

9109-098-502-NA

Issue 1
March 1997

SX-200® ML PABX

LIGHTWARE™ 16
ML Practices
Index

NOTICE

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1 General

This section contains a list of practices for the SX-200[®] ML Private Automatic Branch Exchange with SX-200 ML LIGHTWARE[™] 16 software.

Documentation Index

1.1 The SX-200 ML PABX documentation is contained in three volumes as follows:

Volume 1 - 9109-098-001-NA, contains system description, feature operation information, peripheral equipment descriptions, and engineering information pertaining to the system and its components.

Volume 2 - 9109-098-002-NA, provides installation and administration information which includes testing, data entry, troubleshooting, and maintenance information.

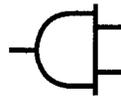
Volume 3 - 9109-098-003-NA, contains ARS and SMDR documentation as well as various feature and application package details.

| Table 1-1 Practices Index | | |
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| 9109-098-353-NA | General Maintenance Information | Issue 1 |
| 9109-098-355-NA | Field-Replaceable Units | Issue 1 |

SX-200[®] ML PABX

Safety Instructions

This Section includes
Regulatory Notices.



Read all instructions before
attempting to install or use
this product.

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1 Important Safety Instructions

These instructions are intended as a general guide to provide basic installation information which is necessary for the proper and safe functioning of this equipment.

WARNING: FAILURE TO FOLLOW ALL INSTRUCTIONS MAY RESULT IN IMPROPER EQUIPMENT OPERATION AND/OR RISK OF ELECTRIC SHOCK.

General

- Read and understand all instructions. Keep these instructions with the equipment.
- Do not attempt to install or service this equipment unless you are skilled in the installation and maintenance of electronic telecommunication equipment and have successfully completed specific training for this equipment.
- This product must be installed and serviced in accordance with this document and the information contained in this set of Technical Practices. Practices 9109-098-501-NA, 9109-098-502-NA, and 9109-098-503-NA are the Practice Index documents.
- Follow all procedures outlined in the practices in the sequence that is given.
- Install all assemblies using the procedures described in the *Installation Information Practice*.
- Configure this product with only the assemblies specified and in the locations stated in this set of Technical Practices.
- Replace all guards or barriers. Close and lock doors at the completion of installation or before returning the equipment to service.
- Grounding circuit continuity is vital for safe operation of telecommunication equipment. Never operate telecommunication equipment with the grounding conductor disconnected.
- Ensure grounding conductor is installed before connecting telecommunication cabling to any system.
- Unplug all cabinets from the ac mains during servicing. To reduce static susceptibility, follow the steps listed below when servicing a cabinet:
 - (a) Always attach the wrist strap from the cabinet being serviced.
 - (b) Immediately place any item removed from a cabinet into an antistatic bag.

Use of Notices

The following information provides an explanation of the notices which appear on the product and in the practices for this product:

| | |
|----------------|---|
| DANGER | Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
| WARNING | Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
| CAUTION | Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property. |

Use of Symbols

1.1 The following information provides an explanation of the symbols which appear on the product:

| | |
|---|---|
|  DANGEROUS VOLTAGE | The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a significant risk of electric shock to persons. |
|  INSTRUCTIONS | The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product. |
|  PROTECTIVE GROUNDING TERMINAL | The ground symbol within a circle identifies the terminal which is intended for connection to an external protective conductor. This connector must be connected to earth ground prior to making any other connections to the equipment. |

General Installation Summary

| | |
|---|---|
| Power Source | This product is intended to operate from an electrical branch circuit source rated at 120 volts RMS, 60 Hz, 15 amperes. |
| Equipment Location | This product shall only be situated in a clean and dry environment in accordance with the environmental and other installation requirements specified in the <i>Installation Information Practice</i> . |
|  | This product may not be provided with a power cord. Provision of a power cord (or replacement of a damaged/defective power cord) shall be in compliance with the electrical codes, in force, in the region of installation. The 3 conductor flexible cord shall have a voltage and current rating not less than the rating marked on this product. The polarized attachment plug shall have a current rating not less than 125 percent of the rating marked on this product. The flexible cord shall have a usage rating for floor mounted products (a typical example in the US would be an "S" or "SJ" rated cord). The cord shall not be longer than 2.4 meters. |

Fuse and Component Replacement

WARNING: UNAUTHORIZED REPAIR OF THIS PRODUCT MAY RESULT IN A FIRE OR SHOCK HAZARD, AND/OR DEFECTIVE OPERATION AND/OR EQUIPMENT DAMAGE. DO NOT REPAIR OR REPLACE COMPONENTS ON CIRCUIT CARD ASSEMBLIES OR OTHER PARTS OF THIS EQUIPMENT UNLESS THERE IS A SPECIFIC DESCRIPTION OF THE PROCEDURE PROVIDED IN THIS SET OF TECHNICAL PRACTICES. RETURN ALL INOPERATIVE ASSEMBLIES TO AN AUTHORIZED MITEL AGENT FOR REPAIR.

Fuses identified with an electrical rating (voltage, current, type) shall be replaced with only the same type and rating. Never replace fuses with devices having different electrical ratings. Only those fuses installed in fuse-clips or fuse-holders shall be replaced in the field as directed by instructions in this set of Technical Practices. Do not replace or attempt to bypass soldered in fuses on circuit card assemblies.

Refer to the appropriate documents in this document set for information on the proper method of troubleshooting and servicing of this product. Practice 9109-098-502-NA is the Practice Index document.

Identification and Location of Circuit Card for Installation

The mechanical design consists of an enclosure, a card cage, and an interconnecting backplane which define the arrangement and position of circuit card assemblies. Installation of the circuit card assemblies is performed by sliding it into the appropriate slot in the card cage.

The assembly physically interconnects into the system by first positioning it in front of the appropriate slot and then sliding the card along the card cage guides until the card is firmly seated into the mating connector on the backplane. Most circuit cards are installed in this manner. Refer to Figure 1-1 for specific locations of the assemblies.

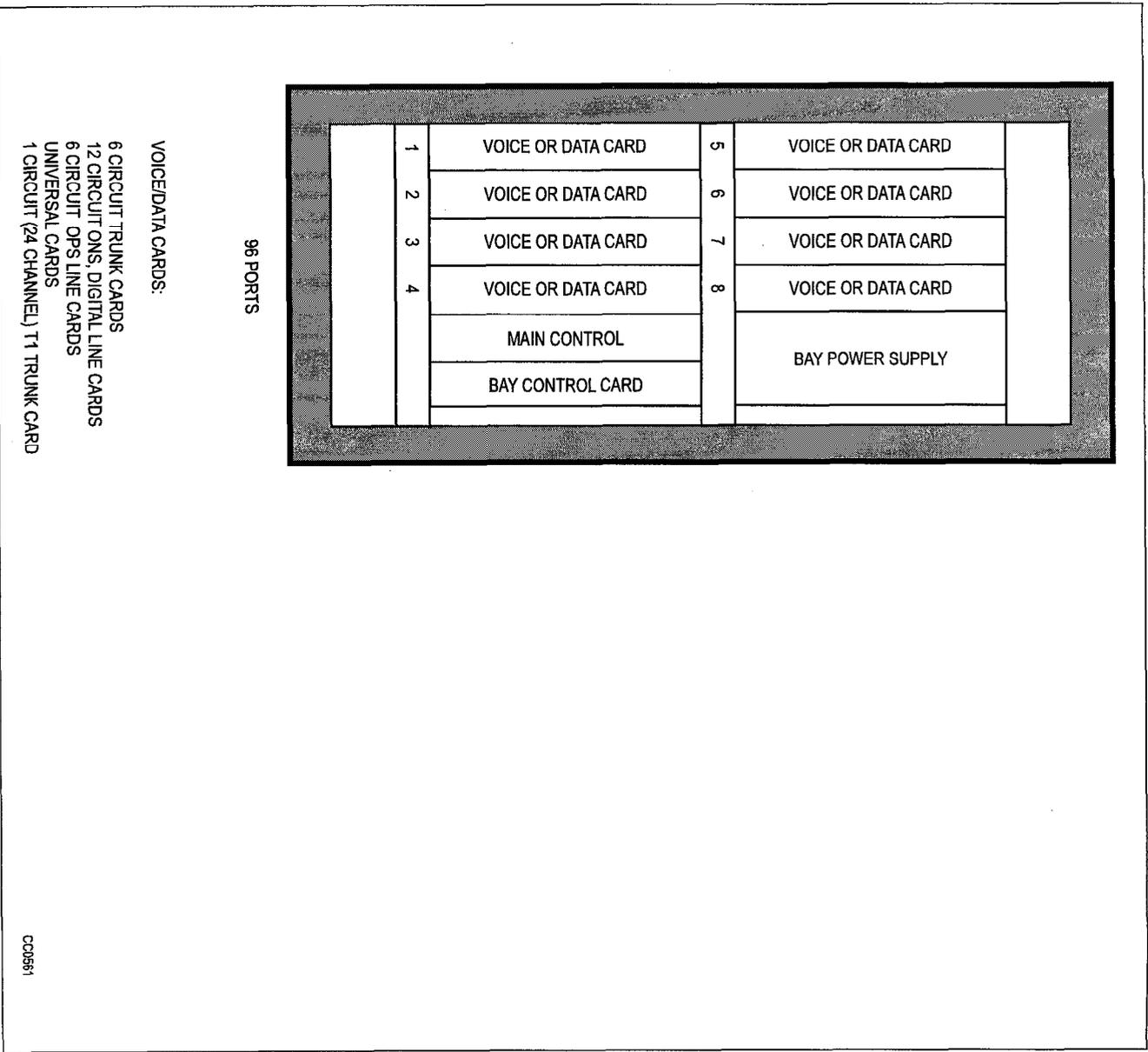


Figure 1-1 SX-200® ML Circuit Card Locations

Equipment Grounding

Redundant and independent equipment grounding conductors (see Note 1) are to be installed between the product and the wiring system ground.

One of the equipment's grounding conductors shall be an insulated grounding conductor (see Note 2) that is not smaller in size and is equivalent in insulation material and thickness to the grounded and ungrounded branch circuit supply conductor, except that it is green, with or without one or more yellow stripes. The grounding conductor is to be installed as part of the circuit that supplies that product or system and is to be connected to ground at the service equipment.

The other conductor (see Note 3) shall comply with the general rules for grounding contained in Article 250 of the National Electrical Code, NFPA 70, or Section 10 of the Canadian Electrical Code, CSA C22.1, but shall not depend on the cord and plug of the product.

Note: 1. There are two grounding conductors required to be installed with this equipment. One ground conductor is provided as part of the three wire 15 A branch circuit from which the product derives AC power. The other ground conductor is the supplementary or telecommunications ground.

The SX-200 ML control cabinet requires a separate and independent equipment grounding conductor. The supplementary ground is required because the cabinet contains telecommunications interfaces that connect to exposed or outside plant leads. These generally include LS/GS and DID trunk cards and OPS line cards.

The power cord for this product should only be replaced with one having the same number of conductors, gauge, insulation and usage ratings.

The telecommunications ground conductor shall be installed before installing other telecommunications wiring to the system. Multi-cabinet system installations may share a common ground conductor. Refer to the *Installation Information Practice* for specific instructions for correct system grounding.

2. This grounding conductor is provided as part of the AC power cord-set provided with the equipment. The size of this conductor is allowed as stated in the National Electrical Code (NEC) in the United States NFPA/ANSI 70 Section 250-95, Exception No. 1 which provides for compliance through Section 240-4, Exception No. 1.
3. This grounding conductor is referred to as the telecommunications ground or supplementary ground as permitted in Section 250-91 (c) of the NEC. This shall be an insulated #6 AWG, green or green and yellow striped wire which is to be connected to the protective grounding stud within the cabinet. The following symbol is located adjacent to the stud to identify the connection point for the grounding conductor:



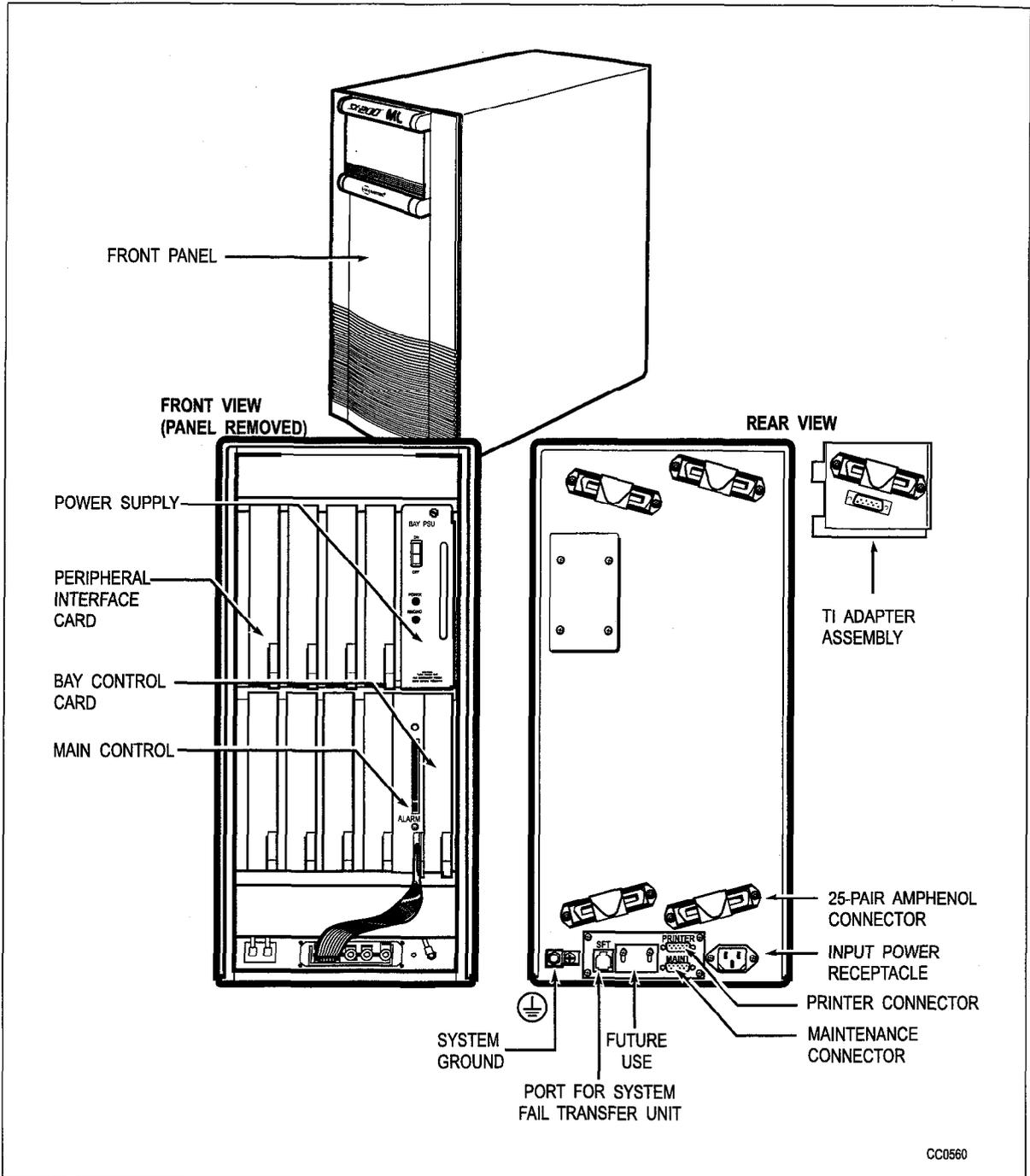


Figure 1-2 SX-200 ML Cabinet Ground Connection Point

Approved Configurations of Product (United States Of America)

This product has been evaluated and listed with Underwriters' Laboratories Incorporated to their Standard for Safety 1459, "Telephone Equipment", Second Edition. The following assemblies have been investigated and determined suitable for use in this product:

| Marketing Number | Description / Common Name |
|------------------|---|
| 9109-005-000-SA | UNIVERSAL CARD |
| 9109-008-000-SA | BAY POWER SUPPLY 120V |
| 9109-008-003-NA | BAY POWER SUPPLY 240V |
| 9109-010-000-SA | ONS LINE CARD |
| 9109-010-002-SA | ONS LINE CARD |
| 9109-010-003-NA | ONS LINE CARD (for SX-200 ML only) |
| 9109-011-001-SA | LS/GS TRUNK CARD 6CCT-CSA |
| 9109-012-000-SA | DIGITAL LINE CARD |
| 9109-012-002-NA | DIGITAL LINE CARD (for SX-200 ML only) |
| 9109-013-000-SA | E&M TRUNK MODULE |
| 9109-016-000-SA | DTMF RX/RELAY MODULE |
| 9109-020-000-SA | COV LINE CARD |
| 9109-017-001-SA | BAY CONTROL CARD II |
| 9109-018-000-SA | MUSIC/PAGING MODULE |
| 9401-000-024-NA | DNIC MUSIC-ON-HOLD/PAGER UNIT |
| 9109-021-000-SA | T1 TRUNK CARD AND ADAPTOR |
| 9109-031-000-SA | DID TRUNK CARD |
| 9109-040-000-SA | OPS LINE CARD |
| 9109-070-000-NA | MAIN CONTROL II CARD WITH STRATUM 3 CLOCK |
| 9109-070-001-NA | MAIN CONTROL II CARD WITH STRATUM 4 CLOCK |

Installation of Telecommunication Wiring

Telecommunication wiring to this product shall conform to all applicable safety and electrical wiring regulations. Installation of telecommunication wiring shall be performed following precautions in accordance with standard industry practice. The precautions to be followed include:

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.
5. The SFT (System Fail Transfer) output connector (see Figure 1-2) shall not be connected to an off-premise application.

WARNING: ANY CONNECTION OF THE ASSEMBLIES LISTED BELOW TO AN OUTSIDE PLANT LEAD, AN OFF-PREMISE APPLICATION OR ANY OTHER EXPOSED PLANT APPLICATION MAY RESULT IN A FIRE OR SHOCK HAZARD, AND/OR DEFECTIVE OPERATION AND/OR EQUIPMENT DAMAGE.

| Marketing Number | Description / Common Name |
|------------------|--|
| 9109-010-000-SA | ONS LINE CARD |
| 9109-010-002-SA | ONS LINE CARD |
| 9109-012-000-SA | DIGITAL LINE CARD |
| 9109-010-003-NA | ONS LINE CARD(for <i>SX-200</i> ML only) |
| 9109-012-002-NA | DIGITAL LINE CARD(for <i>SX-200</i> ML only) |
| 9109-018-000-SA | MUSIC/PAGING MODULE |
| 9109-021-000-SA | T1 TRUNK CARD |
| 9400-300-313-NA | SFT FILTER ASSY |

Note: The T1 Trunk Card may be connected to an outside plant lead, an off-premise application, or any other exposed plant lead, only through a Customer Service Unit (CSU) which has been suitably investigated and approved by the FCC or Industry Canada, and the appropriate authority for safety.

Examples of installations which shall not be permitted for connection to these interfaces are those which:

- (a) Require protectors in accordance with the National Electrical Code for the United States, NEC, NFPA / ANSI 70, Article 800-30, or,
- (b) Are "Exposed Plant" as defined in the Canadian Electrical Code - CSA C22.1, paragraph 60-100 which states; "Exposed plant means where any portion of the circuit is subject to accidental contact with electric lighting or power conductors operating at a voltage exceeding 300V between conductors or is subject to lightning strikes."

2 Regulatory Notices

NOTICE TO CANADIAN CUSTOMERS

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an approved method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

The Ringer Equivalence Number for the SX-200 ML PABX is 1.0B.

Industry Canada Notice

This Class A digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

NOTICE TO U.S. CUSTOMERS

This SX-200 ML PABX equipment complies with Part 68 of the FCC rules. On the rear of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The FCC Registration Number for the PABX equipment is: BN285B-64724-MF-E or BN259C-16891-MF-E depending upon the product's country of manufacture (refer to the registration label of the product).

| Port | FIC | SOC | REN | Jack |
|-----------------------|---------|------|------|-------|
| Loop Start | 02LS2 | N/A | 1.0B | RJ21X |
| Ground Start | 02GS2 | N/A | 1.0B | RJ21X |
| OPS | 0L13B | 9.0F | N/A | RJ21X |
| DID (Reverse Battery) | 02RV2-T | AS.2 | N/A | RJ21X |
| E&M, 2 Wire, Type I | TL11M | 9.0F | N/A | RJ2EX |
| E&M, 4 Wire, Type I | TL31M | 9.0F | N/A | RJ2GX |
| DS-1 | 04DU9-B | 6.0N | N/A | N/A |

The REN is useful to determine the quantity of devices you may connect to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the total REN's, contact the local telephone company.

If the PABX equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.

If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

For information concerning repairs that can be made by the customer, refer to MITEL *Troubleshooting Practice* and the *General Maintenance Information Practice*. These documents are part of the MITEL Standard Practices (technical documentation) shipped with the equipment.

This equipment may not be used on public coin phone service provided by the telephone company. Connections to party lines service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information).

WHEN PROGRAMMING EMERGENCY NUMBERS AND (OR) MAKING TEST CALLS TO EMERGENCY NUMBERS:

1. Remain on the line and briefly explain to the dispatcher the reason for the call.
2. Perform such activities in the off-peak hours, such as early mornings or late evenings.

ALLOWING THIS EQUIPMENT TO BE OPERATED IN SUCH A MANNER AS TO NOT PROVIDE FOR PROPER ANSWER SUPERVISION IS A VIOLATION OF PART 68 OF THE FCC'S RULES.

Proper Answer Supervision is when:

- a) This equipment returns answer supervision signals to the PSTN when DID calls are:
 - Answered by the called station
 - Answered by the attendant
 - Routed to a recorded announcement that can be administered by the CPE user
 - Routed to a dial prompt.
- b) This equipment returns answer supervision on all DID calls forwarded to the PSTN. Permissible exceptions are:
 - A call is unanswered
 - A busy tone is received
 - A reorder tone is received

This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operators Consumers Act of 1990.

Federal Communications Commission (FCC) Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTES

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March 1997

SX-200[®] ML PABX

Installation Information

Special Accessories Required for Compliance with FCC Rules Part 15

The following special accessories are used with the *SX-200* ML equipment. Refer to the appropriate section of this practice for special accessory installation information.

| Special Accessory | Special Accessory Installation Information |
|--------------------------|---|
| Split Ferrite Block | Chart 5-1 |

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SX-200, LIGHTWARE 16 ML, SUPERSET, SUPERSET 3, SUPERSET 4, SUPERSET 3DN, SUPERSET 4DN, SUPERSET 401+, SUPERSET 410, SUPERSET 420, SUPERSET 430, SUPERSET 7000 and SUPERCONSOLE 1000 are trademarks or registered trademarks of Mitel Corporation.

VT100 is a trademark of Digital Equipment Corp.

IMPORTANT SAFETY INSTRUCTIONS

These instructions are intended to be used as a general guide to provide basic installation information which is necessary for the proper and safe functioning of this equipment.

WARNING: Failure to follow all instructions may result in improper equipment operation and/or the risk of electric shock.

General

- Read and understand all instructions. Keep these instructions with the equipment.
- Do not attempt to install or service this equipment unless you are skilled in the installation and maintenance of electronic telecommunication equipment and have successfully completed specific training for this equipment.
- This product must be installed and serviced in accordance with this document and the information contained in this set of technical practices. Refer to the *Practice Index* document.
- Follow all the steps outlined in this document in the sequence that is given.
- Configure this product only with the assemblies specified and in the locations stated in this document and in this set of technical practices.
- Replace all guards or barriers. Close and lock doors at the completion of installation or before returning the equipment to service.
- Grounding circuit continuity is vital for safe operation of telecommunication equipment. Never operate telecommunication equipment with the grounding conductor disconnected. Ensure that the grounding conductor is installed before connecting telecommunication cabling to any system (See Note).

Note: All cabinets must be unplugged from the ac mains during servicing. Unplugging a LIGHT control cabinet means the cabinet is “floating” and presents a potential static problem. To reduce static susceptibility on an SX-200 ML cabinet, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a node into an antistatic bag.

Installation of Telecommunication Wiring

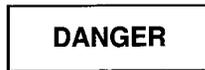
Telecommunication wiring to this product shall conform to all applicable safety and electrical wiring regulations. Installation of telecommunication wiring shall be performed by following precautions in accordance with standard industry practice. The precautions to be followed include:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Use of Notices and Symbols

The following information provides an explanation of the notices and symbols which appear on the product and in the practices for this product.



Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property.

| | |
|---|--|
|  DANGEROUS VOLTAGE | <p>The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a significant risk of electric shock to persons.</p> |
|  INSTRUCTIONS | <p>The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.</p> |
|  PROTECTIVE GROUNDING TERMINAL | <p>The ground symbol within a circle identifies the terminal which is intended for connection to an external protective conductor. This connector must be connected to earth ground prior to making any other connections to the equipment.</p> |

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1 Introduction

Installation Information

Intent of this Document

- 1.1 This practice describes the installation procedures for the SX-200® ML PABX, in addition to the MITEL® peripheral equipment designed to be used with them.

Intended Audience

This practice is designed for MITEL-trained installation and maintenance technicians.

The System: The 96-port cabinet, consisting of a single bay, holds one Main Control Card II (MCC II), a Bay Control Card, a Bay Power Supply, and up to eight Peripheral Interface Cards. Located on the rear of the cabinet is a connector panel for serial ports, and the SFT (system fail transfer) control port.

Peripheral Devices, Software and Documentation

Peripheral Cards: Peripheral cards are either line cards (cards that provide lines for telephones or other peripherals) or trunk cards (cards that interface the PABX to the telephone company). The number and type of line and trunk cards vary with the operational requirements of the customer's system.

Software: This document describes the installation of LIGHTWARE™ 16 ML software.

Peripheral Equipment: The PABX supports such MITEL peripheral devices as consoles, telephones, and datasets.

Documentation: A set of MITEL Technical Practices is delivered with the *LIGHTWARE* 16 ML software.

Summary of Practice Contents

The *Installation Information* Practice provides installation procedures for the PABX (system, line and trunk cards, and software), and peripherals as shown in Table 1-1.

| Table 1-1 Installation Information | | |
|---|---|---|
| Part | Title | Contents |
| Part 2 | Installing System | <ul style="list-style-type: none"> - Equipment part numbers and outlines of installation procedures. - Prepare for installation |
| Part 3 | Handling Printed Circuit Cards | <ul style="list-style-type: none"> - Unpack and handle printed circuit cards - Remove and return printed circuit cards |
| Part 4 | Installing Digital Peripheral Cards and Modules | Installation of: <ul style="list-style-type: none"> - the Universal Card - the ONS, OPS, and Digital Line Cards - the DID Trunk Card - the LS/GS Trunk Card - the T1-DS1 Trunk Card |
| Part 5 | Bring System into Service | <ul style="list-style-type: none"> - Connect cables between PABX and cross-connect field - Power up cabinet - Install software - Check system initialization |
| Part 6 | Installing Peripheral Equipment | Installation of: <ul style="list-style-type: none"> - terminals - printers - night bells - paging equipment - Music-on-Hold equipment - alternate music source for ACD |
| Part 7 | Cabling and Cross Connections | <ul style="list-style-type: none"> - Tip and ring assignments - PFT connections - external plug and jack connections to the cross-connect field - interconnect card connections - USOC connector pin connections |
| Appendix A | Peripheral Device Connection to the Digital Line Card | <ul style="list-style-type: none"> - Maximum loop lengths for peripheral device connection to the Digital Line Card |

How to Use this Practice

Refer to the following charts for information on:

- How to use this practice to install the PABX (Chart 1-1).

| Chart 1-1 How to Use This Practice | | |
|------------------------------------|---|--|
| Step | Action | Comments |
| 1. | Install Equipment Refer to the appropriate part of this document for the PABX configuration you are installing. | The tables tell you what equipment is to be installed, and in what sequence. |
| 2. | Consult the tables at the beginning of each part. | |
| 3. | Follow the installation charts in the sequence given in the table. | |
| 4. | Install Peripheral Equipment When the cabinet and circuit cards are installed, refer to the <i>Peripheral Devices Practice</i> , for information on how to install optional equipment such as terminals, data sets, and modems. | |
| 5. | Cabling and Cross Connections Go to Cabling and Cross-connections chapter for information on tip and ring assignments, power fail transfer connections, backplane connector pinouts to the cross-connect field, interconnect card connections, and USOC connector pin designations. | |

Prerequisites To Installation

Tools Needed

- 1.2 The PABX can be installed with a standard set of tools.

Training Requirements

Only those who have successfully completed a MITEL installation and maintenance training course for the *SX-200 LIGHT PABX* and the *SX-200 ML PABX* should install an *SX-200 ML PABX*.

Referenced Documents

The MITEL documents that are referenced in this practice are listed in Table 1-2

Table 1-2 Referenced MITEL Documents

| Practice Number | Title | Contains Information On |
|------------------------|-----------------------------|---|
| 9109-098-126-NA | Peripheral Devices | All peripherals, including SUPERSET™ telephones, consoles, datasets, and other devices, and the installation procedures for those devices |
| 9109-098-180-NA | Engineering Information | Configuring the system |
| 9109-098-210-NA | Customer Data Entry (CDE) | Programming the PABX when hardware installation is complete |
| 9109-098-350-NA | Troubleshooting | Problems during initialization |
| 9109-098-351-NA | RS-232 Maintenance Terminal | Installing the maintenance terminal |
| 9109-098-355-NA | Field-Replaceable Units | Ordering part numbers for expansion kits, cards, and peripherals |

Disclaimer

The following products have been manufacture-discontinued by Mitel. These products are supported but not described in *SX-200 ML Practices*:

- SUPERSET 3™ and SUPERSET 4® telephone sets
- SUPERSET 3DN™ and SUPERSET 4DN™ telephone sets
- DATASET 1101 data cartridge
- SUPERSET DSS module.

The following products and peripheral devices are not supported on the *SX-200 ML PABX* and are not described in *SX-200 ML Practices*:

- Modem Interconnect Panel
- DATASET 1102 Rack-mounted Dataset
- DATASET 2102 Rack-mounted Dataset
- DATACABINET 9000 data cabinet
- DATASHELF 9100 datashelf
- ISDN Node
- Fiber Interface Module (and associated products)
- Peripheral Node
- LCD Console (and Console module for Universal Card).

2 Installing the System

Installing the SX-200 ML PABX

Introduction

- 2.1 The equipment to be installed to create the system is shown in Table 2-1. Some of the equipment listed as requiring installation may have been shipped already installed. If that is the case, the equipment should be removed and reseated during the installation procedure.

| Table 2-1 Equipment Installed in the SX-200 ML PABX | |
|---|--|
| Cabinet | The cabinet is shipped preconfigured with - Main Control II Card - Bay Control Card - Bay Power Supply - 1 ML-only ONS Line Card - 2 ML-only Digital Line Cards |
| Digital Peripheral Cards | Requiring installation: - Universal card and modules - ONS Line Card - OPS Line Card - Digital Line Card - COV Line Card - LS/GS Trunk Card - DID Trunk Card - T1-DS1 Trunk Card |

Installation Info

Equipment Part Numbers

The part numbers of equipment to be installed in the SX-200 ML PABX are shown in Table 2-2.

| Table 2-2 SX-200 ML Equipment Part Numbers | | |
|--|-----------------|----------------------|
| Equipment Name | Part Number | Comments |
| Cabinet and Hardware | | |
| Cabinet | 9400-100-113-NA | |
| Digital Control Cards | | |
| Main Control II Card | 9109-070-000-NA | with Stratum 4 clock |
| Main Control II Card | 9109-070-001-NA | with Stratum 3 clock |
| Bay Power Supply | 9109-008-000-SA | 115 V |
| | | Page 1 of 2 |

| Table 2-2 SX-200 ML Equipment Part Numbers (continued) | | |
|---|--------------------|--|
| Equipment Name | Part Number | Comments |
| Bay Power Supply | 9109-008-002-NA | 230 V |
| Bay Control Card | 9109-017-000-SA | |
| Digital Peripheral Cards | | |
| Universal Card | 9109-005-000-SA | Without modules |
| - Receiver/relay module | 9109-016-000-SA | |
| - Music on hold/pager module | 9109-018-000-SA | |
| - E&M trunk module | 9109-013-000-SA | |
| COV Line Card | 9109-020-000-SA | |
| ONS Line Card | 9109-010-000-SA | |
| ONS Line Card | 9109-010-003-NA | for SX-200 ML only |
| OPS Line Card | 9109-040-000-SA | |
| Digital Line Card | 9109-012-002-NA | for SX-200 ML only |
| Digital Line Card | 9109-012-000-SA | |
| LS/GS Trunk Card | 9109-011-001-SA | |
| DID Trunk Card | 9109-031-000-SA | |
| DNIC Music-on-Hold/Pager Unit (DMP) | 9401-000-010-NA | |
| Software (see Note) | | |
| SX-200 ML LIGHTWARE 16 | 9109-418-000-NA | Includes: - SX-200 ML LIGHTWARE 16 software - system documentation |
| SX-200 ML System ID Module | 9400-300-302-NA | |
| Documentation (see Note) | | |
| System documentation | 9109-953-050-NA | Technical documentation - included with software |
| Page 2 of 2 | | |

Note: The SX-200 ML PABX has been evaluated and listed with Underwriter's Laboratories Incorporated to their standard for safety 1459, "Telephone Equipment", second edition. The denoted assemblies have been investigated and determined suitable for use in this product.

Installation Charts

Table 2-3 indicates which charts to follow in sequence to install the SX-200 ML PABX.

| Table 2-3 Charts to Follow to Install the SX-200 ML System | | |
|--|--------------|--------------|
| Activity | Basic | Chart |
| Prepare for Installation | | |
| Prepare for Installation | X | Chart 2-1 |
| Install Cabinet | | |
| Unpack and Inspect Cabinet | X | Chart 2-2 |
| Open and Close Front Door | X | Chart 2-3 |
| Install Cabinet (the cabinet is pre-configured with Control cards) | X | Chart 2-4 |
| Verify Ground Connection | X | Chart 2-5 |
| Handle Printed Circuit Cards | | |
| Unpack and Handle Printed Circuit Cards | X | Chart 3-1 |
| Remove and Repack Printed Circuit Cards | @ | Chart 3-2 |
| Install Digital Peripheral Cards | | |
| Install Universal Card and Modules | # | Chart 4-1 |
| Install Line (ONS, OPS, COV, and Digital) and DID Trunk Cards | # | Chart 4-2 |
| Install LS/GS Trunk Card | # | Chart 4-3 |
| Install T1-DS1 Trunk Card | # | Chart 4-4 |
| Put System Into Service | | |
| Connect Cables Between System and Cross-connect Field | X | Chart 5-1 |
| Install System ID Module and PCMCIA Memory Card onto the MCC II | X | Chart 5-2 |
| Cabinet Power On | X | Chart 5-3 |
| Check System Initialization | X | Chart 5-4 |

X means: Do this chart.

@ means: Do this chart as required.

means: Type and number of circuit cards to be installed vary according to customer requirements.

Prepare for Installation

2.2 When you have completed Chart 2-1 you will have:

- Made sure that the site survey information is available.
- Made sure that the system configuration information is available.
- Assembled the material you need for the installation.
- Provided additional ac outlets if required.

| Chart 2-1 Prepare For Installation | | |
|---|--|---|
| Step | Action | Comments |
| 1. | Prepare For Installation Make sure all stations, trunks, and other equipment to be connected to the system are identified. | This information is usually prepared by a customer service representative before installation begins. |
| 2. | If you are following this procedure in the course of a system upgrade, ensure that additional ac outlets are provided if required. | |
| | Refer to System Configuration | |
| 3. | Check that the quantities and types of printed circuit cards to be installed have been identified. | The <i>Engineering Information Practice</i> provides configuration rules. |
| 4. | Make sure that stations and trunks are assigned to specific cards. | System configuration ensures proper handling and distribution of traffic. |
| 5. | Make sure cards are assigned to specific slots in the cabinet. | |
| | Prepare Support Material | |
| 6. | Make sure that all material required for the installation is available. | Material includes telephone sets, cables, and cross-connection blocks. |

Install Cabinet

Unpack and Inspect the SX-200 ML Cabinet

Chart 2-2 lists the steps required to unpack and inspect the SX-200 ML Cabinet. The SX-200 ML PABX is a single-cabinet system.

When you have completed Chart 2-2:

- The cabinet will be ready to install.
- Other items will be set aside to be unpacked later.
- Defective items will be repacked for return.

CAUTION: Do not open or unpack any printed circuit board cartons at this time.

Chart 2-2 Unpack and Inspect an SX-200 ML Cabinet

| Step | Action | Comments |
|------|---|----------------|
| | Remove Cabinet from Carton | |
| 1. | Set aside all other packaged items for later unpacking and installation. | |
| 2. | Unpack carton and check contents against packing list. Retain some packing material in case any items are to be returned. | |
| 3. | Remove the cabinet from the carton. | |
| | Inspect for Transit Damage | |
| 4. | Visually check that the cabinet and all attached equipment is undamaged. | |
| 5. | Open the cabinet front door. | See Chart 2-3. |
| 6. | Remove shipping braces from within cabinet. | |
| 7. | Make sure that all connector contacts are free of foreign matter. | |
| 8. | Remove and reseat preconfigured cards. | |
| 9. | Check that all cable connectors are seated firmly and are undamaged. | |
| 10. | Remove tie wrap from BPS. Tighten BPS thumbscrew. | |
| 11. | Inspect backplane for damage. | |
| | Repack Defective Items | |
| 12. | Tag defective items, repack, and returns. | |

Open and Close Cabinet Front Door

For most card installation procedures, the front door panel of the control cabinet must be removed. Chart 2-3 provides instructions for removing and replacing the cabinet front door panel.

| Chart 2-3 Open and Close Cabinet Front Door | | |
|---|--|----------|
| Step | Action | Comments |
| Open Cabinet Front Door | | |
| 1. | Pry open the two latches on the right-hand side of the black cover panel on the front door, and swing the cover panel off to the left. | |
| 2. | Loosen the two screws under the black panel to release the front door panel. | |
| 3. | Pull the top of the front door out from the cabinet and lift it off the lower front cabinet rail. | |
| Close Cabinet Front Door | | |
| 4. | Lower the front door panel down over the front cabinet rail and position it on the front of the cabinet so that the two screw slots are aligned. | |
| 5. | Tighten the two screws holding the door panel on the front of the cabinet. | |
| 6. | Place the black cover panel over the appropriate opening, first catching the latch on the left hand side, and then the two latches on the right hand side. | |

Install SX-200 ML Cabinet

When you have completed Chart 2-4:

- The cabinet will be in its assigned position.
- Power requirements will be checked.
- The cabinet will not be plugged in.

- Note:**
1. When positioning the cabinet, allow room for any PABX accessories (such as a UPS) or peripherals (such as a maintenance terminal).
 2. Arrange for the power requirements for these peripherals and accessories. These power requirements are described in the documentation provided with the items.
 3. An Uninterruptible Power Supply (UPS) is recommended.

| Chart 2-4 Install an SX-200 Cabinet | | |
|-------------------------------------|---|---|
| Step | Action | Comments |
| Position Cabinet | | |
| 1. | Put the cabinet in its assigned position. | Equipment Location: The location MUST be: - Dry, clean, well ventilated - Well lit - Readily accessible |

Chart 2-4 Install an SX-200 Cabinet (continued)

| Step | Action | Comments |
|------|---|---|
| 2. | Make sure that there is adequate room for access and cabinet ventilation. | The location MUST NOT be: <ul style="list-style-type: none"> - Near a sprinkler, sweating pipes, steam pipes, or steam vents. - In temperatures less than 5°C or greater than 40° C (32° F to 104° F). - Near corrosive fumes or machinery exhaust. |
| 3. | Make sure that the cabinet is within reach of the ac receptacle. | The rear of the cabinet must be unobstructed and not too close to a wall or other equipment so the air vents are clear. |
| 3. | Make sure that the cabinet is within reach of the ac receptacle. | The plug should be accessible enough so you can unplug the cabinet for maintenance. However, you shouldn't be able to unplug the cabinet accidentally. |
| | Check Power Requirements | |
| 4. | Check the power and power receptacles provided. | <p>System Power Requirements:</p> <p>The power requirements are as follows:</p> <ul style="list-style-type: none"> - More than one receptacle may be installed on the branch circuit if more plugs are required. - If the total power requirements of the entire system exceed the rating of one branch circuit, individual dedicated branch circuits may be installed per cabinet. <p>Cabinet Power Requirements:</p> <p>The cabinet has a line cord with a three-prong plug. There must be one single-phase power receptacle, as follows:</p> <ul style="list-style-type: none"> - The power receptacle must be a three-wire type, with the ground wire connected to the ground of the electrical system. - There must be no attempt to defeat the grounding conductor. - The power receptacle must not be controlled by a switch. |
| 4. | <p>System Power Requirements: 115 V</p> <p>System Power Requirements: 230 V The 230 Volt power cord for this product shall be in compliance with the electrical codes in force within the region of installation.</p> | <ul style="list-style-type: none"> - The dedicated receptacle should have a rating of 120 V, 60 Hz, 15 A - The dedicated receptacle should have a rating of 230 V, 50 Hz, 10A |
| 5. | Attach a warning tag to the plug end of the power cord to prevent its accidental removal. Fasten the power cord to the cabinet securely. | |

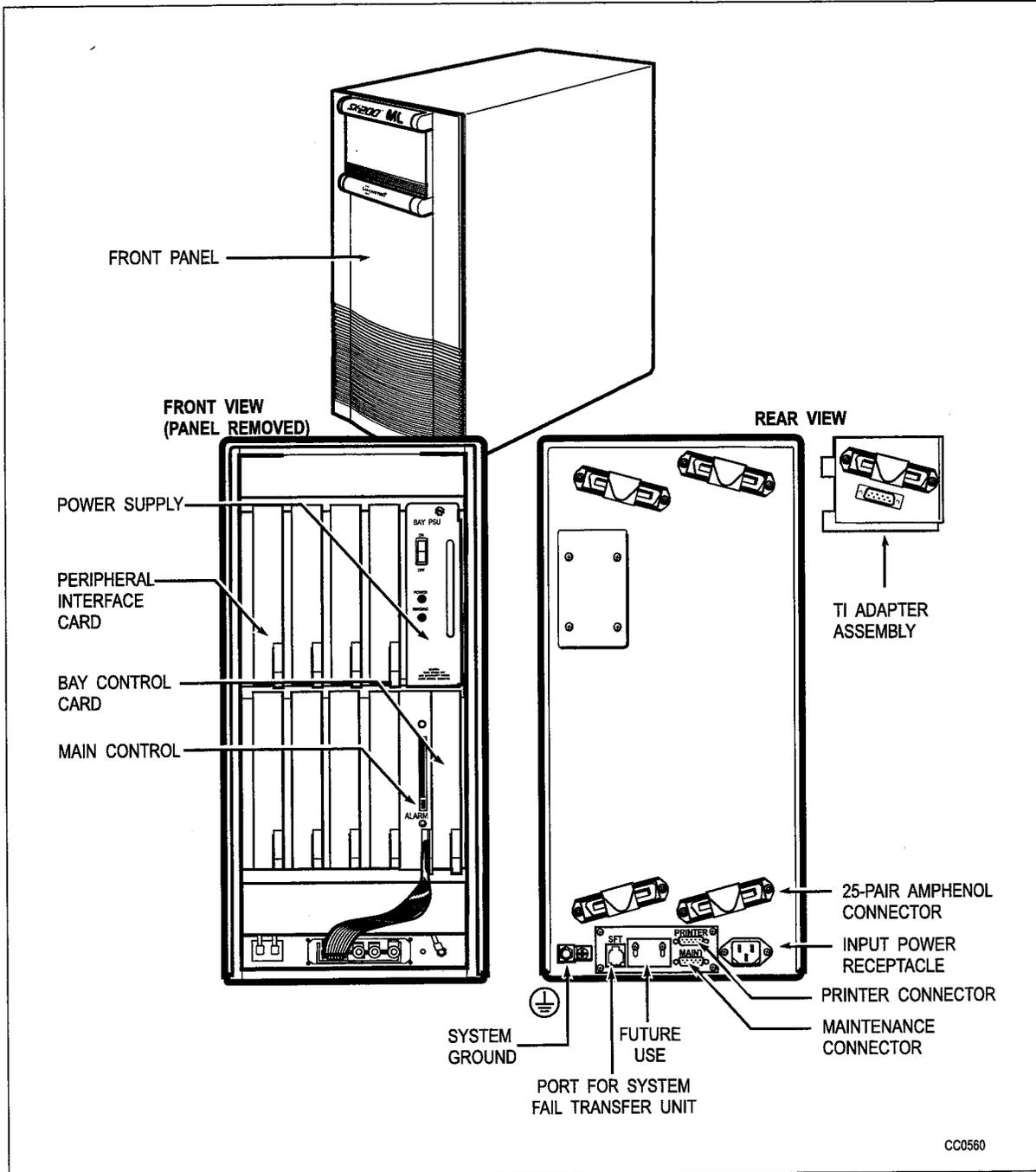


Figure 2-1 SX-200 ML Cabinet

Verify Ground Connections

- 2.3 When you have completed Chart 2-5:
- Ground requirements will be checked.
 - Voltage and resistance between the ground lug and the ground wire will be within acceptable limits.

Check Ground Requirements

Ensure that ground requirements have been met. The ground wire shall be installed in accordance with national and local regulations and/or regulations of other authorities having jurisdiction. References: United States of America: NEC - NFPA/ANSI 70 National Electrical Code Article 250. Canada: CEC - CSA C22.1 - Canadian Electrical Code, Section 10.

All circuit commons in the cabinet, and all system hardware, must derive ground from a single ground concentration point in one of the cabinets. This point must derive ground from a cold water pipe or other equally grounded point, using a #6 AWG insulated green wire connected directly between both points.

The cabinet and associated ducting hardware must not be exposed to any ground source other than that described above. AC service wires bringing ac to the cabinet must not share an enclosure or raceway with other system grounds, dc power distribution wires, or signaling wires. All sources of external ground (for example, system signaling ground to the approved ground source) must connect only to the system single point ground.

Note: Before installation, an insulated #6 AWG green ground wire must be connected between the equipment location and an approved ground (metallic cold water pipe where it enters the building, or equivalent).

| Chart 2-5 Verify Ground Connections | | |
|-------------------------------------|--|---|
| Step | Action | Comments |
| | Measure Voltage | |
| 1. | Ensure that equipment power switches are in the OFF position | |
| 2. | Verify the wiring of the ac outlet. | Use a locally approved plug-in circuit tester to confirm that the ground connection is good. |
| 3. | Plug the ac line cord into the IEC (ac) receptacle on the cabinet. | 230 Volt systems require the local procurement of a power cord for this product that shall be in compliance with the electrical codes in force within the region of installation. |
| 4. | Plug the ac line cord into the IEC (ac) receptacle on the cabinet. | |
| 5. | Plug the ac line cord into the building ac receptacle. | |
| | | Page 1 of 2 |

Chart 2-5 Verify Ground Connections (continued)

| Step | Action | Comments |
|-------------|--|---|
| 6. | Measure the ac voltage between the PABX ground lug and the "approved" ground wire. | The #6 AWG green ground wire should be connected to an approved ground but not to the PABX. |
| 7. | If the voltage is greater than 1.0 V, locate another approved ground. | The customer's engineering support group is responsible for providing the approved ground. |
| 8. | If the voltage is less than 1.0 V, measure the resistance. | |
| 9. | If the resistance is greater than 0.5 ohm, take corrective action to reduce it to less than 0.5 ohm. | Resistance should be less than 0.5 ohm. The customer's engineering support group is responsible for providing the approved ground. |
| 10. | Unplug the ac line cord from both the cabinet and the building ac receptacles. | |
| | Connect Ground | |
| 11. | Connect the verified ground wire to the common ground terminal on the rear of the cabinet. | |

3 Handling Printed Circuit Cards

Unpack and Handle Printed Circuit Cards

3.1 When you have completed Chart 3-1:

- You will know how to properly unpack and handle printed circuit cards.

CAUTION: Read these instructions carefully and follow them when performing procedures described in following chapters.

| Chart 3-1 Unpack and Handle Printed Circuit Cards | | |
|---|---|---|
| Step | Action | Comments |
| | When Unpacking | |
| 1. | Make sure the PABX ground is connected (see Note at the end of this table). | |
| 2. | Put on the antistatic wrist strap when unpacking and handling cards. | The antistatic wrist strap must be connected to the PABX chassis, which must be connected to an approved ground to provide protection from static discharges (see Note at the end of this table). |
| 3. | Remove the card from its MITEL packaging. | The card is packed in an antistatic bag. |
| 4. | When you are ready to put the card in its slot, open the antistatic bag, and remove the card. | The card should stay protected in the bag until it is installed. |
| 5. | Keep the packaging and antistatic bag in case the card has to be returned. | |
| | When Handling Cards | |
| 6. | Handle printed circuit cards by their edges only, except when seating connectors. | Handling the card faces or components may cause damage. |
| 7. | Do not touch the gold edge connectors. | |
| 8. | Avoid contact with any exposed electrical connections. | |
| | Identifying Digital Card Positions | |
| | | CAUTION: Do not install cards yet. Card installation is described in later chapters. |

Chart 3-1 Unpack and Handle Printed Circuit Cards (continued)

| Step | Action | Comments |
|------|--|---|
| 9. | Identify the appropriate slots for digital control cards in the control shelf and the digital peripheral bay. The System Configuration and/or the Tip and Ring forms identify which card type goes into each slot. Symbols on the face of each card show which slot it should be installed in. | Control cards have symbols that match symbols on the appropriate slots in the Control cabinet. Main Control Card II Bay Control Card: semicircle Bay Power Supply: right triangle |
| 10. | Identify the appropriate card slot for digital peripheral cards in the control shelf and the digital peripheral bay. When Installing Cards or Modules | Cards with a square on their faceplates are high-power digital peripheral cards and are installed only in upper slots: - COV Line Card - OPS Line Card - DID Line Card - Universal Card - T1-DS1 Trunk Card Cards with a circle on their faceplates are low-power digital peripheral cards and are installed in upper or lower slots: - LS/GS Trunk Card - Digital Line Card - ONS Line Card |
| 11. | <i>If installing control cards, make sure power is off. If installing peripheral cards in an operating system, power may be left on.</i> | CAUTION: Do not install cards or modules yet. Card installation is described in Chart 4-1 to Chart 4-4. CAUTION: Power must be off when inserting the Main Control Card II, Bay Control Card and Bay Power Supply. Cards that must not be inserted while system power is on carry a caution notice. |
| 12. | Set switches on those circuit cards requiring it. | Instructions for setting switches are included in card installation charts for: - Main Control Card II - Bay Control Card - Universal Card - T1-DS1 Trunk Card |
| 13. | Lift the card extractor, and slide the card into the slot. Press on the extractor after it mates with the notch in the shelf to seat the card firmly. | Each digital peripheral card and module has a card extractor to help seat the card firmly in the backplane. The extractor is also used to provide leverage to remove cards or modules. |
| 14. | When finished, replace the antistatic wrist strap in the cabinet. | |

Note: All cabinets must be unplugged from the ac mains during servicing. To reduce static susceptibility, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed into an antistatic bag.

Remove and Return Printed Circuit Cards

3.2 When you have completed Chart 3-2:

- You will know how to remove circuit cards from the PABX.
- You will know how to repack printed circuit cards for return.

CAUTION: Power must be off when the Main Control Card II, Bay Control Card, and the Bay Power Supply are being removed.

Follow these instructions carefully when performing procedures with printed circuit cards.

Cards that are not correctly packed in antistatic bags and foam packing when returned will not be covered by any warranty.

Installation Info

| Chart 3-2 Remove and Return Printed Circuit Cards | | |
|---|---|---|
| Step | Action | Comments |
| Removing Cards | | |
| 1. | <i>If you are removing cards from an operating system, turn power off, if possible.</i> | CAUTION: The cards that must not be removed while the system power is on carry a Caution notice. |
| 2. | Make sure the PABX ground is connected (see Note at the end of this table). | |
| 3. | Put on the antistatic wrist strap when removing and repacking cards. | The antistatic wrist strap must be connected to the PABX chassis, which must be connected to an approved ground to provide protection from static discharges (see Note at the end of this table). |
| 4. | Remove the card by using the extractor as a lever and pulling the card towards you. | Each digital peripheral card has a card extractor to help seat the card firmly in the backplane. The extractor is used to provide leverage to remove the card or module. |
| Repacking Cards and Modules | | |
| 5. | Follow the steps in Chart 3-1 to handle cards and modules properly. | |
| 6. | Use the packaging retained after unpacking. | The original, or similar, packaging material should be used. |
| 7. | Put a card or module in an antistatic bag as soon as you remove it from its slot. | Place suspected faulty cards in antistatic bags to prevent further damage. |
| 8. | When you are finished, replace the antistatic wrist strap in the cabinet. Replace any guards and/or covers which have been removed. | |

| Chart 3-2 Remove and Return Printed Circuit Cards (continued) | | |
|--|---|-----------------|
| Step | Action | Comments |
| 9. | If you have powered down the system, power it up again. | |
| | Return Card | |
| 10. | Return a damaged card according to local procedures. | |

Page 2 of 2

Note: All cabinets must be unplugged from the ac mains during servicing. To reduce static susceptibility, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed into an antistatic bag.

4 Install Digital Peripheral Cards / Modules

Install Universal Card and Modules

4.1 When you have completed Chart 4-1:

- A Universal Card and the modules to be installed on the card will be unpacked and inspected.
- The modules will be installed on the card.
- The card will be installed in the system.

Note: 1. The Universal Card carries up to four plug-in modules:

DTMF Receiver/Relay Module - has four dual-tone multi-frequency (DTMF) receiver circuits and two relays for night bells or alarms. (power rating = 2)

Music/Paging Module - provides one 600-ohm balanced audio (music) input, a 200-ohm output to a paging amplifier, and one relay contact for controlling an amplifier. (power rating = 1)

E&M Trunk Module - Interfaces the PABX to one standard E&M trunk. (power rating = 3)

2. Up to four modules can be mounted on a Universal Card as long as the total power rating is 10 or less.

| Chart 4-1 Install Universal Card and Modules | | |
|--|--|---|
| Step | Action | Comments |
| | Follow General Procedures | |
| 1. | Follow the general procedures for handling circuit cards. | |
| | Unpack and Inspect | |
| 2. | While wearing the antistatic wrist strap, unpack the Universal Card(s), standoffs and module(s). | Figure 4-1 shows a Universal Card and modules. |
| 3. | Inspect for loose or missing components, and for damage. | Repack and return any damaged or incorrect items. |
| | Verify Power Ratings | |
| 4. | Verify the power ratings for each Universal Card. | Total power rating per Universal Card cannot exceed 10. If it exceeds 10, the system indicates an alarm and ignores the Universal Card when it is powered up. |

Chart 4-1 Install Universal Card and Modules (continued)

| Step | Action | Comments |
|------|---|--|
| 5. | <p>Install Standoffs</p> <p>Install the plastic standoffs on the Universal Card (where required to mate with the modules). Do not attempt to install standoffs in holes that are obstructed by components or wire.</p> | <p>Refer to Figure 4-2.</p> |
| 6. | <p>Install DTMF/Receiver Module</p> <p>Insert each DTMF/receiver module (optional) into its assigned location.</p> | <p>Typical installation is shown in Figure 4-2.</p> <p>The number of modules is determined by calculations in the <i>Engineering Information Practice</i>. The MCC II contains seven receivers.</p> <p>Two relays (not associated with the DTMF receivers) can be used to control system functions such as night bells or alarms. Each relay provides a contact closure across a Tip-Ring pair.</p> <p>Ratings: 90 V rms at 0.1 A 48 V dc at 0.5 A</p> <p>CAUTION: The relay contact is only used to control the paging amplifier. It may be connected only to a secondary circuit that has no direct connection to a primary circuit, and which receives its power from a transformer, converter, or equivalent isolation device situated within the equipment.</p> |
| 7. | <p>Press the module until it snaps into its standoffs. Make sure that connectors are properly seated.</p> <p>Install Music/Paging Module</p> | <p>Module specifications are shown in Table 4-1.</p> |
| 8. | <p>Insert each music/paging module (optional) in its assigned location.</p> | <p>Typical installation is shown in Figure 4-2. Music/paging equipment is:</p> <ul style="list-style-type: none"> - Outside the PABX. - Should be in an environment specified by the suppliers. - Connected to the PABX through the cross-connect field. <p>CAUTION: This relay contact may be connected only to a secondary circuit that has no direct connection to a primary circuit, and which receives its power from a transformer, converter, or equivalent isolation device situated within the equipment.</p> |
| 9. | <p>Press the module until it snaps into its standoffs. Make sure that connectors are properly seated.</p> | |

Chart 4-1 Install Universal Card and Modules (continued)

| Step | Action | Comments |
|-------------------|--|---|
| 10. 11. 12. | <p>Install E&M Trunk Module</p> <p>Set the eight DIP switches for the type of trunk in use.</p> <p>Insert the trunk module (optional) in its assigned location.</p> <p>Press the module until it snaps into its standoffs. Make sure that connectors are properly seated.</p> <p>Install Universal Card</p> <p>Insert the Universal Card in its assigned slot in the card shelf.</p> | <p>Typical installation is shown in Figure 4-2.</p> <p>Shown in Table 4-2.</p> <p>Interfaces to Type 1 and Type 5 E&M trunks.</p> <p>A Universal Card can plug into any upper peripheral slot in a digital shelf.</p> |
| Page 3 of 3 | | |

Installation Info

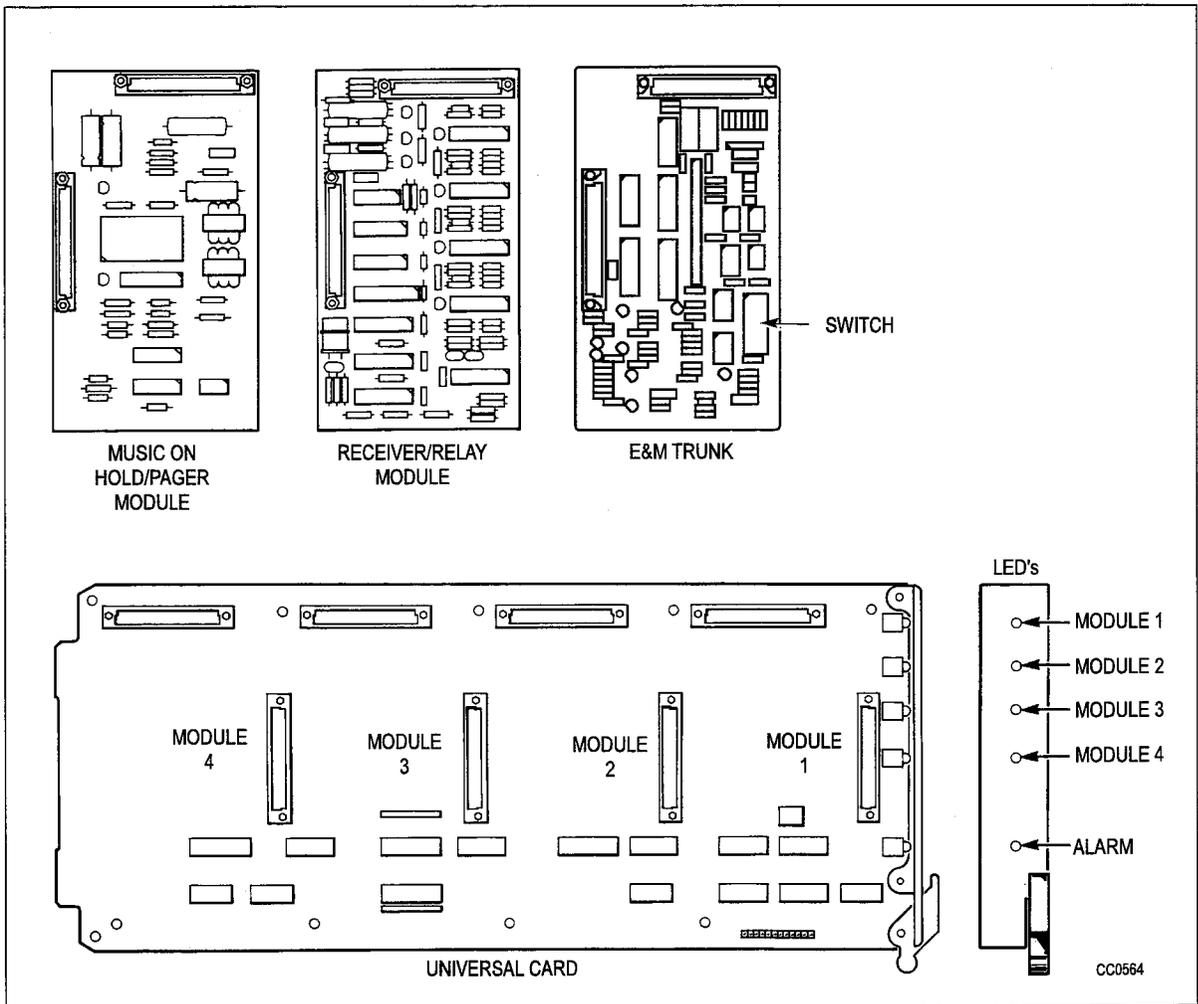


Figure 4-1 Universal Card and Modules

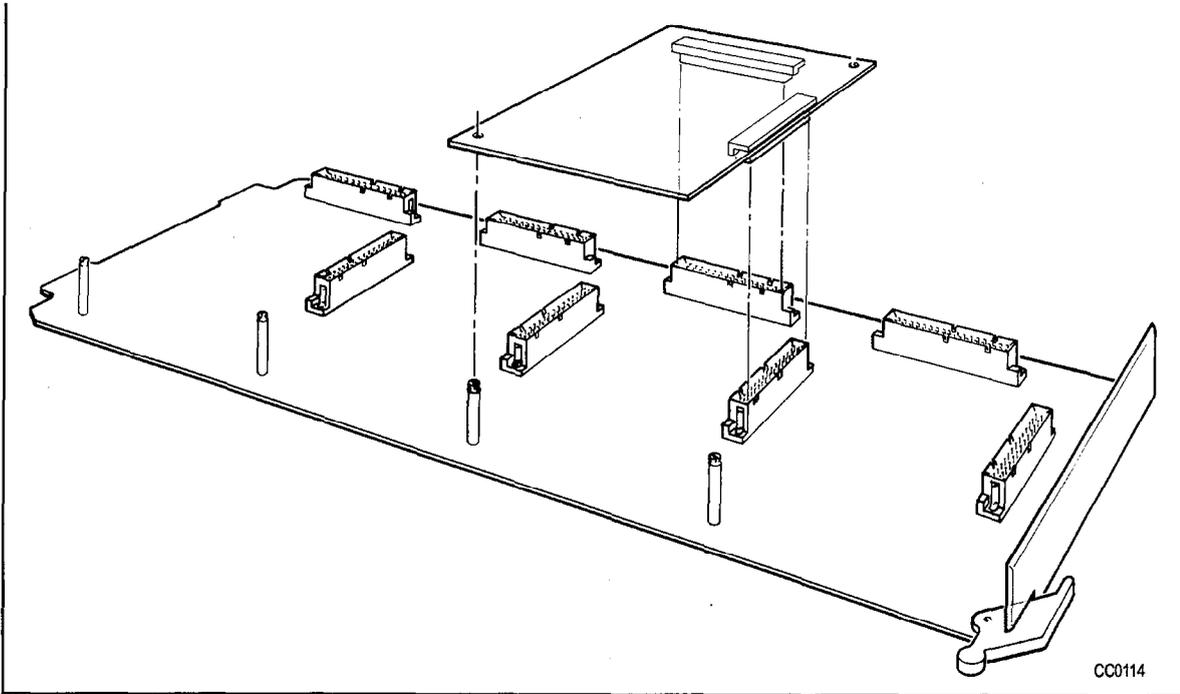


Figure 4-2 Installation of Module on Universal Card

| Table 4-1 Music-on-Hold/Paging Module Specifications | | |
|---|----------------------------|---------------------------------------|
| Music-on-Hold Input | input impedance | 600 ohms |
| | input level | -6 dBm |
| Paging Output | output impedance (low) | 200 ohms |
| | output level into 600 ohms | -6 dBm |
| Relay Contact | maximums | 90 V rms at 0.1 A 48 V dc at 0.5 A |

| Table 4-2 E&M Trunk Module Switch Settings | | | | | | | | |
|---|-----------------|----------|----------|----------|----------|----------|----------|----------|
| Function | Switches | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| PABX to Line Gain | | | | | | | | |
| 3 dB | 0 | X | X | X | X | X | X | X |
| -13 dB | 1 | X | X | X | X | X | X | X |

Table 4-2 E&M Trunk Module Switch Settings (continued)

| Table 4-2 E&M Trunk Module Switch Settings (continued) | | | | | | | | |
|--|---|---|---|---|---|---|---|-------------|
| Line to PABX Gain | | | | | | | | |
| -4 dB | X | 0 | X | X | X | X | X | X |
| -11dB | X | 1 | X | X | X | X | X | X |
| Termination | | | | | | | | |
| 600 ohm | X | X | 1 | 0 | X | X | X | X |
| Complex | X | X | 0 | 1 | X | X | X | X |
| Transmission | | | | | | | | |
| 2-wire | X | X | X | X | 1 | X | X | X |
| 4-wire | X | X | X | X | 0 | X | X | X |
| Signaling | | | | | | | | |
| Type 1 | X | X | X | X | X | 1 | X | X |
| Type 5 | X | X | X | X | X | 0 | X | X |
| | | | | | | | | Page 2 of 2 |

0 = open, 1 = closed, X = not applicable

Install Line (ONS, OPS, COV, and Digital) and DID Trunk Cards

4.2 Chart 4-2 applies to the ONS, OPS, COV, and Digital Line Cards, and the DID Trunk Card. When you have completed this chart:

- A line or trunk card will be unpacked and inspected.
- A line or trunk card will be installed.

- Note:**
1. The ONS Line Card interfaces up to 12 standard telephone sets (rotary or DTMF). The ONS Line Card ports can interface alternate music sources for the Automatic Call Distribution feature. An alternate music source must be either an FCC Part 68 and Industry Canada CS-03 approved recorded announcement device connected to an ONS circuit, or another source connected through an FCC Part 68 and Industry Canada CS-03 approved voice coupler or voice connecting arrangement to an ONS circuit.
 2. The OPS Line Card contains six off-premises line circuits.
 3. The COV Line Card provides six interface circuits for COV voice mail.
 4. The Digital Line Card is a 12-circuit card that interfaces the PABX to the following peripherals: SUPERSET 401+™, SUPERSET 410™, SUPERSET 420™, and SUPERSET 430™ telephones, DNIC Music-on-Hold/Pager Unit (DMP), SUPERCONSOLE 1000™ Attendant Console, SUPERSET 7000™ attendant console, and the DATASET 1100 and 2100 series of products. See Appendix A for the loop length rules applying to the installation of the above listed peripheral devices.
 5. The DID Trunk Card interfaces to six one-way direct inward dial circuits.

WARNING: ANY CONNECTION OF AN ONS OR DIGITAL LINE CARD TO AN OFF-PREMISE APPLICATION, AN OUT-OF-PLANT APPLICATION OR ANY OTHER EXPOSED PLANT APPLICATION MAY RESULT IN A SAFETY HAZARD AND/OR DEFECTIVE OPERATION AND/OR EQUIPMENT DAMAGE.

| Chart 4-2 Install Line or DID Trunk Cards | | |
|---|---|--|
| Step | Action | Comments |
| 1. | <p>Follow General Procedures</p> <p>Follow the general procedures for handling circuit cards.</p> <p>Unpack and Inspect</p> | <p>Up to four OPS or DID cards can be installed in each digital peripheral bay. The Digital Line Card must be installed in an upper (high-power) slot if used with a <i>SUPERCONSOLE 1000</i> Attendant Console.</p> |
| 2. | Wearing the antistatic wrist strap, unpack and inspect the line or trunk card. | |
| 3. | Repack and return any damaged or incorrect items. | |
| 4. | <p>Install the Line or Trunk Card</p> <p>Slide the line or trunk card into its slot. Cards with squares on their faceplates are high-power digital peripheral cards and are installed only in upper slots in the digital peripheral bays. The OPS Line Card and the DID Trunk Card are high-power digital peripheral cards. The ONS and Digital Line Cards are low-power digital peripheral cards.</p> | |

Install an LS/GS Trunk Card

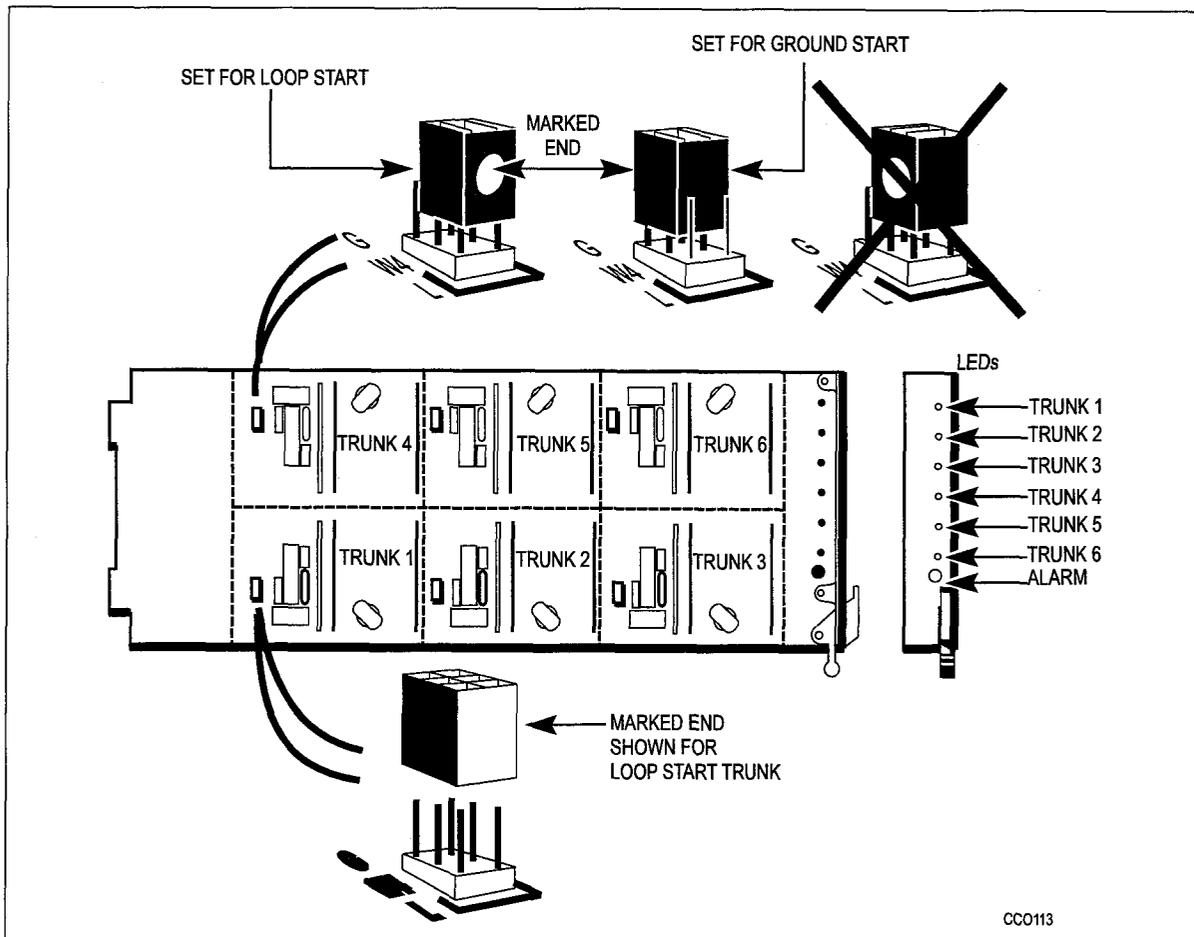
- 4.3 When you have completed Chart 4-3:
- A loop start/ground start (LS/GS) Trunk Card will be unpacked and inspected.
 - An LS/GS Trunk card will be installed.

Note: The LS/GS Trunk Card provides interfaces to six central office trunks. Each trunk circuit can operate as a loop start or a ground start.

| Chart 4-3 Install LS/GS Trunk Card | | |
|------------------------------------|--|----------|
| Step | Action | Comments |
| 1. | <p>Follow General Procedures</p> <p>Follow the general procedures for handling circuit cards.</p> <p>Identify Trunk Circuits</p> | |

| Chart 4-3 Install LS/GS Trunk Card (continued) | | |
|--|---|---|
| Step | Action | Comments |
| 2. | Identify trunk circuits by bay, slot, circuit and type (loopstart or groundstart). | This is available from the configuration information prepared by the customer service representative. |
| | Unpack and Inspect | |
| 3. | Wearing the antistatic wrist strap, unpack and inspect the LS/GS Trunk Card and jumpers. | Repack and return any damaged or incorrect items. |
| | Set LS/GS Trunk Card Jumpers | |
| 4. | Set the jumpers in position for each of the six trunks on the card. Position the marked end to G for a ground start or L for a loop start trunk. | Shown in Figure 4-3. |
| | Install LS/GS Trunk Card | |
| 5. | Slide the LS/GS Trunk Card into its slot. | |

Installation Info



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Figure 4-3 LS/GS Trunk Card

Install a T1-DS1 Trunk Card and T1 Trunk Adapter

4.4 The PABX uses an adapter with a straight-out T1 connector.

- Note:**
1. The T1 -DS1 Trunk Card interfaces to a single T1 trunk circuit.
 2. The T1 Trunk Card kit includes:
 - T1-DS1 Trunk Card
 - T1 Trunk Adapter assembly
 - hardware kit
 3. The hardware kit contains parts to accommodate manufacturing variants; all the hardware parts will not be used in any particular installation.

WARNING: INCORRECT INSTALLATION MAY RESULT IN A SHOCK HAZARD AND/OR DEFECTIVE EQUIPMENT OPERATION.

CAUTION: Failure to remove metal housing before installing the T1 Adapter in an SX-200 ML PABX may result in equipment damage and/or electrical shock

Chart 4-4 Install a T1-DS1 Trunk Card and Adapter Assembly

| Step | Action | Comments |
|---|---|---|
| <p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p> | <p>Follow General Procedures</p> <p>Follow the general procedures for handling circuit cards.</p> <p>Unpack and Inspect</p> <p>While wearing the antistatic wrist strap, unpack and inspect the T1-DS1 Trunk Card.</p> <p>Set Switches</p> <p>Set DIP switches (for appropriate line equalization) according to cable length from the CSU.</p> <p>0 to 149 ft: S1 CLOSED;S2-8 OPEN 150 to 449 ft: S2-4 CLOSED;S1, S5-8 OPEN 450 to 655 ft: S5-7 CLOSED;S1-4, S8 OPEN</p> <p>Install T1 Trunk Adapter Assembly. A dual T1 adapter may be installed on connector J5, and T1 trunk cards may be installed in slots 5 and 6.</p> <p>At the backplate connector associated with the T1-DS1 Trunk Card, remove the strain relief assembly and the hex nuts or screws from the connector.</p> | <p>If you are reseating a previously installed card, switches may already be set.</p> <p>Note: Length is distance between T1-DS1 Trunk card and channel service unit (CSU), not loop length. Note: The CSU is provided by the telephone company.</p> <p>Install part number 9400-100-302-NA for a single T1 in slot 6, or part number 9400-100-304-NA for dual T1 cards in slots 5 and 6.</p> <p>If connector J5 protrudes through the backplate, install the four very short standoffs from kit into the four screw holes in the backplate (Figure 4-4 and Figure 4-5).</p> |

Chart 4-4 Install a T1-DS1 Trunk Card and Adapter Assembly (continued)

| Step | Action | Comments |
|------|--|---|
| 5. | Plug the T1 Trunk Adapter Assembly connector into the backplate connector. Align the 4 screw holes on the housing with holes (or standoffs) on backplate. Fasten using 4 screws and washers from kit. Install T1-DS1 Trunk Card(s) | Refer to Figure 4-4 and Figure 4-5. |
| 6. | Insert the T1-DS1 trunk card in a high power slot. Install T1 Trunk Cable From CSU | First T1 card goes in slot 6. Each T1 trunk card requires a cable. |
| 7. | Connect the T1 trunk cable from the CSU to the T1 Trunk Adapter. | |

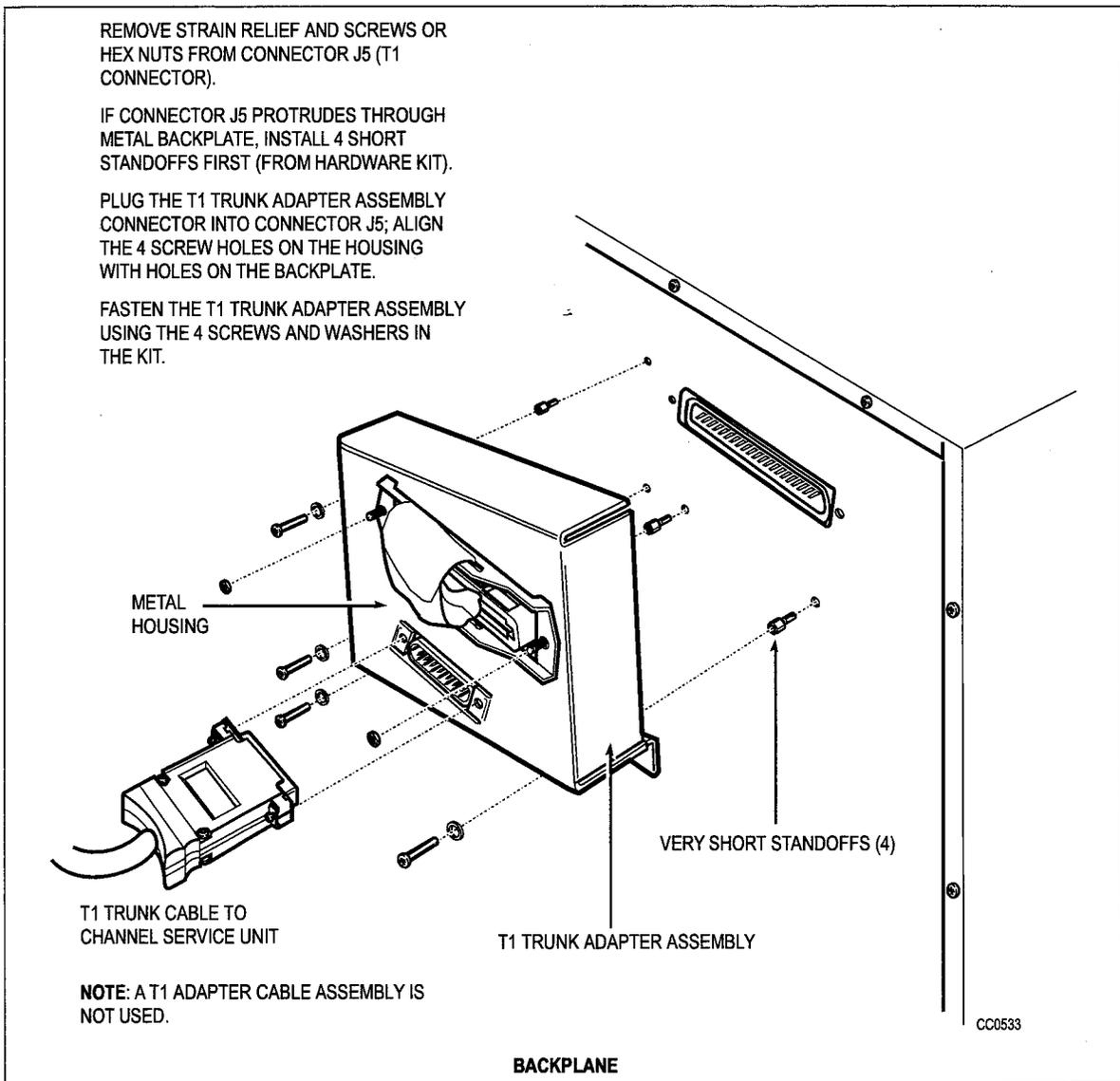


Figure 4-4 Install a T1 Trunk Adapter Assembly

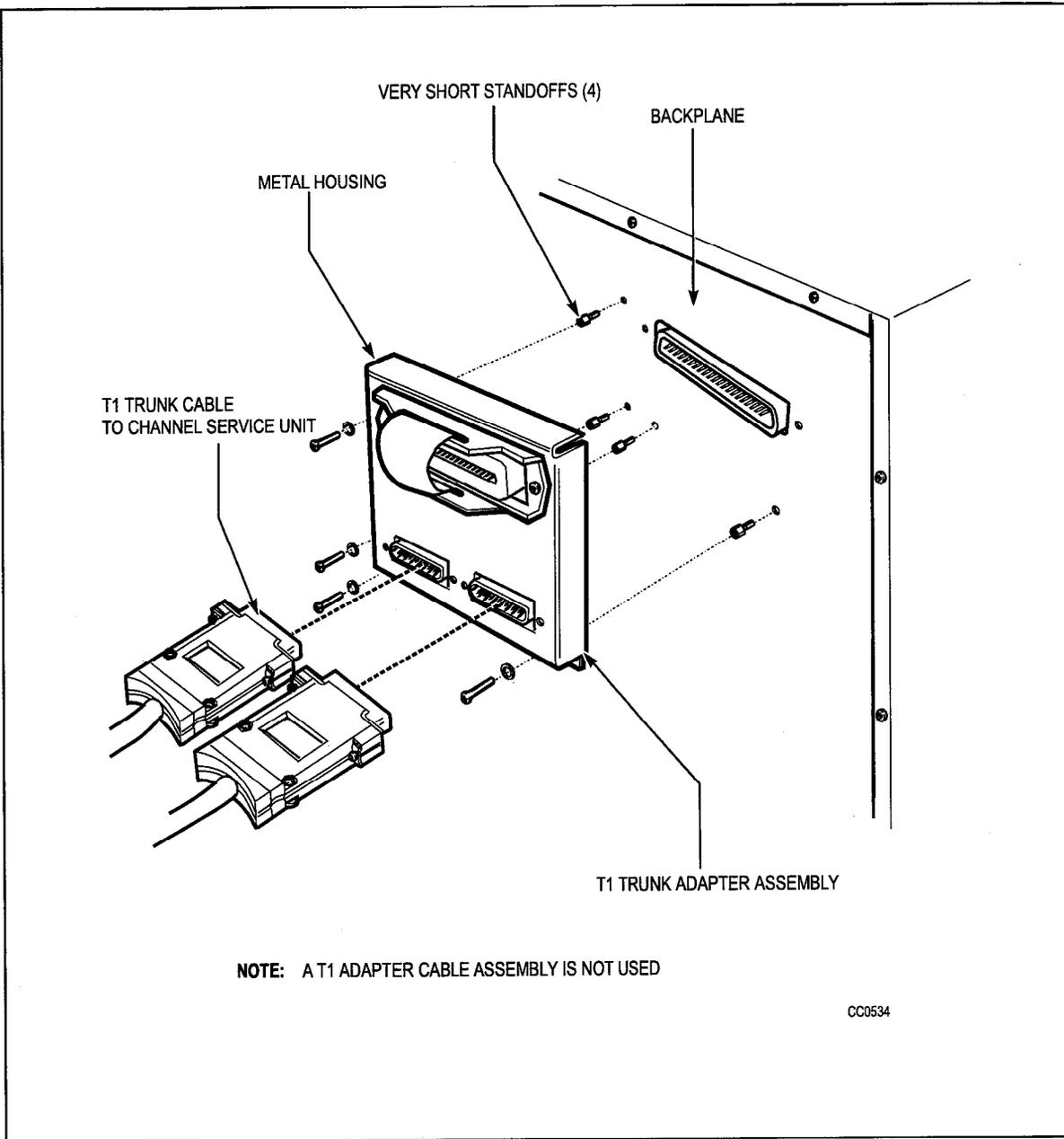


Figure 4-5 Install a Dual T1 Trunk Adapter Assembly on an SX-200 PABX

5 Bring System into Service

Connect Cables Between PABX and Cross-Connect Field

- 5.1 When you have completed Chart 5-1:
- Connection blocks will be installed.
 - Cables will be connected at the connection blocks.
 - Cables will be run from the cross-connect field to the cabinet(s).
 - Cable connectors will be attached to the cabinet plugs.
 - Cables will be connected at the cross-connect field.

| Chart 5-1 Connect Cables Between PABX and Cross-Connect Field | | |
|---|--|--|
| Step | Action | Comments |
| | Install Connection Blocks | |
| 1. | Install required connection blocks at cross-connect field. | |
| | Connect Cables | |
| 2. | Connect 25-pair cables to connection blocks. | Cross-connection tables are shown in Chapter 7. |
| 3. | Mark each cable connector or plug with its corresponding cabinet plug number. | |
| | Run Cables | |
| 4. | Run the 25-pair cables between the cross-connect field and the cabinet. | |
| | Attach Cabinet Cable Connectors | |
| 5. | Attach each cable connector to its cabinet plug, and tighten connector retaining screw or strap. | Cabinet backplate connections are shown in Figure 2-1. |
| 6. | Install split ferrites around each 25-pair cable which exits the system. Locate the ferrites approximately 4 inches from the case of the connector (see Figure 5-1). | The split ferrites supplied consist of two ferrite cores contained in a hinged plastic housing (see Figure 5-1). |
| | Cross Connect Cables at Cross-connect Field | |
| 7. | Cross connect station lines, CO trunks, other trunks, and equipment to cross-connection blocks for cables from within PABX. | Tip and Ring assignment tables in Chapter 7 identify which equipment connects to each pin on the connecting block. |

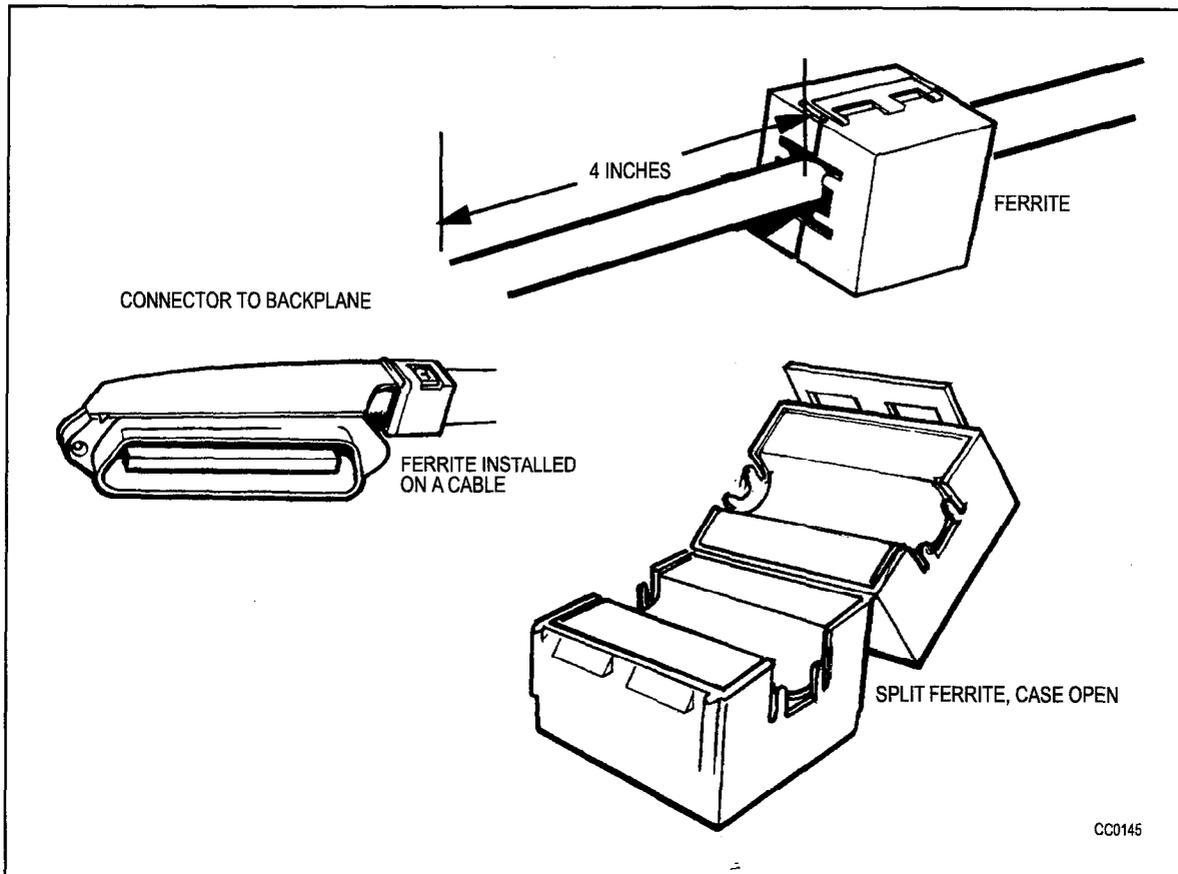


Figure 5-1 Ferrite Installed on a Cable

Install System ID Module and PCMCIA Memory Card onto the Main Control Card II

- 5.2 When you have completed Chart 5-2
- The System ID module will be installed onto the MCC II.
 - The PCMCIA Memory Card will be installed onto the MCC II.

CAUTION: Remove conductive articles such as rings and watches before handling the Main Control Card II.

Do not use a screwdriver or any similar object to pry the module away from the main control card. Damage to components or circuit card tracks may result.

Do not remove or insert the PCMCIA Memory Card with power ON

Chart 5-2 Install System ID Module and PCMCIA Memory Card onto the MCC II

| Step | Action | Comments |
|------|--|--|
| 1. | Follow general procedures for handling circuit cards. | Power must be off when installing or removing a BCC, MCC II, System ID module, or PCMCIA Memory Card. |
| 2. | Power down the <i>SX-200</i> ML PABX. | |
| 3. | Attach the antistatic wrist strap. | |
| | Remove the MCC II and BCC from Shelf | |
| 4. | Remove the MCC II / BCC pair from the cabinet and separate the cards. Disconnect the MCC II ribbon cable when removing the MCC II. | Remove or install the MCC II and BCC pair together. Route the interface panel ribbon cable under the faceplate to connect to the MCC II. |
| | Install System ID Module | |
| 5. | Install the MCC II System ID module onto the MCC II. | The plastic standoff mates with the System ID module. |
| | Install PCMCIA Memory Card | |
| 6. | Install the PCMCIA Memory Card into the opening on the front of the MCC II. | The PCMCIA Memory Card is polarized and installs only one way. Do not force. |
| 7. | Remove a PCMCIA Memory Card by pressing the eject button to release it from its connector. | Power must be off when removing or installing a PCMCIA Memory Card. |
| | Install MCC II on BCC | |
| 8. | Mount the MCC II onto the BCC | |
| 9. | Connect the cable from the rear panel to connector J2 on the MCC II. Refer to Figure 5-2 for cable routing. | Fold the cable under the lower right corner of the faceplate, flat against the MCC II to prevent contact with an adjacent peripheral interface card. |
| 10. | Slide the BCC and the attached MCC II into its slot. | |
| 11. | Seat the BCC into its connector. | |

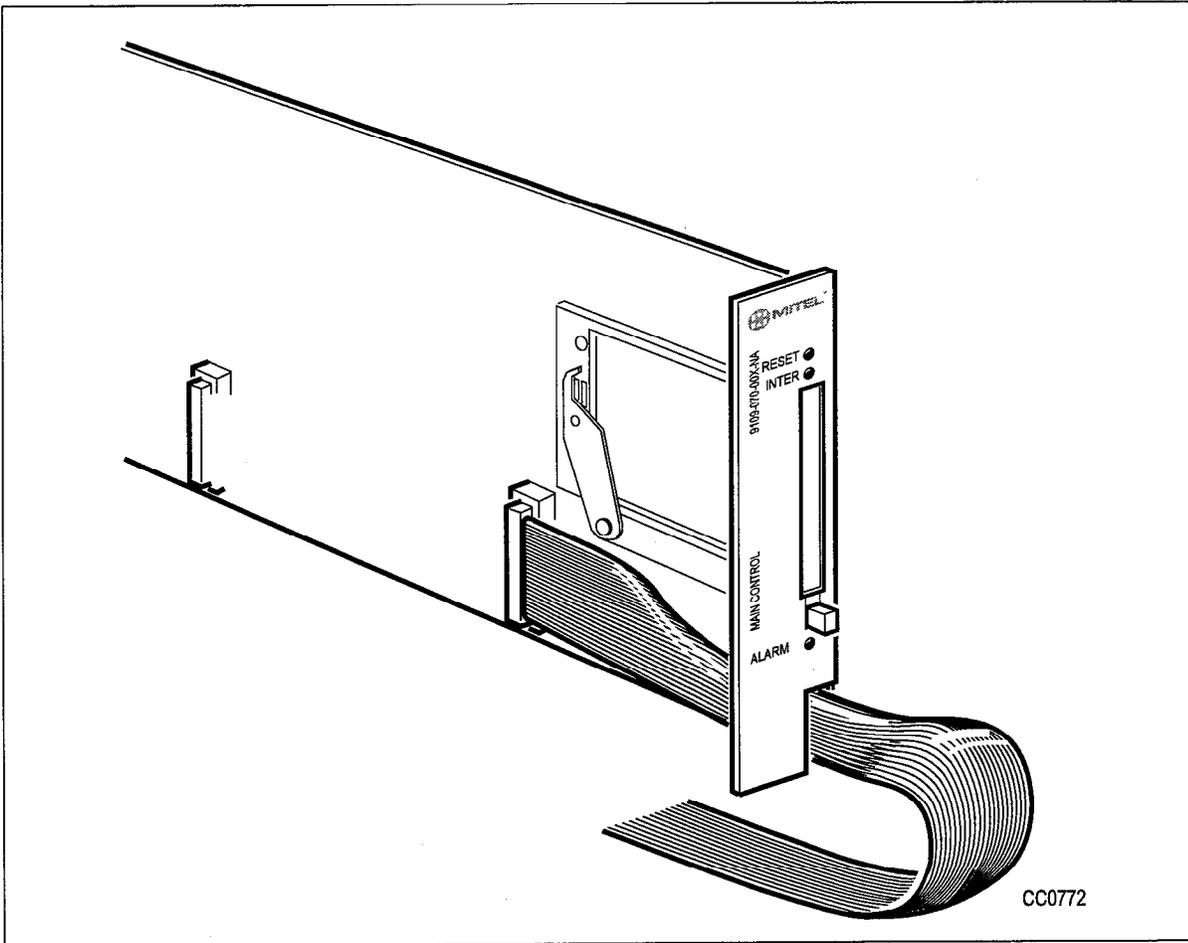


Figure 5-2 MCC II Ribbon Cable Routing

Power Up Cabinet

- 5.3 When you have completed Chart 5-3:
- The Cabinet will be powered up.

| Chart 5-3 Power Up Cabinet | | |
|----------------------------|---|--|
| Step | Action | Comments |
| 1. | <p>Power Up Cabinet</p> <p>Make sure that all cards are in place and well seated, and that all cables within the cabinet (including optional UPS) are connected.</p> | <p>It is recommended that a UPS be used with all cabinets.</p> |

| Chart 5-3 Power Up Cabinet (continued) | | |
|--|---|--|
| Step | Action | Comments |
| 2. | Plug the line cord into the ac receptacle. | If the system has a UPS, the line cord should be plugged into the UPS, and the UPS line cord into the ac receptacle, according to manufacturer's instructions. |
| 3. | Turn on UPS (if present), and then the main switch on the backplate of the cabinet. | |
| 4. | Open the front door panel, if not already opened. | Described in Chart 2-3. |
| 5. | Turn Bay Power Supply on. | |
| 6. | Close the front door panel. | Described in Chart 2-3. |
| | | Page 2 of 2 |

Check System Initialization

- 5.4 When you have completed Chart 5-4:
- Initialization of the PABX will be complete.

| Chart 5-4 Check System Initialization | | |
|---------------------------------------|---|---|
| | Check Initialization | |
| 1. | If you are installing a system, open the cabinet front door. | Described in Chart 2-3. |
| 2. | Wait for the initialization procedures to complete. | The system goes into self-test mode. |
| 3. | Check the MCC II alphanumeric display for a sequence of numbers followed by a "- -" and a flashing green LED. | The MCC II display shows a series of numbers while loading software. When loading is complete and successful, each display on the MCC II shows a "-". |
| 4. | Check the MCC II display for a series of numbers. | These indicate diagnostic tests on programmed card locations, test line, maintenance console. While the bay boots, the system checks the position of the bay cards, and the display indicates the last bay position checked when finished. |
| 5. | Close the control cabinet front door panel. | Described in Chart 2-3. |
| | Proceed with CDE | Described in the <i>Customer Data Entry Practice</i> . |

System Initialization

5.5 When the system is first installed, default data must be loaded into the system. For details, refer to Initial Power-up Procedures from the Terminal.

| Table 5-1 Initial Power-up Procedures from the Terminal | |
|--|--|
| Step | Action |
| 1. | Ensure that the correct System ID module is installed. |
| 2. | Insert the PCMCIA memory card into the slot on the Main Control Card II. |
| 3. | Turn the power supply ON. |
| 4. | Wait for power up sequence to complete (“-” “-” displayed on MCC II displays). |
| 5. | Press the RETURN key four times; the terminal display responds with: 1 - VT100 COMPATIBLE 2 - TTY TYPE SELECT A TERMINAL TYPE : |
| 6. | Select the terminal type by entering “1”. The display responds with: 1 - MAINTENANCE 2 - CDE 6 - QUIT SELECT AN APPLICATION (OR QUIT TO START OVER) : |
| 7. | Select the Customer Data Entry application by entering “2”. The display responds with: ENTER USERNAME : |
| 8. | Enter the INSTALLER level of access. The display responds with: ENTER PASSWORD: |
| 9. | Enter the required password to gain Customer Data Entry access. The default password is 1000. A list of the system’s forms is displayed. |
| 10. | Select Form 04 and enable all the software options that were purchased. Note: Enable only the purchased options listed on the MOSS sheet that is included with the system software package. An error results when a purchased option is not enabled, or when an enabled option is not purchased. |
| 11. | Enter the Mitel Options password to activate the enabled features. The password must be the password that is included with the system software package. |

6 Installing Peripheral Equipment

Introduction

Peripheral Equipment and Applications

- 6.1 Table 6-1 shows the peripheral equipment and applications that can be installed on the PABX. Figure 6-1 shows typical connections for several peripheral devices. Procedures for installation of attendant consoles, *SUPERSET* telephones, and datasets are described in the *Peripheral Devices Practice*.

| Equipment/Applications | Chart |
|---|------------------------------------|
| <i>SUPERCONSOLE 1000</i> Attendant Console | <i>Peripheral Devices Practice</i> |
| Install a Programmable Key Module | <i>Peripheral Devices Practice</i> |
| <i>SUPERCONSOLE 1000</i> installed as a maintenance console | Chart 6-3 |
| Local maintenance terminal | Chart 6-1 |
| Remote maintenance terminal | Chart 6-2 |
| System printer | Chart 6-4 |
| <i>SUPERSET</i> telephones | <i>Peripheral Devices Practice</i> |
| Night Bell (direct connect) | Chart 6-5 |
| Night Bell (auxiliary relay) | Chart 6-6 |
| Paging equipment | Chart 6-7 |
| Music-on-Hold equipment | Chart 6-8 |
| Alternate music source - Automatic Call Distribution only | Chart 6-9 |
| DNIC Music-on-Hold/Pager Unit (DMP) | <i>Peripheral Devices Practice</i> |

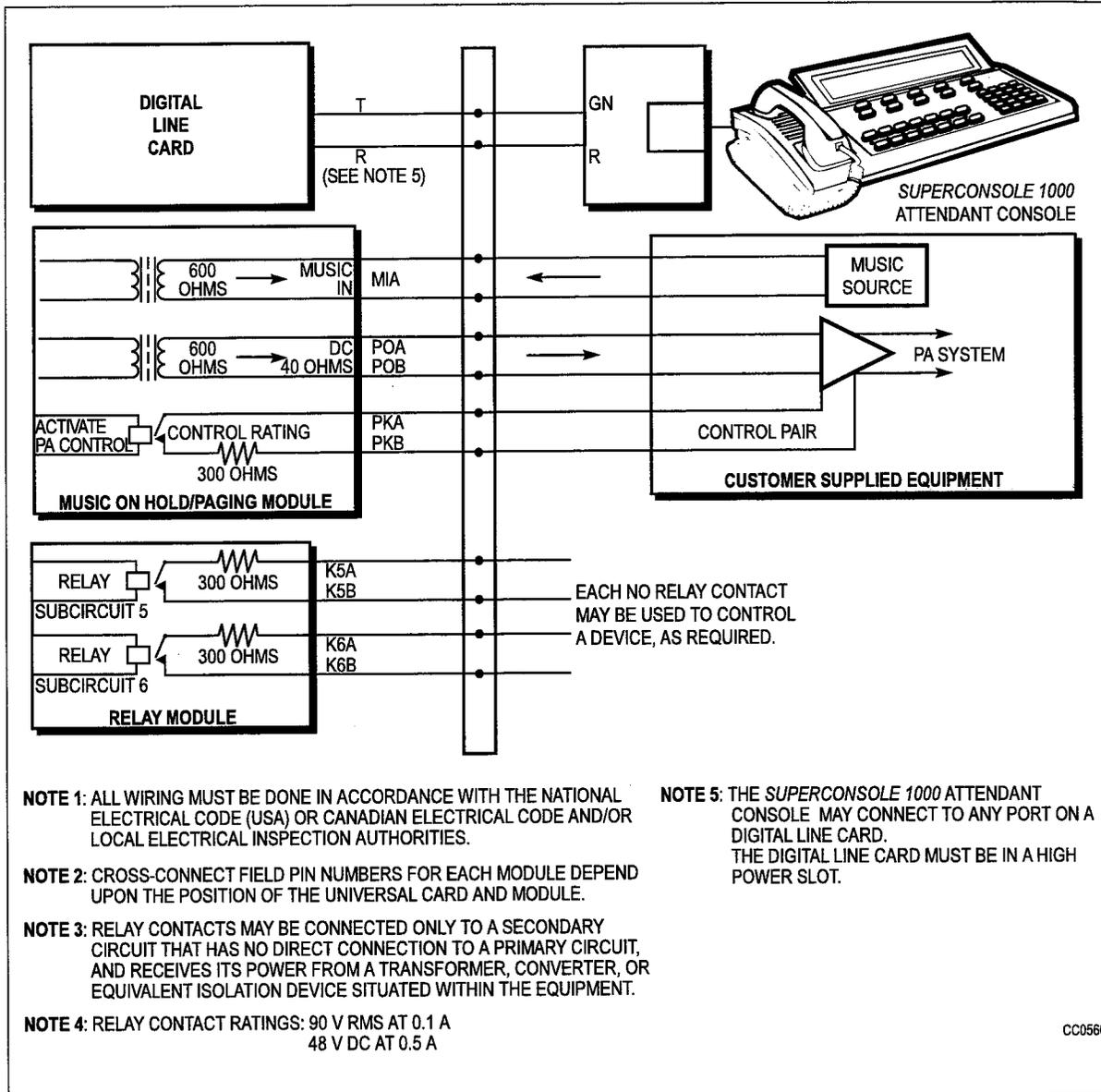


Figure 6-1 Music, Relay, and Paging Connections on the SX-200 ML PABX

MITEL Peripheral Equipment

Table 6-2 lists the part numbers for MITEL peripheral equipment discussed in this section. A full list of MITEL peripherals can be found in the *Field-Replaceable Units Practice*.

| Equipment | Part Number |
|--|-----------------|
| <i>SUPERCONSOLE 1000</i> Attendant Console | 9189-000-001-NA |
| <i>SUPERSET 401+</i> Telephone | 9113-000-002-NA |
| <i>SUPERSET 410</i> Telephone | 9114-000-000-NA |
| <i>SUPERSET 420</i> Telephone | 9115-000-000-NA |
| <i>SUPERSET 430</i> Telephone | 9116-000-001-NA |
| Music-on-Hold/Pager Unit (DMP) | 9401-000-010-NA |

Details on other MITEL peripheral equipment are found in the *Peripheral Devices Practice*.

Install a Maintenance Terminal

Install a Local Maintenance Terminal

6.2 When you have completed Chart 6-1:

- The VT100™ terminal, or equivalent, will be unpacked and inspected.
- The VT100 terminal will be installed.
- The terminal will be powered up.

Note: 1. A maintenance terminal can be connected to the local port on the control node backplate.
2. The RS-232 maintenance terminal is described in the *RS-232 Maintenance Terminal Practice*.

| Step | Action | Comments |
|------|---|--|
| | Inventory, Unpack, Inspect | |
| 1. | Check off received items against packing list and equipment list. | |
| 2. | Unpack cartons. | |
| 3. | Label damaged or defective items. | Repack labeled items and return according to local procedures. |

Chart 6-1 Install a Local Maintenance Terminal (continued)

| Step | Action | Comments |
|------|---|---|
| 4. | <p>Position Terminal</p> <p>Put the terminal in its assigned position.</p> | <p>Maximum cable length is 15 m (50 ft) without a modem.</p> |
| 5. | <p>Connect the other end of the 25-pin RS-232 maintenance terminal cable to a 25-to-9 pin RS-232 adapter arrangement (connector adapter or cable adapter). Then connect the adapter arrangement to the maintenance port on the backplate.</p> | <p>The maintenance port is located on the lower backplate. See Figure 6-2 .</p> |
| 6. | <p>Set Up Terminal Data Characteristics</p> <p>Set up the terminal data characteristics.</p> | <p>8 data bits 1 start bit 1 stop bit no parity 300-9600 baud</p> |
| 7. | <p>Route Cable</p> <p>Only a maintenance terminal should be permanently cabled. No special cable routing is necessary.</p> <p>Power Up</p> | <p>Only one maintenance session may be conducted at any one time.</p> |
| 8. | <p>Plug in the terminal, and turn it on.</p> | |

Install a Remote Maintenance Terminal

When you have completed Chart 6-2:

- The VT100 terminal, or equivalent, will be unpacked and inspected.
- The modems will be unpacked, inspected, and installed.
- The VT100 terminal and modems will be installed.

- Note:**
1. A remote maintenance terminal provides a means of performing maintenance checks (logs and alarms), as well as customer data entry, without visiting the customer site.
 2. There are two methods of connecting a remote terminal: by dialing up to an autoanswer modem connected to a dedicated network trunk (direct access), or by dialing up to an autoanswer modem connected to an ONS port (dial-up access) on an as-required basis. Refer to Figure 6-2.
 3. The RS-232 maintenance terminal is described in the *RS-232 Maintenance Terminal Practice*.

Chart 6-2 Install a Remote Maintenance Terminal

| Step | Action | Comments |
|------|--|--|
| | Inventory, Unpack, Inspect | |
| 1. | Check off received items against packing list and equipment list, above. | |
| 2. | Unpack cartons. | |
| 3. | Label defective items and fill in relevant portion of damage report. | Repack labeled items and return according to local procedures. |
| | Install the Modem | |
| 4. | Set up the modem data characteristics. | 8 data bits 1 start bit 1 stop bit no parity 300-9600 baud |
| 5. | Connect the modem to the remote port on the rear of the cabinet by using an RS-232 cable and a Null Modem Adapter. | Pin assignments are shown in Table 6-3. |
| 6. | Connect the Tip/Ring pair of the modem to the dedicated trunk, or to the ONS port. | |

Table 6-3 RS-232 Maintenance Connector Pins

| SX-200 ML RS-232 Pin | RS-232 Signal | Direction |
|----------------------|---------------------|------------|
| 3 | TRANSMIT DATA | from modem |
| 2 | RECEIVE DATA | to modem |
| 7 | REQUEST TO SEND | from modem |
| 8 | CLEAR TO SEND | to modem |
| 6 | DATA SET READY | from modem |
| 5 | SIGNAL GROUND | |
| 1 | CARRIER DETECT | from modem |
| 4 | DATA TERMINAL READY | to modem |

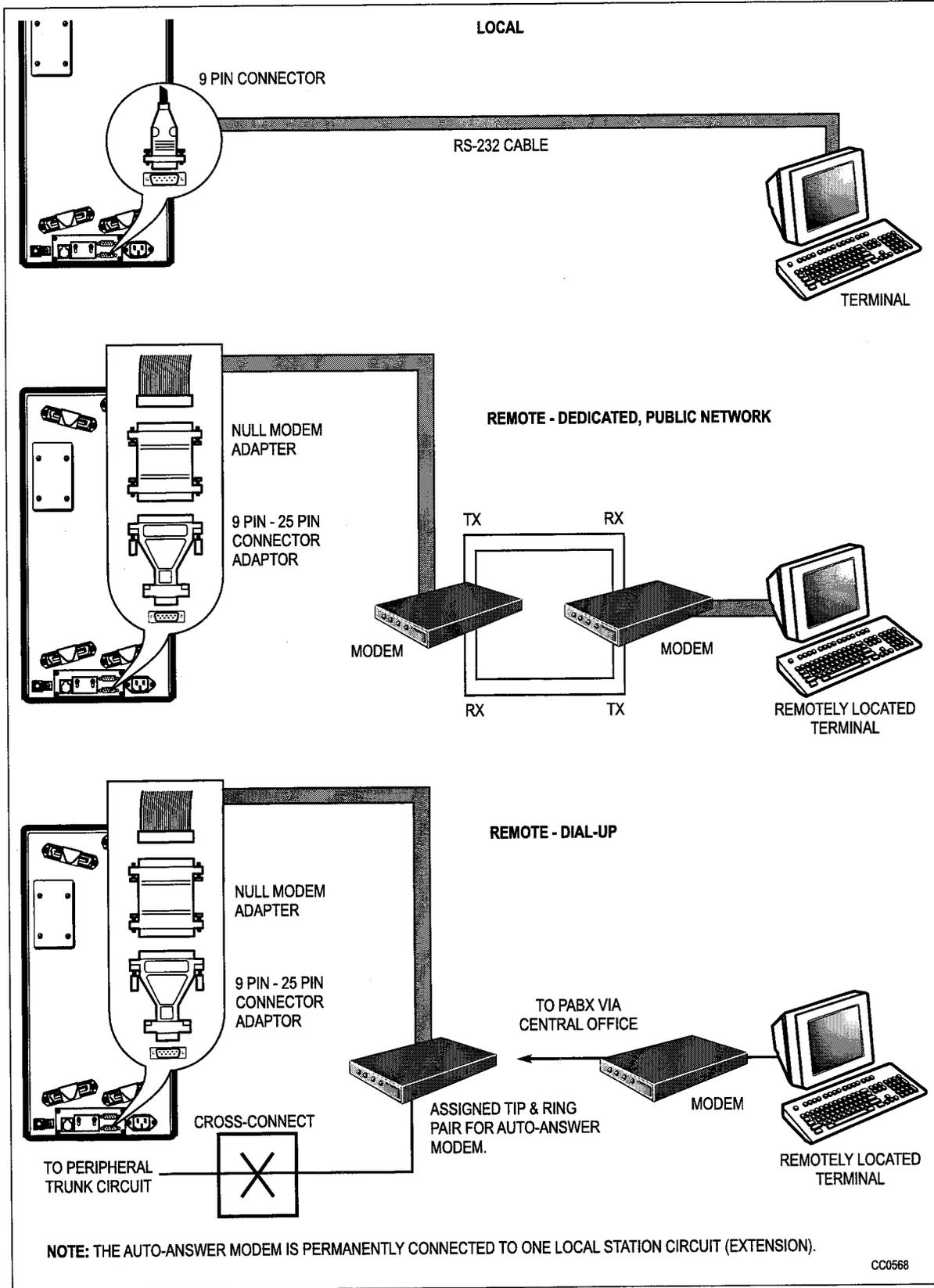


Figure 6-2 Maintenance Terminal Connections - SX-200 ML

Install a SUPERCONSOLE 1000 Attendant Console as a Maintenance Console

When you have completed Chart 6-3:

- A *SUPERCONSOLE 1000* Attendant Console will be installed as a maintenance console.
- A printer will be connected to it (optional).

Note: A Digital Line Card (seated in a high-power slot) is required to support a *SUPERCONSOLE 1000* Attendant Console used as a maintenance console. There is no console jack on the cabinet.

Chart 6-3 Install a SUPERCONSOLE 1000 Attendant Console as a Maintenance Console

| Step | Action | Comments | | | | | | | | | | | | | | | | | | | | |
|------|---|--|-----|--------|---|--------------|---|---------------|---|--------------|---|---------------|---|---------------|---|----------------|---|---------------|---|----------------|----|---------------------|
| 1. | <p>Connect Console</p> <p>Connect the console to its assigned modular wall jack.</p> | A Digital Line Card (in a high-power slot) is required to support a <i>SUPERCONSOLE 1000</i> Attendant Console. | | | | | | | | | | | | | | | | | | | | |
| 2. | <p>Connect Printer (Optional)</p> <p>Connect the printer to the RS-232 printer connector on the back of the console.</p> | <table> <thead> <tr> <th>Pin</th> <th>Signal</th> </tr> </thead> <tbody> <tr><td>1</td><td>frame ground</td></tr> <tr><td>2</td><td>transmit data</td></tr> <tr><td>3</td><td>receive data</td></tr> <tr><td>4</td><td>ready to send</td></tr> <tr><td>5</td><td>clear to send</td></tr> <tr><td>6</td><td>data set ready</td></tr> <tr><td>7</td><td>signal ground</td></tr> <tr><td>8</td><td>carrier detect</td></tr> <tr><td>20</td><td>data terminal ready</td></tr> </tbody> </table> <p>Maximum 50 ft between the printer and the printer port on the <i>SUPERCONSOLE 1000</i> Attendant Console.</p> | Pin | Signal | 1 | frame ground | 2 | transmit data | 3 | receive data | 4 | ready to send | 5 | clear to send | 6 | data set ready | 7 | signal ground | 8 | carrier detect | 20 | data terminal ready |
| Pin | Signal | | | | | | | | | | | | | | | | | | | | | |
| 1 | frame ground | | | | | | | | | | | | | | | | | | | | | |
| 2 | transmit data | | | | | | | | | | | | | | | | | | | | | |
| 3 | receive data | | | | | | | | | | | | | | | | | | | | | |
| 4 | ready to send | | | | | | | | | | | | | | | | | | | | | |
| 5 | clear to send | | | | | | | | | | | | | | | | | | | | | |
| 6 | data set ready | | | | | | | | | | | | | | | | | | | | | |
| 7 | signal ground | | | | | | | | | | | | | | | | | | | | | |
| 8 | carrier detect | | | | | | | | | | | | | | | | | | | | | |
| 20 | data terminal ready | | | | | | | | | | | | | | | | | | | | | |
| 3. | Set the printer baud rate. | Maximum baud rate is 2400 baud. | | | | | | | | | | | | | | | | | | | | |

Install a System Printer

6.3 When you have completed Chart 6-4:

- The system printer will be connected to the control cabinet.
- The system printer will be powered up.

| Chart 6-4 Install a System Printer | | |
|------------------------------------|--|--|
| Step | Action | Comments |
| Connect System Printer | | |
| 1. | Connect one end of a standard 25-pin RS-232 cable to the RS-232 port of the printer (or similar output device). | |
| 2. | Connect the other end of the 25-pin RS-232 cable to a 25-to-9 pin RS-232 adapter arrangement (connector adapter or cable adapter). Then connect the adapter arrangement to the printer port located on the lower backplate of the cabinet. | J8 printer pins 6, 8, and 20 are tied together. |
| 3. | Set up the printer data characteristics. | 8 data bits 1 start bit 1 stop bit no parity 300-1200 baud (system default baud rate is 1200 baud) |
| Power Up | | |
| 4. | Plug in the printer and turn it on. | |

| Table 6-4 Printer Port Pinout | | |
|-------------------------------|-----------------|--------------|
| Pin | RS-232 Signal | Printer Port |
| 2 | RECEIVE DATA | to printer |
| 3 | TRANSMIT DATA | from printer |
| 5 | SIGNAL GROUND | |
| 7 | REQUEST TO SEND | from printer |
| 8 | CLEAR TO SEND | to printer |

Install Night Bell

6.4 Chart 6-5 describes the procedure for installing a Direct Connect night bell, and Chart 6-6 describes the procedure for an Auxiliary Relay night bell. When you have completed Chart 6-5 or Chart 6-6:

- The DTMF receiver/relay module will be installed.
- The night bell will be installed and connected.

- Note:**
1. Incoming and internal calls can be directed to a common alerting device (bell). The bell is activated by a relay on the DTMF receiver/relay module on the universal card. The calls can be answered from the attendant console, or from any station with Trunk Access From Any Station (TAFAS) feature access assigned to it.
 2. The night bell, the auxiliary relay (normally open) and independent ringing supply are customer-supplied.

The night bell must be a type of unit which does not require ringing voltage (a "Buzzer" style unit) from the system. A power source other than the PABX is required.

3. Direct Connect Method: Night bells can be connected directly if the total current requirement does not exceed the relay contact ratings.
4. Auxiliary Relay method: Night bells must be connected through an auxiliary relay if the total current requirement exceeds the relay contact ratings.
5. All wiring must be done in accordance with local electrical codes.

| Chart 6-5 Install Night Bell (Direct Connect) | | |
|---|---|---|
| Step | Action | Comments |
| 1. | Install Bell Follow manufacturer's instructions to install the bell. | The equipment should be installed in the environment specified by the manufacturer. |
| 2. | Install DTMF Receiver/Relay | Ensure the DTMF receiver/relay module is installed. |
| 3. | Connect Night Bell | See Figure 6-1 for relay connection. |
| 4. | Connect one side of the night bell through the cross-connect field to the power source. Connect one side of the relay contact from the DTMF receiver/relay module to ground and the other side of the relay contact to the other side of the night bell. Note: Relay contacts may be connected only to a secondary circuit that has no direct connection to a primary circuit, and receives its power from a transformer, converter, or equivalent isolation device situated within the equipment. | |
| | | Relay contact ratings: 90 Vrms at 0.1 A 48 Vdc at 0.5 A |

Chart 6-6 Install Night Bell (Auxiliary Relay)

| Step | Action | Comments |
|------|--|--|
| 1. | <p>Install DTMF Receiver/Relay module</p> <p>Ensure that the DTMF receiver/relay module is installed on the Universal Card.</p> | |
| | <p>Install Bell</p> | |
| 2. | <p>Follow manufacturer's instructions to install the bell.</p> | <p>Install equipment in the environment specified by the manufacturer.</p> |
| | <p>Connect Auxiliary Relay</p> | |
| 3. | <p>Connect one side of the auxiliary relay coil through the cross-connect field to the customer supplied power source. See Figure 6-3.</p> <p>Connect one side of the relay contact from the DTMF receiver/relay module to ground and the other side of the relay contact to the other side of the auxiliary relay coil.</p> <p>Relay contact ratings: 90 Vrms at 0.1 A 48 Vdc at 0.5 A</p> <p>Connect Bell to Auxiliary Relay</p> | <p>Note: Relay contacts may be connected only to a secondary circuit which has no direct connection to a primary circuit, and which receives its power from a transformer, converter, or equivalent isolation device situated within the equipment.</p> |
| | <p>Connect Bell to Auxiliary Relay</p> | |
| 4. | <p>Connect one side of the bell to one side of the auxiliary relay contact.</p> | |
| 5. | <p>Connect the other side of the bell to one side of the independent ringing source.</p> | |
| 6. | <p>Connect the other side of the auxiliary relay contact to the other side of the independent ringing source.</p> | |

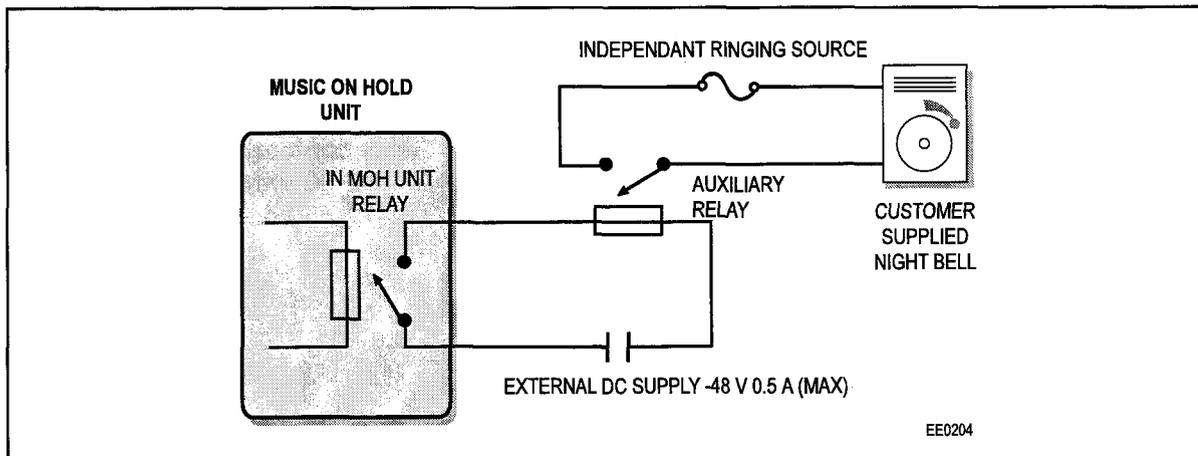


Figure 6-3 Night Bell With Auxiliary Relay

Install Paging Equipment

6.5 The Paging equipment connections are illustrated in Figure 6-1. When you have completed Chart 6-7:

- The Music-on-Hold/Paging module or unit will be installed.
- The paging equipment will be installed.
- The paging equipment will be connected.

Note: 1. The paging equipment is customer-supplied.
 2. The PABX supports up to nine separate paging zones. Each zone requires a paging module or a DMP.

Installation Info

| Chart 6-7 Install Paging Equipment | | |
|---|--|--|
| Step | Action | Comments |
| 1. | <p>Install the Music-on-Hold/Paging module or DMP</p> <p>Universal Card: Ensure that the Music-on-Hold/Paging module is installed.</p> <p>DMP: Ensure that the Music-on-Hold/Pager unit is installed.</p> | |
| 2. | <p>Install Paging Equipment</p> <p>Follow manufacturer's instructions to install the paging equipment. See Figure 6-1.</p> | The equipment should be installed in the environment specified by the manufacturers. |
| 3. | <p>Connect Paging Equipment</p> <p>Universal Card: Connect the output from POA and POB on the Music-on-Hold/Paging module through the cross-connect field to the paging equipment.</p> <p>DMP: Connect the output from PAGE+ and PAGE- on the Music-on-Hold/Paging unit through the cross-connect field to the paging equipment.</p> | <p>Output impedance (low): 200 ohm</p> <p>Output level into 600 ohm: -6 dBm</p> |
| 4. | <p>Universal Card: Connect the relay contacts, normally open or normally closed and common (or as specified in the documentation with the paging amplifier), from the Music-on-Hold/Paging unit (PKA and PKB) to the control circuit of the paging equipment.</p> <p>DMP: Connect the appropriate relay contacts from the Music-on-Hold/Pager unit to the control circuit of the paging equipment.</p> | <p>Note: Relay contacts may be connected only to a secondary circuit which has no direct connection to a primary circuit, and which receives its power from a transformer, converter, or equivalent isolation device situated within the equipment.</p> <p>Relay contact ratings: 90 Vrms at 0.1 A 48 Vdc at 0.5 A</p> |

Install Music-On-Hold Equipment

6.6 The Music-on-Hold equipment connections are illustrated in Figure 6-1. When you have completed Chart 6-8:

- The Music-on-Hold/Paging module/unit will be installed.
- The Music source will be installed and connected.

- Note:**
1. An external music source can be connected to the system using a Music-on-Hold/Paging module on the Universal Card or by using the Music-on-Hold/Pager unit (DMP). Music on Hold is used with the camp-on and hold features. Callers on hold hear music instead of no sound; camp-on callers hear music instead of busy tone.
 2. The PABX supports only one Music on Hold source.
 3. This equipment also provides the background music played through the speakers of the *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* while the set is idle (background music feature).
 4. The music source is customer-supplied, and can be a tape recorder, radio, or other music source.

Chart 6-8 Install Music On Hold Equipment

| Step | Action | Comments |
|------|---|---|
| 1. | <p>Install the Music-on-Hold/Paging module</p> <p>Universal Card: Ensure that the Music-on-Hold/Paging module is installed.</p> <p>DMP: Ensure that the Music-on-Hold/Pager unit is installed.</p> | |
| 2. | <p>Install Music Source</p> <p>Follow manufacturer's instructions to install the music source. See Figure 6-1.</p> | <p>The equipment should be installed in the environment specified by the manufacturers.</p> |
| 3. | <p>Connect Music Source</p> <p>Universal Card: Connect the music source through the cross-connect field to MIA and MIB on the Music-on-Hold/Paging module.</p> <p>DMP: Connect the music source through the cross-connect field to MOH+ and MOH- on the Music-on-Hold/Paging unit.</p> | <p>Input impedance: 600 ohm</p> <p>Input level: -6 dBm</p> |

Install Alternate Music Source for ACD

- 6.7 When you have completed Chart 6-9:
- The alternate music source for Automatic Call Distribution (ACD) will be installed.

- Note:**
- An alternate music source for the ACD feature package must be either:
 - an FCC Part 68- and Industry Canada approved recorded announcement device connected to an on-premises (ONS) Line Card circuit or
 - any other source which is connected through an FCC Part 68- and Industry Canada-approved voice coupler or voice-connecting arrangement to an ONS circuit.
 - The equipment is used to provide music and recorded announcements for callers awaiting an ACD agent.
 - The equipment is customer-supplied.

| Chart 6-9 Install Alternate Music Source - Automatic Call Distribution Only | | |
|---|---|--|
| Step | Action | Comments |
| | Install ONS Line Card | |
| 1. | Make sure that an ONS line card is installed. | This card can be installed in any slot in any digital bay. |
| | Install Recorded Announcement Device | |
| 2. | Install the recorded announcement device according to manufacturer's instructions. | |
| | Connect Recorded Announcement Device | |
| 3. | Connect the recorded announcement device through the cross-connect field to a circuit on the ONS card. | |
| | Connect Voice Coupler | |
| 4. | Connect the recorded announcement device through the cross-connect field to a circuit on the ONS card. | |
| | Connect Voice Coupler | |
| 5. | If the recorded announcement device to be installed is not FCC Part 68- and Industry Canada approved, install an approved voice coupler or other type of approved voice connector between the recorded announcement device and the cross-connect field. | |

7 Cabling and Cross Connections

System Cabling

7.1 This section gives the Tip-Ring Assignment tables for cabling and crossconnecting the PABX. Table 7-1 lists these tables.

| Table 7-1 Cable Terminations | |
|-------------------------------------|---|
| Table | Contents |
| Table 7-2 | Tip and Ring Assignments for High-power Slots J5 and J9 f |
| Table 7-3 | Tip and Ring Assignments for Universal Card Modules J5 and J9 |
| Table 7-4 | Tip and Ring Assignments for Low-power Slots J7 and J11 |
| Table 7-5 | USOC Connector Pin Designations |

Table 7-2 Digital Bay Tip and Ring Assignments (High-power Slots)

J5 and J9 for Digital Bay 1

| | | | | | Lead Designation | | | | | | | |
|--------------|----|-------|-----|------|------------------|------------|-----|-------|-----|-----|-----|------------|
| Slot | | Plug | Pin | Pair | Cct | ONS or DLC | Cct | LS/GS | Cct | COV | Cct | OPS or DID |
| 6 or 8 | or | J5 | 26 | W-BL | 1 | T1 | 1 | T1 | 1 | T1 | 1 | T1 |
| | | | 1 | BL-W | | R1 | | R1 | | R1 | | R1 |
| | | | 27 | W-O | 2 | T2 | | MM1 | 2 | T2 | | T2 |
| | | | 2 | O-W | | R2 | | M1 | | R2 | | R2 |
| | | | 28 | W-G | 3 | T3 | 2 | T2 | 3 | T3 | 2 | T2 |
| | | | 3 | G-W | | R3 | | R2 | | R3 | | R2 |
| | | J9 | 29 | W-BR | 4 | T4 | | MM2 | 4 | T4 | | T4 |
| | | | 4 | BR-W | | R4 | | M2 | | R4 | | R4 |
| | | | 30 | W-S | 5 | T5 | 3 | T3 | 5 | T5 | 3 | T3 |
| | | | 5 | S-W | | R5 | | R3 | | R5 | | R3 |
| | | | 31 | R-BL | 6 | T6 | | MM3 | 6 | T6 | | T6 |
| | | | 6 | BL-R | | R6 | | M3 | | R6 | | R6 |
| | 32 | R-O | 7 | T7 | 4 | T4 | 4 | T7 | 4 | T4 | | |
| | 7 | O-R | | R7 | | R4 | | R7 | | R4 | | |
| | 33 | R-G | 8 | T8 | | MM4 | | T8 | | T8 | | |
| | 8 | G-R | | R8 | | M4 | | R8 | | R8 | | |
| | 34 | R-BR | 9 | T9 | 5 | T5 | 5 | T9 | 5 | T5 | | |
| | 9 | BR-R | | R9 | | R5 | | R9 | | R5 | | |
| | 35 | R-S | 10 | T10 | | MM5 | | T10 | | T10 | | |
| | 10 | S-R | | R10 | | M5 | | R10 | | R10 | | |
| | 36 | BK-BL | 11 | T11 | 6 | T6 | 6 | T11 | 6 | T6 | | |
| | 11 | BL-BK | | R11 | | R6 | | R11 | | R6 | | |
| | 37 | BK-O | 12 | T12 | | MM6 | | T12 | | T12 | | |
| | 12 | O-BK | | R12 | | M6 | | R12 | | R12 | | |
| | | | 38 | BK-G | SPARE | | | | | | | |

Table 7-2 Digital Bay Tip and Ring Assignments (High-power Slots) (continued)

| J5 and J9 for Digital Bay 1 | | | | | | | | | | | | |
|-----------------------------|------|------|------|-------|------------------|------------|-----|-------|-----|-----|-----|------------|
| Slot | | Plug | Pin | Pair | Lead Designation | | | | | | | |
| | | | | | Cct | ONS or DLC | Cct | LS/GS | Cct | COV | Cct | OPS or DID |
| | | | 13 | G-BK | SPARE | | | | | | | |
| 5 7 | or | J5 | 39 | BK-BR | 1 | T1 | 1 | T1 | 1 | T1 | 1 | T1 |
| | | | 14 | BR-BK | | R1 | | R1 | | R1 | | R1 |
| | | | 40 | BK-S | 2 | T2 | | MM1 | 2 | T2 | | |
| | | | 15 | S-BK | | R2 | | M1 | | R2 | | |
| | | | 41 | Y-BL | 3 | T3 | 2 | T2 | 3 | T3 | 2 | T2 |
| | | | 16 | BL-Y | | R3 | | R2 | | R3 | | R2 |
| | | | 42 | Y-O | 4 | T4 | | MM2 | 4 | T4 | | |
| | | | 17 | O-Y | | R4 | | M2 | | R4 | | |
| | | | 43 | Y-G | 5 | T5 | 3 | T3 | 5 | T5 | 3 | T3 |
| | | | 18 | G-Y | | R5 | | R3 | | R5 | | R3 |
| | | 44 | Y-BR | 6 | T6 | | MM3 | 6 | T6 | | | |
| | | 19 | BR-Y | | R6 | | M3 | | R6 | | | |
| | | 45 | Y-S | 7 | T7 | 4 | T4 | | | 4 | T4 | |
| | | 20 | S-Y | | R7 | | R4 | | | | R4 | |
| | | 46 | V-BL | 8 | T8 | | MM4 | | | | | |
| | | 21 | BL-V | | R8 | | M4 | | | | | |
| | | 47 | V-O | 9 | T9 | 5 | T5 | | | 5 | T5 | |
| | | 22 | O-V | | R9 | | R5 | | | | R5 | |
| | | 48 | V-G | 10 | T10 | | MM5 | | | | | |
| | | 23 | G-V | | R10 | | M5 | | | | | |
| 49 | V-BR | 11 | T11 | 6 | T6 | | | 6 | T6 | | | |
| 24 | BR-V | | R11 | | R6 | | | | R6 | | | |
| 50 | V-S | 12 | T12 | | MM6 | | | | | | | |
| 25 | S-V | | R12 | | M6 | | | | | | | |

Installation Info

| Table 7-3 Tip and Ring Assignments for Universal Card Modules | | | | | | | | | | |
|---|----|-------|-----|------|-----|---------------|-----|---------------|-----|--------------|
| J5 and J9 for Digital Bay 1 | | | | | | | | | | |
| Slot | | Plug | Pin | Pair | Cct | MOH/ Pager | Cct | DTMF Relay | Cct | E&M Trunk |
| 6 or 8 | | J5 | 26 | W-BL | 1 | MIA1 | 1 | | 1 | T1 |
| | | | 1 | BL-W | | MIB1 | | | R1 | |
| | | | 27 | W-O | | POA1 | | K5A1 | TR1 | |
| | | | 2 | O-W | | POB1 | | K5B1 | RR1 | |
| | | | 28 | W-G | | PKA1 | | K6A1 | E1 | |
| | | | 3 | G-W | | PKB1 | | K6B1 | M1 | |
| | | J9 | 29 | W-BR | 2 | MIA2 | 2 | | 2 | T2 |
| | | | 4 | BR-W | | MIB2 | | | R2 | |
| | | | 30 | W-S | | POA2 | | K5A2 | TR2 | |
| | | | 5 | S-W | | POB2 | | K5B2 | RR2 | |
| | | | 31 | R-BL | | PKA2 | | K6A2 | E2 | |
| | | | 6 | BL-R | | PKB2 | | K6B2 | M2 | |
| | 32 | R-O | 3 | MIA3 | 3 | | 3 | T3 | | |
| | 7 | O-R | | MIB3 | | | R3 | | | |
| | 33 | R-G | | POA3 | | K5A3 | TR3 | | | |
| | 8 | G-R | | POB3 | | K5B3 | RR3 | | | |
| | 34 | R-BR | | PKA3 | | K6A3 | E3 | | | |
| | 9 | BR-R | | PKB3 | | K6B3 | M3 | | | |
| | 35 | R-S | 4 | MIA4 | 4 | | 4 | T4 | | |
| | 10 | S-R | | MIB4 | | | R4 | | | |
| | 36 | BK-BL | | POA4 | | K5A4 | TR4 | | | |
| | 11 | BL-BK | | POB4 | | K5B4 | RR4 | | | |
| | 37 | BK-O | | PKA4 | | K6A4 | E4 | | | |
| | 12 | O-BK | | PKB4 | | K6B4 | M4 | | | |
| | | | 38 | BK-G | | | | | | |

Table 7-3 Tip and Ring Assignments for Universal Card Modules (continued)

J5 and J9 for Digital Bay 1

| Slot | | Plug | Pin | Pair | Cct | MOH/ Pager | Cct | DTMF Relay | Cct | E&M Trunk | | | |
|--------|------|------|------|-------|------|---------------|-----|---------------|------|--------------|----|------|-----|
| | | | 13 | G-BK | | | | | | | | | |
| 5 7 | or | J5 | 39 | BK-BR | 1 | MIA1 | 1 | | 1 | T1 | | | |
| | | | 14 | BR-BK | | MIB1 | | R1 | | | | | |
| | | | 40 | BK-S | | POA1 | | K5A1 | | TR1 | | | |
| | | | 15 | S-BK | | POB1 | | K5B1 | | RR1 | | | |
| | | | 41 | Y-BL | | PKA1 | | K6A1 | | E1 | | | |
| | | | 16 | BL-Y | | PKB1 | | K6B1 | | M1 | | | |
| | | | 42 | Y-O | | 2 | | MIA2 | | 2 | 2 | T2 | |
| | | | 17 | O-Y | | | | MIB2 | | | | R2 | |
| | | | 43 | Y-G | | | | POA2 | | | | K5A2 | TR2 |
| | | | 18 | G-Y | | | | POB2 | | | | K5B2 | RR2 |
| | | 44 | Y-BR | PKA2 | K6A2 | | E2 | | | | | | |
| | | 19 | BR-Y | PKB2 | K6B2 | | M2 | | | | | | |
| | | 45 | Y-S | 3 | MIA3 | | 3 | 3 | T3 | | | | |
| | | 20 | S-Y | | MIB3 | | | | R3 | | | | |
| | | 46 | V-BL | | POA3 | | | | K5A3 | | | TR3 | |
| | | 21 | BL-V | | POB3 | | | | K5B3 | | | RR3 | |
| | | 47 | V-O | | PKA3 | K6A3 | | | E3 | | | | |
| | | 22 | O-V | | PKB3 | K6B3 | | | M3 | | | | |
| | | 48 | V-G | | 4 | MIA4 | | | 4 | 4 | T4 | | |
| | | 23 | G-V | | | MIB4 | | | | | R4 | | |
| 49 | V-BR | POA4 | K5A4 | | | TR4 | | | | | | | |
| 24 | BR-V | POB4 | K5B4 | | | RR4 | | | | | | | |
| 50 | V-S | PKA4 | K6A4 | E4 | | | | | | | | | |
| 25 | S-V | PKB4 | K6B4 | M4 | | | | | | | | | |

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Table 7-4 Tip and Ring Assignments (Low-power Slots)

J7 and J11

| | | | | | Lead Designation | | | |
|------------|----|------|-----|-------|------------------|------------|-----|-------|
| Slot | | Plug | Pin | Pair | Cct | ONS or DLC | Cct | LS/GS |
| 2 4 | or | J7 | 26 | W-BL | 1 | T1 | 1 | T1 |
| | | | 1 | BL-W | | R1 | | R1 |
| | | | 27 | W-O | 2 | T2 | | MM1 |
| | | | 2 | O-W | | R2 | | M1 |
| | | | 28 | W-G | 3 | T3 | 2 | T2 |
| | | | 3 | G-W | | R3 | | R2 |
| | | J11 | 29 | W-BR | 4 | T4 | | MM2 |
| | | | 4 | BR-W | | R4 | | M2 |
| | | | 30 | W-S | 5 | T5 | 3 | T3 |
| | | | 5 | S-W | | R5 | | R3 |
| | | | 31 | R-BL | 6 | T6 | | MM3 |
| | | | 6 | BL-R | | R6 | | M3 |
| | | | 32 | R-O | 7 | T7 | 4 | T4 |
| | | | 7 | O-R | | R7 | | R4 |
| | | | 33 | R-G | 8 | T8 | | MM4 |
| | | | 8 | G-R | | R8 | | M4 |
| | | | 34 | R-BR | 9 | T9 | 5 | T5 |
| | | | 9 | BR-R | | R9 | | R5 |
| | | | 35 | R-S | 10 | T10 | | MM5 |
| | | | 10 | S-R | | R10 | | M5 |
| | | | 36 | BK-BL | 11 | T11 | 6 | T6 |
| | | | 11 | BL-BK | | R11 | | R6 |
| | | | 37 | BK-O | 12 | T12 | | MM6 |
| | | | 12 | O-BK | | R12 | | M6 |
| | | | 38 | BK-G | SPARE | | | |

Table 7-4 Tip and Ring Assignments (Low-power Slots) (continued)

| J7 and J11 | | | | | | | | |
|------------|------|---------------|-----|-------|------------------|------------|-----|-------|
| Slot | | Plug | Pin | Pair | Lead Designation | | | |
| | | | | | Cct | ONS or DLC | Cct | LS/GS |
| | | | 13 | G-BK | SPARE | | | |
| 1 3 | or | J7 J11 | 39 | BK-BR | 1 | T1 | 1 | T1 |
| | | | 14 | BR-BK | | R1 | | R1 |
| 40 | BK-S | | 2 | T2 | 2 | MM1 | | |
| 5 | S-BK | | | R2 | | M1 | | |
| 41 | Y-BL | | 3 | T3 | 2 | T2 | | |
| 16 | BL-Y | | | R3 | | R2 | | |
| 42 | Y-O | | 4 | T4 | | MM2 | | |
| 17 | O-Y | | | R4 | | M2 | | |
| 43 | Y-G | | 5 | T5 | 3 | T3 | | |
| 18 | G-Y | | | R5 | | R3 | | |
| 44 | Y-BR | | 6 | T6 | | MM3 | | |
| 19 | BR-Y | | | R6 | | M3 | | |
| 45 | Y-S | | 7 | T7 | 4 | T4 | | |
| 20 | S-Y | | R7 | | R4 | | | |
| 46 | V-BL | 8 | T8 | | MM4 | | | |
| 21 | BL-V | | R8 | | M4 | | | |
| 47 | V-O | 9 | T9 | 5 | T5 | | | |
| 22 | O-V | | R9 | | R5 | | | |
| 48 | V-G | 10 | T10 | | MM5 | | | |
| 23 | G-V | | R10 | | M5 | | | |
| 49 | V-BR | 11 | T11 | 6 | T6 | | | |
| 24 | BR-V | | R11 | | R6 | | | |
| 50 | V-S | 12 | T12 | | MM6 | | | |
| 25 | S-V | | R12 | | M6 | | | |

Installation Info

| Table 7-5 USOC Connector Pin Designations | | | | |
|---|-------|----------------|-------|-------|
| | | Connector Type | | |
| | | RJ21X | RJ2EX | RJ2GX |
| 26 | W-BL | T | T | T |
| 1 | BL-W | R | R | R |
| 27 | W-O | T | E | T1 |
| 2 | O-W | R | M | R1 |
| 28 | W-G | T | T | E |
| 3 | G-W | R | R | M |
| 29 | W-BR | T | E | T |
| 4 | BR-W | R | M | R |
| 30 | W-S | T | T | T1 |
| 5 | S-W | R | R | R1 |
| 31 | R-BL | T | E | E |
| 6 | BL-R | R | M | M |
| 32 | R-O | T | T | T |
| 7 | O-R | R | R | R |
| 33 | R-G | T | E | T1 |
| 8 | G-R | R | M | R1 |
| 34 | R-BR | T | T | E |
| 9 | BR-R | R | R | M |
| 35 | R-S | T | E | T |
| 10 | S-R | R | M | R |
| 36 | BK-BL | T | T | T1 |
| 11 | BL-BK | R | R | R1 |
| 37 | BK-O | T | E | E |
| 12 | O-BK | R | M | M |

Table 7-5 USOC Connector Pin Designations (continued)

| | | Connector Type | | |
|----|-------|----------------|-------|-------|
| | | RJ21X | RJ2EX | RJ2GX |
| 38 | BK-G | T | T | T |
| 13 | G-BK | R | R | R |
| 39 | BK-BR | T | E | T1 |
| 14 | BR-BK | R | M | R1 |
| 40 | BK-S | T | T | E |
| 15 | S-BK | R | R | M |
| 41 | Y-BL | T | E | T |
| 16 | BL-Y | R | M | R |
| 42 | Y-O | T | T | T1 |
| 17 | O-Y | R | R | R1 |
| 43 | Y-G | T | E | E |
| 18 | G-Y | R | M | M |
| 44 | Y-BR | T | T | T |
| 19 | BR-Y | R | R | R |
| 45 | Y-S | T | E | T1 |
| 20 | S-Y | R | M | R1 |
| 46 | V-BL | T | T | E |
| 21 | BL-V | R | R | M |
| 47 | V-O | T | E | T |
| 22 | O-V | R | M | R |
| 48 | V-G | T | T | T1 |
| 23 | G-V | R | R | R1 |
| 49 | V-BR | T | E | E |
| 24 | BR-V | R | M | M |
| 50 | V-S | SPARE | | |
| 25 | S-V | SPARE | | |

- Note:**
1. RJ21X is a standard trunk.
 2. RJ2EX is a two-wire E&M trunk.
 3. RJ2GX is a four-wire E&M trunk.

Appendix A

Peripheral Device Connection to the Digital Line Card

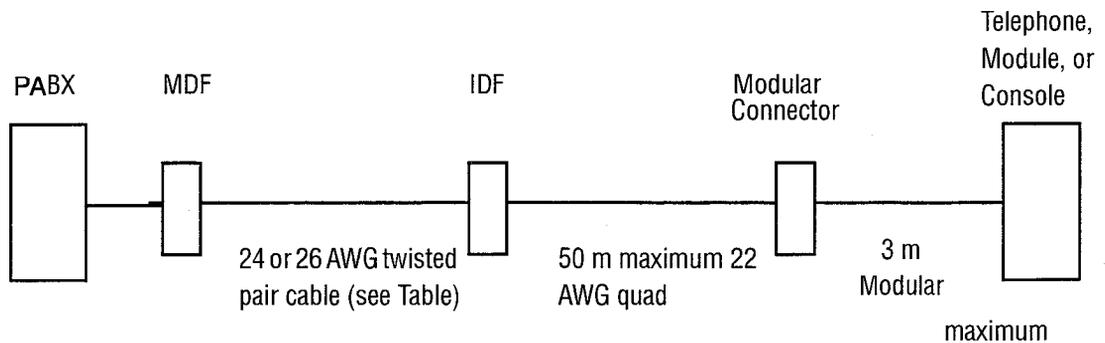
Loop Length Specifications

- A.1 The following rules for loop lengths between the Digital Line Card within the PABX and the *SUPERSET 401+*, *SUPERSET 410*, *SUPERSET 420*, and *SUPERSET 430* telephones, or *SUPERCONSOLE 1000* Attendant Console must be followed for proper operation of the device:

Maximum loop length (twisted pair) 24 or 26 AWG see Table A-1

Maximum length of quad cable (22 AWG) 50 m (160 ft)

Modular Line Cord 3 m (10 ft)



| Table A-1 Loop Lengths for Digital Peripheral Devices | | |
|--|----------------------------|------------------------|
| Peripheral | Maximum Loop Length | |
| Device | Without Bridge Tap | With Bridge Tap |
| <i>SUPERSET 401+</i> | 1000 m | n/a |
| <i>SUPERSET 410</i> | 1000 m | n/a |
| <i>SUPERSET 420</i> | 1000 m | 1000 m |
| <i>SUPERSET 430</i> | 1000 m | 1000 m |
| <i>SUPERSET 7000</i> Attendant Console | 1000 m | not permitted |
| DATASET 1103 | 2000 m | 1000 m |
| DATASET 2103 | 2000 m | 1000 m |
| <i>SUPERCONSOLE 1000</i> console | 1000 m | 1000 m |

Note: Peripherals connected to Digital Line Card 9109-012-001-NA cannot have bridge taps.

NOTES

NOTES

9109-098-210-NA

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SX-200® ML PABX

Customer Data Entry

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1 Introduction

General

- 1.1 After the successful mechanical installation of the PABX (refer to the *Installation Information Practice*), the system is ready for programming. This practice describes the Customer Data Entry (CDE) package and outlines the procedures for entering customer data entry mode.

CDE Package Grouping

- 1.2 The system is programmed in groups. Classes of service group together users with the same COS restrictions. Pickup groups assemble users in a department. Hunt groups classify users together with a common knowledge about how to handle certain calls. Trunks are grouped together with common incoming answering points and common outgoing characteristics.

Tenant groups also relate to this grouping theme. Tenant groups facilitate separate attendant services for different areas of a corporation. These services include handling "DIAL 0" calls locally, routing and recalling incoming trunk calls as required and locally switching to night service mode.

One variant of this multi-tenant operation occurs when each group may be separate customers that cannot access each other's trunks. Another variant occurs when DID trunk service handles incoming calls into a number of different customers. For this plan, each customer requires identification of its incoming calls.

Scope of Document

- 1.3 This is a programming guide - the document does not describe the PABX features. Refer to the *Features Description Practice*, for complete descriptions of all features.

Reason for Issue

- 1.4 This Section has been issued to describe customer data entry procedures and forms for LIGHTWARE™ 16 ML software.

Disclaimer

The following products have been manufacture discontinued by Mitel. These products are supported but not described in SX-200® ML Practices:

- SUPERSET 3™ and SUPERSET 4® telephone sets
- SUPERSET 3DN™ and SUPERSET 4DN™ telephone sets
- DATASET 1101 data cartridge
- SUPERSET™ DSS module.

The following products and peripheral devices are not supported on the SX-200 ML PABX and are not described in SX-200 ML Practices:

- Modem Interconnect Panel
- DATASET 1102 Rack-mounted Dataset
- DATASET 2102 Rack-mounted Dataset
- DATACABINET 9000 data cabinet
- DATASHELF 9100 datashelf
- ISDN Node
- Fiber Interface Module (and associated products)
- Peripheral Node
- LCD Console (and Console module for Universal Card).

2 Equipment Used For Customer Data Entry

The programming of the database is supported by three devices: the attendant console, an ASCII CRT terminal (VT100™ compatible), and a PC.

ASCII Terminal

2.1 A terminal or PC is required for remote programming. A modem is connected to the REMOTE (DCE) connector on the cabinet's lower rear panel. The modem is connected, usually by telephone, to a modem connected to the remote terminal.

The terminal or PC can also be used for local programming; the terminal is connected via an RS-232 connection to the LOCAL (DTE) connector on the maintenance panel.

Note: The PABX has a maintenance connector located on the rear of the cabinet.

A VT100 compatible terminal or PC displays the full screen version of the CDE forms. Forms consist of a header line, 12 lines of data, the command line, and two rows of softkeys which are selected by pressing ESC and the softkey number (1 to 9 and 0).

Figure 2-1 shows the 4 main areas of a typical CDE form on a terminal interface or PC:

1. The column title area is used to title the columns of information in the CDE form.
2. The display area is used to display up to 12 lines of information. The cursor (the line of data between the 2 angle brackets > and <) points to the line of information which may be modified.
3. The cursor line area repeats the line of data marked by the cursor, and contains data which may be modified.
4. The softkey area is usually 2 lines, and contains the softkeys used to perform actions within the form.

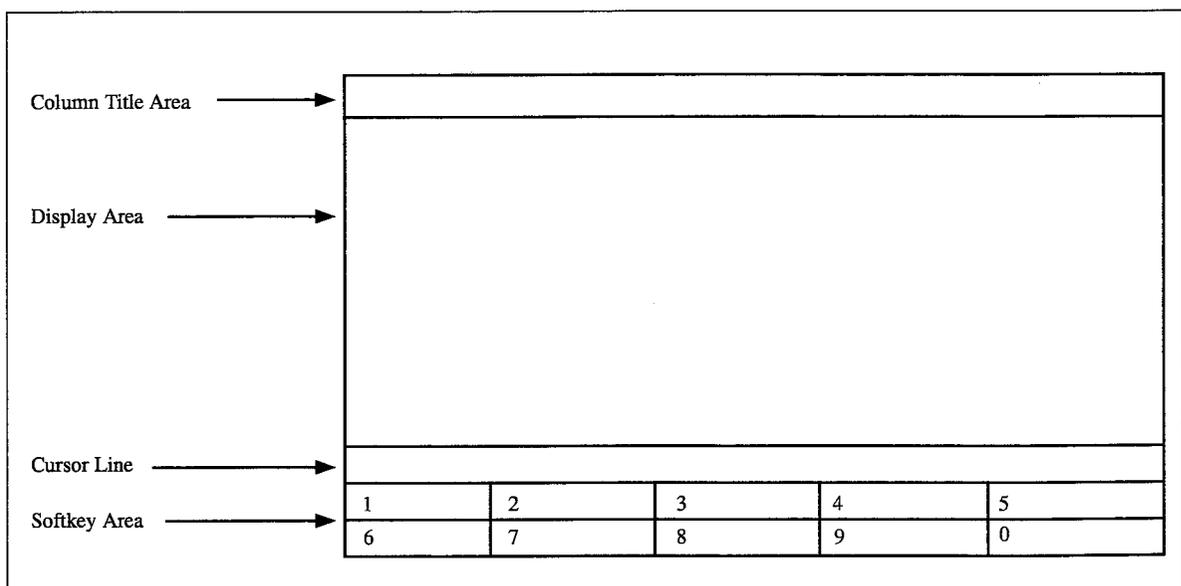


Figure 2-1 CDE Terminal/PC Display Areas

Attendant Console

2.2 On-site customer data entry can be performed via the attendant console. The console's softkeys and display facilitate this task. The display has four lines of 80 characters. These lines are: the header line, the command line (which displays the data that can be edited) and two lines for the 10 softkeys. Note that there are some forms which have two header lines and only one line for the softkey display.

Figure 2-2 shows the 3 main screen areas of a typical CDE form on a terminal interface; they are:

1. The column title area is used to title the columns of information in the CDE form.
2. The display area contains data which may be modified.
3. The softkey area is usually two lines, and contains the softkeys used to perform actions within the form.

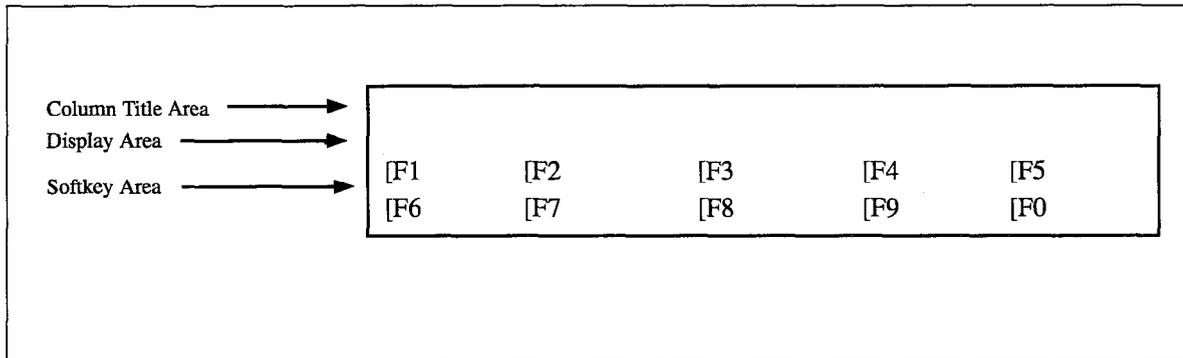


Figure 2-2 CDE Console Display Areas

Levels of Access to Customer Data Entry

2.3 The system provides five password protected levels of CDE access. These levels are, in descending order of priority:

- Installer
- Maint 1
- Maint 2
- Supervisor
- Attendant

The access for any of these levels (except Installer) can be set to "read/write access", "no access" or "read only access" for each CDE form.

An attendant may be restricted, for example, to moves of station numbers and review of pickup groups only. Similarly, a maintenance person may be given access to class-of-service modifications and station/*SUPERSET* telephone additions but not to ARS programming. Installers must be able to access the entire database.

When programming from a console, the user can exit CDE mode (for Call Handling) by pressing any hardkey on the attendant console. Pressing the FUNCTION key and then the APPLICATION softkey automatically returns the console to CDE mode.

3 Operation

Load System Software

CDE Access from a Terminal

- 3.1 The login procedure for initial CDE access (from a terminal) consists of four basic steps. These steps are:
1. Specify the terminal type:
 - 1- VT100 COMPATIBLE
 - 2- TTY TYPE (suppresses graphic characters)
 - 3- IBM PC
 2. Select the function:
 - 1- MAINTENANCE
 - 2- CDE
 - 6- QUIT
 3. Enter the level of access:
INSTALLER,
MAINT1,
MAINT2,
SUPERVISOR or
ATTENDANT
 4. Enter the password (the default password is *1000*).

After log in, the terminal displays the top level CDE form - a list of the names and numbers of the available forms (see example in Figure 3-1). Forms and system options that are not available are marked RESERVED, and cannot be accessed.

NOTE: Programming can be done in any order, however, Form 4 must be completed to enable purchased software options.

2:39 PM 9-JAN-97 alarm status = NO ALARM

| FORMS | |
|---|--|
| > 01 = SYSTEM CONFIGURATION 03 = COS DEFINE 05 = TENANT INTERCONNECTION TABLE 07 = CONSOLE ASSIGNMENTS 09 = STATIONS/SUPERSET TELEPHONES 11 = DATA CIRCUIT DESCRIPTOR 13 = TRUNK CIRCUIT DESCRIPTORS 15 = DIAL-IN TRUNKS 17 = HUNT GROUPS 19 = CALL REROUTING TABLE 21 = ARS: DAY ZONE DEFINITION 23 = ARS: ROUTE DEFINITION 25 = ARS: ROUTE PLANS 27 = ARS: MAXIMUM DIALED DIGITS | 02 = FEATURE ACCESS CODES 04 = SYSTEM OPTIONS/SYSTEM TIMERS 06 = TENANT NIGHT SWITCHING CONTROL 08 = ATTENDANT LDN ASSIGNMENTS 10 = PICKUP GROUPS 12 = DATA ASSIGNMENT 14 = NON-DIAL-IN TRUNKS 16 = TRUNK GROUPS 18 = MISCELLANEOUS SYSTEM PORTS 20 = ARS: COR GROUP DEFINITION 22 = ARS: MODIFIED DIGIT TABLE 24 = ARS: ROUTE LISTS 26 = ARS: DIGIT STRINGS 28 = FORM ACCESS RESTRICTION DEF < |
| ENTER FORM NUMBER: █ | |
| 6-QUIT | 7-TOP |
| 8-BOTTOM | 9- |
| 0- | |

Figure 3-1 CDE Top Level Form

The command line displays ENTER FORM NUMBER:. Select a form by entering a valid form number. It is not necessary for the desired form number selected to be in the display area. Press the ENTER softkey.

CDE Access from the Attendant Console

3.2 The login procedure for initial CDE access from the attendant console consists of the following steps:

1. Press the FUNCTION key.
2. Press the APPLICATION softkey.
3. Press the CDE softkey.
4. Select a level of access.
5. Enter the password (default is 1000).
6. Press the ENTER softkey.

When the CDE application has been selected, the console LCD displays the top level CDE form. See Figure 3-2.

| | | | | |
|---------------------------|--------|---------------------------|-----|-----|
| FORMS | | | | |
| 01 = SYSTEM CONFIGURATION | | 02 = FEATURE ACCESS CODES | | |
| ENTER FORM NUM: | | | | |
| [F6 QUIT | [F7TOP | [F8BOTTOM | [F9 | [F0 |

Figure 3-2 Available Forms: Attendant Console Display

The lower command line displays ENTER FORM NUM:. Select a form by entering a valid form number. It is not necessary to have the desired form number displayed on the upper command line. Press the ENTER softkey.

Form Editing

General

- 3.3 The forms in the CDE package have several columns and lines of information. On the attendant console, or on a terminal that has cursor control keys, the left and right arrow keys (← and →) move the cursor from field to field on the command line. On a terminal, the **TAB** and **DEL** keys perform an equivalent function. Note that both the **DEL** and left arrow keys delete edited data as the cursor moves left. The up and down arrow keys move the cursor up and down the form. On a terminal, the **LINE FEED** key also moves the cursor down the form. Note also that the **RETURN** key on a terminal performs the same function as the ENTER softkey. On the attendant console, cursor movement is indicated by the underscore character (_). On the terminal, cursor movement is indicated by a flashing solid block and by a line pointer (represented by > < characters at the ends of the screen line).

From the Top Level CDE Form

On the terminal interface, the line at the cursor position is displayed on the command line. Press the cursor control keys to move the cursor through the list a line at a time. When the cursor reaches the bottom (or top) data line, the list will scroll up (or down) if there are more items on the list to display. Press the **TOP** or **BOTTOM** softkeys to move immediately to the top or bottom of the list.

On the console interface, the word FORMS is on the header line. Under this are two command lines and one row of softkeys. See Figure 3-2. The upper command line displays the names and numbers of the first two available forms. Press the cursor control keys to display the names and numbers of subsequent forms, two at a time. Press the TOP or BOTTOM softkeys to move immediately to the top or bottom of the list. Refer to Table 3-1 for the complete list of available forms for each software generic.

Exit from CDE

- 3.4 To exit from CDE, press the QUIT softkey at the forms level. The terminal returns to the application level; the system is now ready for another application (such as Maintenance).

| Table 3-1 Customer Data Entry Forms | |
|--|--|
| Form Number | Form Name |
| 01 | System Configuration |
| 02 | Feature Access Codes |
| 03 | COS Define |
| 04 | System Options/System Timers |
| 05 | Tenant Interconnection Table |
| 06 | Tenant Night Switching Control |
| 07 | Console Assignments |
| 08 | Attendant LDN Assignments |
| 09 | Stations/ <i>SUPERSET</i> Telephones |
| 10 | Pickup Groups |
| 11 | Data Circuit Descriptor |
| 12 | Data Assignment |
| 13 | Trunk Circuit Descriptors |
| 14 | Non-Dial-In Trunks |
| 15 | Dial-In Trunks |
| 16 | Trunk Groups |
| 17 | Hunt Groups |
| 18 | Miscellaneous System Ports |
| 19 | Call Rerouting Table |
| 20 | ARS: COR Group Definition |
| 21 | ARS: Day Zone Definition |
| 22 | ARS: Modified Digit Table |
| 23 | ARS: Route Definition |
| 24 | ARS: Route Lists |
| 25 | ARS: Route Plans |
| 26 | ARS: Digit Strings |
| 27 | ARS: Maximum Dialed Digits |
| 28 | Form Access Restriction Def'n. |
| 29 | DTE Profile |
| 30 | Device Interconnection Table |
| 31 | System Abbreviated Dial Entry |
| 32 | CDE Data Print |
| 33 | Account Code Entry |
| 34 | Directed IO |
| 35 | Global Find Access Code |
| 36 | Modem Assignment |
| 37 | Guest Rm <i>SUPERSET</i> Keys Template |
| 38 | ACD Keys Template |
| 39 | ACD Agent Groups |
| 40 | ACD Supervisors |
| 41 | ACD Paths |
| 42 | T1 Link Descriptors |
| 43 | T1 Link Assignment |
| 44 | Network Synchronization |
| 45 | Key System Telephones |
| 46 | Key System Toll Control |

Softkeys Available in Most CDE Forms

- 3.5 The following softkeys appear in most forms. They have the same purpose, regardless of which form they appear in.

QUIT: Pressing the QUIT softkey exits from the current form and returns the display to the previous - another form, or the level where the forms are selected (see Figure 3-1). Also, if another softkey was activated, pressing the QUIT softkey returns the display to the previous state.

CANCEL: This softkey appears after a programming error has occurred. Pressing the CANCEL softkey returns the display to the level where the programming error was made. The CANCEL softkey appears with an error message. Refer to Appendix A for a list of these error messages.

BAY/SLT/CCT: Instead of moving the line pointer to the desired line of the form, the programmer can call it up directly by specifying the bay, slot and circuit. Pressing the BAY/SLT/CCT softkey displays Bay: Slot: Circuit: on the command line. The cursor appears to the right of the Bay: prompt. A single digit specifies the bay location. When a valid digit has been entered, the TAB or → cursor key can move the cursor to the Slot field. If the programmer enters an invalid number, the system inhibits subsequent cursor movement. Use the DEL or ← cursor key to delete the incorrect entry. When the slot number has been entered, the ENTER softkey appears.

DELETE: This softkey appears when the command line is displaying data. Pressing the DELETE softkey followed by the ENTER softkey removes the selected entry from the form.

ENTER: This softkey appears only after data for an entry has been modified. Pressing the ENTER softkey stores the change in the database. **Note:** in some forms, it is necessary to press ENTER for every change. Form 01 is one exception to this rule.

TOP: Pressing the TOP softkey moves the line pointer to the first line of the form. The command line displays the first line.

BOTTOM: Pressing the BOTTOM softkey moves the line pointer to the last line of the form. The command line displays this line.

**** MORE **:** When the MORE softkey is pressed, a new set of softkeys are displayed. Most forms with this softkey have two sets of softkeys; some forms have three.

Programming Aids

- 3.6 After you have installed the circuit cards, and before you begin CDE programming, plan the CDE programming requirements using the blank CDE forms in Appendix B.

4 CDE Form Descriptions

NOTE: Programming can be done in any order, however, Form 4 must be completed to enable purchased software options.

Form 01 - System Configuration

4.1 This form specifies the intended location of each peripheral card for the system (see Figure 4-1). If the peripheral cards are installed before the system is programmed, this form enables the configuration of the system according to the actual installation. If the system is programmed prior to the peripheral card installation, this form acts as a guide during the installation process. If the installed card type does not match the card type in the PROGRAMMED field, then that device does not function, and the card alarm LED will flash. When the system is programmed, the CDE software uses the PROGRAMMED field of this form to generate a list of physical location (bay, slot and circuit) numbers that can be programmed in subsequent forms. These forms include:

- Form 07, Console Assignments
- Form 08, Attendant LDN Assignments
- Form 09, Station and *SUPERSET* Telephones
- Form 12, Data Assignment
- Form 14, Non-Dial-In Trunks
- Form 15, Dial-In Trunks
- Form 18, Miscellaneous System Ports
- Form 36, Modem Assignment
- Form 43, T1 Link Assignment
- Form 44, T1 Network Synchronization
- Form 45, Key System Telephones

When a device is assigned to a physical location, the system first checks the appropriate card type in this form.

Field Description

BAY, SLT and **CCT**: These fields specify the physical location of each card type. The circuit number represents the physical location of each module on the Universal Card.

PROGRAMMED: Specifies the intended location of the required card types. Data can be assigned to the PROGRAMMED field before the cards are installed.

INSTALLED: The data in the INSTALLED field reflects the actual installed cards. The system updates this field; the installer cannot edit it.

COMMENTS: This field stores additional data (a maximum of 20 characters), for the programmer's reference. The system does not use this information for call processing.

| 2:51 PM 9-JAN-97 | | | alarm status = NO ALARM | | | |
|------------------|-----|---------------|-------------------------|-------------------|-------------------|-------------|
| BAY | SLT | CCT | PROGRAMMED | INSTALLED | COMMENTS | |
| > | 01 | 01 | - | ONS LINE CARD | ONS LINE CARD | < |
| | 01 | 02 | - | | | |
| | 01 | 03 | - | | | |
| | 01 | 04 | - | | | |
| | 01 | 05 | - | | | |
| | 01 | 06 | - | T1 TRUNK CARD | | |
| | 01 | 07 | - | | | |
| | 01 | 08 | - | DIGITAL LINE CARD | DIGITAL LINE CARD | |
| | 02 | 01 | - | | | |
| | 02 | 02 | - | | | |
| | 02 | 03 | - | | | |
| | 02 | 04 | - | | | |
| | 01 | 01 | - | ONS LINE CARD | ONS LINE CARD | |
| 1-LINE CARDS | | 2-TRUNK CARDS | | 3-UNIVERSAL | 4-NODE TYPE | 5-CONFIGURE |
| 6-QUIT | | 7-BAY/SLT/CCT | | 8-DELETE | 9-VERIFY DATA | 0- |

Figure 4-1 Form 01 Layout

Softkeys

LINE CARDS: Programs the selected card slot as a line card. Available line cards are ONS LINE, OPS LINE (see Note), DIGITAL LINE, and COV LINE. Press the desired line card softkey and then the ENTER softkey. The selected card type is displayed in the PROGRAMMED field.

Note: The OPS and COV cards are high power cards and are restricted to the upper slots. When a console is installed on a Digital Line Card, it also must be in a high powered slot.

TRUNK CARDS: Programs the selected card slot as a trunk card. Available trunk cards are LS/GS TRUNK, T1 TRUNK (See following paragraph for conditions), and 6 CCT DID (See Note). Press the desired trunk card softkey and then the ENTER softkey. The selected card type is displayed in the PROGRAMMED field.

Note: The 6 CCT DID card is a high power card and is restricted to the upper slots. The system generates an error message if an attempt is made to program it in a lower slot.

T1 Trunk Card

The following condition applies:

- Systems may program two T1 Trunk Cards (slots 5 and 6).

UNIVERSAL: Designates that card slot as the Universal Card. Three further softkeys are presented for the programming of the Universal card modules: MUSIC PAGER, E&M MODULE, and CONSOLE. Note that the Universal Card can only be assigned to those card slots rated for high power consumption (these are denoted by a square symbol on the card shelf; low power slots are denoted by a circle symbol).

Note: The system automatically programs DTMF Receivers where they are installed, provided nothing is already programmed for that circuit. These circuits must be in place in order to program night bell relays and alarms in CDE Form 18.

MUSIC PAGER: Programs the selected module as a Music on Hold/Pager Module. The PROGRAMMED field displays MUSIC PAGER MODULE. Each MOH/Pager Module has a power rating of 1. Therefore, a Universal Card can support four of these modules.

E&M MODULE: Programs the selected module as an E&M module. The PROGRAMMED field displays E&M. Each E&M module has a power rating of 3 (a maximum of three per Universal Card).

NODE TYPE: Define the NODE TYPE as PER.

CONFIGURE: Configure should only be performed with new installations. Before the system can function properly, the PROGRAMMED field must match the INSTALLED field. Pressing the CONFIGURE softkey matches the PROGRAMMED field to the INSTALLED field. Note that devices can be assigned to the cards in the PROGRAMMED field but the card type cannot change. The CONFIGURE softkey cannot be pressed if any device is specified (e.g., defining a station in Form 09, Station/SUPERSET Telephones). When a new peripheral card is added to the system, it is necessary to manually update the PROGRAMMED field. The INSTALLED field updates upon exiting and re-entering this form.

VERIFY DATA: Pressing the VERIFY DATA softkey begins a series of system tests on the database. The command line displays a message as each test completes successfully. These messages are:

PLID TO SWID CONVERSION SUCCESSFUL
ALL RECEIVERS ARE IN VALID STATES
ALL HUNT GROUPS ARE VALID
ALL TRUNK GROUPS ARE VALID
ALL PICKUP GROUPS ARE VALID
ALL SUPERSET KEYS ARE VALID
ALL TRUNK NUMBERS ARE VALID

If a test fails, the command line displays an error message and creates a maintenance log. Refer to the *Troubleshooting Practice*. When all tests are complete, the form reverts to the original softkey display.

The standard softkeys **BAY/SLT/CCT**, **CANCEL**, **DELETE**, **ENTER**, ****MORE**** and **QUIT** are also provided. **Note:** Before a card can be deleted, any devices programmed on the card, or associated with circuits on the card must be deleted or disassociated first, using the appropriate form.

Table 4-1 Feature Access Codes

| Feature Numbers For <i>LIGHTWARE 16 ML</i> | Feature Names |
|---|--|
| 01 | Account Code Access |
| 02 | Auto-Answer Activation |
| 03 | Call Forwarding - All Calls |
| 04 | Call Forwarding - Internal Only |
| 05 | Call Forwarding - External Only |
| 06 | Call Forwarding - I'm Here |
| 07 | Call Forwarding - Cancel I'm Here |
| 08 | Dial Call Pickup |
| 09 | Directed Call Pickup |
| 10 | Do Not Disturb |
| 11 | Extension General Attendant Access |
| 12 | Paging Access To Default Zone(s) |
| 13 | Paging Access To Specific Zones |
| 14 | TAFAS - Any |
| 15 | TAFAS - Local Tenant |
| 16 | Hold Pickup Access (Attendant Hold Slots) |
| 17 | Console Lockout Access Code |
| 18 | Maintenance Functions (Test Line) |
| 19 | Direct Inward System Access |
| 20 | Callback Busy <<single digit>> |
| 21 | Call Hold |
| 22 | Call Hold Retrieve (Local) |
| 23 | Call Hold Retrieve (Remote) |
| 24 | Abbreviated Dial Access |
| 25 | Clear All Features |
| 26 | <i>SUPERSET 4</i> Telephone Loopback Test |
| 27 | Tone Demonstration |
| 28 | ADL Call Setup |
| 29 | ADL Disconnect |
| 30 | Last Number Redial |
| 31 | Executive Busy Override <<single digit>> |
| 32 | Automatic Wakeup |
| 33 | Call Park |
| 34 | Node ID |
| 35 | Maid In Room |
| 36 | <i>SUPERSET 4</i> Tel. Room Status Display |

Customer Data Entry

Table 4-1 Feature Access Codes (continued)

| Feature Numbers For <i>LIGHTWARE 16 ML</i> | Feature Names |
|---|--|
| 37 | Direct To ARS |
| 38 | UCD Agent Login / Logout |
| 39 | Analogue Network Accept Caller's Extension |
| 40 | <i>SUPERSET 4</i> Tel. Maid In Room Status Display |
| 41 | Send Message |
| 42 | Call Message Sender of Oldest Message |
| 43 | Callback - No Answer |
| 44 | ACD Login / Logout |
| 45 | ACD Silent Monitoring |
| 46 | Flash Over Trunk |
| 47 | Program Feature Key |
| 48 | Key System - Direct Paging Access |
| 49 | Key System - Group Page Meet-Me-Answer |
| 50 | Key System - Direct CO Line Select |
| 51 | Key System - Store Personal Speed Call |
| 52 | Key System - Retrieve Personal Speed Call |
| 53 | Double Flash Over Trunk |

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Softkeys

FEATURE NUM: Allows the user to select a Feature Access Code by number. Pressing this key clears the command line and positions the cursor after the ENTER FEATURE NUM: prompt. Entering the 1- or 2-digit feature number displays that access code with its name on the command line. The cursor moves to the start of the ACCESS CODE field on the command line ready for a new access code entry.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are also provided, where applicable.

Parameters arranged alphabetically

The following are not feature descriptions; refer to *Features Description Practice* for complete descriptions.

Abbreviated Dial Access (24): Allows users to dial pre-programmed index numbers rather than having to dial entire digit strings (which can be up to 26 digits in length). The original numbers and their corresponding index numbers must be programmed into Form 31 - System Abbreviated Dial.

Account Code Access (01): This code is dialed prior to the entry of an independent account code.

ACD Login/Logout (44): Allows an ACD position to log in and out at a *SUPERSET* telephone. Refer to the *ACD TELEMARKETER® Application Package Practice* for further details.

ACD Silent Monitoring (45): Allows an ACD supervisor to silently monitor calls of ACD agents. Refer to the *ACD TELEMARKETER Application Package Practice* for further details.

ADL Call Setup (28): Allows an Associated Data Line (ADL) configured extension to originate a data call. Refer to the *Features Description Practice* for further information.

ADL Disconnect (29): Allows an ADL configured extension to disconnect a data call. Refer to the *Features Description Practice* for further information.

Analog Network Access Callers Extension (39): Used by the system to display caller's extension numbers on display sets during cross-node network calls. This code is entered into the ARS: Modified Digit Table. Refer to the *Features Description Practice*, under "Analog Networking", for further information.

Auto-Answer Activation (02): This code is dialed prior to the activation (dial 1), or deactivation (dial 2), of the Auto Answer feature.

Automatic Wakeup (32): Allows an extension user to set up a wakeup call without talking to an attendant. The user dials the Automatic Wakeup code, followed by the time (in 24-hour format - 2 hour digits followed by 2 minute digits).

Callback Busy (20): Allows an extension to set a callback on another (busy) extension. The user then hangs up.

Callback - No Answer (43): Allows an extension to set a callback on an extension that does not answer, while listening to ringback.

Call Forwarding - All Calls (03): Allows an extension to forward internal and external calls either: ALWAYS (dial 01), BUSY (dial 02), NO ANSWER (dial 03) or BUSY/NO ANSWER (dial 04). This is available when COS Option 260 - Call Forward Internal/External Split is disabled. The NO ANSWER option allows an extension to forward calls that are not answered within a selected time-out period.

Call Forwarding - Cancel I'm Here (07): Allows a station user to cancel Call Forwarding - I'm Here, from the other station.

Call Forwarding - External Only (05): Allows an extension to forward external calls either: ALWAYS (dial 01), BUSY (dial 02), NO ANSWER (dial 03) or BUSY/NO ANSWER (dial 04). This is available when COS Option 260 - Call Forward Internal/External Split is enabled.

Call Forwarding - I'm Here (06): Allows an extension to redirect its calls to another extension from that other extension.

Call Forwarding - Internal Only (04): Allows an extension to forward internal calls either: ALWAYS (dial 01), BUSY (dial 02), NO ANSWER (dial 03) or BUSY/NO ANSWER (dial 04). This is available when COS Option 260 - Call Forward Internal/External Split is enabled.

Call Hold (21): Allows an extension to put a call on hold and go on-hook. The extension may then be used to make other calls.

Call Hold Retrieve - Local (22): Allows a user to retrieve a held call at the extension where the call was originally held.

Call Hold Retrieve - Remote (23): Allows a user to retrieve a held call from any extension. The user must dial the Call Hold Retrieve - Remote Feature Access Code, followed by the number of the extension where the call was originally held.

Call Message Sender of Oldest Message (42): Allows an extension to call the sender of the oldest message without having to dial the extension number.

Call Park (33): Allows an extension to park an active call, and go on-hook. The extension may not make other calls, but may access paging equipment.

Clear All Features (25): Allows the user to clear features currently activated at the extension with a single access code. The features affected are: all flavors of Call Forwarding, Do Not Disturb and Callbacks.

Console Lockout Access Code (17): Allows an attendant to render the console "harmless" (typically, while left unattended). The console is returned to its normal state by re-entering the code.

Dial Call Pickup (08): Allows a station to retrieve calls ringing other stations in the same pickup group. Stations using this feature must be programmed in Form 10 - Pickup Groups.

Directed Call Pickup (09): Allows a station to retrieve calls ringing other stations. The user must dial the access code, followed by the extension number of the ringing station.

Direct Inward System Access (19): This is the DISA security code. Refer to the *Features Description Practice*, under *Trunk Operation - DISA*, for further information.

Direct To ARS (37): Allows an extension to access ARS immediately, without dialing ARS leading digits. The system automatically dials the Direct To ARS code upon the set going off-hook, or after an account code.

Do Not Disturb (10): Allows a station to prevent any incoming calls from ringing. The calling party receives whatever is programmed in Form 19 - Call Rerouting Table. This code is dialed prior to the activation (dial 1), or deactivation (dial 2) code.

Double Flash Over Trunk (53): Allows a Centrex extension to be reconnected to the CENTREX extension that it put on softhold while attempting to reach a second CENTREX extension.

Executive Busy Override (31): Allows an extension to override busy extensions by dialing a single code while listening to busy tone.

Extension General Attendant Access (11): This code (usually 0) allows a station to access an attendant directly, without knowing the specific extension number or an LDN number of a specific attendant as defined in CDE Form 19.

Flash Over Trunk (46): Allows an extension to access Central Office CENTREX™ features (sends a flash out over a trunk).

Hold Pickup Access (16): Allows a station to connect to a held call in an attendant console hold slot. Typically, the attendant will relay the digits to dial: the Hold Pickup Access code, the console/subattendant ID number, followed by the hold slot number, through the system's zone paging equipment.

Key System - Direct CO Line Select (50): Allows a key system extension to access a specific trunk. The user dials the code, followed by the trunk number.

Key System - Direct Paging (48): Allows a key system set to directly page another (idle) key system set through the set's speaker. The user can page a specific set, or the entire page group. Page groups are programmed in Form 45 - Key System Telephones.

Key System - Group Page - Meet Me Answer (49): Allows a key system extension to respond to a group page by dialing a single access code.

Key System - Store Personal Speed Call (51): Allows a key system extension to store up to 5 dial access personal speed call numbers.

Key System - Retrieve Personal Speed Call (52): Allows a key system extension to make a call using previously stored dial access Personal Speed Call numbers.

Last Number Redial (30): Allows an extension to use the Last Number Redial feature.

Maid In Room (35): Allows a maid to change the status of the room using the telephone in the room. The maid dials the Maid In Room code, followed by one of: 1-maid in room, 2-maid not in room, 3-room clean, 4-room to be inspected.

Maintenance Functions (18): Allows the test line telephone to access the available test line functions. Refer to the *General Maintenance Information Practice* for further details.

Node ID (34): Allows a uniform numbering plan in a network of systems. Refer to "Analog Networking" in the *Features Description Practice* for further information.

Paging Access to Default Zones (12): Allows a station to access the default paging zone equipment. The paging equipment must be programmed in Form 18 - Miscellaneous System Ports, and COS Option 312 must be set to a default value.

Paging Access to Specific Zones (13): Allows a station to access specific paging zones. The access code is dialed, followed by the number corresponding to the paging zone number. The station must have access to the zone(s) via COS Options 303 through 311 (paging zone 1 through 9).

Program Feature Key (47): Allows users of SUPERSET 410™, SUPERSET 420™, and SUPERSET 430™ sets to program feature keys on their own sets, from their own sets. This eliminates the need to access CDE through the console or terminal interface to make these changes.

Send Message (41): Allows an extension user to send a message to another extension. The message is in the form of one of: a flashing lamp, a display indication, or a

distinctive ringing pattern. Refer to the *Features Description Practice*, under “Messaging - Call Me Back”, for further information.

SUPERSET 4 Maid In Room Status Display (40): Allows a *SUPERSET 420* or *SUPERSET 430* station to view room status information.

SUPERSET 4 Room Status Display (36): Allows *SUPERSET 420* and *SUPERSET 430* users to view room status information. Refer to the *Hotel/Motel Feature Package Description Practice* for further information.

SUPERSET 4 Telephone Loopback Test (26): Allows a *SUPERSET 4* telephone user to perform a loopback test on the set. Going on-hook terminates the test.

TAFAS - Any (14): Allows a station to answer incoming calls ringing at common alerting devices (night bells) in any tenant group, provided COS option 248 has been enabled.

TAFAS - Local Tenant (15): Allows a station to answer incoming calls ringing at common alerting devices (night bells) within the station’s tenant group, provided COS option 249 has been enabled.

Tone Demonstration (27): Allows a user to listen to all of the possible tones available on the system. Going on-hook terminates the demonstration.

UCD Agent Login/Logout (38): Allows a UCD agent to log in and out of a UCD agent hunt group, to control the arrival of calls from the hunt group. This code is dialed prior to the login (dial 1), or logout (dial 2) code.

Form 03 - COS Define

- 4.3 This form defines the Classes of Service for the system (see Figure 4-3 for the form layout). Classes of Service group together stations with common feature operations and restrictions. The PABX accommodates a maximum of 50 Classes of Service. Each device (including attendants, data devices and all trunks) are supplied with a Class of Service. COS options are listed in groups. Refer to Table 4-2 for the complete list of COS options.

| | | | | |
|---|--------------|-------------------------|------------|----------|
| 8:33 PM 9-JAN-97 | | alarm status = NO ALARM | | |
| [COS: 1] OPTION (DISPLAYING ENABLED) | | STATUS | OPTION NUM | |
| Attendant-Timed Recall (NO ANS) 0=disable 5-240 s | | 30 | 115 | |
| Attendant-Timed Recall (HOLD) 10-240 seconds | | 30 | 116 | |
| Attendant-Timed Recall (CAMPON) 0=disable 5-240 s | | 30 | 117 | |
| Attendant Call Forward No Answer Timer 10-240 s | | 30 | 118 | |
| Line Privacy | | ENABLED | 240 | |
| Call Forward - Don't Answer Timer 2-6 rings | | 3 | 253 | |
| PBX Telephone - Call Hold Recall Timer 1-10 min | | 1 | 254 | |
| Repeated Camp-On Beeps Timer 5-15 seconds | | 10 | 255 | |
| UCD Music On Hold Timer 0-50 minutes | | 0 | 256 | |
| Display Prime As Forwarder | | ENABLED | 258 | |
| Delay Ring Timer 2-6 rings | | 3 | 263 | |
| Paging Default (0-9) (0 Gives All Enabled Zones) | | 0 | 312 | |
| Line Privacy | | ENABLED | 240 | |
| 1-DISABLE | 2-COPY COS | 3-COS NUMBER | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-OPTION NUM | 8-SHOW DISABLE | 9-COS NAME | 0- |

Figure 4-3 Form 03 Layout

Field Descriptions

The header line indicates the Class of Service being programmed and which set of options are selected for either the enabled or disabled options list. The command line displays the current indexed option. When Form 03 - COS Define is selected, the command line displays the first enabled option of the first Class of Service.

OPTION: This field lists the option titles. The actual option names cannot be modified. The option names are classified into two groups: enabled options and disabled options. When RESERVED appears as the option name, the option is not available.

STATUS: This field displays the status of each option; either DISABLED, ENABLED or a timer value.

OPTION NUM: This field displays the number of each Class of Service option. The actual option number cannot be modified.

Softkeys

DISABLE/ENABLE: This softkey enables and disables COS options. The DISABLE softkey appears when the form shows the enabled options list. Pressing the DISABLE softkey followed by pressing the ENTER softkey twice disables the selected option. The ENABLE softkey appears when the form shows the disabled options list. Pressing the ENABLE softkey followed by pressing the ENTER softkey twice enables the selected option.

- Note:**
1. For those COS options which have a status other than 'ENABLED' or 'DISABLED', this softkey has no function or indication.
 2. If the ENTER softkey is not pressed twice after each selection, softkeys 2 and 3 are not available until the data is completely entered.

COPY COS: Pressing the COPY COS softkey copies the contents of one Class of Service to another. This is useful when two Classes of Service are similar. The command line displays the COPY FROM COS prompt; the user enters the 1- or 2-digit COS number. The command line then displays the TO COS prompt; the user enters the second 1- or 2-digit COS number. Pressing the ENTER softkey twice completes the copy process.

COS NUMBER: Pressing the COS NUMBER softkey prompts the user for a COS number (one or two digits) which selects a specific COS number. The header line displays the new COS number.

OPTION NUM: This softkey selects a specific COS option. Pressing the OPTION NUM softkey displays the ENTER OPTION NUM: prompt on the command line. The selection is completed by entering a valid option number (100 to 908). The command line displays that COS option name, status and number.

SHOW DISABLE/SHOW ENABLE: This softkey has two functions: it displays the disabled or enabled COS options for the selected COS. Pressing the SHOW DISABLE softkey displays the currently disabled COS options. This softkey now shows the SHOW ENABLE prompt and softkey 1 displays the ENABLE prompt. Pressing the SHOW ENABLE softkey shows those COS options that are enabled. This softkey returns to the SHOW DISABLE prompt and softkey 1 displays the DISABLE prompt. Note: Those options with a status other than "ENABLED" or "DISABLED" are listed when the SHOW ENABLE softkey is pressed.

COS NAME: When the programmer presses the COS NAME softkey, the system requests a name for the Class of Service. The COS name can be up to 8 characters in length.

The standard softkeys **CANCEL**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are also provided, where applicable.

Table 4-2 Class Of Service Options

| COS Option Numbers | Class Of Service Option Name |
|--------------------|--|
| 100 | Attendant Bell Off |
| 101 | Attendant O/G Restriction/Room Status Setup |
| 102 | Attendant Display of System Alarms |
| 103 | Attendant DISA Code Setup |
| 104 | Attendant Flexible Night Service Setup |
| 105 | Attendant Guest Room Key |
| 106 | Attendant New Call Tone |
| 107 | Attendant Automatic Call Forward - No Answer |
| 108 | Attendant Audible Lockout Alarm |
| 109 | Attendant Serial Call |
| 110 | Attendant Abbr. Dial Confidential Number Display |
| 111 | Attendant Abbreviated Dial Programming |
| 112 | Attendant Station Busy-Out |
| 113 | Attendant Call Block Key |
| 114 | Attendant Trunk Busy-Out |
| 115 | Attendant-Timed Recall (No Ans) 5 -240 s; 0=Disable |
| 116 | Attendant-Timed Recall (Hold) 5 - 240 s; 0=Disable |
| 117 | Attendant-Timed Recall (CampOn) 5 - 240 s; 0=Disable |
| 118 | Attendant Call Forward - No Answer Timer 10 - 240 s. |
| 119 | Attendant Tone Signaling |
| 120 | Attendant Conference Disable |
| 121 | Attendant Station Do Not Disturb |
| 122 | Attendant Setup Time/Date |
| 123 | Attendant Call Forward Setup and Cancel |
| 124 | Attendant Hold Position Security |
| 125 | Attendant Multi-New Call Tone |
| 150 | Sub-Attendant Station Setup Advisory Messages |
| 200 | Account Code, Forced Entry - External Calls |
| 201 | Account Code, Forced Entry - Long Distance Calls |
| 202 | Alarm Call |
| 203 | Broker's Call |
| 204 | Call Block Applies (Room To Room) |
| 205 | Flash For Waiting Call |
| 206 | Call Forwarding - Busy |
| 207 | Call Forwarding - Don't Answer |
| 208 | Call Forwarding - External |
| 209 | Call Forwarding - Follow Me |
| 210 | Call Forwarding Inhibit on Dial-In Trunks |
| 211 | Call Hold and Retrieve Access |

Customer Data Entry

Table 4-2 Class Of Service Options (continued)

| COS Option Numbers | Class Of Service Option Name |
|---------------------------|--|
| 212 | Can Flash If Talking to an Incoming Trunk |
| 213 | Can Flash If Talking to an Outgoing Trunk |
| 214 | Cannot Dial a Trunk after Flashing |
| 215 | Cannot Dial a Trunk if Holding or in Conference with One |
| 216 | Data Security |
| 217 | Direct To ARS |
| 218 | Directed Call Pickup |
| 219 | Discriminating Dial Tone |
| 220 | Do Not Disturb |
| 221 | Clear All Features |
| 222 | Call Forward Inhibit on Hold Timeout |
| 223 | Flash Disable |
| 224 | Flash for Attendant |
| 225 | Hold Pickup (Attendant Paged Access) |
| 226 | Inward Restriction (DID) |
| 227 | Lockout Alarm Applies |
| 228 | Manual Line (Dial 0 Hotline) |
| 229 | COV Voice Mail Port |
| 230 | Message Register Overflow Alarm |
| 231 | Message Waiting Setup - Bell |
| 232 | Message Waiting Setup - Lamp |
| 233 | Never a Consultee |
| 234 | Never a Forwardee |
| 235 | Originate Only |
| 236 | Outgoing Trunk Callback |
| 237 | Outgoing Trunk Camp-On |
| 238 | Override Security |
| 239 | Priority Dial 0 |
| 240 | Line Privacy |
| 241 | Receive Only |
| 242 | Repeated Camp-On Beep |
| 243 | Non-Busy Extension |
| 244 | Room Status Applies |
| 245 | Abbreviated Dialing Access |
| 246 | SMDR - Extended Record |
| 247 | SMDR - Record Meter Pulses |
| 248 | TAFAS Any Access |
| 249 | TAFAS Access Tenant |
| 250 | TAFAS Access During Day Service |

Table 4-2 Class Of Service Options (continued)

| COS Option Numbers | Class Of Service Option Name |
|---------------------------|--|
| 251 | Transfer Dial Tone |
| 252 | Broker's Call with Transfer |
| 253 | Call Forward - Don't Answer Timer (2 - 6 Rings) |
| 254 | Call Hold Recall Timer (PBX Telephones) 1 - 10 Minutes |
| 255 | Repeated Camp-On Beeps Timer (5 - 15 Seconds) |
| 256 | UCD Music On Hold Timer (0 - 50 Minutes) |
| 257 | Flash Over Trunk |
| 258 | Display Prime as Forwarder |
| 259 | Message Sending |
| 260 | Internal / External Split Call Forwarding |
| 261 | ONS Voice Mail Port |
| 262 | Ignore Forward Busy with Free Appearance |
| 263 | Delay Ring Timer (2 - 6 Rings) |
| 264 | Half Fwd NA timer for DID call when VM msg on |
| 265 | Voice Mail System Speed Dial Index (0-255) |
| 300 | Automatic Callback |
| 301 | Camp-On |
| 302 | Flash-in Conference |
| 303 | Paging Zone 1 Access |
| 304 | Paging Zone 2 Access |
| 305 | Paging Zone 3 Access |
| 306 | Paging Zone 4 Access |
| 307 | Paging Zone 5 Access |
| 308 | Paging Zone 6 Access |
| 309 | Paging Zone 7 Access |
| 310 | Paging Zone 8 Access |
| 311 | Paging Zone 9 Access |
| 312 | Paging Default (0 - 9) (0 Gives All Enabled Zones) |
| 313 | CO Trunk to CO Trunk Connect |
| 314 | CO Trunk to TIE Trunk Connect |
| 315 | CO Trunk to DID Trunk Connect |
| 316 | TIE Trunk to TIE Trunk Connect |
| 317 | TIE Trunk to DID Trunk Connect |
| 318 | DID Trunk to DID Trunk Connect |
| 319 | Extension Non-CO Trunk to Trunk Connect |
| 320 | Transparent Multi-Console Operation |
| 321 | Ignore Call Forward After Transfer |
| 326 | Account Code, Forced Entry - Data Internal Calls |
| 327 | Account Code, Forced Entry - Data External Calls |

Customer Data Entry

Table 4-2 Class Of Service Options (continued)

| COS Option Numbers | Class Of Service Option Name |
|---------------------------|---|
| 328 | Account Code, Forced Entry - Data Long Distance Calls |
| 400 | Contact Monitor |
| 401 | Call Park |
| 402 | Long Loop (Off-Premise Extensions Only) |
| 403 | Trunk Recall Partial Inhibit |
| 404 | Recording Failure to Hangup Timer (1 - 255 Seconds) |
| 500 | Override |
| 501 | Override Announce |
| 502 | Display ANI/DNIS/CLASS Information |
| 503 | Display CLASS Name |
| 600 | <i>SUPERSET</i> Tel. - Auto-Answer |
| 601 | <i>SUPERSET</i> Tel. - Auto-Hold Disable |
| 602 | <i>SUPERSET</i> Tel. - Background Music |
| 603 | <i>SUPERSET</i> Tel. - Disconnect Alarm |
| 604 | PBX <i>SUPERSET</i> Tel. - Automatic Outgoing Line |
| 605 | <i>SUPERSET</i> Tel. - Message Program |
| 606 | <i>SUPERSET</i> Tel. - Enhanced Answering Position |
| 607 | <i>SUPERSET</i> Tel. - Associated Modem Line |
| 608 | <i>SUPERSET</i> Tel. - Room Status Display |
| 609 | <i>SUPERSET</i> Tel. - Night Service Switching |
| 610 | <i>SUPERSET</i> Tel. - Guest Room Template (0 - 3) (DN) |
| 611 | <i>SUPERSET</i> Tel. - Limited New Call Ring |
| 612 | <i>SUPERSET</i> Tel. - Headset Operation |
| 613 | Display ANI Information Only |
| 614 | <i>SUPERSET</i> Tel. - Handset Volume Saved |
| 650 | ACD - Agent Template (0 - 3; 0 = Disable) |
| 651 | ACD - Supervisor Template (0 - 3; 0 = Disable) |
| 652 | ACD - Senior Supervisor Template (0 - 3; 0 = Disable) |
| 653 | ACD - Agent Always Auto-Answer |
| 654 | ACD - Display Path Always |
| 655 | ACD - Allow Continuous Monitor of Agent |
| 680 | Key System - Direct CO Access |
| 681 | Key Set/Sub Att. - Call Hold Notify Timer (0 -600 s) |
| 683 | Key System - Direct Paging Handsfree Answerback |
| 700 | SMDR - Does Not Apply |
| 701 | No Dial Tone |
| 702 | SMDR - Overwrite Buffer |
| 703 | Message Register Applies |
| 704 | Incoming / Internal Modem Pooling Access |

| Table 4-2 Class Of Service Options (continued) | |
|--|--|
| COS Option Numbers | Class Of Service Option Name |
| 705 | Automatic Overflow From Attendant |
| 709 | Follow External Call Forward |
| 800 | ANI Applies |
| 801 | Incoming Trunk Call Rotary |
| 802 | Limited Wait for Dial Tone |
| 803 | SMDR - Drop Calls < n Digits (0 ... 11, 0 = disable) |
| 804 | SMDR - Drop Incomplete Outgoing Calls |
| 805 | Trunk No Dial Tone Alarm |
| 806 | SMDR - Record Incoming Calls |
| 807 | SMDR - Display Private Speedcall |
| 808 | Special DISA |
| 809 | Standard Ring Applies |
| 810 | DISA During Night Service Only |
| 811 | ANI/DNIS Trunk |
| 812 | Loop Start Trunk to ACD Path Connect |
| 814 | SMDR - Record ANI/DNIS/CLASS |
| 815 | DTS Key Honors Forwarding |
| 816 | CENTREX Flash Over Trunk |
| 900 | Data Station Queuing |
| 901 | DTRX Herald |
| 902 | DTRX Message Code |
| 903 | DTRX Message Code Text |
| 904 | DTRX Complete Message Text |
| 905 | DTRX Herald Text Select (1- 4) |
| 906 | DATA SMDR - Does Not Apply |
| 907 | DATA SMDR - Extended Record |
| 908 | DATA SMDR - Overwrite Buffer |

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Parameters arranged alphabetically

The following are not feature descriptions; refer to the *Features Description Practice* for complete descriptions.

Abbreviated Dialing Access: Allows access to the system Abbreviated Dialing tables.

Account Code, Forced Entry - Data External Calls: Requires an extension to enter an account code before making external data calls.

Account Code, Forced Entry - Data Internal Calls: Requires an extension to enter an account code before making internal data calls.

Account Code, Forced Entry - Data Long Dist Calls: Requires an extension to enter an account code before making long distance data calls.

Account Code Forced Entry - External Calls: Forces an extension to enter an account code before allowing external calls.

Account Code Forced Entry - Long Distance Calls: Forces an extension to enter an account code before allowing long distance calls.

ACD - Agent Always Auto-Answer: Allows an ACD agent to be in auto answer mode at all times. See the *ACD TELEMARKETER Application Package Practice*.

ACD - Agent Template: Allows certain configurations of Speed Dial keys and Feature Keys. See the *ACD TELEMARKETER Application Package Practice*.

ACD - Allow Continuous Monitor of Agent: Allows a supervisory set to monitor an agent set continuously, regardless of call state. This COS option is enabled in the class of service of the supervisory set.

ACD - Display Path Always: When enabled, this option displays the ACD path name, programmed in Form 41, on the *SUPERSET* display. If disabled, the ACD access code is presented.

ACD - Senior Supervisor Template: Allows certain configurations of Speed Dial keys and Feature Keys. See the *ACD TELEMARKETER Application Package Practice*.

ACD - Supervisor Template: Allows certain configurations of Speed Dial keys and Feature Keys. See the *ACD TELEMARKETER Application Package Practice*.

Alarm Call: Allows an extension to be programmed to ring at a specific time.

ANI Applies: Provides for ANI information being transmitted on outgoing trunks.

ANI/DNIS Trunk: Allows an incoming trunk to receive ANI/DNIS information. ANI/DNIS trunks must use DTMF signaling, have a wink timer and one of the following trunk circuit descriptors: "T1 E&M", "T1 E&M DISA", "T1 DID/TIE" or "T1 TIE DISA".

Attendant Abbr. Dial Confidential Number Display: Allows the attendant to view abbreviated dial numbers which have been programmed as "confidential".

Attendant Abbreviated Dial Programming: Allows the attendant to program numbers into the system's abbreviated dial table.

Attendant Audible Lockout Alarm: Allows for an audible alarm to ring at the console when a suitably programmed station goes into the lock-out state.

Attendant Automatic Call Forward - No Answer: Allows unanswered calls to be rerouted to a secondary answer point. The call is automatically rerouted after it rings for a pre-determined length of time. See COS Option 118 - Attendant Automatic Call Forward - No Answer Timer.

Attendant Bell Off: Allows the attendant to mute the console ringer.

Attendant Call Block Key: Allows the attendant to block station to station (room to room) calls. This feature is part of the Hotel/Motel feature package.

Attendant Call Forward - No Answer Timer: This sets the Call Forward - No Answer timer for the Attendant Automatic Call Forward Feature.

Attendant Call Forward Setup/Cancel: Allows attendant or sub-attendant to change the call forward status of a station in its tenant group.

Attendant Conference Disable: Disallows the console from making conference calls.

Attendant DISA Code Setup: Allows the attendant to change the DISA access code, without accessing CDE.

Attendant Display of System Alarms: Allows the attendant to receive and view alarm logs at the console without logging in to maintenance. The alarm icon is not presented for minor alarm conditions.

Attendant Flexible Night Service Setup: Allows the attendant to change the night service assignment for non-dial-in trunks.

Attendant Guest Room Key: Allows the attendant to access Hotel/Motel features via the *GUEST ROOM* softkey. This feature is part of the Hotel/Motel feature package.

Attendant Multi - New Call Tone: When at least one call is waiting to be answered by an attendant or subattendant who is busy on a call, a short beep sounds at the programmed interval. (Consoles must also have Attendant New Call Tone enabled.)

Attendant New Call Tone: Allows the attendant to be notified of incoming calls by a single tone burst, while engaged in a call.

Attendant O/G Restriction/Room Status Setup: Allows the attendant to restrict outgoing calls. This feature is part of the Hotel/Motel feature package.

Attendant Serial Call: Allows the attendant to force an incoming trunk call to recall to the console after the trunk is released from the call.

Attendant Setup Time/Date: Allows attendant or sub-attendant to set the system time and/or date.

Attendant Station Busy Out: Allows the attendant to busy out (and return to service) any station in the system.

Attendant Station Do Not Disturb: Allows attendant or sub-attendant to change DND status on a station in its tenant group.

Attendant Timed Recall (Busy): This sets the busy recall timer. If set to 0, the feature is disabled.

Attendant Timed Recall (Campon): This sets the campon recall timer. If set to 0, the feature is disabled.

Attendant Timed Recall (No Ans): This sets the no answer recall timer. If set to 0, the feature is disabled.

Attendant Tone Signaling: Allows the console to transmit DTMF tones during an established call.

Attendant Trunk Busy Out: Allows the attendant to busy out (and return to service) any trunk in the system.

Automatic Callback: Allows an extension to arrange for a call to a busy extension to be completed when that extension becomes idle.

Automatic Overflow from Attendant: Allows incoming calls not answered within a pre-determined period to be rerouted to a recording device while remaining in the answer queue.

Broker's Call: Allows an extension flash to be interpreted as a swap rather than a conference attempt.

Broker's Call With Transfer: Same as Broker's Call, except that a transfer is possible when the extension goes on-hook.

Call Block Applies: Allows the extension to be affected when the attendant applies the Call Block feature. This feature is part of the Hotel/Motel feature package.

Call Forward - Busy: Allows the extension to set up call forwarding on busy.

Call Forward - Don't Answer: Allows the extension to set up call forwarding on no answer.

Call Forward Don't Answer Timer: Sets the number of times the set will ring before the call is forwarded.

Call Forward - External: Allows the extension to set up call forwarding to external numbers.

Call Forward - Follow Me: Allows an extension user to set up call forwarding from another station.

Call Forward Inhibit On Dial In Trunks: Prevents calls from Dial-In trunks from being forwarded to stations with this item in their COS.

Call Forwarding Inhibit on Hold Timeout: Causes call forward no answer to be ignored when a held party times out and begins ringing back the holding set.

Call Hold and Retrieve Access: Allows the extension to use the Call Hold and Call Hold Retrieve access codes.

Call Hold Recall Timer: For regular stations and *SUPERSET* telephones, this COS Option sets the length of time between when a call was placed on hold, and when the held call recalls. For Key System telephones this COS option sets the length of time between when a call was placed on hold, and when the system provides the first Hold Reminder tone.

Call Park: Allows an extension to park a call and go on-hook. New calls may not be received or originated, but paging equipment may be accessed.

Camp-On: Allows an extension to notify a busy extension (via a beep) that they desire communication. The camped-on call rings when the called party goes on-hook.

Can Flash If Talking To An Incoming Trunk: Allows an extension to flash the switchhook when connected to an incoming trunk.

Can Flash If Talking To An Outgoing Trunk: Allows an extension to flash the switchhook when connected to an outgoing trunk.

Cannot Dial a Trunk After Flashing: Prevents an extension from accessing a trunk after flashing the switchhook.

Cannot Dial a Trunk if Holding or in Conf With One: Prevents an extension from accessing a trunk if that extension already has a trunk on hold, or is in conference with a trunk.

Centrex Flash Over Trunk: After the user performs a Flash Over Trunk, this feature allows the user to go immediately into talk state, and access Central Office CENTREX features (such as Conference, Call Waiting, Swap/Hold, and Drop Last). When disabled, this COS allows the user to perform a Flash Over Trunk and go into dialing state. CENTREX Flash Over Trunk is disabled by default.

Clear All Features: Allows an extension to turn off all features currently active. These features include all flavors of Call Forwarding, Do Not Disturb and Callbacks.

Contact Monitor: Allows a line circuit port to be used as an alarm contact relay. See the *Features Description Practice* for further information.

CO Trunk to CO Trunk Connect: Allows an extension to connect 2 CO trunks together.

CO Trunk to DID Trunk Connect: Allows an extension to connect a CO trunk and a DID trunk together.

CO Trunk to Tie Trunk Connect: Allows an extension to connect a CO trunk and a Tie trunk together.

Data Security: Prevents the system from transmitting any intrusion or warning tones on an established call.

DATA SMDR - Does Not Apply: Prevents data calls from having SMDR records.

DATA SMDR - Extended Record: Allows for the system identifier to be included in the SMDR record.

DATA SMDR - Overwrite Buffer: Allows older records to be overwritten by newer records when the SMDR buffer becomes full. If disabled, a full buffer will result in further calls requiring SMDR to not be allowed.

Data Station Queuing: Allows queuing on to busy data stations.

Delay Ring Timer: Specifies the duration of the ring delay on *SUPERSET* line select keys which are line appearances with delay ring. Default value is 3 rings.

DID Trunk to DID Trunk Connect: Allows an extension to connect 2 DID trunks together.

Direct To ARS: Allows an extension to be routed directly to ARS upon going off-hook. The system automatically dials the ARS leading digit string.

Directed Call Pickup: Allows the extension to dial the Directed Call Pickup access code, and answer a call ringing at another extension.

DISA During Night Service Only: Allows for a trunk to be a DISA trunk only when the system (or tenant group) is in night service.

Discriminating Dial Tone: Allows an extension to have a special distinctive dial tone, informing the user that feature(s) are active.

Display ANI/DNIS/CLASS Information: Allows the display of ANI and DNIS digits on *SUPERSET* telephones and consoles.

Display ANI Information Only: Allows ANI digits only (never DNIS digits) to be displayed on *SUPERSET* telephones. Not applicable if CLASS name is available.

Display CLASS Name: Enabled by default, this COS option gives CLASS name priority over CLASS numbers (Calling Line ID digits) whenever information about the trunk is to be displayed on the *SUPERSET* telephones and consoles. If disabled, CLASS number will be displayed ahead of CLASS name.

Display Prime as Forwarder: Allows the option of displaying or toning out the forwarder's extension or logical line access code when a call is forwarded. If enabled, and a logical line of single appearance is forwarded to the ONS Voice Mail, then the extension of the prime of the set will be toned out. If disabled, the extension of the line is toned out. (Calls forwarded from a single appearance DTS key that has COS option 815 enabled will always display the prime as the forwarder.)

Do Not Disturb: Allows the extension to prevent incoming calls from ringing.

DTRX Complete Message Code Text: Allows for DTRX message codes and status messages to be displayed. See the *Features Description Practice*, under Data Transceiver, for further information.

DTRX Herald: Allows a programmable message to appear when connection is made to the DTRX.

DTRX Herald Text Select: Allows for a choice of DTRX herald messages. See the *Features Description Practice*, under Data Transceiver, for further information.

DTRX Message Code: Allows for DTRX message codes to be displayed. See the *Features Description Practice*, under Data Transceiver, for further information.

DTRX Message Code Text: Allows for DTRX status messages to be displayed. See the *Features Description Practice*, under Data Transceiver, for further information.

DTS Key Honors Forwarding: Allows incoming direct trunk select calls to follow call forwarding programmed on the set if the DTS line appears on only one set (disabled by default).

Extension Non-CO Trunk to Trunk Connect: Allows an extension to connect any non-CO type trunk to any other trunk.

Flash Disable: Prevents an extension from using any feature that required the use of the switchhook flash.

Flash For Waiting Call: Allows a user to place a call (2-party or multi-party) on consultation hold and connect to a waiting call, via a flash of the switchhook.

Flash For Attendant: Allows an extension to ring the attendant immediately upon flashing the switchhook.

Flash-In Conference: Allows an extension to create 4 or 5 party conferences.

Flash Over Trunk: Allows an extension to send a switchhook flash out on a trunk.

Follow External Call Forward: Specifies the calling device to be an external call for call forwarding (Disabled by default).

Half Fwd NA timer for DID call when VM msg on: When an incoming DID call is made to a set or station with this option, and when that set or station has Voice Mail messages waiting, then the Call Forward No Answer timer is shortened by half. This is a toll saving option, allowing users who are calling in to check their messages to hang up if the cfna timer is not shortened, knowing they have no messages to retrieve.

Hold Pickup: Allows an extension to connect to a caller waiting in an attendant console hold slot position.

Ignore Call Forward After Transfer: A trunk call that is transferred will ignore forwarding programmed for the set or station the call is transferred to. The call will recall to the transferring set, subattendant, or console when the recall timer expires. This COS option is enabled in the Class of Service of the transferring set, subattendant, or console. Only trunk calls are affected by this COS.

Ignore Forward Busy with Free Appearance: When calling a station or *SUPERSET* telephone with this COS enabled, call forward busy is ignored if there are any free multiline appearances. Sets with an appearance of this line that are in Do Not Disturb will appear busy. The lines on sets that are not in Do Not Disturb will appear busy.

Incoming/Internal Modem Pooling Access: Allows a modem user to make a call to a Dataset.

Incoming Trunk Call Rotary: Instructs a trunk to ignore incoming DTMF digits.

Internal/External Split Call Forwarding: Allows an extension to split call forward setup between internal calls and external calls.

Inward Restriction: Prevents an extension from receiving incoming calls from DID trunks.

Key Set/Sub Att - Call Hold Notify Timer: Sets the time between when a subattendant places a call on hold on a programmable hold key and when the held call recalls.

Key System - Direct Paging Handsfree Answerback: Allows a *SUPERSET 410*, *SUPERSET 420* or a *SUPERSET 430* key system set user to access the handsfree answerback feature for directed page calls.

Key System - Direct CO Access: Allows a key set to directly access a CO trunk using Feature Access Code 50.

Limited Wait For Dial Tone: Instructs a trunk to wait a pre-determined period for dial tone from the far end before sending digits. This option must be enabled for ISDN trunks.

Line Privacy: Prevents one *SUPERSET* telephone from overriding the key line being used by another *SUPERSET* telephone.

Lockout Alarm Applies: Causes an alarm to be raised at the attendant console when the set goes into the *lockout* state.

Long Loop: Designates the OPS port as having a loop length of over 2 km. This adds a compromise balance network into the circuit.

Loop Start Trunk to ACD Path Connect: Allows loop start DISA trunks to access ACD.

Manual Line: Causes an off-hook origination to ring the attendant. Calls are received in the normal manner.

Message Register Applies: Causes the system to count and report (SMDR) the number of outgoing calls made by a station and the number of incoming meter pulses received. This feature is part of the Hotel/Motel Feature Package.

Message Register Overflow Alarm: Allows an alarm to be raised at the attendant console, and a maintenance log to be generated when the extension's message register overflows.

Message Sending: Allows telephone sets to send Call Me Back messages to other extensions using the Send Message Feature access code of the **Message** key on *SUPERSET* telephones.

Message Waiting Setup - Bell: Allows the attendant to set up a message waiting condition on a extension not equipped with a lamp.

Message Waiting Setup - Lamp: Allows the attendant to set up a message waiting condition on an extension equipped with a lamp.

Never a Consultee: Prevents other extensions calling when they have a consultation hold in progress.

Never a Forwarder: Prevents an extension from having calls forwarded to it by another extension.

No Dial Tone: Inhibits dial tone. This option must be enabled for ISDN trunks.

Non-Busy Extension: Causes calls to the busy extension to override automatically, and join the conversation.

ONS Voice Mail Port: Causes an ONS line port to be designated as an interface to an ONS Voice Mail system. Refer to the *Features Description Practice*.

Originate Only: Prevents an extension from receiving any calls, unless they are forwarded.

Outgoing Trunk Callback: Allows Callback - Busy on outgoing trunks.

Outgoing Trunk Camp-On: Allows Camp-On on outgoing trunks.

Override: Allows an extension to override (intrude into the conversation of) a busy extension.

Override Security: Prevents other extensions from overriding calls.

Paging Default: Sets the default paging zone for the station. 0 enables all zones.

Paging Zone Access: Allows an extension to have access to one or more paging zones. Zones 1 through 9 are programmable.

PBX SUPERSET Telephone - Automatic Outgoing Line: Allows a set to automatically select the first free line when the user begins dialing. If disabled, the user must first either go off-hook, or press a line appearance key. Note that this does not apply to SUPERSET 401+™ telephone sets.

Priority Dial 0: Provides a second class of dial-0 access to the attendant. This class may then have its own LDN appearance on the attendant console(s).

Receive Only: Prevents an extension from initiating calls.

Recording Failure to Hangup Timer: Sets the time a recording device has to hang up. If the timer expires before the device hangs up, it is placed into the *Do Not Disturb* state.

Repeated Camp-On Beeps: Provides for repeated notification beeps, indicating that a trunk is camped on.

Repeated Campon Beeps Timer: Sets the period for the repeated campon beeps.

Room Status Applies: Allows an extension to have its room status changed - this feature is part of the Hotel/Motel feature package.

SMDR - Display Private Speedcall: Controls the display of private speedcall numbers in SMDR.

SMDR - Does Not Apply: Prevents calls from having SMDR records.

SMDR - Drop Calls < n Digits: Prevents SMDR from reporting on calls which are less than a pre-determined length.

SMDR - Drop Incomplete Outgoing Calls: Prevents incomplete outgoing calls from generating an SMDR report.

SMDR - Extended Record: Allows for 8 additional columns in the record to accommodate 12-digit account codes and the system identifier. This increases the number of characters for an SMDR record to 88.

SMDR - Overwrite Buffer: Allows older records to be overwritten by newer records when the SMDR buffer becomes full. If disabled, a full buffer will result in further calls requiring SMDR to not be allowed.

SMDR - Record ANI/DNIS/CLASS: Allows ANI/DNIS information to be reported in the SMDR trunk record.

SMDR - Record Incoming Calls: Causes incoming trunk calls to be recorded by SMDR.

SMDR - Record Meter Pulses: Allows meter pulses received from the Central Office to be counted, and recorded.

Special DISA: Allows for DISA users to enter verified account codes rather than the DISA access code. (Feature Access Code 19).

Standard Ring Applies: When enabled for trunks, this option allows for incoming trunks to provide standard ringing cadence; ignoring the Discriminating Ringing feature. When enabled for station/set (available with software loads F41.0 and above), a standard ringing cadence would be provided to the station/set, regardless of any other system option or COS options.

Sub-Attendant Station Setup Advisory Message: Allows a subattendant to set up advisory messages on sets within the tenant group.

SUPERSET - Immediate Line Select: See *SUPERSET Telephone - Automatic Outgoing Line* for more information.

SUPERSET Telephone - Auto Answer: Allows incoming calls to ring briefly, then are automatically answered in Hands Free mode.

SUPERSET Telephone - Auto Hold Disable: Disables the auto-hold feature. Auto hold allows a user to press another line appearance key, automatically placing a caller on the original line on hold.

SUPERSET Telephone - Background Music: Allows a set to play music (from MOH) over the set speaker, when idle.

SUPERSET Telephone - Disconnect Alarm: Allows for an alarm indication (log message is generated) when the set is unplugged.

SUPERSET Telephone - Enhanced Answering Position: Allows a *SUPERSET* telephone to be used as an enhanced answering position (see the *Features Description Practice*, under *Sub-Attendant - Enhanced Functions*).

SUPERSET Telephone - Guest Rm Template (0-3) (DN): Allows certain configurations of Speed Dial keys and Feature Keys. Not available to the *SUPERSET 401+* telephones. See the *Hotel/Motel Feature Package Description Practice*. This feature is part of the Hotel/Motel feature package.

SUPERSET Telephone - Handset Volume Saved: Allows a *SUPERSET* telephone user to set the handset volume and have it saved for every call.

SUPERSET Telephone - Headset Operation: Allows a *SUPERSET* telephone to be used as with a headset.

SUPERSET Telephone - Limited New Call Ring: Limits the new call ring for sets which have a high amount of traffic on one or more line appearances.

SUPERSET Telephone - Message Program: Allows changing/programming of advisory messages from the set.

SUPERSET Telephone - Night Service Switching: Allows a *SUPERSET 430* or *SUPERSET 420* telephone to change the night service status of the system or a tenant group.

SUPERSET Telephone - Room Status Display: Allows a *SUPERSET 430* or *SUPERSET 420* telephone to check room status. This feature is part of the Hotel/Motel feature package.

TAFAS Access During Day Service: Allows the extension to answer incoming calls appearing at night bells, regardless of the tenanting.

TAFAS Any Access: Allows an extension to answer incoming calls appearing at night bells, only during day service.

TAFAS Tenant Access: Allows an extension to answer incoming calls appearing at night bells, providing that they are within the same tenant group.

Tie Trunk to DID Trunk Connect: Allows an extension to connect a Tie trunk and a DID trunk together.

Tie Trunk to Tie Trunk Connect: Allows an extension to connect two Tie trunks together.

Transfer Dial Tone: Allows an extension to have a special distinctive dial tone, informing the user that there is a call on consultation hold.

Transparent Multi-Console Operation: Allows consoles within a tenant group to read/cancel messages set by other consoles in the group. Also, any console in the group can answer recalls for any other console.

Trunk No Dial Tone Alarm: Allows the system to raise an alarm if dial tone cannot be detected on it. The system will also take such a trunk out of service.

Trunk Recall Partial Inhibit: Prevents a trunk from ringing the extension back while the extension is dialing, and goes on hook (phantom ringback).

UCD Music On Hold Timer: Sets the length of time an incoming UCD caller hears music before being routed to an overflow answer point.

Voice Mail System Speed Dial Index (0-255): This option applies to ONS voice mail port hunt groups. When enabled, this option identifies a set/station accessing voice mail through the message waiting key to retrieve messages. The user listening to messages can also use the Messaging - Call Me Back feature to reply to messages. This COS option is Disabled by default. To enable, assign an index number from 0 to 255. This index number will point to an abbreviated dial entry in Form 31.

Form 04 - System Options/System Timers

- 4.4 This form specifies the system's options and timers that are system wide. See Table 4-3 for the complete list of options and timers, and Figure 4-4 for the form layout (the example used shows "BOTTOM" of the form where the new functionality is located).

| | | | | | |
|---|--------------|----------------|----------|-------------------------|--|
| 3:27 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| System Options (Displaying ENABLED Options) | | | STATUS | OPTION NUM | |
| Class Receivers in Spine Bay #6 (0..6) | | | 4 | 66 | |
| Class Receivers in Spine Bay #7 (0..6) | | | 4 | 67 | |
| Mitel Options Password | | | 14083194 | 100 | |
| System Identity Code | | | 65535 | 101 | |
| System Type (ML,EL,H) | | | ML | 102 | |
| Maximum Devices | | | 672 | 103 | |
| Maximum ACD Agents | | | 100 | 104 | |
| Mitel Application Interface | | | ENABLED | 105 | |
| Automated Attendant | | | ENABLED | 106 | |
| Lodging | | | DISABLED | 107 | |
| Property Management System | | | ENABLED | 108 | |
| Remote Software Download | | | ENABLED | 109 | |
| Mitel Application Interface | | | ENABLED | 105 | |
| 1-DISABLE | 2- | 3- | 4-TOP | 5-BOTTOM | |
| 6-QUIT | 7-OPTION NUM | 8-SHOW DISABLE | 9- | 0- | |

Figure 4-4 Form 04 Layout

Field Description

The header line indicates which set of options are selected; either the enabled or disabled options. Note that the system timers are included with the enabled options.

SYSTEM OPTIONS: This field lists the system option names. The option names cannot be modified. The option names are classified into two groups: enabled options and disabled options. When RESERVED appears as the option name, the option is not available.

STATUS: This field specifies which options are enabled, disabled or the value of the timers.

OPTION NUM: This field lists the option number for each option or timer.

Softkeys

DISABLE/ENABLE: This softkey has two functions: it disables or enables System Options. The DISABLE softkey appears when the form shows the enabled options. Pressing the DISABLE softkey disables the selected option. The STATUS field shows the DISABLED prompt. The ENABLE softkey appears when the form displays the disabled options. Pressing the ENABLE softkey enables the selected option. The STATUS field shows the ENABLED prompt. **Note:** The enable (or disable) process is completed by pressing the ENTER softkey.

VARIABLE: This softkey appears only when System Option 55 is selected (displayed on the command line). Pressing the VARIABLE softkey sets the status of System Option 55 to Variable; the STATUS field shows the VARIABLE prompt. The selection is completed by pressing the ENTER softkey. Account Codes entered into Form 33, Account Code Entry, can be from 1 to 12 digits in length.

INTERNAL: This softkey appears only when System Options 57 and 58 are selected (displayed on the command line). Pressing the INTERNAL softkey sets the status of System Options 57 and 58 to Internal (for telephones with "Room Status" enabled) and only internal calls can be made. The selection is completed by pressing the ENTER softkey. The INTERNAL prompt disappears from the softkey display and the STATUS field now displays the INTERNAL prompt to indicate this selection.

LOCAL: This softkey appears only when System Options 57 and 58 selected (displayed on the command line). Pressing the LOCAL softkey sets the status of System Options 57 and 58 to Local (for telephones with "Room Status" enabled) and only internal and local calls can be made. The selection is completed by pressing the ENTER softkey. The LOCAL prompt disappears from the softkey display and the STATUS field now displays the LOCAL prompt.

LONG DIST: This softkey appears only when System Options 57 and 58 are selected (displayed on the command line). Pressing the LONG DIST softkey enables long distance calls. For telephones with "Room Status" enabled, internal, local and long distance calls can be made. The selection is completed by pressing the ENTER softkey. The LONG DIST prompt disappears from the softkey display and the STATUS field displays the LONG DIST prompt.

OPTION NUM: This softkey selects a specific System Option or System Timer. Pressing the OPTION NUM softkey displays the ENTER OPTION NUM: prompt on the command line. The selection is completed by entering a valid option number (1 to 58). The command line displays that System Option (or System Timer) name, status and number.

SHOW DISABLE/SHOW ENABLE: This softkey has two functions: it displays the disabled or enabled System Options. Pressing the SHOW DISABLE softkey displays the currently disabled System Options; the softkey now shows the SHOW ENABLE prompt. Pressing the SHOW ENABLE softkey shows those System Options that are enabled; the softkey returns to the SHOW DISABLE prompt. **Note:** Those options with a timer value are listed when the SHOW ENABLE softkey is pressed.

Note: Options 100 and below are always displayed on Enable and Disable screens.

ENTER TIME: This softkey only appears when System Timer 56, Auto Room Status Conversion/Auto Wakeup Print Timer, is selected (displayed on the command line). Pressing the ENTER TIME softkey, displays the ENTER TIME (HH:MM): prompt on the command line. The time selection is completed by entering the time (00:00 to 23:59 are valid) in a 24-hour format and then pressing the ENTER softkey.

The standard softkeys **CANCEL**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are provided.

Table 4-3 System Options and Timers

| Option Numbers For <i>LIGHTWARE 16 ML</i> | System Options / System Timers |
|--|--|
| 01 | 24 Hour Clock |
| 02 | Message Lamp Test Enable |
| 03 | Single Paging Amplifier |
| 04 | Message Waiting and Message Register Clear Print |
| 05 | Verified Account Codes |
| 06 | Analogue Networking SMDR |
| 07 | Cancel 24-Hour Message Waiting |
| 08 | Five-Digit SMDR |
| 09 | Attendant Call Block |
| 10 | Attendant Conference Beeps |
| 11 | Automatic Wake-up |
| 12 | Automatic Wake-up Alarm |
| 13 | Automatic Wake-up Print |
| 14 | Automatic Wake-up Music |
| 15 | Data Demultiplexer |
| 17 | Discriminating Ringing |
| 18 | Discriminating Ringing Always |
| 20 | Holiday Messages |
| 21 | Incoming to Outgoing Call Forward |
| 22 | Last Party Clear - Dial Tone |
| 23 | Message Register Count Additional Supervisions |
| 24 | Message Register Audit |
| 25 | Message Register Zero After Audit |
| 26 | No Overlap Outpulsing |
| 27 | Room Status Audit |
| 28 | SMDR Indicate Long Call |
| 29 | Telephone Last Number Redial |
| 31 | Satellite PBX |
| 32 | Outgoing Call Restriction |
| 33 | Room Status |
| 34 | Auto Room Status Conversion / Auto Wake-up Print |
| 36 | End Of Dial Character (#) |
| 37 | Calibrated Flash |
| 38 | Switch-Hook Flash |
| 39 | DATA SMDR Indicate Long Calls |
| 40 | Message Register Follows Talker |
| 42 | ACD Silent Monitoring |
| 43 | ACD Silent Monitoring Beeps |
| 44 | ACD Reports |
| 46 | Digit Translation Plan (0 - 3) |
| 47 | ARS Unknown Digit Length Time-out (2 - 60 Seconds) |
| 48 | Limited Wait For Dial Tone (1 - 15 Seconds) |
| 49 | Pseudo Answer Supervision Timer (10 - 60 Seconds) |
| 50 | Dialing Conflict Timer (2 - 10 Seconds) |

| Table 4-3 System Options and Timers (continued) | |
|---|---|
| Option Numbers For LIGHTWARE 16 ML | System Options / System Timers |
| 51 | Final Ring Time-out (1 - 30 Minutes) |
| 52 | Minimum Flash Timer (20 - 50 ms; in 10 ms increments) |
| 53 | Maximum Flash Timer (20 - 150 ms; in 10 ms incr) |
| 54 | DISA Answer Timer (1 - 8 Seconds) |
| 55 | Account Code Length (Variable or 4 - 12 Digits) |
| 56 | Auto Room Status Conversion / Wakeup Print Timer |
| 57 | Vacant / Reserved Room Default Call Restriction |
| 58 | Occupied Room Default Call Restriction |
| 59 | Receivers Reserved for Non-Auto-Attendant Use |
| 60 | Tone Plan |
| 61 | CLASS Receivers in SPINE Bay #1 (0..5) |
| 62 | CLASS Receivers in SPINE Bay #2 (0..5) |
| 63 | CLASS Receivers in SPINE Bay #3 (0..5) |
| 64 | CLASS Receivers in SPINE Bay #4 (0..5) |
| 65 | CLASS Receivers in SPINE Bay #5 (0..5) |
| 66 | CLASS Receivers in SPINE Bay #6 (0..5) |
| 67 | CLASS Receivers in SPINE Bay #7 (0..5) |
| 100 | Mitel Options Password |
| 101 | System Identity Code |
| 102 | System Type (ML, EL, H) |
| 103 | Maximum Devices |
| 104 | Maximum ACD Agents (Automatic Call Distribution) |
| 105 | Mitel Application Interface |
| 106 | Automated Attendant |
| 107 | Lodging |
| 108 | Property Management System |
| 109 | Remote Software Download |
| Page 2 of 2 | |

Parameters arranged alphabetically

The following are not feature descriptions. Refer to the *Features Description Practice* for complete descriptions.

24 Hour Clock: If enabled, system runs on 24-hour clock. If disabled, system runs on 12-hour clock.

Account Code Length: Sets the length of account codes (VARIABLE, or any fixed length between 4 and 12).

ACD Reports: Changes SMDR reports into the format required by the *ACD TELEMARKETER* Reporting Package.

ACD Silent Monitoring: Allows silent monitoring of ACD agents by ACD supervisors.

ACD Silent Monitoring Beeps: Enables the ACD agent to be notified when being monitored by the ACD supervisor.

Analog Networking SMDR: Enable if SMDR records are to be kept for calls made via analog networking.

ARS Unknown Digit Length Time-out: Sets the time ARS will wait for more digits when dialing a digit string which includes a variable-length account code (2 - 60 sec).

Attendant Call Block: Allows call blocking on the system (Hotel/Motel Feature).

Attendant Conference Beeps: Allows for warning beeps to be heard by the source and destination parties of a call, before the attendant enters into a conference with them, and during the conference.

Automated Attendant: Enables the Automated Attendant Feature Package - refer to the *Automated Attendant Application Package Practice* for further information.

Automatic Wakeup: Enables the Automatic Wakeup feature.

Automatic Wakeup Alarm: Allows an alarm to be raised at the attendant console when a wakeup alarm is unanswered three times.

Automatic Wakeup Music: Allows music (MOH) to be heard upon answering a wake-up call.

Automatic Wakeup Print: Allows a message to be printed on the default printer whenever a wakeup call is set up, canceled, answered or honored.

Auto Room Stat. Conversion/Auto Wakeup Print: Allows an automatic change of room status and wakeup audit daily.

Auto Room Status Conversion/Auto Wakeup Print Timer: Sets the time when the conversion/audit takes place (the default time is 00:00).

Calibrated Flash: Allows the system to create the proper flash time to prevent confusion between a flash and a hang-up attempt. This applies to rotary-dial telephones, and DTMF sets with flash buttons.

Cancel 24-Hour Message Waiting: Allows the system to automatically cancel message waiting indicators after 24 hours.

Class Receivers in Spine Bay: Not available in the first release of the *SX-200 ML* system.

Data Demultiplexer: Enable if a Data Demultiplexer is connected to the system's printer port. See Practice 9160-080-300-NA, *Data Demultiplexer*, for further information.

Data SMDR Indicate Long Calls: Provides an identifying character in column 1 of the SMDR report to indicate the approximate length of a call.

Dialing Conflict Timer: Sets the time that the system will wait for conflict dialing (2 - 10 sec).

Digit Translation Plan: Chooses one of four available digit translation plans for rotary dial signaling. See Digit Translation in the *Features Description Practice*.

DISA Answer Timer: Sets the time between seizure of the incoming DISA trunk and the provision of dial tone.

Discriminating Ringing: Enables the Discriminating Ringing feature.

Discriminating Ringing Always: Causes discriminating ringing to be the normal ringing pattern for all calls on the system.

End of Dial Character: Allows the user to dial a special character (#) to indicate to the system that there are no more characters coming. This eliminates the end of dial timer.

Final Ring Time-Out: Sets the time the system will allow an unanswered station to ring (1 - 30 min) before dropping the call.

Five-Digit SMDR: Allows SMDR to record 5 digit telephone extension numbers rather than the usual 4. Used in networking and hotel/motel applications.

Holiday Messages: If enabled, the system automatically sets up holiday messages on *SUPERSET* display telephones at Christmas and the New Year.

Incoming to Outgoing Call Forward: Allows call forwarding to external numbers by incoming trunks.

Last Party Clear - Dial Tone: Allows the last party remaining in a call to receive dial tone rather than silence.

Limited Wait For Dial Tone: Sets the time a trunk will wait before outpulsing digits (1 - 15 sec). A value of 1 second is recommended if ISDN trunks are present.

Lodging (Hotel/Motel): Enable if the Lodging option has been purchased (listed on MOSS sheet). Lodging and Property Management System are mutually exclusive.

Maximum ACD Agents: Displays the maximum number of ACD agents enabled, from 0 through 100, in increments of 5.

Maximum Devices: Displays the maximum number of user devices enabled, from 0 through 672, in increments of 24.

Maximum Flash Timer: Sets the maximum time a set can be on-hook to be recognized as a flash. If this time is exceeded, it is recognized as an on-hook hang-up (20 - 150 ms, in 10 ms increments).

Message Lamp Test Enable: When enabled, allows testing of telephone message lamps by the system.

Message Register Audit: Allows the attendant to print the message register count for all rooms that have a count greater than zero.

Message Reg. Count Additional Supervisions: Allows meter pulses to be counted after supervision has been received from an outgoing trunk.

Message Register Follows Talker: Allows the last party connected to a trunk to be charged with the register count.

Message Register Zero After Audit: Allows the system to automatically clear all message registers after an audit.

Message Waiting & Message Register Clear Print: If enabled, a message is printed on the default printer whenever a message register is cleared or a message waiting is canceled.

Minimum Flash Timer: Sets the minimum time a set must be on-hook before it is recognized as a flash (20 - 50 ms, in 10 ms increments).

MITEL Application Interface: Enable if the MITEL Application Interface Package (MAI) was purchased (listed on MOSS sheet).

Mitel Options Password: The 8 digit numeric code provided by Mitel and entered by the user. It is required to decode and enable the options selected.

No Overlap Outpulsing: Forces ARS to collect all dialed digits before outpulsing them on a trunk.

Occupied Room Default Call Restriction: Sets default call restriction for occupied rooms; one of INTERNAL, LOCAL or LONG DISTANCE.

Outgoing Call Restriction: Prevent unauthorized trunk calls after a guest has checked out of the room (Hotel/Motel application).

Property Management System: Enable if Property Management System (PMS) was purchased (listed on MOSS sheet). Lodging (Hotel/Motel) and Property Management System are mutually exclusive.

Pseudo Answer Supervision Timer: Sets the time a trunk will wait while providing pseudo answer supervision (10 - 60 sec).

Receivers Reserved for Non-Auto-Attendant Use: Reserves receivers for standard PBX call processing to safeguard against the auto-attendant feature from using all of the available receivers.

Remote Software Download: Displays whether the feature was purchased. Not available in this release.

Room Status: Allows room status statistics to be maintained by the system.

Room Status Audit: Allows room status printouts.

Satellite PBX: Enable if the system is to serve as a satellite PBX.

Single Paging Amplifier: Enable if system has only one paging amplifier output. Allows one user at a time to access the paging feature.

SMDR Indicate Long Calls: Allows the SMDR record to flag calls which are greater in duration than 5 minutes.

Switch-hook Flash: Allows stations to flash the switch-hook to access system features.

System Identity Code: Displays the system identity code from the module on the MCCII - five numeric digits.

System Type: Enter system type 'ML'.

Telephone Last Number Redial: Allows telephone users and attendants to redial the last manually-dialed number with a single key or using an access code.

Tone Plan: Sets the system tone plan - one of NA (North America), HK (Hong Kong), MX (Mexico), MA (Malaysia) or TW (Taiwan). Not available in this release.

Vacant/Reserved Room Default Call Restriction: Sets default call restriction for vacant/reserved rooms; one of INTERNAL, LOCAL or LONG DISTANCE.

Verified Account Codes: Enable if verified account codes are to be used.

Form 05 - Tenant Interconnection Table

- 4.5 This form specifies which tenant groups may be connected together (see Figure 4-5). The system allows for a maximum of 25 tenant groups. Each group specifies its own trunk answering points, attendant answering points and night service status.

3:29 PM 9-JAN-97
alarm status = NO ALARM

| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|--------|----|----|----|----|----|--------------|----|----|----|----|----|------------|----|----|----|----|----|-------|----|----|----|----|----|----------|
| > | 01 | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 02 | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 03 | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 04 | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 05 | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 06 | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 07 | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 08 | * | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 09 | * | * | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 10 | * | * | * | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 11 | * | * | * | * | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 12 | * | * | * | * | * | * | * | * | * | * | * | 0 | * | * | * | * | * | * | * | * | * | * | * | * |
| | 01 | 0 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * |
| | 1- | | | | | | 2- | | | | | | 3- | | | | | | 4-TOP | | | | | | 5-BOTTOM |
| | 6-QUIT | | | | | | 7-TENANT NUM | | | | | | 8-DISALLOW | | | | | | 9- | | | | | | 0- |

Customer Data Entry

Figure 4-5 Form 05 Layout

Field Description

Initially, the system interconnects all tenant groups. The asterisk (*) character indicates this condition. When the system inhibits tenant group interconnection, it is indicated by the period (.) character. The tenant group numbers are listed in the header line and the first column. The letter (O) functions as a marker and cannot be modified.

Softkeys

TENANT NUM: The TENANT NUM softkey allows a user to select a tenant group by number. Press the softkey to display the ENTER TENANT GROUP NUM: prompt. Enter the 2-digit tenant number (1 to 25) to display the tenant group with a series of '*' characters (allow interconnection) and '.' characters (disallow interconnection). Control cursor movement on the command line with right and left cursor control keys.

ALLOW/DISALLOW: This softkey has two functions: it enables or disables interconnection between tenant groups. Pressing the DISALLOW softkey disables the interconnection between the Row Tenant (displayed by the command line) and the Column Tenant (highlighted by the cursor) in one direction only. For example, when modifying connections for tenant group 5 (the command line displays line 5) and the DISALLOW softkey is pressed when the cursor is under the sixth column, then tenant group 5 cannot call tenant group 6. However, tenant group 6 can still call tenant group 5. Total interconnection is inhibited only when a '.' (disallow) character is inserted at row 6 (tenant group 6) under the fifth column (tenant group 5). The softkey now displays the ALLOW prompt. Pressing the ALLOW softkey enables the unidirectional interconnection between the selected tenant groups; the '*' character replaces the '.' character. Standard softkeys **CANCEL**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are also provided.

Form 06 - Tenant Night Switching Control

4.6 In some systems it is necessary for one attendant to control the night service switching of more than one tenant group. This form specifies which tenant groups are switched to night service simultaneously and which tenant has control. **Note:** The system defaults to tenant groups switching to night service independently of each other. See Figure 4-6 for the form layout.

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| <table border="1" style="width: 100%; border-collapse: collapse; font-family: monospace;"> <tr> <td style="width: 20px;">01</td><td style="width: 20px;">02</td><td style="width: 20px;">03</td><td style="width: 20px;">04</td><td style="width: 20px;">05</td><td style="width: 20px;">06</td><td style="width: 20px;">07</td><td style="width: 20px;">08</td><td style="width: 20px;">09</td><td style="width: 20px;">10</td><td style="width: 20px;">11</td><td style="width: 20px;">12</td><td style="width: 20px;">13</td><td style="width: 20px;">14</td><td style="width: 20px;">15</td><td style="width: 20px;">16</td><td style="width: 20px;">17</td><td style="width: 20px;">18</td><td style="width: 20px;">19</td><td style="width: 20px;">20</td><td style="width: 20px;">21</td><td style="width: 20px;">22</td><td style="width: 20px;">23</td><td style="width: 20px;">24</td><td style="width: 20px;">25</td> </tr> <tr> <td>> 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| 08 | . | . | . | . | . | . | . | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | . | . | . | . | . | . | . | . | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | . | . | . | . | . | . | . | . | . | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | . | . | . | . | . | . | . | . | . | . | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | . | . | . | . | . | . | . | . | . | . | . | 0 | . | . | . | . | . | . | . | . | . | . | . | . | . | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse; font-family: monospace;"> <tr> <td colspan="25" style="border: none;">01 0 █</td> </tr> <tr> <td style="width: 50%;">1-</td><td style="width: 20%;">2-</td><td style="width: 20%;">3-</td><td style="width: 15%;">4-TOP</td><td style="width: 15%;">5-BOTTOM</td> </tr> <tr> <td>6-QUIT</td><td>7-TENANT NUM</td><td>8-SWITCHED</td><td>9-</td><td>0-</td> </tr> </table> | | | | | | | | | | | | | | | | | | | | | | | | | 01 0 █ | | | | | | | | | | | | | | | | | | | | | | | | | 1- | 2- | 3- | 4-TOP | 5-BOTTOM | 6-QUIT | 7-TENANT NUM | 8-SWITCHED | 9- | 0- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01 0 █ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6-QUIT | 7-TENANT NUM | 8-SWITCHED | 9- | 0- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Figure 4-6 Form 06 Layout

Field Description

Initially, the system inhibits tenant groups from switching each other into night service. This condition is indicated by the period (.) character. When the system permits tenant groups to switch each other into night service, it is indicated by the asterisk (*) character. The tenant group numbers are listed in the header line and the first column. The letter (O) functions as a marker and cannot be modified.

Softkeys

TENANT NUM: The TENANT NUM softkey allows a user to select a tenant group by number. Pressing this softkey displays the ENTER TENANT GROUP NUM: prompt. Entering the 1- or 2-digit tenant number displays that tenant group with a series of '.' characters (single tenant group entry into night service) and '*' characters (multiple tenant group entry into night service). Cursor movement on the command line is controlled by the right and left cursor control keys.

SWITCHED/NOT SWITCHED: This softkey has two functions: it enables or disables multiple tenant group switching into night service. This softkey displays the SWITCHED prompt when the cursor is at a period (.) character. Pressing the SWITCHED softkey specifies that the tenant group being programmed (as indicated by the row number) can switch the other tenant group (as indicated by the column number) into night service. The system reflects this modification by replacing the '.' character with the '*' character. The softkey now displays the NOT SWITCHED prompt. Pressing the NOT SWITCHED softkey specifies that the tenant group being programmed cannot switch the other tenant group into night service. The '.' character replaces the '*' character and the softkey now displays the SWITCHED prompt.

The standard softkeys **CANCEL**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are also provided.

Form 07 - Console Assignments

- 4.7 This form specifies the physical location of each attendant console. Refer to Figure 4-7 for the form layout. The system provides an entry line in Form 07 for each digital line circuit in a high power (upper) slot not assigned to a *SUPERSET* telephone, DATASET, or Music On Hold/Paging Unit. The system can support a maximum of 11 attendant consoles. There can be no more than four Consoles per Digital Line Card.

Each attendant console has a Class of Service (COS), a Class of Restriction (COR), a tenant group number and an extension number. The extension number enables calls between attendant consoles. These calls appear on the INTERNAL softkey. Note that the provision of a COR means that attendant consoles are not necessarily toll-allowed on all calls.

| 2:58 PM 10-JAN-97 | | | | alarm status = NO ALARM | | | |
|-------------------|-----|---------------|---------|-------------------------|-----|--------|----------|
| BAY | SLT | CCT | EXT NUM | COS | COR | TENANT | COMMENTS |
| 1 | 08 | 03 | 1803 | 01 | 01 | 01 | |
| 1 | 08 | 12 | 3000 | 01 | 01 | 01 | |
| 1 | 08 | 03 | 1803 | 01 | 01 | 01 | |
| 1- | | 2- | | 3- | | 4- | 5- |
| 6-QUIT | | 7-BAY/SLT/CCT | | 8-DELETE | | 9- | 0- |

Figure 4-7 Form 07 Layout

Field Description

EXT NUM: This field displays the extension number of each attendant console. Calls directed to the console's extension number route to softkey 2 on the attendant console.

COS: This field lists the Class-of-Service number specification for each console (1 to 50).

COR: This field lists the Class-of-Restriction number specification for each console (1 to 25).

TENANT: The tenant group for each attendant console is specified in this field (1 to 25).

COMMENTS: This field is reserved for notes about each console. It contains a maximum of 15 alphanumeric characters. The COMMENTS field is stored by the system but not used.

Softkeys

The standard softkeys **BAY/SLT/CCT**, **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are provided.

Form 08 - Console LDN Assignments

- 4.8 This form specifies the LDN assignments for the consoles (see Figure 4-8). A maximum of nine LDN assignments can be programmed for each attendant console. The attendant LDNs are assigned to the softkeys. Console softkey 1 is reserved for the RECALL function. Each LDN assignment is identified by a directory number. The directory numbers are subject to the same constraints as all Listed Directory Numbers (i.e., number conflicts are not allowed). If there are many attendant consoles in one tenant group and if "DIAL 0" calls are shared, then a common Listed Directory Number must be specified for the consoles. Note that this form is related to the Form 09 and Form 45 Expand Set Subforms, where LDN keys are programmed for subattendants.

2:59 PM 10-JAN-97
alarm status = NO ALARM

| BAY/SLT/CCT : 01_08_03 | | KEY | DIR NUMBER | LABEL | COMMENTS |
|------------------------|---------------|----------|------------|----------|----------|
| > | | 2 | 1813 | INTERNAL | |
| | | 3 | | | |
| | | 4 | | | |
| | | 5 | | | |
| | | 6 | | | |
| | | 7 | | | |
| | | 8 | | | |
| | | 9 | | | |
| | | 0 | | | |
| | | | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM | |
| 6-QUIT | 7-BAY/SLT/CCT | 8-DELETE | 9-NEXT | 0- | |

Customer Data Entry

Figure 4-8 Form 08 Layout

Field Description

BAY/SLT/CCT: This field specifies the physical location of the attendant console being programmed. This form relates to the programmed consoles in Form 07.

KEY: This field displays the console softkeys 2 through 10 (10 is displayed as 0). The KEY field cannot be modified.

DIR NUMBER: This field is reserved for assigning a directory number for console softkeys 2 to 10. This number (a maximum of five digits) links this form to Form 19 (Call Rerouting Table), and to Form 14 (Non-Dial-In Trunks), where the call type is defined for the directory number. An LDN directory number can only appear once per console. If it is required that two consoles share the same LDN, then both consoles must be in the same tenant group.

LABEL: This field specifies the actual text that the console LCD displays as softkey prompts. The LABEL field provides for a maximum of 12 characters. The label for

console softkey 1 defaults to RECALL and cannot be modified. The label for console softkey 2 defaults to INTERNAL. Softkey 2 is shared between the extension number programmed in the DIR NUMBER field and calls directed to the attendant console's extension number (as defined in the EXT NUM field of Form 07, Console Assignments). Console softkeys 2 to 10 can be edited.

COMMENTS: This field further specifies the attendant LDN assignments with text. The COMMENTS field has a maximum of 15 characters. It is stored by the system but not used.

Softkeys

NEXT: Pressing the NEXT softkey displays the physical location (bay, slot and circuit numbers) of the next programmed attendant console. If the physical location of the last programmed console is displayed, then pressing this softkey again displays the bay, slot and circuit numbers of the first programmed console.

The standard softkeys **BAY/SLT/CCT**, **CANCEL**, **DELETE**, **ENTER**, **BOTTOM**, **TOP**, and **QUIT** are also provided.

Form 09 - Stations/SUPERSET Telephones

4.9 This form assigns stations and *SUPERSET* telephones to the system. See Figure 4-9 for the form layout.

| 7:33 PM | | 9-JAN-97 | | alarm status = NO ALARM | | | | | | | | | |
|---------|-----|----------|-----|-------------------------|-----|-----|--------------|----------|----------|--------------|------------------------|---------|----------|
| BAY | SLT | CCT | TEN | EXTN | COS | COR | TYP | ANNOUNCE | | | NAME | ASSOC | COMMENTS |
| 1 | 08 | 01 | 1 | 1801 | 1 | 1 | 420 | | | | P. MOSHER J. THOMAS | | |
| 1 | 08 | 02 | 1 | 1802 | 1 | 1 | 430 | | | | | | |
| 1 | 08 | 03 | 1 | 1803 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 04 | 1 | 1804 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 05 | 1 | 1805 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 06 | 1 | 1806 | 1 | 1 | 430 | | | | | | |
| 1 | 08 | 07 | 1 | 1807 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 08 | 1 | 1808 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 09 | 1 | 1809 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 10 | 1 | 1810 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 11 | 1 | 1811 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 12 | 1 | 1812 | 1 | 1 | 410 | | | | | | |
| 1 | 08 | 12 | 1 | 1812 | 1 | 1 | 410 | | | | | | |
| 1-MOVE | | | | 2-FIND EXT | | | 3-EXPAND SET | | | 4-EXPAND PKM | | 5-RANGE | |
| 6-QUIT | | | | 7-BAY/SLT/CCT | | | 8-DELETE | | 9-REVIEW | | 0- | | |

Figure 4-9 Form 09 Layout

Field Description

BAY, SLOT and CCT: These fields list the physical location number of each station or *SUPERSET* telephone. They are generated by the system based on what was entered in the PROGRAMMED field of Form 01, System Configuration. This field cannot be modified.

TEN: This field lists the tenant group number for each station or *SUPERSET* telephone. Default tenant number is one.

EXTN: This field lists the extension number of each station or the prime line extension number of each *SUPERSET* telephone.

COS: This field lists the Class-of-Service number for each station or *SUPERSET* telephone. Default COS number is 1.

COR: This field lists the Class-of-Restriction number for each station or *SUPERSET* telephone. Default COR number is 1.

TYP: The TYP field will display **401** for a *SUPERSET 401+*; **410** for a *SUPERSET 410* and for a blank DNIC port; **420** for a *SUPERSET 420*; and **430** for a *SUPERSET 430*. For a *SUPERSET 430* programmed as an enhanced sub-attendant, **SUB** is displayed. For *SUPERSET 410*, *SUPERSET 420* and *SUPERSET 430* telephones that are programmed with a PKM, an asterisk (*) precedes the set type (e.g., ***420**).

NAME: This field is reserved for a set name up to 10 characters long. The name's first character must NOT be an asterisk (*).

ASSOC: Associates the device in the TYP field with another device. A *SUPERSET* telephone can be associated with a modem (enter the ONS port extension number). Each *SUPERSET* telephone can be associated with only one modem. However, more than one telephone can be associated with the same modem.

COMMENTS: This field is reserved for additional data (a maximum of 15 characters). It is stored by the system but not used.

Softkeys

MOVE: This softkey relocates a device via its bay slot, and circuit numbers. When the MOVE softkey is pressed, the command line requests the FROM location (BAY: SLOT: CCT:). When the location is specified and the ENTER softkey is pressed, the command line requests the TO location. The new location is designated and the ENTER softkey is pressed. Note entering invalid numbers inhibits cursor movement.

FIND EXT: This softkey selects a device by its extension number. Pressing the FIND EXT softkey displays the ENTER EXTENSION NUM: prompt on the command line. The selection is completed by entering an extension number of a station or the Prime Line number of a *SUPERSET* telephone. The selected device information appears on the command line.

EXPAND SET: Pressing this softkey displays the Expand Set subform. Refer to *Expand Set Subform*. **Note:** This softkey is valid only when reviewing or programming a *SUPERSET* telephone, and appears only when the TYP field on the command line says SUB, 410, 420, or 430.

EXPAND PKM: Pressing this softkey displays the Expand PKM (Programmable Key Module) subform. This form is used to associate up to three PKMs with *SUPERSET 410*, *SUPERSET 420*, and *SUPERSET 430* telephones, and to program the keys on the PKM. Refer to *Expand PKM Subform*. The EXPAND PKM softkey appears only when you are reviewing or programming a *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* telephone.

RANGE: This softkey allows block programming for consecutive stations and *SUPERSET* telephones. Pressing this softkey displays the prompt: FROM BAY: SLOT: CIRCUIT:. Enter valid Bay, Slot and Circuit numbers for the first device and press the ENTER softkey. The system then prompts TO BAY: SLOT: CIRCUIT:. Enter valid Bay, Slot and Circuit numbers for the last device and press the ENTER softkey. Enter Tenant Group, Extension Number, COS and COR for the first device, if this has not been done already. Press the ENTER softkey. The system automatically assigns incremented extension numbers, the same COS, COR and tenant group numbers to the rest of the devices in the block. When range programming on COV circuits, the system will automatically fill in COV in the TYP field. When range programming on DNIC circuits, the DEVICE TYPE softkey will appear when the extension number for the first circuit is assigned. The following device types are offered: SS401, SS410, SS420 and SS430.

REVIEW: Pressing this softkey displays a read-only form which lists all programmed appearances of the selected extension number (or the Prime Line number) on other *SUPERSET* telephones. This softkey appears only when an extension has been defined.

DEVICE TYPE: Allows the line circuit to be programmed as one of: SUB ATT, DMP, or *SUPERSET*. This softkey appears only when a circuit is not programmed. Programming any other fields "freezes" the device type at its current value. After this, only the fields valid for that device type are available. The device type can be changed by deleting all of the programmed entries - the DEVICE TYPE softkey will then reappear. The DEVICE TYPE softkey allows the line circuit to be programmed as one of: SUB ATT, DMP, SS401, SS410, SS420 or SS430.

DMP: Sets the TYP field to **DMP** for the DNIC MOH/Pager Unit.

SUPERSET: Sets the TYP field to **SET**, and designates the device type as a normal *SUPERSET* telephone.

SUB ATT: Sets the TYP field to **SUB** and designates the device type as an Enhanced Subattendant. **Note:** This refers to a *SUPERSET 430* only. For further information, see Subattendant - Enhanced Functions, in the *Features Description Practice*.

SS401: Sets the TYP field to **401** and designates device type as *SUPERSET 401+* telephone.

SS410: Sets the TYP field to **410** and designates device type as *SUPERSET 410* telephone.

SS420: Sets the TYP field to **420** and designates device type as *SUPERSET 420* telephone.

SS430: Sets the TYP field to **430** and designates device type as *SUPERSET 430* telephone.

The standard softkeys **BAY/SLT/CCT**, **CANCEL**, **DELETE**, **ENTER**, ****MORE**** and **QUIT** are also provided. Generally, before a card can be deleted, any devices programmed on the card, or associated with circuits on the card must be deleted or disassociated first, using the appropriate form.

If you install a *SUPERSET* telephone on a DNIC circuit that is not the same device type, in many cases, the programmed device type for the circuit will change automatically to the device type of the installed set. For example, if a circuit is programmed with a 410 device type and you install a *SUPERSET 420* telephone on that circuit, the

system will automatically change the programmed device type from 410 to 420. Table 4-4 shows which *SUPERSET* telephones will operate when they are installed on the programmable device types.

| Installed <i>SUPERSET</i> | Programmed Device Type | | | |
|---------------------------|------------------------|-----|------|------|
| | 401 | 410 | 420 | 430 |
| <i>SUPERSET</i> 401+ | Yes | No | No | No |
| <i>SUPERSET</i> 410 | No | Yes | Yes* | Yes* |
| <i>SUPERSET</i> 420 | No | Yes | Yes | Yes |
| <i>SUPERSET</i> 430 | No | Yes | Yes | Yes |

Note: 1. Yes - Programmed device type for the circuit changes automatically to installed device type.
 2. No - Installed set will not operate.
 3. * If keys 7 to 12 of the programmed set are not assigned to a line or feature key, the installed *SUPERSET* 410 telephone will operate. If any of these keys are assigned, it will not operate.

Expand Set and Expand PKM Subforms for Form 09

Expand Set Subform

This form appears when you press the EXPAND SET softkey in the Station/*SUPERSET* Telephones form. You use this form to program *SUPERSET* telephone line appearances and feature keys. Refer to Figure 4-10 for the form layout. This form is not available to *SUPERSET* 401+ telephones.

3:44 PM 9-JAN-97
alarm status = NO ALARM

| KEY | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK NUM | LABEL |
|------------|------------|--------------|-------|-----------|-----|---------------|---------|---------------|
| 01 | Prime | In/Out | Immed | No | | 1812 | | |
| 02 | Speed Dial | | | | | | | |
| 03 | Speed Dial | | | | | | | |
| 04 | Speed Dial | | | | | | | |
| 05 | Speed Dial | | | | | | | |
| 06 | Speed Dial | | | | | | | |
| 02 | Speed Dial | | | | | | | |
| 1-KEY LINE | | 2-MULTI-CALL | | 3-FEATURE | | 4-DIR TRK ACC | | 5- ** MORE ** |
| 6-QUIT | | 7-KEY | | 8- | | 9- | | 0- |

Figure 4-10 Form 09 Expand Set Subform Layout

Expand PKM Subform

This form appears when you press the EXPAND PKM softkey in the Station/*SUPERSET* Telephones form. You use this form to program PKM line appearances and feature keys. Up to three PKMs may be programmed; an * indicates a PKM is associated with a telephone. Refer to Figure 4-11 for the form layout. This form is available to *SUPERSET 430*, *SUPERSET 420*, and *SUPERSET 410* telephones.

| 3:49 PM | | 9-JAN-97 | | alarm status = NO ALARM | | | | |
|------------|------------|--------------|------|-------------------------|-----|---------------|---------|---------------|
| KEY | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK NUM | LABEL |
| > 1 01 | Speed Dial | | | | | | | |
| 1 02 | Speed Dial | | | | | | | |
| 1 03 | Speed Dial | | | | | | | |
| 1 04 | Speed Dial | | | | | | | |
| 1 05 | Speed Dial | | | | | | | |
| 1 06 | Speed Dial | | | | | | | |
| 1 07 | Speed Dial | | | | | | | |
| 1 08 | Speed Dial | | | | | | | |
| 1 09 | Speed Dial | | | | | | | |
| 1 10 | Speed Dial | | | | | | | |
| 1 11 | Speed Dial | | | | | | | |
| 1 12 | Speed Dial | | | | | | | |
| 1 01 | Speed Dial | | | | | | | |
| 1-KEY LINE | | 2-MULTI-CALL | | 3-FEATURE | | 4-DIR TRK ACC | | 5- ** MORE ** |
| 6-QUIT | | 7-KEY | | 8-SAVE PKM | | 9-REVIEW | | 0- |

Figure 4-11 Form 09 Expand PKM Subform Layout

Field Description

KEY: This field lists the *SUPERSET* Telephone Line Select key numbers and cannot be modified. If the keys are on Programmable Key Modules (PKMs), the key numbers are preceded by a 1, 2, or 3. The 1, 2, or 3 indicates the PKM address. The key numbers on a Programmable Key Module correspond to those in Figure 4-12, on page 48.

Note: The *SUPERSET 410* has 6 programmable keys; *SUPERSET 420* and *SUPERSET 430* each have 12 programmable keys. The error message "Invalid key for set in use" will appear when an attempt is made to program keys 7 to 12 of a *SUPERSET 410* which has been installed on a circuit which has been programmed for a *SUPERSET 420* or a *SUPERSET 430*. The key numbers on a *SUPERSET 410*, *SUPERSET 420*, and *SUPERSET 430* correspond to those in Figure 4-13, on page 49.

TYPE: This field lists the key function. If it is a Speed Dial key, the default assignment, the words "Speed Dial" are shown. If it is a line appearance, the line type is shown. If it is a feature key, the feature name is shown. If the line is a BLF Appearance, the key type is "Busy Lamp".

DIR: If the key is a line appearance, the directional variant of the line (In/Out or Incoming) is shown.

RING: If the key is a line appearance, the ringing variant of the line (Immed, Delay, or None) is shown.

SEC: If the key is a line appearance, this field indicates (Yes or No) whether the secretarial variant is enabled. For a Busy Lamp key, setting this field to YES causes an immediate release when the DSS key is pressed.

DSS: A YES in this field indicates that the key is a DSS key.

EXT NUM: This field contains the extension number of the line. This applies to the Prime Line, Key lines, Multiple Call lines, Personal Outgoing lines or BLF/DSS lines. When this field is filled for a specific key, no entry is allowed in the corresponding TRUNK NUMBER field. The EXT NUM field is blank if the key directly selects a trunk.

TRK NUM: If the key is assigned as DTS or private trunk, this field contains the trunk number. Trunk numbers are defined in Form 14, Non-Dial-In Trunks and Form 15, Dial-In Trunks. Note that when this field is filled for a specific key, no entry is allowed in the corresponding EXT NUM field.

LABEL: Only appears if the softkey type is LDN, and the device type is a subattendant. The only exception is, if the softkey type is Recall, the LABEL field is automatically RECALL. For all other LDN softkeys, any character string may be entered up to 12 characters in length.

Softkeys

BLF/DSS: Programs the selected key as a busy lamp field appearance (for the associated extension number).

BOTH WAY: Pressing this softkey enables the selected *SUPERSET* key (line appearance) to originate and receive calls. The DIR / DIRECTION field displays the In/Out indication.

DELAY RING: Pressing this softkey causes incoming calls to flash the selected key (line appearance) for a programmable period of time and then ring the *SUPERSET* telephone for incoming calls. The "Delay" indication appears in the RING field. The duration of the ring delay is controlled by COS Option 263, Delay Ring Timer.

DELETE PKM: This softkey appears when a PKM with unassigned keys has been selected (i.e., all keys are speed call keys). Pressing this softkey deletes the PKM, and exits the PKM subform.

DIR TRK ACC: Pressing this softkey programs the selected *SUPERSET* key as a Direct Trunk Access line. "DTS" appears in the TYPE field. Then use the TAB or → key to move the cursor to the DIRECTION field.

DSS: Appears only in the DSS field. Enables the DSS key associated with a BLF appearance. The YES indication appears in the DSS field.

FEATURE: Pressing this softkey assigns the selected *SUPERSET* line appearance key as a feature access key. This softkey appears only if the set is a *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* telephone. The following softkeys appear when the cursor is at the TYPE field and the FEATURE softkey is pressed:

- ACCOUNT CODE
- AUTO ANSWER
- CALL FORWARD
- CALL PICKUP
- CALL/ATTN (Data Call Connect)
- CALLBACK
- CAMPON
- DATA DISC (Data Call Disconnect)
- DO NOT DIST (Do Not Disturb)
- DOUBLE FLASH
- FORWARD CALL
- MUSIC
- NIGHT ANSWER
- OVERRIDE
- PRIVACY REL (Privacy Release)
- PA PAGING
- RELEASE
- SINGLE FLASH
- SWAP (Trade Calls)

Note: Refer to the *Features Description Practice*, for a description of the feature keys available for digital *SUPERSET* telephones.

HOLD POS: Programs the selected key as an enhanced sub-attendant hold slot. Hold Slot is displayed in the TYPE field. No other fields may be programmed. An enhanced sub-attendant may have up to 3 hold slots.

IMMED RING: Pressing this softkey programs the selected *SUPERSET* key (line appearance) to ring the *SUPERSET* telephone immediately for incoming calls. The form displays Immed in the RING field to indicate this condition.

IN ONLY: Pressing this softkey restricts the selected *SUPERSET* key (line appearance) to receiving incoming calls only. No call originations are permitted. The DIRECTION field displays "Incoming".

KEY: This softkey selects a *SUPERSET* key by number. Pressing the KEY softkey displays the ENTER KEY NUM: prompt on the command line. Any *SUPERSET* key may be selected except for Key 01 (Prime Line).

KEY LINE: Pressing this softkey assigns the selected *SUPERSET* key as a Key Line appearance. "Key" appears in the TYPE field. Then use the TAB or → key to move the cursor to the DIRECTION field.

LDN: Programs the selected key as an enhanced sub-attendant LDN key. LDN is displayed in the TYPE field. At this point, a ring type can be selected, an extension number entered, and a label entered. The label is displayed on the *SUPERSET 430* display. An enhanced sub-attendant may have up to 3 LDN positions.

****MORE****: Pressing this softkey displays the next group of softkeys available. You may continue to press the MORE softkey to view all softkeys, and return to the first groups presented.

MULTI-CALL: Pressing this softkey assigns the selected *SUPERSET* key as a Multiple Call Line appearance. "Multiple" appears in the TYPE field. Then use the TAB or → key to move the cursor to the DIRECTION field.

NON DSS: Appears only in the DSS field. Disables the DSS key associated with a BLF appearance. The "No" indication appears in the DSS field.

NON SECR: Pressing this softkey disables the secretarial function for the selected *SUPERSET* key (line appearance). The "No" indication appears in the SECRETARIAL field.

NO RING: Pressing this softkey prevents incoming calls from ringing the *SUPERSET* telephone ringer. Only the line appearance flashes. The 'None' indication appears in the RING field.

PERSONAL O/G: Pressing the PERSONAL O/G softkey designates the selected *SUPERSET* key as a personal outgoing line. No other fields can be edited. Press the ENTER softkey. "Personal" appears in the TYPE field. "Outgoing" appears in the DIRECTION field. "None" appears in the RING field.

PRIVATE TRK: Pressing PRIVATE TRK designates the selected *SUPERSET* key as a private line.

RECALL: Programs the selected key as an enhanced sub-attendant Recall key. Recall is displayed in the TYPE field. The only other field that may be programmed is the RING field. An enhanced sub-attendant may have only one Recall Key.

REVIEW: Pressing this softkey displays a read-only form which lists all programmed appearances of the selected Line Select key on all devices.

SAVE PKM: This softkey is presented the first time a PKM is created. It allows the user to save the PKM without entering any key assignments, thereby designating all keys as speed call keys. Pressing this softkey saves the PKM and exits the PKM subform.

SECRETARIAL: Pressing this softkey enables the secretarial function for the selected *SUPERSET* key (line appearance). The 'Yes' indication appears in the SECRETARIAL field. When a Line Select key is set as a secretarial key, then the user can override the DO NOT DISTURB feature on the *SUPERSET* telephone corresponding to that line appearance. For a DSS key, this enables the secretarial option.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **** MORE **** and **QUIT** are also provided.

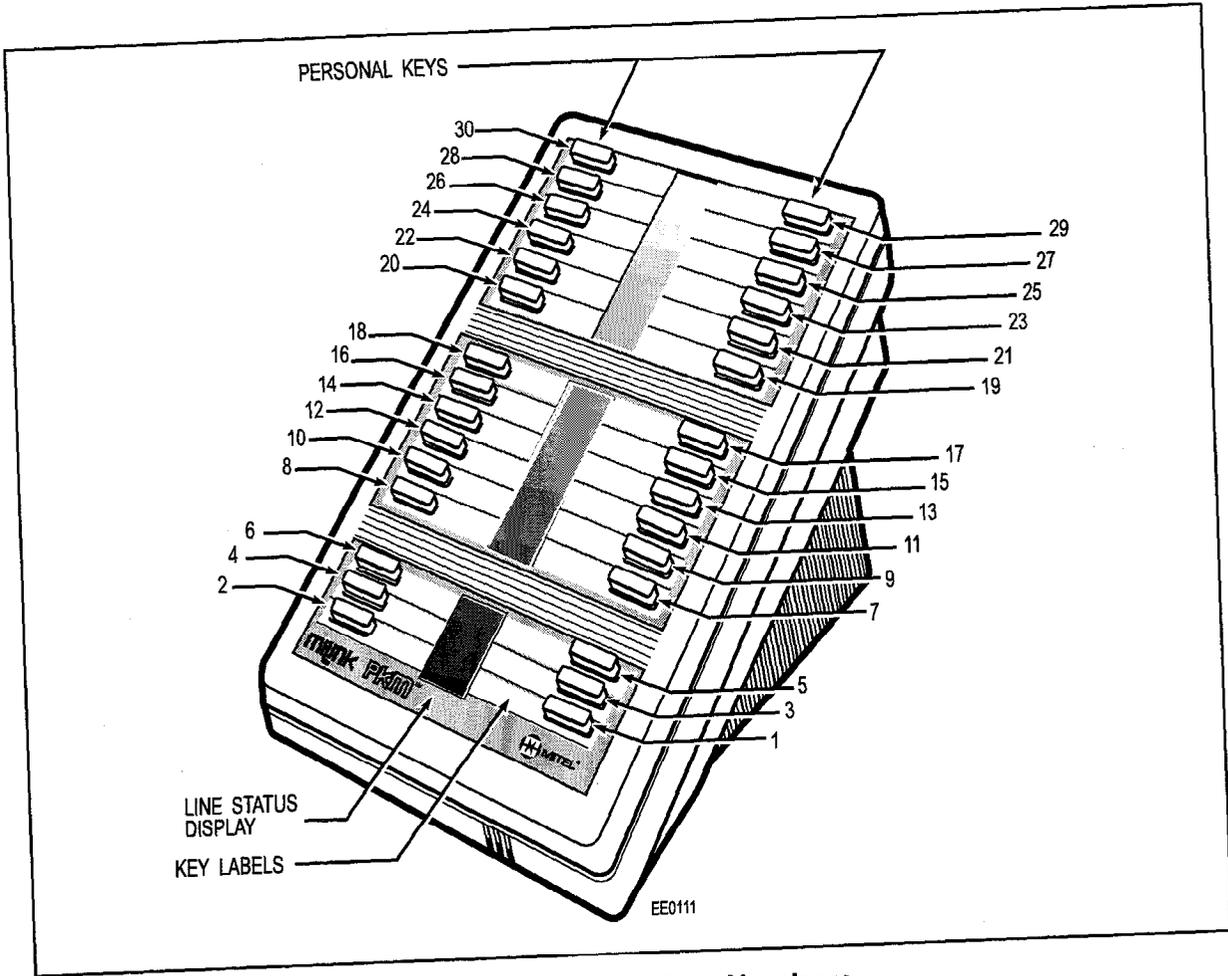


Figure 4-12 PKM Key Numbers

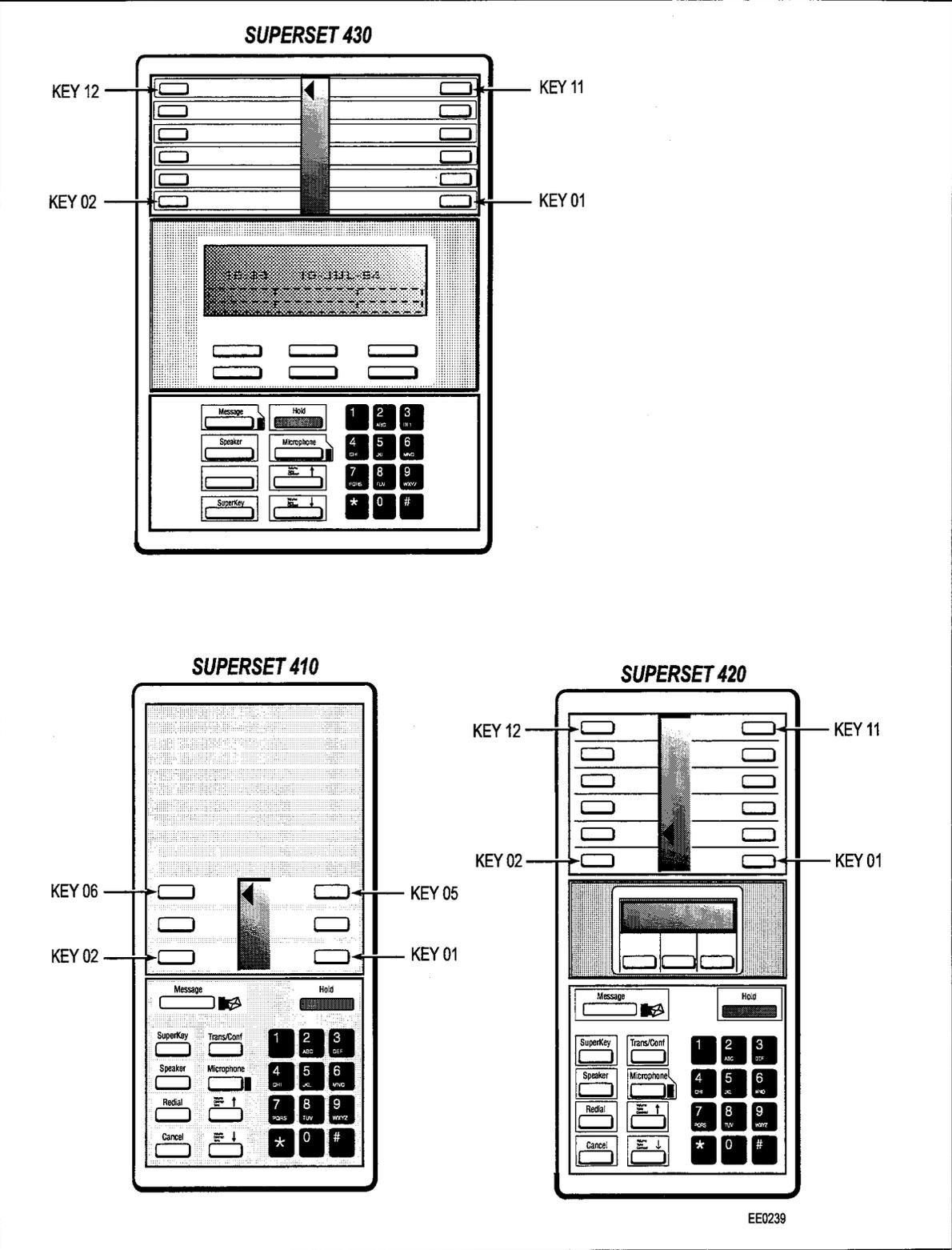


Figure 4-13 SUPERSET Telephone Key Numbers

Review List Subform for Form 09

- 4.10 This form appears when the REVIEW softkey is pressed in the Station/*SUPERSET* Telephones form or the *SUPERSET* Telephone Lines form. This form can be used at any time to find where any particular extension number or line appears. When entered from the Station/*SUPERSET* form, this form displays a list of all programmed appearances of the selected extension number. When entered from the Expand Set Subform or Expand PKM Subform, the form displays all appearances of the selected key's extension number, trunk number, or Sub Attendant LDN number. See Figure 4-14 for the form layout. Note that the data in this form cannot be modified.

| | | | | | | | |
|--------------------|----|----------------|-------------------------|-----------|---------|-------------|-----|
| 3:51 PM 9-JAN-97 | | | alarm status = NO ALARM | | | | |
| PBX Station : 2200 | | BAY | SLOT | CCT | EXT NUM | SET TYPE | KEY |
| | | 1 | 01 | 01 | 2200 | PBX Station | |
| | | 1 | 01 | 01 | 2200 | PBX Station | |
| 1- | 2- | 3-TRUNK NUMBER | | 4-LDN NUM | | 5- | |
| 6-QUIT | 7- | 8- | | 9-EXT NUM | | 0- | |

Figure 4-14 Form 09 Review List Subform Layout

Field Descriptions

The header line displays the selected line appearance access number. For telephones, the type (set, station, subattendant) and application (PBX or KEY system) is shown, along with the extension number. For trunks, the type (trunk number, CO Line CO Line group) is shown along with the trunk number, or leading ARS digits. Extension numbers are also shown for LDNs and logical lines.

BAY, SLT and CCT: These fields list the bay, slot and circuit numbers of each extension or *SUPERSET* telephone that has an appearance of the selected line. These fields cannot be modified. The system generates them based on the PROGRAMMED field of Form 01, System Configuration.

SET TYPE: This field lists the device type:

- PBX STATION indicates that the line appears on a station.
- PBX SET indicates that the line appears on a *SUPERSET* telephone.
- PBX SUB-ATT indicates that the line appears on a subattendant.
- CONSOLE indicates that the LDN appears on an attendant console. (The console shares a common LDN with a subattendant).
- Key SET indicates that the line appears on key system telephone.
- Key SUB-ATT indicates that the line appears on a key system subattendant.

KEY: For listed *SUPERSET* telephones, the KEY field displays the key number where the line appears.

EXT NUM: This field displays the prime extension number assigned to a particular Bay/Slot/Circuit.

Softkeys

EXT NUM: This softkey selects an extension to review. Pressing this softkey displays the ENTER EXTENSION NUM: prompt. The selection is completed by entering a valid extension number and then pressing the ENTER softkey.

LDN NUM: This softkey selects an LDN to review. Pressing this softkey displays the ENTER LDN NUM: prompt. The selection is completed by entering a valid LDN number and then pressing the ENTER softkey.

TRUNK NUMBER: This softkey selects a trunk to review by its trunk number. Pressing this softkey displays ENTER TRUNK NUM: prompt on the command line. The trunk selection is completed by entering a valid trunk number (1 - 200), and pressing the ENTER softkey.

The standard softkeys **CANCEL**, **ENTER**, and **QUIT** are also provided.

Form 10 - Pickup Groups

- 4.11 This form specifies the members of each pickup group. See Figure 4-15 for the form layout. Memberships are specified by the extension number of an industry standard telephone set or the prime line number of a *SUPERSET* telephone. Attendant consoles are not allowed. The PABX supports a maximum of 50 pickup groups; each group supports a maximum of 50 members.

| | | | | | | |
|----------------------|----|----------|-----|-------------------------|----------------|----------|
| 7:40 PM | | 9-JAN-97 | | alarm status = NO ALARM | | |
| [PICKUP GROUP : 1] | | EXT NUM | BAY | SLT | CCT | COMMENTS |
| | | 1801 | 01 | 08 | 01 | |
| | | 1802 | 01 | 08 | 02 | |
| | | █1802 | 01 | 08 | 02 | |
| 1- | 2- | 3-INSERT | | 4- | 5-PICKUP GROUP | |
| 6-QUIT | 7- | 8-DELETE | | 9-EXT NUM | 0- | |

Figure 4-15 Form 10 Layout

Field Descriptions

EXT NUM: This field displays the pickup group member extension number.

BAY/SLT/CCT and **COMMENTS:** These fields cannot be modified. The form displays the BAY/SLT/CCT and COMMENTS fields from the corresponding lines of Form 09, Station/*SUPERSET* Telephones.

Softkeys

INSERT: This softkey adds a new member to the pickup group on a new line just above the current line pointer. Pressing the INSERT softkey clears the command line and moves the cursor to the EXT NUM field. Enter a valid extension number and press the ENTER softkey.

Note: This softkey only appears if there is data present in this form.

PICKUP GROUP: This softkey selects the pickup group to be displayed. Pressing the PICKUP GROUP softkey displays the ENTER PICKUP GROUP NUM: prompt on the command line. Enter the pickup group number and press the ENTER softkey.

EXT NUM: This softkey selects a Pickup Group member by its extension number (or Prime Line number). Pressing the EXT NUM softkey displays the ENTER EXTENSION NUM: prompt on the command line. Entering the extension number displays that member with its bay, slot and circuit location, and (if any) comments. Note that if the selected extension number is not in the current Pickup Group, then the system automatically displays the Pickup Group where the selected device is located.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 11 - Data Circuit Descriptor

- 4.12 A data circuit descriptor specifies the parameters the data processing software and attached DTE (Data Terminal Equipment) require. This form provides 25 programmable descriptors. The main form displays the descriptor numbers and the number of circuits associated with each descriptor (see Figure 4-16). The system generates the data in this form based on the entries in Form 12, Data Assignment. The user can modify only the COMMENTS field. A softkey provides access to the individual parameters of each descriptor via a sub-form.

| 3:37 PM 12-JAN-97 | | alarm status = NO ALARM | | |
|-------------------|----------------------------------|-------------------------|----------|----------|
| DESCRIPTOR | NUMBER OF DATA CIRCUITS ASSIGNED | | | COMMENTS |
| 01 | 1 | | | |
| 02 | 0 | | | |
| 03 | 0 | | | |
| 04 | 0 | | | |
| 05 | 0 | | | |
| 06 | 0 | | | |
| 07 | 0 | | | |
| 08 | 0 | | | |
| 09 | 0 | | | |
| 10 | 0 | | | |
| 11 | 0 | | | |
| 12 | 0 | | | |
| 01 | 1 | | | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7-DESC NUMBER | 8-SEL. OPTION | 9-REVIEW | 0- |

Customer Data Entry

Figure 4-16 Form 11 Layout

Field Descriptions

DESCRIPTOR: This field lists the circuit descriptors, numbered 01 to 25.

NUMBER OF DATA CIRCUITS ASSIGNED: This field records the number of devices assigned to each descriptor.

COMMENTS: This field is reserved for additional data (a maximum of 20 characters). It is stored by the system but not used.

Softkeys

DESCRIPTOR NUMBER: The DESC NUM softkey allows the user to select a DESC NUM by number. Pressing this softkey displays the ENTER DESC NUM: prompt. Entering a valid descriptor number and pressing the ENTER softkey, completes the selection.

SELECT OPTION: Pressing this softkey displays a new form. This form provides the options associated with the data circuit that is assigned to a descriptor number. Refer to Table 4-5, Data Circuit Descriptor Options.

REVIEW: This softkey displays the Review List Subform, a read-only form containing the BAY, SLOT, CIRCUIT and SUBCIRCUIT location of all devices assigned that descriptor, and the comments which were entered in Form 12, Data Assignment. The REVIEW softkey appears only if at least one circuit has been assigned the descriptor displayed on the command line.

The standard softkey **QUIT** is also provided.

Data Circuit Descriptor Options SUBFORM

4.13 This form appears when the SEL. OPTION softkey is pressed (see Figure 4-17). It lists the programmable parameters of the descriptor. See Table 4-5 for the complete list of options (they are described below, under *Parameters*).

| | | | | | |
|--|--|--------------------------------|----|-------------------------|--------|
| 3:56 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| [DESCRIPTOR NUMBER : 1] PARAMETER NAME | | | | | UALIIF |
| > | Session Inactivity Disconnect Timer | 0 - 255 minutes | | | 0 |
| | Guard Timer | 0 - 99 seconds | | | 2 |
| | Minimum Baud Rate | | | | 110 |
| | Default Baud Rate | | | | 9600 |
| | Maximum Baud Rate | | | | 19200 |
| | Always Use Default Baud Rate When Called | | | | NO |
| | DTR Off Disconnect Timer | 0 - 99 seconds | | | 5 |
| | DTR To CTS Delay Timer | 0 - 9900 msec (100 msec inc) | | | 100 |
| | DTR Forced High | | | | NO |
| | RTS Forced High | | | | NO |
| | DSR Is Held High When Device Is Idle | | | | YES |
| | CTS Is Held High When Device Is Idle | | | | YES |
| | Session Inactivity Disconnect Timer | 0 - 255 minutes | | | 0 |
| 1- | 2- | 3- | 4- | 5- | |
| 6-QUIT | 7- | 8- | 9- | 0- | |

Figure 4-17 Select Options Subform Layout

Field Descriptions

The header line displays the descriptor number.

PARAMETER NAME: This field lists the parameters. For numerical parameters, it lists the valid range of values.

VALUE: This field lists the option or numeric value selected for each parameter.

Softkeys

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided. The other softkeys depend on the parameter displayed on the command line (see *Parameters* for details). Generally, for numeric parameters, only the QUIT softkey appears. When a value is typed in, the ENTER softkey appears. Press ENTER once to terminate the entry, then again to commit it to the database. While the ENTER softkey is present and has not been pressed, the QUIT softkey cancels the new entry and restores the previous value. For parameters with YES and NO options, softkey 1 appears, marked with the option opposite to the current setting.

Table 4-5 Data Circuit Descriptor Options

Session Inactivity Disconnect Timer (0-255 minutes)
 Guard Timer (0-99 seconds)
 Minimum Baud Rate
 Default Baud Rate
 Maximum Baud Rate
 Always Use Default Baud Rate When Called
 DTR Off Disconnect Timer
 DTR to CTS Delay Timer
 DTR Forced High
 RTS Forced High
 DSR Is Held High When Device is Idle
 CTS Is Held High When Device is Idle
 Originate a DTRX Call With A Low->High Transition of DTR
 Action Taken If The Idle DTE Has DTR Low (Auto Answer)
 Pooled Modem Communication Established Indicator
 First Modem Tone
 Second Modem Tone
 ASYNC: Keyboard Origination Allowed
 ASYNC: ADL Auto Baud
 ASYNC: Flow Control
 ASYNC: XON Character
 ASYNC: XOFF Character
 ASYNC: Break Key Function
 ASYNC: PBX Attention Character
 ASYNC: Parity
 ASYNC: Character Length
 ASYNC: Number of Stop Bits
 ASYNC: Autobaud To Host Character 1
 ASYNC: Autobaud To Host Character 2
 ASYNC: Delay Between Autobaud Characters
 DS2100: Operating Mode
 SYNC: Rate Adaption Scheme
 SYNC: Clock Source

Table 4-6 Data Communication Abbreviations

| Abbreviation | Term |
|--------------|------------------------------|
| CTS | Clear To Send |
| DCD | Data Carrier Detect |
| DCE | Data Communication Equipment |
| DSR | Data Set Ready |
| DTE | Data Terminal Equipment |
| DTR | Data Terminal Ready |
| DTRX | Data Transceiver |
| RI | Ring Indicator |
| ADL | Associated Data Line |

Parameters

The Data Circuit Descriptor is used by ADL calls, DTRX calls, printer monitors, the PMS port and pooled modems. The parameters are ordered so that timers and baud rate options appear at the top of the form. These parameters apply to all data device types. Next are the parameters dealing with EIA leads. These also apply to all data devices but the parameter's meaning can depend on whether a modem adapter is in the RS-232 connection. The last options are device type dependent parameters, usually indicated by a prefix.

Session Inactivity Disconnect Timer: The DATASET monitors the time from the last transmitted or received character. If the programmed time period is exceeded, the data call is dropped. This timer has a range of 0 to 255 minutes. It is disabled if set to 0 minutes. Set to 0 for synchronous operation.

Guard Timer: After a DATASET has disconnected, the guard timer keeps the DATASET unavailable for a short time period to allow the far end to clear down. This timer has a range of 0 to 99 seconds in 1 second increments.

Minimum And Maximum Baud Rate: These two fields specify the minimum and maximum data rate capacities of the attached device. The maximum baud rate must be set greater than or equal to the minimum baud rate. Valid baud rates are 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200. If a range of baud rates is specified, it is assumed the system can use any of these baud rates to establish communications. If it is undesirable to have the system change the baud rate, do NOT program a range. Instead, set the minimum and maximum baud rates to the same rate.

Default Baud Rate: The specified default baud rate is used as the initial baud rate for non-autobaud datasets.

Always Use Default Baud Rate When Called: When this parameter is enabled, the system will set the baud rate of the destination dataset to the default, even if a range of baud rates has been programmed. The system will not change the data rate when attempting to establish communications.

DTR Off Disconnect Timer: This timer specifies how long the system will wait to disconnect the data call after the attached device has dropped DTR. If a modem adapter is inserted in the RS-232 connection, the system monitors DSR instead. This timer has a range of 0 to 99 seconds, in 1 second increments. **Note:** If the attached device is a pooled modem, the timer has no effect; when the pooled modem drops DSR, the data call is dropped immediately.

DTR To CTS Delay Timer: This timer specifies how long the system waits before asserting CTS to the dataset after the attached device has asserted DTR. The timer has a range of 0 to 9900 milliseconds, in 100 millisecond increments.

DTR Forced High: With this option enabled, the system assumes DTR of the attached device is high, regardless of its actual state. If a modem adapter is inserted in the RS-232 connection, this option applies to DSR instead.

RTS Forced High: With this option enabled, the system assumes RTS of the attached device is high, regardless of its actual state. If a modem adapter is inserted in the RS-232 connection, this option applies to DCD instead.

DSR Is Held High When Device Is Idle: This option specifies the state of system DSR to an idle device, until a data call is connected. When enabled, DSR is held high; when disabled, DSR is held low. If a modem adapter is inserted in the RS-232 connection, this option applies to DTR instead. **Note:** This parameter **MUST** be enabled to provide keyboard origination.

CTS Is Held High When Device Is Idle: This option specifies the state of system CTS to an idle device, until a data call is connected. When enabled, CTS is held high; when disabled, CTS is held low. With this parameter disabled, the DTR to CTS Delay Timer is not applicable because CTS will not be asserted until the call is connected. **Note:** This parameter **MUST** be enabled to provide keyboard origination.

Originate A DTRX Call With A Low → High Transition Of DTR: With this option enabled, the system initiates a DTRX call when the attached device changes DTR from low to high (e.g. when the attached terminal is turned on). This option is typically enabled for Hotline services.

Action To Be Taken If The Called DTE Has DTR Low (Auto Answer): This parameter specifies which EIA signal the system applies to an idle DTE which is called and has DTR low. The attached DTE must respond with DTR high within one minute. The options available are:

Toggle RI: The system alerts the DTE by toggling RI with a cadence of 2.5 seconds on, 2.5 seconds off. If DTR is high when the DTE is called, the call is barred.

RAISE DSR: The system alerts the DTE by raising DSR. If DTR is high when the DTE is called, the call is barred.

RAISE DCD: The system alerts the DTE by raising DCD. If DTR is high when the DTE is called, the call is barred.

REFUSE: The DTE is only seized when DTR is high. If DTR is low when the DTE is called, the call is barred.

Pooled Modem Communication Established Indicator: When the system is establishing data communication between a pooled modem and a remote modem, this parameter identifies which EIA lead indicates that communication is established. The options available are DCD and DSR.

First Modem Tone: When the system is establishing outgoing communication between a pooled modem and a remote modem, this parameter identifies which modem tone the pooled modem can detect (2025, 2100 or 2225 Hz). Once the system detects the tone, and recognizes it as a valid tone, it connects the call.

Second Modem Tone: When the system is establishing outgoing communication between a pooled modem and a remote modem, this parameter identifies a second modem tone the pooled modem can detect (2025, 2100 or 2225 Hz). Once the system detects the tone, and recognizes it as a valid tone, it connects the call.

ASYNC: Keyboard Origination Allowed (Auto Baud): The dataset can perform autobaud detection on a carriage return <CR> character. With this option enabled, the system receives a baud rate report from the dataset and attempts to establish the data call at this rate. If the originator's baud rate must be changed, the system notifies the user with a message on the terminal. The following parameters must also be enabled:

- DSR Is Held High When Device Is Idle
- CTS Is Held High When Device Is Idle

ASYNC: ADL Auto Baud: With this option enabled, after dialing the ADL access code an ADL caller must enter a carriage return to set the baud rate. With this option disabled, the system attempts to establish the ADL call at the originator's last used baud rate.

ASYNC: Flow Control: This parameter specifies the flow control method the dataset uses. The options are CTS, PIN 25HI/CTS, PIN 25LO/CTS, XON/XOFF or NONE.

Note: The CTS method of flow control is unidirectional. When instructed to stop the data flow, the dataset drops CTS. The attached DTE should recognize this signal and stop transmitting data. When the dataset is instructed to start the flow again, it raises CTS and the attached DTE should begin transmitting again.

ASYNC: XON Character: This character resumes transmission between the dataset and the attached device. It is programmed as the decimal equivalent of the desired ASCII character. The most widely used XON character is Control-Q, whose decimal equivalent is 17.

ASYNC: XOFF Character: This character stops transmission between the dataset and the attached device. It is programmed as the decimal equivalent of the desired ASCII character. The most widely used XOFF character is Control-S, whose decimal equivalent is 19.

ASYNC: Break Key Function: This parameter specifies the function of the BREAK key. The options are:

SYS ATT: the current DTRX data call is dropped and the user is prompted to dial another data call. If the current data call is via ADL, SYS ATT simply drops the call.

TRANSPARENT: No action by DTRX. Passed on to destination.

ASYNC: PBX Attention Character: This parameter (0-127) specifies the incoming character the dataset expects as the Attention character. When the dataset detects this character, it informs the PABX. If the current data call is via DTRX, the user is prompted to dial another data call; if the call is via ADL, it is simply dropped. The value of the parameter is decimal equivalent of the desired ASCII character. The NULL character (00) should be programmed to disable this feature.

ASYNC: Parity: This parameter specifies the parity type of the device attached to the dataset. The options are: mark parity, space parity, even parity, odd parity or no parity. If the character length is set to 8 bits, NO PARITY is assumed.

ASYNC: Character Length: This parameter specifies the UART character length, 7 or 8 bits. If 8 bits are selected, NO PARITY is assumed.

ASYNC: Number Of Stop Bits: This parameter specifies the number of stop bits per character, 1 or 2.

ASYNC: Autobaud To Host Character 1 And 2: These are the characters sent to the attached device when the dataset is switched to the B-channel. The value of the parameter (0-127) is the decimal equivalent of the desired ASCII character. To disable this feature, program a NULL (00) character into both Autobaud To Host Characters. If character 1 is non-zero and character 2 is zero, only character 1 is sent. However,

if character 1 is zero and character 2 is non-zero, both characters are sent. This feature is designed for attached devices which can automatically set their baud rate and/or parity from specific characters. If the attached device does not have this capability, one of the following should be done:

- Set Minimum Baud Rate = Maximum Baud Rate = Default Baud Rate
- Enable the “Always Use Default Baud Rate When Called” parameter

With one of the above options selected, the Autobaud To Host characters can still be programmed for other purposes. For example, some data devices return a prompt in response to a carriage return (decimal equivalent = 13).

ASYNCR: Delay Between Autobaud Characters: This timer specifies the interval between the start of transmission of one autobaud character and the next. It is also applied after the Dataset has disconnected from the D channel and before the first autobaud character is sent to the attached device. The timer has a range of 0 to 1270 msec in increments of 10 msec. To disable this timer, set it to 0 msec.

DS2100: Operating Mode: This parameter is for the DATASET 2100 series only. It selects the operating mode of the dataset, asynchronous or synchronous.

SYNCR: Rate Adaptation Scheme: In synchronous operation of the DATASET 2100, this parameter defines synchronous operation as either Transparent Mode (MiNET) or X.31 Mode.

SYNCR: Clock Source: This parameter selects the clock source for synchronous operation of the DATASET 2100. The options are:

INTERNAL: This option applies when the DATASET 2100 is operated as a DCE. The DTE transmit clock signal comes from the dataset's internal baud rate generator which is not synchronized to the PBX timing. The DTE Receive clock signal comes from the dataset's receiver Phase Locked Loop (PLL). The PLL extracts the timing from the data received from the far end dataset.

SYSTEM: This option applies when the DATASET 2100 is operated as a DCE. Both the DTE transmit and receive clock signals come from the dataset's receiver Phase Locked Loop (PLL). The PLL extracts the timing from the data received from the far end data set.

TX EXT: This option applies to both DCE and DTE operation. The DTE Receive clock signal comes from the dataset's receiver PLL. The PLL extracts the timing from the data received from the far end dataset. When the DATASET 2100 is operated as a DCE, the DTE transmit clock signal comes from an external clock signal on RS-232 pin 24 from the attached device. When the DATASET 2100 is operated as a DTE, the external clock signal is derived from the DCE's received data.

TX & RX EXT: This option applies when the DATASET 2100 is operated as a DTE. Both the receive and transmit data clocks come from the attached DCE. The external transmit clock is derived from the modem's received data (Pin 17) and is remapped to pin 24 on the dataset via the DCE adapter. The external receive clock is derived from the modem's transmit data (Pin 15) and is remapped to the dataset pin 18 using the DCE adapter.

Form 12 - Data Assignment

4.14 When a Digital Line Card is programmed in the System Configuration Form, the system creates an entry line for each of its circuits in Form 09, Stations/*SUPERSET* Telephones, Form 45, Key System Telephones and in Form 12, Data Assignment. See Figure 4-18 for the layout of Form 12. If the card is in an upper (high power) slot, the system also creates entry lines for its circuits in Form 07, Console Assignments.

When the programmer assigns a Digital Line Card port as a DATASET, the system removes the corresponding line from Form 09 or Form 45.

When a *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* telephone is programmed in Form 09 or Form 45, the only data device type available is 1101M.

Digital Line Card ports which appear in Form 07 are removed if assigned as a Digital *SUPERSET* telephone, DATASET, or MOH/Pager Unit. Likewise, a port assigned as a console is removed from Form 09. Then the only data device type that can be selected on the corresponding line in Form 12 is DSCONS, the console printer port.

| 3:58 PM 9-JAN-97 | | | | | | | | | | alarm status = NO ALARM | | |
|------------------|-----|-----|---------------|-----|---------|------------|-----|-----|-----|-------------------------|---------|----------|
| BAY | SLT | CCT | TYPE | TEN | EXT NUM | COS | COR | CDN | DTE | AUL | HOTLINE | COMMENTS |
| 1 | 08 | 01 | | | | | | | | | | |
| 1 | 08 | 02 | | | | | | | | | | |
| 1 | 08 | 03 | | | | | | | | | | |
| 1 | 08 | 04 | | | | | | | | | | |
| 1 | 08 | 05 | | | | | | | | | | |
| 1 | 08 | 06 | | | | | | | | | | |
| 1 | 08 | 07 | | | | | | | | | | |
| 1 | 08 | 08 | | | | | | | | | | |
| 1 | 08 | 09 | | | | | | | | | | |
| 1 | 08 | 10 | | | | | | | | | | |
| 1 | 08 | 11 | | | | | | | | | | |
| 1 | 08 | 12 | | | | | | | | | | |
| 1 | 08 | 01 | | | | | | | | | | |
| 1-DATA DEU TYP | | | 2-FIND EXT | | | 3-FIND AUL | | | 4- | | 5-RANGE | |
| 6-QUIT | | | 7-BAY/SLT/CCT | | 8- | | | 9- | | 0- | | |

Figure 4-18 Form 12 Layout

Field Descriptions

BAY/SLT/CCT/: This field specifies the physical location of each device. This list is generated by the system based on what was entered in the programmed field of Form 01, System Configuration. This field cannot be modified.

TYP: This field identifies the type of data device programmed. The available devices are: DS1101, DS1102, DS1103, DS2102, DS2103, DSCONS and 1101M.

TEN: The tenant group for each device is specified in this field.

EXT NUM: This field displays the assigned extension number of a data line.

COS: This field lists the Class-of-Service number specification of each device (1 to 50).

COR: This field lists the Class-of-Restriction number specification of each device (1 to 25).

CDN: This field lists the Circuit Descriptor Number assigned to a device (1 to 25).

DTE: This field lists the Data Terminal Equipment Profile number (1 to 25). A data device must have a DTE Profile number to access a DTRX. Otherwise, this field should be left blank.

AVL: This field lists the Associated Voice Line (directory number) used to associate a DATASET with a Voice set, so the ADL (Associated Data Line) can be used.

HOTLINE: This field lists the directory number of the destination DTE.

COMMENTS: This field is reserved for additional data (a maximum of 15 characters). It is stored by the system but not used.

Softkeys

DATA DEV TYP: Pressing the DATA DEV TYP softkey displays softkeys which assign the type of data device connected to the circuit displayed on the command line. If a *SUPERSET 410*, *SUPERSET 420*, or a *SUPERSET 430* telephone is programmed for the circuit, only the 1101M device type softkey appears.

DS1103: This softkey appears after the DATA DEV TYP softkey has been pressed. Pressing this softkey assigns the device as an Asynchronous Stand-alone dataset.

DS2103: This softkey appears after the DATA DEV TYP softkey has been pressed. Pressing this softkey assigns the device type as an asynchronous/synchronous rack-mount dataset.

DSCONS: This softkey appears after the DATA DEV TYP softkey has been pressed. Pressing this softkey assigns the device type as a Mk 2 console printer port.

1101M: This softkey appears after the DATA DEV TYP softkey has been pressed, followed by the **** MORE **** softkey. Pressing this softkey assigns the device type as an asynchronous MILINK™ Data Module.

FIND EXT: Pressing the FIND EXT softkey displays the ENTER EXTENSION NUM prompt. When a valid extension number of a DATASET is entered, its physical location is displayed on the command line.

FIND AVL: Pressing this softkey prompts the user to enter an extension number. When a valid extension number of an associated voice set is entered, and the ENTER softkey is pressed, the physical location of the dataset which is associated with the selected voice set is displayed on the command line.

RANGE: This softkey facilitates block programming of data devices. Pressing this softkey displays FROM BAY: SLOT: and CIRCUIT: TO BAY: SLOT: CIRCUIT: prompts on the command line. The range of devices is then specified by entering valid bay, slot

and circuit numbers for the first and last devices. The entry is completed by pressing the ENTER softkey. When the extension number for the first device is entered, the system automatically assigns incremented extension numbers, the same COS, COR, CDN, and DTE for each device in the block. A dual circuit dataset cannot be included in range programming.

DELETE FIELD: This softkey appears when the cursor is positioned in the AVL or HOTLINE field, when a value has been already programmed. Pressing the DELETE FIELD softkey removes the value which is programmed in that field. The deletion is completed by pressing the ENTER softkey.

The standard softkeys **DELETE**, **ENTER**, **BAY/SLT/CCT** and **QUIT** are also provided.

Form 13 - Trunk Circuit Descriptors

4.15 Trunk circuit descriptors are similar to Classes of Service. A trunk circuit descriptor specifies the hardware options for each type of trunk card. Refer to Figure 4-19 for the form layout. Trunk circuit descriptors are complemented by the switch settings on the 9105/9110 type trunk cards. Refer to the Trunk Card Switch Assignments Forms in the *Engineering Information Practice*. The trunk circuit types are as follows:

| | | |
|-----------------|-------------|--------------------|
| 6-Circuit CO | T1 CO DISA | 4-Circuit DID |
| 6-Circuit DID | T1 DID/TIE | 4-Circuit DISA |
| 6-Circuit DISA | T1 E&M | 2-Circuit DID/TIE |
| DID/TIE | T1 E&M DISA | 2-Circuit TIE/DISA |
| E&M Module | T1 LS/GS | E&M Trunk Card |
| E&M Module DISA | T1 TIE/DISA | |

Each circuit descriptor type has its own set of parameters as detailed in Table 4-7, Trunk Options. The system supports a maximum of 25 trunk circuit descriptors.

| 3:59 PM 9-JAN-97 | | alarm status = NO ALARM | | |
|------------------|----------------|-------------------------|---------------|---------------|
| DESCRIPTOR | TRUNK TYPE | NUMBER OF TRKS ASSIGNED | | COMMENTS |
| > 01 | T1 E&M | 0 | | < |
| 02 | 4-CIRCUIT CO | 0 | | |
| 03 | 4-CIRCUIT CO | 0 | | |
| 04 | 6-CIRCUIT CO | 0 | | |
| 05 | 6-CIRCUIT CO | 0 | | |
| 06 | 2-CCT DID/TIE | 0 | | |
| 07 | 2-CCT DID/TIE | 0 | | |
| 08 | 2-CCT DID/TIE | 0 | | |
| 09 | 2-CCT DID/TIE | 0 | | |
| 10 | 2-CCT DID/TIE | 0 | | |
| 11 | 4-CIRCUIT DISA | 0 | | |
| 12 | 4-CIRCUIT DISA | 0 | | |
| 01 | T1 E&M | 0 | | |
| 1-6 CCT CO | 2-6 CCT DISA | 3-E&M MODULE | 4-6 CCT DID | 5- ** MORE ** |
| 6-QUIT | 7-DESC NUMBER | 8-SEL. OPTION | 9-EM MOD DISA | 0- |

Figure 4-19 Form 13 Layout

Field Descriptions

DESCRIPTOR: This field lists the trunk circuit descriptors, numbers 01 to 25 (maximum of 25 different descriptors in total).

TRUNK TYPE: This field lists trunk circuit type for each trunk circuit descriptor. Note that the selected trunk type (the one that appears on the command line) is not displayed on the softkeys. **Note:** Trunk type cannot be changed if there are 1 or more trunks assigned to the descriptor.

NUMBER OF TRKS ASSIGNED: This field records the number of trunks which use each trunk circuit descriptor. The trunk circuit descriptor can be assigned a new trunk type only if this field is zero. To clear the NUMBER OF TRKS ASSIGNED field, the trunks must first be de-assigned. Refer to Form 14 (Non-Dial-In Trunks) and Form 15 (Dial-In Trunks). When a trunk type is assigned to a trunk circuit descriptor, the system prohibits any changes by clearing those softkeys that can alter the trunk types.

COMMENTS: This field is reserved for additional data (a maximum of 20 characters). It is stored by the system but not used.

Softkeys

6 CCT CO: Pressing this softkey assigns the CO Trunk type to the selected trunk circuit descriptor.

6 CCT DID: Pressing this softkey programs the selected trunk circuit descriptor as a DID Trunk.

6 CCT DISA: Pressing this softkey assigns the DISA Trunk type to the selected trunk circuit descriptor.

DID/TIE: This softkey appears when the MORE softkey has been pressed. Pressing this softkey specifies the selected trunk circuit descriptor as a DID/Tie Trunk. The TYPE field displays 2-CCT DID/TIE.

E&M MODULE: Pressing this softkey programs the selected trunk circuit descriptor as an E&M Trunk Module.

EM MOD DISA: Pressing this softkey programs the selected trunk circuit descriptor as an EM MOD DISA.

EM TRK DISA: This softkey appears when the MORE softkey has been pressed. Pressing this softkey commits the (E&M) analog trunk as a DISA trunk.

T1 CO DISA: This softkey appears when the MORE softkey has been pressed for the third time. Pressing this softkey defines the selected trunk circuit descriptor as a T1 Trunk simulating a CO DISA Trunk.

T1 DID/TIE: This softkey appears when the MORE softkey has been pressed for the second time. Defines the selected trunk circuit descriptor as a T1 trunk simulating a DID/TIE trunk.

T1 E&M: This softkey appears when the MORE softkey has been pressed for the second time. Pressing this softkey defines the selected trunk circuit descriptor as a T1 Trunk simulating an E&M Trunk.

T1 E&M DISA: This softkey appears when the MORE softkey has been pressed for the second time. Pressing this softkey defines the selected trunk circuit descriptor as a T1 Trunk simulating an E&M DISA Trunk.

T1 LS/GS: This softkey appears when the MORE softkey has been pressed for the second time. Pressing this softkey defines the selected trunk circuit descriptor as a T1 Trunk simulating an LS/GS Trunk.

T1 TIE DISA: This softkey appears when the MORE softkey has been pressed for the third time. Pressing this softkey defines the selected trunk circuit descriptor as a T1 Trunk simulating a TIE/DISA Trunk.

TIE DISA: This softkey appears when the MORE softkey has been pressed. Pressing this softkey commits the DID/TIE (analog) trunk as a DISA trunk.

DESC NUM: Pressing this softkey displays ENTER DESC NUM: prompt. This softkey selects a trunk circuit descriptor number. The selection is completed by entering a valid number (1 to 25).

SEL. OPTION: Pressing the SEL. OPTION softkey displays a new form. This form displays the options (parameters) associated with the trunk type that is assigned to that trunk circuit descriptor. Refer to Options Subform.

REVIEW: Pressing the REVIEW softkey displays a new form (Review List Subform). This form displays a list of trunks that use the selected trunk circuit descriptor. Note that this softkey appears only if "NUMBER OF TRKS ASSIGNED" on command line is greater than zero.

The standard softkeys **CANCEL**, **ENTER**, ****MORE**** and **QUIT** are also provided.

Options Subform for Form 13

4.16 This form appears when the SEL. OPTION softkey is pressed (see Figure 4-20) and displays the options associated with each trunk type assigned to each trunk circuit descriptor. See Table 4-7 for a list of options followed by descriptions.

| | | | | | |
|--|----|----------|----|-------------------------|---|
| 4:00 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| [T1 E&M TRUNK: 1] OPTION NAME [SUPERVISION PARAMETER] | | | | | STATUS |
| > Reverse to Idle Far-end gives answer supervision Inhibit automatic supervision No seize alarm No release alarm Toll office Is this a CO DTMF Save Busy-Out Status Disconnect timer 150 - 300 ms (50 ms inc) Release acknowledge timer 2 - 240 s (2 s inc) Guard timer 200 - 1000 ms (100 ms inc) | | | | | NO NO NO NO NO NO NO YES 300 40 800 |
| Reverse to Idle | | | | | <input checked="" type="checkbox"/> NO |
| 1-YES | 2- | 3- | 4- | 5- | |
| 6-QUIT | 7- | 8- | 9- | 0- | |

Figure 4-20 Select Option Subform Layout

Field Descriptions

The header line displays the trunk type, the trunk circuit descriptor number and the type of parameter under observation.

STATUS: This field lists the option selected for each parameter.

Softkeys

YES, NO, COMPLEX, 600 OHM, 60/40, IMMEDIATE: This softkey toggles the status of the parameters.

30/20, WINK: This softkey toggles the status of the parameters.

66/33, DELAY: This softkey toggles the status of the parameters.

DELAY INTEG: This softkey toggles the status of the parameters.

LOOP FLSH/RING GND: Toggles between an opened loop current type flash (LOOP FLSH), or a grounded ring type of flash (RING GND).

The standard softkeys **CANCEL, ENTER,** and **QUIT** are also provided.

Table 4-7 Trunk Options

| 6-CCT DID |
|--|
| Reverse to Idle Far-End Gives Answer Supervision Inhibit Automatic Supervision No Seize Alarm No Release Alarm Toll Office Is this a CO DTMF Save Busy-Out Status Impedance (600 Ohm or Complex) Disconnect Timer (150 → 300 ms) (50 ms increments) Release Acknowledge Timer (2-120 seconds) Guard Timer (200 → 1000 ms) (100 ms increments) Start Type (Immed, Wink, Delay) Debounce Timer (20 → 150 ms) (10 ms increments) Wink Timer (150 → 300 ms) (50 ms increments) Remote End is a Satellite Remote End is a Satellite with OPS Lines |
| Page 1 of 4 |

Table 4-7 Trunk Options (continued)

| 6-CIRCUIT CO TRUNK and 6-CIRCUIT DISA |
|--|
| Reverse to Idle Far-End Gives Answer Supervision Inhibit Automatic Supervision No Seize Alarm No Release Alarm Toll Office Is this a CO DTMF Save Busy-Out Status Impedance (600 Ohm or Complex) Post Call Metering (0 → 15 seconds) Calling Party Disconnect Timer (1 → 12 minutes) Dictation Trunk Ignore Remote Disconnect Disconnect Timer (100 → 9900 ms) (100 ms increments) Supervision Direction: Incoming Trunk Calls Also Guard Timer (0 → 3000 ms) (100 ms increments) Ring Cycle Timer (6 → 10 seconds) Ignore Line Reversal During Seizure Ringing Expected Ringing Debounce Timer (5 → 12 seconds) Seize Timer (10 → 60 s) (10 s increments) Flash Timer (200 → 700 ms) (100 ms increments) Flash Type (Loop Flash, Ring Ground) Flash Over Trunk Interdigit Timer (300 → 800 ms) (100 ms increments) Digit Outputting Ratio (60/40, 30/20, 66/33) |
| E&M MODULE and E&M MODULE DISA |
| Reverse to Idle Far-End Gives Answer Supervision Inhibit Automatic Supervision No Seize Alarm No Release Alarm Toll Office Is this a CO DTMF Save Busy-Out Status Impedance ** use dip switch on the module to program ** (600 Ohm or Complex) E Lead Invert M Lead Invert ** required for type 5 operation ** Disconnect Timer (150 → 300 ms) (50 ms increments) Release Acknowledge Timer (2000 → 9900 ms) (100 ms inc) Guard Timer (200 → 1000 ms) (100 ms increments) Dictation Trunk Incoming Start Type (Immed, Wink, Delay) Debounce Timer (20 → 150 ms) (10 ms increments) Wink Timer (150 → 300 ms) (50 ms increments) Outgoing Start Type (Immed, Wink, Delay or Delay Integ) Digit Outputting Ratio (60/40, 30/20, 66/33) Output Delay Timer (100 → 2000 ms) (100 ms inc) Flash Timer (200 → 700 ms) (100 ms increments) Flash Type (Loop Flash or Ring Ground) Flash Over Trunk Interdigit Timer (300 → 800 ms) (100 ms increments) Wait for Delay Timer (300 → 5000 ms) (100 ms inc) Remote End is a Satellite Remote End is a Satellite with OPS Lines |
| Page 2 of 4 |

Table 4-7 Trunk Options (continued)

T1 DID/TIE and T1 TIE DISA

Reverse to Idle
 Far-End Gives Answer Supervision
 Inhibit Automatic Supervision
 No Seize Alarm
 No Release Alarm
 Toll Office
 Is this a CO
 DTMF
 Save Busy-Out Status
 Disconnect Timer (150 → 300 ms) (50 ms inc)
 Release Acknowledge Timer (2 → 120 s)
 Guard Timer (200 → 1000 ms) (100 ms inc)
 Incoming Start Type (Immed, Wink or Delay)
 Debounce Timer (20 → 150 ms) (10 ms inc)
 Wink Timer (150 → 300 ms) (50 ms inc)
 Outgoing Start Type (Immed, Wink, Delay or Delay Integ)
 Digit Outpulsing Ratio (60/40, 30/20, 66/33)
 Outpulse Delay Timer (100 → 2000 ms) (100 ms inc)
 Flash Timer (200 → 700 ms) (100 ms inc)
 Flash Type (Loop Flash, Ring Ground)
 Flash Over Trunk
 Interdigit Timer (300 → 800 ms) (100 ms inc)
 Wait for Delay Timer (300 → 5000 ms) (100 ms inc)
 Remote End is a Satellite
 Remote End is a Satellite With OPS Lines

T1 E&M and T1 E&M DISA

Reverse to Idle
 Far-End Gives Answer Supervision
 Inhibit Automatic Supervision
 No Seize Alarm
 No Release Alarm
 Toll Office
 Is this a CO
 DTMF
 Save Busy-Out Status
 Disconnect Timer (150 → 300 ms) (50 ms inc)
 Release Acknowledge Timer (2-240 s) (2 s inc)
 Guard Timer (200 → 1000) (100 ms inc)
 Incoming Start Type (Immed, Wink or Delay)
 Debounce Timer (20 → 150 ms) (10 ms inc)
 Wink Timer (150 → 300 ms) (50 ms inc)
 Outgoing Start Type (Immed, Wink, Delay or Delay Integ)
 Digit Outpulsing Ratio (60/40, 30/20, 66/33)
 Outpulse Delay Timer (100 → 2000 ms) (100 ms inc)
 Flash Timer (200 → 700 ms) (100 ms inc)
 Flash Type (Loop Flash, Ring Ground)
 Flash Over Trunk
 Interdigit Timer (300 → 800 ms) (100 ms inc)
 Wait for Delay Timer (300 → 5000 ms) (100 ms inc)
 Remote end is a Satellite
 Remote end is a Satellite with OPS Lines

Table 4-7 Trunk Options (continued)

| T1 LS/GS TRUNK and T1 CO DISA |
|--|
| No Seize Alarm No Release Alarm Toll Office Is this a CO DTMF Save Busy-Out Status Loop Start or Ground Start (T1 LS, T1 GS) Calling Party Disconnect Timer (1 → 12 minutes) Disconnect Timer 100 → 9900 ms (100 ms inc) Guard Timer (0 → 3000 ms) (100 ms inc) Ring Cycle Timer (6 → 10 s) Ringing Expected Ringing Debounce Timer (5 → 12 seconds) Seize Timer (10 → 60 s) (10 s increments) Flash Timer (200 → 700 ms) (100 ms inc) Flash Type (Loop Flash, Ring Ground) Flash Over Trunk Interdigit Timer (300 → 800 ms) (100 ms inc) |
| Page 4 of 4 |

Parameters

Calling Party Disconnect Timer: This defines how long the system will wait for the far-end, a ground start trunk, to acknowledge a trunk release.

Debounce Timer: This timer specifies the period for which an incoming seizure is to be debounced before being recognized as a valid incoming seizure.

Dictation Trunk: If selected, this maintains trunk dialing for the duration of the call. See Dictation Trunk in the *Features Descriptions Practice*.

Digit Outpulsing Ratio: This field specifies the break/make ratio during outpulsing. It can be set to 60/40, 66/33, or 30/20.

Disconnect Timer: This defines the time a release signal must be continuously present before a call is disconnected. **Note:** For digital DID trunks, the range is 150-300 ms.

DTMF: If selected, forces DTMF digits to be transmitted on the trunk when dialing. If not selected, digits are pulsed onto the trunk.

E Lead Invert/ M Lead Invert: These two fields provide the flexibility to specify the polarity of the E and M leads to match the far end connection. M Lead Invert must be enabled for type 5 operation.

Far-End Gives Answer Supervision: If selected, answer signals are expected, and acted upon when received on the trunk; answer signals are not generated internally. If not selected, answer signals received are ignored.

Flash Over Trunk: Enables the Flash Over Trunk feature for the descriptor number.

Flash Timer: This defines the duration of a flash transmitted onto a trunk in a digital bay. Note: this is not programmable for some analog trunks; in these cases, the flash timer is always 200 ms.

Flash Type: Specifies whether the flash will be done by opening the current loop (Loop Flash) or grounding the ring (Ring Ground).

Guard Timer: This defines how long the system will wait after releasing the trunk before seizing it again for an outgoing call.

Ignore Line Reversal During Seizure: If selected, line reversal is not recognized as an incoming seizure.

Ignore Remote Disconnect: If selected, release signals from the far-end are ignored. If not selected, release signals cause disconnection of the call.

Impedance: "600" should be selected if the trunk is to be connected to a carrier facility, or the cable is short. This setting provides a 600 ohm + 2mF termination impedance match for the incoming line. "Complex" should be selected if the trunk is to be connected directly to cable facilities. This setting provides the standard AT&T complex balance network as a termination impedance for the incoming line.

Inhibit Automatic Supervision: If selected, the system waits for the far-end to provide answer supervision before providing answer supervision to an incoming Tie or DID trunk.

Interdigit Timer: This defines the time gap inserted between outpulsed digits.

Is this a CO: Select if trunk is to terminate at the Central Office. If "No", a 2dB pad is added in the circuit. Refer to the *Engineering Information Practice*.

Loop Start or Ground Start: This defines trunk signaling type (T1 only).

No Release Alarm: If selected, a trunk failing to release is removed from service and maintenance is notified. The trunk can only be returned to service manually. If not selected, the trunk remains in service.

No Seize Alarm: If selected, a trunk failing to return a seize acknowledgment on three successive occasions is removed from service; maintenance is not notified. If not selected, the trunk remains in service. If the trunk originates, the no seize count is reset. As well, if the trunk had been removed from service due to a no seize count, the trunk is returned to service and the incoming call on the trunk is processed.

Outgoing Start Type: This field specifies the outgoing type of the trunk, which can be set to immediate outgoing, wink start outgoing, delay dial outgoing or delay dial with integrity.

Outpulse Delay Timer: This timer specifies the pause between seizing and the start of dialing, applicable to immediate outgoing trunks only. This value should be specified after determining the far end characteristics.

Post Call Metering: This defines how long the system will wait for and record meter pulses after the release signal is received.

Release Acknowledge Timer: This specifies the time-out period to wait for a release acknowledge signal from the far end.

Remote End is a Satellite: Select if the trunk is to terminate at a satellite PABX. Refer to the *Engineering Information Practice* for details of loss/gain.

Remote End is a Satellite with OPS Lines: Select if the trunk is to terminate at a satellite PABX with OPS lines. Refer to the *Engineering Information Practice* for details of loss/gain.

Reverse to Idle: In some central offices, upon seizure, the CO reverses the polarity on the trunk. When the call ends, the CO again reverses the polarity, returning the trunk to its normal idle state. When the Reverse to Idle option is enabled, the PABX treats the reversal to idle condition as a disconnect signal from the CO. The Far-End Gives Answer Supervision option has no effect.

Ring Cycle Timer: This defines a period during which a minimum ring burst (250 ms) must be present before the system will recognize it as an incoming call.

Ringling Debounce Timer: This defines the duration during which the system tries to detect the minimum ring burst, indicating the persistence of an incoming call.

Ringling Expected: If selected, incoming calls are not reported unless ringing is recognized. If other seize signals are received before ringing, the trunk is busied-out for outgoing calls, but the incoming call is not reported until ringing is received.

Save Busy Out Status: If selected, all trunks in this descriptor type which were in the busy-out state before a system reset will be in that state after the reset.

Seize Timer: This defines the time the system will wait for a seize acknowledge from a ground start trunk. Also see Option "No Seize Alarm" in this list.

Start Type: This field specifies the start type of the trunk, which can be set to immediate, wink start, or delay dial.

Supervision Direction: Incoming Trunk Calls Also: If this option is selected, the system will record meter pulses for incoming trunk calls. If the CO provides a reversal as a disconnect signal, this option must be set to YES for the PABX to respond to the reversal.

Toll Office: Select if the CO trunk is to be connected to a Toll Office. This option is applicable to systems using the North American loss plan. It provides a 3 dB loss for trunk-to-OPS line connections, and a 6 dB loss for trunk-to-ONS line connections. If not selected, "normal" through switch loss is provided. Refer to the *Engineering Information Practice*.

Wait For Delay Timer: This timer specifies the period to wait for the delay signal from the far end. It is only applicable if the trunk is of type delay dial outgoing (without integrity).

Wink Timer: This timer specifies the duration of the wink signal sent to the far end if the trunk is programmed as a Wink Start Incoming or Delay Start incoming.

Review List Subform for Form 13

- 4.17 This form appears when the REVIEW softkey is pressed in Form 13 - Trunk Circuit Descriptors. The form lists the trunks that use the selected trunk circuit descriptor. Refer to Figure 4-21 for the form layout. The data in this form cannot be modified.

| [T1 E&M TRUNK: 1] TRK NUM | | BAY | SL | CC | | COMMENTS |
|-----------------------------|---------------|-----|----|----|---|----------|
| | | 1 | | 1 | 6 | 1 |
| | | 2 | | 1 | 6 | 2 |
| | | 3 | | 1 | 6 | 3 |
| | | 1 | | 1 | 6 | 1 |
| 1- | 2- | 3- | | 4- | | 5- |
| 6-QUIT | 7-DESC NUMBER | 8- | | 9- | | 0- |

alarm status = MAJOR

Figure 4-21 Form 13 Review List Subform Layout

Field Descriptions

The header line displays the descriptor number and the trunk type.

TRK NUM: This field lists the trunk numbers assigned to the selected trunk circuit descriptor number. Trunk numbers are arbitrarily assigned to the trunks in Form 14 (Non-Dial-In Trunks) and Form 15 (Dial-In Trunks).

BAY, SLT and CCT: These fields list the physical location of each trunk number according to their bay, slot and circuit numbers.

COMMENTS: This field displays any additional information about each trunk as it was entered on Form 14 (Non-Dial-In Trunks) and Form 15 (Dial-In Trunks). The COMMENTS field stores a maximum of 15 characters. The data in this field is stored by the system but not used.

Softkeys

DESC NUMBER: This softkey selects a trunk circuit descriptor number. Pressing the DESC NUMBER softkey displays the ENTER DESC. NUM: prompt. The selection is completed by entering a valid number (1 to 25).

The standard softkeys **CANCEL**, **ENTER**, and **QUIT** are also provided.

Form 14 - Non-Dial-In Trunks

4.18 This form specifies the characteristics of the system's Non-Dial-In Trunks. These trunks cannot dial any digits into the PABX and are usually CO trunks. The Day, N1, N2 answer points are assigned in this form. Alternate recall points are assigned in Form 19 (Call Rerouting Table). Refer to Figure 4-22 for the form layout.

| BAY | SLT | CCT | COS | TEN | DAY | N1 | N2 | CDN | TK NUM | TK NAME | COMMENTS | |
|--------|-----|-----|-----|---------------|------|------|----------------|-----|--------|---------|----------|--|
| 1 | 06 | 01 | 1 | 1 | 1801 | 1801 | 1801 | 1 | 1 | T1 | | |
| 1 | 06 | 02 | | | | | | | | | | |
| 1 | 06 | 03 | | | | | | | | | | |
| 1 | 06 | 04 | | | | | | | | | | |
| 1 | 06 | 05 | | | | | | | | | | |
| 1 | 06 | 06 | | | | | | | | | | |
| 1 | 06 | 07 | | | | | | | | | | |
| 1 | 06 | 08 | | | | | | | | | | |
| 1 | 06 | 09 | | | | | | | | | | |
| 1 | 06 | 10 | | | | | | | | | | |
| 1 | 06 | 11 | | | | | | | | | | |
| 1 | 06 | 12 | | | | | | | | | | |
| 1 | 06 | 01 | 1 | 1 | 1801 | 1801 | 1801 | 1 | 1 | T1 | | |
| 1- | | | | 2- | | | 3-TRUNK NUMBER | | 4- | | 5- | |
| 6-QUIT | | | | 7-BAY/SLT/CCT | | | 8-DELETE | | 9- | | 0- | |

Figure 4-22 Form 14 Layout

Field Descriptions

BAY, SLT, and CCT: These fields list the physical location of each Non-Dial-In Trunk. They are generated by the system based on what was entered in the PROGRAMMED field in Form 01, System Configuration. This field cannot be modified.

COS: This field specifies the Class of Service of each Non-Dial-In Trunk. The default COS is 1.

TEN: This field specifies the Tenant Group number of each Non-Dial-In Trunk. The default Tenant Group number is 1.

DAY, N1 and N2: These fields are reserved for the Day, Night1 and Night2 answer points. The answer points may be specified as an LDN on the attendant console, a console extension number, a station, a hunt group, a night bell, a logical line, a data station, or an ACD path access code. Note that an LDN and night bell cannot be rung simultaneously. These fields may be left blank.

CDN: The CDN (Circuit Descriptor Number) field links this form to Form 13, Trunk Circuit Descriptors, which defines the trunk hardware parameters. This field must be filled in before any changes for the selected physical location are stored in the database.

TK NUM: This field lists the trunk identification numbers. This field must be filled in before any changes for the selected physical location are stored in the database. In this field, trunks are listed according to their trunk number (1 to 200). This method of identifying trunks is used for the following:

- SMDR records of a trunk call (only three digits are allocated for trunk identification),
- Identification of a trunk in a call on the attendant console or a *SUPERSET* display telephone,
- Attendant Direct Trunk Select (DTS) capability,
- Form 09 for *SUPERSET* telephone line appearance programming (DTS or Private Trunk),
- Form 45 for Key Set CO Line appearance programming,
- Form 16 for listing members of trunk groups.

TK NAME: This field lists the trunk names. Names can be up to eight characters long.

COMMENTS: This field is reserved for additional data (a maximum of 15 characters). It is stored by the system but not used.

Softkeys

TRUNK NUMBER: This softkey selects a trunk by its trunk number. Trunk numbers are assigned in Form 14 and Form 15. Pressing the TRUNK NUMBER softkey displays the ENTER TRUNK NUM: prompt on the command line. Entering a valid trunk number (1 to 200) selects that Non-Dial-In Trunk and displays it on the command line.

DELETE FIELD: This softkey appears when the cursor is on a programmed DAY, N1 or N2 field. It allows the field to be deleted, without affecting the other two fields.

The standard softkeys **CANCEL**, **BAY/SLT/CCT**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 15 - Dial-In Trunks

- 4.19 This form specifies the characteristics of the system's Dial-In Trunks. This form also designates where incoming calls on Dial-In Trunks are routed by modifying the incoming digits. See Figure 4-23 for the form layout.

| BAY | SLT | CCT | COS | COR | TEN | N | M | X | CDN | TK NUM | TK NAME | COMMENTS |
|--------|-----|-----|---------------|-----|-----|----------------|---|---|-----|--------|---------|----------|
| 1 | 06 | 01 | 1 | 1 | 1 | 4 | 0 | | 1 | 12 | T1 | |
| 1 | 06 | 02 | | | | | | | | | | |
| 1 | 06 | 03 | | | | | | | | | | |
| 1 | 06 | 04 | | | | | | | | | | |
| 1 | 06 | 05 | | | | | | | | | | |
| 1 | 06 | 06 | | | | | | | | | | |
| 1 | 06 | 07 | | | | | | | | | | |
| 1 | 06 | 08 | | | | | | | | | | |
| 1 | 06 | 09 | | | | | | | | | | |
| 1 | 06 | 10 | | | | | | | | | | |
| 1 | 06 | 11 | | | | | | | | | | |
| 1 | 06 | 12 | | | | | | | | | | |
| 1 | 06 | 01 | 1 | 1 | 1 | 4 | 0 | | 1 | 12 | T1 | |
| 1- | | | 2- | | | 3-TRUNK NUMBER | | | 4- | | 5- | |
| 6-QUIT | | | 7-BAY/SLT/CCT | | | 8-DELETE | | | 9- | | 0- | |

Figure 4-23 Form 15 Layout

Field Descriptions

BAY, SLT and CCT: These fields list the physical location identification of each Dial-In Trunk. They are generated by the system based on what was entered in the PROGRAMMED field of Form 01, System Configuration. This field cannot be modified.

COS: This field specifies the Class of Service for each entry. The COS defaults to 1.

COR: This field lists the Class of Restriction for each entry. The COR defaults to 1.

TEN: Tenant group specifications are listed in this field. The tenant group number defaults to 1.

N: This field lists the number of expected digits. The range is 0 to 10. If a value is specified in this field, then digit translation on incoming calls does not commence until the system receives the specified number of digits. This field must be filled in for a DID Trunk. Otherwise, this field defaults to 0, and the trunk is treated as a TIE trunk (regardless of the circuit descriptor).

M: This field specifies the number of digits (0 to 8) that must be absorbed after the incoming trunk is seized. The M field defaults to 0. This field is applicable for any type of Dial-In Trunk.

X: This field specifies a maximum of two digits that may be inserted before the digit string. This field is applicable for any type of Dial-In Trunk.

CDN: The CDN (Circuit Descriptor Number) field lists the circuit descriptor numbers for each Dial-In Trunk. This field links this form to Form 13 (Trunk Circuit Descriptors), which defines the trunk hardware parameters. Note that this field must be filled in before any changes for the selected physical location are stored in the database.

TK NUM: This field displays the Dial-In Trunks according to their trunk number. Note that this field must be filled in before any changes for the selected physical location are stored in the database. Trunk numbers range from 1 to 200 and are used for the following:

- SMDR records of a trunk call (only three digits are allocated for trunk identification),
- Identification of a trunk in a call on the attendant console or a *SUPERSET* display telephone,
- Attendant Direct Trunk Select (DTS) capability,
- Form 09 for *SUPERSET* telephone line appearance programming (DTS or Private Trunk) and
- Form 16 for listing members of trunk groups.

TK NAME: This field lists the trunk names. Names can be up to eight characters long.

COMMENTS: This field is reserved for additional data (a maximum of 15 characters). It is stored by the system but not used.

Softkeys

TRUNK NUMBER: This softkey selects a trunk by its trunk number. Pressing the TRUNK NUMBER softkey displays the ENTER TRUNK NUM: prompt on the command line. Entering a valid trunk number (1 to 200) selects that Dial-In Trunk and displays it on the command line.

The standard softkeys **CANCEL**, **BAY/SLT/CCT**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 16 - Trunk Groups

- 4.20 This form specifies the members of each trunk group by trunk numbers. The trunk number is assigned in Form 14 (Non-Dial-In Trunks) and Form 15 (Dial-In Trunks). The system supports a maximum of 50 trunk groups and each group supports a maximum of 50 members. See Figure 4-24 for the form layout.

| | | | | | | | | |
|----------|------------|-------------------|--|----------------------|-----|---------------|-----|----------|
| 9:01 PM | | 9-JAN-97 | | alarm status = MAJOR | | | | |
| [GRP: 1- | |] [NO SMDR][TERM] | | TK NUM | BAY | SLT | CCT | COMMENTS |
| > | | | | 1 | 01 | 06 | 01 | < |
| | | | | █ 1 | 01 | 06 | 01 | |
| 1-SMDR | 2-CIRCULAR | 3-INSERT | | 4-TK GRP NAME | | 5-TRUNK GROUP | | |
| 6-QUIT | 7- | 8-DELETE | | 9- | | 0- | | |

Figure 4-24 Form 16 Layout

Field Descriptions

The header line indicates the trunk group being programmed, via a number and a name (maximum of eight characters). This line also indicates the presence of the SMDR option and whether the trunk group is subjected to terminal hunting or circular hunting.

TK NUM: This field lists the members of each trunk group according to their trunk number. Members are added by entering a valid trunk number (1 to 200) when the cursor is at the TK NUM field on the command line. The trunk group is displayed on the header line.

BAY, SLT, CCT and COMMENTS: These fields are informational fields only. They cannot be modified in this form. When a trunk number is added to the trunk group, the physical identification (BAY, SLT and CCT) and the COMMENTS fields from Form 14 (Non-Dial-In Trunks) or Form 15 (Dial-In Trunks) are automatically displayed.

Softkeys

SMDR/NO SMDR: This softkey enables and disables the outgoing Station Message Detail Recording (SMDR) feature for the Trunk Group. When the SMDR feature is enabled, the header line displays [SMDR] and the softkey displays NO SMDR. Pressing

the NO SMDR softkey disables the SMDR feature for that trunk group. The softkey now displays SMDR and the header line displays [NO SMDR].

CIRCULAR/TERMINAL: This softkey selects circular or terminal hunting. When the trunk group is defined as a terminal type, the header line displays [TERM] and the softkey displays CIRCULAR. Pressing the CIRCULAR softkey programs the selected trunk group as a circular type. The header line now displays [CIRC] and the softkey displays TERMINAL. Refer to the *Features Description Practice* for details on circular and terminal trunk groups.

INSERT: This softkey adds new members to the trunk group. Pressing the INSERT softkey clears the command line and moves the cursor to the TK NUM field. The addition is completed by entering a valid trunk number. The system inserts the addition before the line previously displayed on the command line. Note that this softkey only appears if there is data present in this form.

TK GRP NAME: This softkey specifies a character name for the selected trunk group. Pressing the TK GRP NAME softkey displays the following prompt on the command line: ENTER TRUNK GROUP NAME:. The name specification is completed by entering a character name (a maximum of eight characters). The trunk group name is displayed on the header line beside the trunk group number.

TRUNK GROUP: This softkey selects a trunk group. Pressing the TRUNK GROUP softkey displays the ENTER TRUNK GROUP NUM: prompt on the command line. The selection is completed by entering a valid trunk group number (1 to 50).

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 17 - Hunt Groups

4.21 This form specifies the members of each hunt group by extension or dataset numbers (see Figure 4-25). The system supports a maximum of 99 hunt groups. Each group supports a maximum of 50 members. Only datasets can be added to a data hunt group and data hunt groups can only contain datasets. Only modems can be added to a modem hunt group and modem hunt groups can only contain modems.

| | | | | | | |
|--------------------------------|---------------|----------------------|-----|-----------|-----|--------------|
| 9:06 PM 9-JAN-97 | | alarm status = MAJOR | | | | |
| [GRP 1: _____][TERM][STN/SET] | | EXT NUM | BAY | SLT | CCT | COMMENTS |
| > | | 1801 | 01 | 08 | 01 | < |
| | | 1801 | 01 | 08 | 01 | |
| 1-GROUP TYPE | 2-CIRCULAR | 3-INSERT | | 4-OPTIONS | | 5-HUNT GROUP |
| 6-QUIT | 7-ACCESS CODE | 8-DELETE | | 9-EXT NUM | 0- | |

Figure 4-25 Form 17 Layout

Field Descriptions

The header line indicates which hunt group is being programmed, its access code, the type of hunting used (terminal or circular) and the type of hunt group (Stn/set, Agent, Recording, Auto Att., RABTOS). Select the OPTIONS softkey to program the hunt group name.

EXT NUM: This field lists the members of each hunt group according to their extension numbers. Valid numbers include extension numbers of rotary dial or DTMF sets and *SUPERSET* prime line and dataset numbers.

BAY, SLT, CCT and COMMENTS: These fields are informational fields only. They cannot be modified in this form. When an extension or dataset number is added to a hunt group, the corresponding physical location number (BAY, SLT and CCT) and the COMMENTS fields from Form 09 (Station/*SUPERSET*Telephones) and Form 12 (Data Assignment) are automatically displayed.

Softkeys

GROUP TYPE: Pressing this softkey displays softkeys which represent the alternative hunt group types. (Softkeys GROUP TYPE and CIRCULAR/TERMINAL do not appear

until the hunt group exists. A hunt group is not created until the first member is defined.) Note that the selected group type does not appear on the softkey display.

STN/SET: Pressing this softkey programs the selected hunt group as a Station/*SUPERSET* telephone type. A bay/slot/circuit number of any type of line card can be used with this type of hunt group. The header line displays the [STN/SET] prompt to indicate this type of hunt group.

DEFAULT: This softkey appears when the first modem hunt group is established. (All the devices are modems; the header reads MODEM). Pressing the DEFAULT softkey makes the hunt group the default modem pool; the header reads MODEM/D. All members of the default modem pool must be in BOTH mode.

DEFAULT OFF: This softkey appears only if the hunt group is the default modem pool. Pressing it removes the hunt group's default status.

RECORDING: Pressing this softkey programs the selected hunt group as a recording type. Only those bay/slot/circuit numbers referring to the ONS Line Card can be used with this type of hunt group. The header line displays [RECORD]. This appears only if the hunt group contains industry standard telephones. *SUPERSET 401+* telephones cannot be programmed as a member of this hunt group.

AGENT: Pressing this softkey programs the selected hunt group as a UCD agent type. The header line displays [AGENT].

CIRCULAR/TERMINAL: This softkey has two functions. It specifies the selected hunt group as a circular or terminal type. Refer to the *Features Description Practice* for details on circular and terminal hunt groups. When the hunt group is defined as a terminal type, the header line displays [TERM] and the softkey displays CIRCULAR. Pressing the CIRCULAR softkey programs the hunt group as a circular type. The header line now displays [CIRC] and the softkey displays TERMINAL.

AUTO ATT.: Programs the selected hunt group as an automatic attendant hunt group. The header displays [AUTO ATT]. Only ONS line circuits may be entered in this type of hunt group (these would be connected to RADs - see the *Automated Attendant Application Package Practice* for further information). *SUPERSET 401+* telephones cannot be programmed as a member of this hunt group.

RABTOS.: Programs the selected hunt group as a Recall Appearance Back To Originating Set (RABTOS) hunt group. The header displays [RABTOS]. In a RABTOS hunt group if all the hunt group members are busy, including the overflow point, the call will recall the *SUPERSET* multi-call line appearance that the call originally came in to. Normally, you program Call Center Manager attendants into this type of hunt group.

You must program hunt groups that are used with MITEL Applications Interface (MAI) applications as RABTOS hunt groups. Note that System Option 105 (MITEL Application Interface) must be enabled or the system will not allow you to program a RABTOS hunt group. Also, before you can disable System Option 19, you must first delete all RABTOS hunt groups.

INSERT: This softkey adds new members to the selected hunt group. Pressing the softkey clears the command line and moves the cursor to the EXT NUM field. The addition is completed by entering a valid extension number. The system inserts the addition on the line preceding the current line. Note that this softkey only appears if there is data present in this form.

OPTIONS: This softkey allows access to the various Options Subforms, which allows selection of options for the different hunt group types. Value inputs are entered on the command line in the usual manner.

HUNT GROUP: This softkey selects a hunt group. Pressing the HUNT GROUP softkey displays the ENTER HUNT GROUP NUM: prompt on the command line. The selection is completed by entering a valid hunt group number from 1 to 99.

ACCESS CODE: This softkey assigns an access code for each hunt group. Pressing the ACCESS CODE softkey displays the ENTER NEW ACCESS CODE: prompt on the command line. The access code specification is completed by entering a valid number which must be unique in the database. The access code is displayed on the header line and can be a maximum of five digits.

EXT NUM: Pressing this softkey displays ENTER EXTENSION NUM on the command line. When a valid number is entered, followed by pressing the ENTER softkey, the screen displays the appropriate hunt group and the command line displays the number and its location BAY/SLT/CCT.

DELETE FIELD: Appears in any of the Options Subforms. Deletes programmed data on the command line. Will not appear if there is no data on the command line.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Option Parameters

Overflow: Allows the programmer to assign a destination where calls can be answered when all members of the hunt group are busy.

Name: Allows the programmer to assign a name to the hunt group. The name can be up to 12 characters long. The first character must not be *, # or a number; the name cannot contain blanks or dashes.

DTRX Enable/Disable: Allows for immediate DTRX access. DTRX DISABLED also provides DTRX access, but only after the interdigit time-out has expired (about 15 seconds). This applies to modem type hunt groups only.

Message Length: Applies only to recording or auto attendant type hunt groups. The length is entered in minutes and seconds. The default value is 10 seconds; the maximum is 4 minutes. The timer should be set at least 3 seconds longer than the actual message length.

Default Destination: This is the destination for incoming calls - if the caller does not dial digits, the call connects to this destination.

Dialing Over Recording: If enabled, allows for dialing digits while listening to a recording.

Prefix Digits: These are added to the digit the caller dials in response to (or while listening to) a recorded announcement.

Wait For Resources: This is the time that an incoming caller will wait for connection to a resource. When this times out the call is routed to the default destination.

1:25 PM 12-JAN-97 alarm status = NO ALARM

| | | | | | | | | | | | |
|---|---------|----|----|----|----|--------|----|----|----|----|--|
| [GRP 1:____][TERM][RECORD.] | OPTIONS | | | | | | | | | | |
| > Name Message Length | 0:00 | | | | | | | | | | |
| Name | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">1-</td> <td style="width: 20%;">2-</td> <td style="width: 20%;">3-</td> <td style="width: 20%;">4-</td> <td style="width: 20%;">5-</td> </tr> <tr> <td>6-QUIT</td> <td>7-</td> <td>8-</td> <td>9-</td> <td>0-</td> </tr> </table> | 1- | 2- | 3- | 4- | 5- | 6-QUIT | 7- | 8- | 9- | 0- | |
| 1- | 2- | 3- | 4- | 5- | | | | | | | |
| 6-QUIT | 7- | 8- | 9- | 0- | | | | | | | |

Figure 4-26 Recording Hunt Group Options Subform Layout

5:01 PM 19-MAR-97 alarm status = NO ALARM

| | | | |
|------------------------|--------|---------------|---------------|
| SX-200 ML LIGHTWARE 16 | 1.0 | 17-MAR-1997 | Main menu |
| | | | |
| █ | | | |
| 1-SYSTEM | 2- | 3-DIAGNOSTICS | 4- |
| 5-TRAFFIC_MEAS | 6-QUIT | 7-LOGS | 8-ACD_REPORTS |
| 9-REPORTS | 0- | | |

Customer Data Entry

Figure 4-27 Auto Attendant Hunt Group Options Subform Layout

11:00 AM 10-JAN-97 alarm status = NO ALARM

| | | | | | |
|-----------------------------|----|----|----------------|---------|--|
| [GRP 1:24][TERM][STN/SET] | | | | OPTIONS | |
| > Name Overflow | | | | mktg < | |
| Name | | | | mktg | |
| 1- | 2- | 3- | 4- | 5- | |
| 6-QUIT | 7- | 8- | 9-DELETE FIELD | 0- | |

Figure 4-28 Station / Set Hunt Group Options Subform Layout

11:04 AM 10-JAN-97 alarm status = NO ALARM

| | | | | | |
|----------------------------|----|----|----------------|---------|--|
| [GRP 1:24][TERM][RABTOS] | | | | OPTIONS | |
| > Name Overflow | | | | mktg < | |
| Name | | | | █ mktg | |
| 1- | 2- | 3- | 4- | 5- | |
| 6-QUIT | 7- | 8- | 9-DELETE FIELD | 0- | |

Figure 4-29 RABTOS Hunt Group Options Subform Layout

Form 18 - Miscellaneous System Ports

- 4.22 This form assigns a physical location to three types of devices and three alarms. The devices are a Music on Hold source, paging equipment and night bells equipment. The alarms are minor, major and critical. The system supports 25 night bells, nine paging zones and one Music on Hold source. Refer to Figure 4-30 for the form layout.

5:50 PM 9-JAN-97 alarm status = NO ALARM

| ENTRY | DESCRIPTION | BAY | SLT | CCT | SCT | DIR | PAGER | EXT # |
|--------|---------------|-----|-------|----------|-----|-----|-------|-------|
| 01 | Music On Hold | | | | | | | |
| 02 | Pager 1 | | | | | | | |
| 03 | Pager 2 | | | | | | | |
| 04 | Pager 3 | | | | | | | |
| 05 | Pager 4 | | | | | | | |
| 06 | Pager 5 | | | | | | | |
| 07 | Pager 6 | | | | | | | |
| 08 | Pager 7 | | | | | | | |
| 09 | Pager 8 | | | | | | | |
| 10 | Pager 9 | | | | | | | |
| 11 | Minor Alarm | | | | | | | |
| 12 | Major Alarm | | | | | | | |
| 01 | Music On Hold | | | | | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM | | | | |
| 6-QUIT | 7-ENTRY NUM | 8- | 9- | 0- | | | | |

Figure 4-30 Form 18 Layout

Field Descriptions

ENTRY NUMBER: This field lists the entry numbers for the miscellaneous ports. There is a total of 38 entry numbers. The field cannot be modified.

DESCRIPTION: This field lists the titles assigned to the entry numbers. The field cannot be modified.

BAY, SLT and CCT: These fields list the bay, slot and circuit numbers of the device being programmed.

SCT: The SCT (subcircuit) field specifies the relay location on each module for each night bell and each alarm circuit. Figure 4-31 shows the circuit and subcircuit layout of modules on the Universal Card.

DIR: Enter the direction of the paging device as "1" (one way) or "2" (both way).

PAGER: This field associates a pager number with each night bell, providing integrated paging. Integrated paging causes a warble tone to be produced on the paging system whenever selected night bells are active. The PLID used to program Pager 1.. Pager 9 must be either: the PLID of a Music Pager Module on a Universal card OR a PLID programmed as a DMP on a DNIC card on a spine/bullet bay. Once a Pager is programmed, it may be integrated with night bells.

EXT: This field applies only to the night bell entries. The EXTENSION NUMBER field lists the extension numbers (a maximum of five digits) assigned to the night bells. This field links the night bell designations to Form 19 (Call Rerouting Table). This field also links the incoming trunks of Form 14 (Non-Dial-In Trunks) to the night bell designations.

Softkeys

ENTRY NUM: This softkey selects an entry number. Pressing the ENTRY NUM softkey displays the ENTER ENTRY NUM: prompt on the command line. The selection is completed by entering a valid entry number (1 to 38). This entry number can now be specified by its bay, slot, circuit and, if applicable, subcircuit numbers.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **TOP**, **BOTTOM** and **QUIT** are also provided.

| Table 4-8 Miscellaneous System Ports Entry Number Designations | | | |
|--|----------------|--------------|---------------|
| Entry Number | Title | Entry Number | Title |
| 01 | Music on Hold | 20 | Night Bell 7 |
| 02 | Pager 1 | 21 | Night Bell 8 |
| 03 | Pager 2 | 22 | Night Bell 9 |
| 04 | Pager 3 | 23 | Night Bell 10 |
| 05 | Pager 4 | 24 | Night Bell 11 |
| 06 | Pager 5 | 25 | Night Bell 12 |
| 07 | Pager 6 | 26 | Night Bell 13 |
| 08 | Pager 7 | 27 | Night Bell 14 |
| 09 | Pager 8 | 28 | Night Bell 15 |
| 10 | Pager 9 | 29 | Night Bell 16 |
| 11 | Minor Alarm | 30 | Night Bell 17 |
| 12 | Major Alarm | 31 | Night Bell 18 |
| 13 | Critical Alarm | 32 | Night Bell 19 |
| 14 | Night Bell 1 | 33 | Night Bell 20 |
| 15 | Night Bell 2 | 34 | Night Bell 21 |
| 16 | Night Bell 3 | 35 | Night Bell 22 |
| 17 | Night Bell 4 | 36 | Night Bell 23 |
| 18 | Night Bell 5 | 37 | Night Bell 24 |
| 19 | Night Bell 6 | 38 | Night Bell 25 |

Form 19 - Call Rerouting Table

4.23 This form designates where intercepted and attendant-directed calls will route based on Day Service, Night1 Service and Night2 Service. Dial-in trunks to ACD Paths may also be rerouted as defined in this form. The ACD Path is assigned a tenant number in Form 41.

Refer to Figure 4-31 for the form layout and to Table 4-9 for Call Rerouting Options. Each Tenant Group requires a Call Rerouting Table. "DIAL 0" calls can be directed to an LDN, Rotary Dial or DTMF set, *SUPERSET* telephone or Night Bell extension number, or to an individual console. For further information, refer to the *Features Description Practice* (under *Call Rerouting*).

| [TENANT : 1] | | TYPE OF CALL | | | DAY | N1 | N2 | |
|--|---------------|--------------|-------|----------|------|------|------|---|
| > Station Dial 0 Routing Priority Dial 0 Routing DID Recall Points On Busy DID Recall Points On No Answer DID Routing For Calls Into This Tenant DID Illegal # Intercept For This Tenant DID Vacant Number Routing For This Tenant DID Attendant Access Night Points Non-Dial-In Trunks Alternate Recall Points Dial-In Tie Recall Points On Busy Dial-In Tie Recall Points On No Answer Dial-In Tie Routing For Calls Into This Tenant | | | | | 1801 | 1801 | 1801 | < |
| Station Dial 0 Routing | | | | | 1801 | 1801 | 1801 | |
| 1- | 2-TENANT NAME | 3- | 4-TOP | 5-BOTTOM | | | | |
| 6-QUIT | 7-TENANT | 8-DELETE | 9- | 0- | | | | |

alarm status = NO ALARM

11:10 AM 10-JAN-97

Customer Data Entry

Figure 4-31 Form 19 Layout

Field Descriptions

The header line displays the tenant group number being programmed.

DAY: This field designates a directory number for each type of call in day service mode. The directory number is defined in one of the following forms:

- Form 07, Console Assignments
- Form 08, Attendant LDN Assignments
- Form 09, Station/*SUPERSET* Telephones
- Form 17, Hunt Groups
- Form 18, Miscellaneous System Ports
- Form 41, ACD Paths
- Form 45, Key System Telephones

If this field is blank, calls do not reroute for features such as no answer or busy forwarding, and reorder tone is heard for features such as vacant number intercept or Do

Not Disturb intercept. An ONS Voicemail port with a caller on soft hold will receive dial tone.

N1: This field specifies the extension that calls are routed to during Night1 Service Mode. If this field is blank, the call reroutes to the extension specified in the DAY field.

N2: This field specifies the extension number where calls are routed to during Night2 Service Mode. If this field is blank, the call does not reroute.

| Table 4-9 Call Rerouting Options |
|--|
| <p>Station Dial 0 Routing - Any extension which dials the extension general attendant access code (0) is routed here. This rerouting option is based on the caller's tenant.</p> |
| <p>Priority Dial 0 Routing - Any extension which dials the extension general attendant access code (0) and has COS Option 239 (Priority Dial 0) enabled in its COS is routed here. This rerouting option is based on the caller's tenant.</p> |
| <p>DID Recall Points on Busy - A DID call reaching a busy extension or hunt group is routed here. This rerouting option is based on the destination tenant.</p> |
| <p>DID Recall Points on No Answer - A DID call reaching an extension which does not answer is routed here. This rerouting option is based on the destination tenant.</p> |
| <p>DID Routing for Calls into this Tenant - All DID calls normally routed to extensions are routed here to allow screening of DID calls. This rerouting option is based on the destination tenant.</p> |
| <p>DID Illegal # Intercept for this Tenant - A DID call to an illegal number is routed here. This rerouting option is based on the DID's tenant.</p> |
| <p>DID Vacant Number Routing for this Tenant - A DID call to a vacant number is routed here. This rerouting option is based on the DID's tenant.</p> |
| <p>DID Attendant Access Night Points - A DID call to the attendant while the system is in Night Service is routed here. This rerouting option is based on the DID's tenant.</p> |
| <p>Non-Dial-In Trunks Alternate Recall Points - Non-Dial-In trunks that have waited for a busy or non-answering extension for the pre-determined recall time are routed here. This rerouting option is based on the destination tenant.</p> |
| <p>Dial-In Tie Recall Points on Busy - A Dial-In Tie call reaching a busy extension is routed here. This rerouting option is based on the destination tenant.</p> |
| <p>Dial-In Tie Recall Points on No Answer - A Dial-In Tie call reaching an extension which does not answer is routed here. This rerouting option is based on the destination tenant.</p> |
| <p>Dial-In Tie Routing for Calls into this Tenant - All Dial-In Tie calls normally routed to extensions are routed here to allow screening of Dial-In Tie calls. This rerouting option is based on the destination tenant.</p> |
| <p>Dial-In Tie Illegal # Intercept for this Tenant - A Dial-In Tie call to an illegal number is routed here. This rerouting option is based on the Tie trunk's tenant.</p> |
| <p>Dial-In Tie Vacant Number Routing for this Tenant - A Dial-In Tie call to a vacant number is routed here. This rerouting option is based on the Tie trunk's tenant.</p> |
| <p>Dial-In Tie Attendant Access Night Points - A Dial-In Tie call to the attendant while the system is in Night Service is routed here. This rerouting option is based on the Tie trunk's tenant.</p> |
| Page 1 of 2 |

Table 4-9 Call Rerouting Options (continued)

| |
|---|
| <p>DND Intercept Routing for this Tenant - An extension with Do Not Disturb activated has its incoming calls routed here. This rerouting option is based in the extension's tenant.</p> <p>Automatic Wake-up Routing for this Tenant - Extensions answering a wakeup call are routed here. Normally the routing point is a recording group. This rerouting option is based on the extension's tenant. Ensure there are sufficient RADs to provide good wakeup performance.</p> <p>UCD/Attendant Recording for this Tenant - Incoming calls destined for UCD agents are routed here when all of the agents are busy. Calls are normally routed to a recording group.</p> <p>UCD on Hold Time-out for this Tenant - Incoming calls to busy UCD hunt groups which are not answered after a pre-determined time-out period are routed here.</p> <p>DISA Day Service Routing for this Tenant - Direct Inward System Access (DISA) calls are routed here. This rerouting option is based on the DISA trunk's tenant.</p> <p>Station Vacant Number Routing for this Tenant - Any station dialing a vacant number is routed here. This rerouting option is based on the extension's tenant.</p> <p>CO Line Routing Points on No Answer - Incoming calls to a CO line that are not answered within a programmed time-out period are routed here. The time-out period is specified by the Attendant-Times Recall (No Ans) timer in the class of service of the set the CO line is calling. This rerouting option is based on the CO line's tenant..</p> <p>Station Illegal Number Routing for this Tenant - Any station or ONS Voicemail port with a caller on soft hold that dials an illegal number is routed here. This rerouting option is based on the extension's tenant.</p> |
|---|

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Customer Data Entry

Softkeys

TENANT: This softkey selects a tenant group. Pressing the TENANT softkey displays the ENTER TENANT GROUP NUM: prompt on the command line. The selection is completed by entering a valid number (1 to 25). The system displays the selected tenant group number on the header line.

TENANT NAME: Allows a name to be programmed for the selected tenant group. The name may have a maximum of eight characters.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 20 - ARS: Class of Restriction Groups

4.24 Class of Restriction groups together users with the same outside call capabilities. A COR is assigned to each attendant console, station, *SUPERSET* telephone and Di-al-In Trunk. This form specifies the Class-of-Restriction (COR) Group members. Refer to Figure 4-32 for the form layout. The system supports a maximum of 50 COR Groups with up to 25 CORs per group. Each COR Group specifies by COR number those extensions which are restricted from accessing the route.

5:57 PM 9-JAN-97
alarm status = NO ALARM

| COR GROUP | COR GROUP MEMBERS (SEPARATE WITH SPACES) | COMMENTS | | |
|--|--|----------|-------|----------|
| > 01 02 03 04 05 06 07 08 09 10 11 12 | | < | | |
| 01 | █ | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-COR GROUP | 8- | 9- | 0- |

Figure 4-32 Form 20 Layout

Field Descriptions

COR GROUP: This field lists the COR Group numbers from 1 to 50. The COR GROUP field cannot be modified.

COR GROUP MEMBERS: This field lists the separate members of each COR group. The COR Group members must be separated by a space (the → key, TAB key or space bar on the terminal or the → key on the console). Consecutively numbered CORs can be separated by a dash (by pressing the “-” key on the terminal or the ninth softkey on the console).

COMMENTS: This field is reserved for additional data (a maximum of 20 characters). It is stored by the system but not used.

Softkeys

COR GROUP: This softkey selects a Class-of-Restriction (COR) group. Pressing the COR GROUP softkey displays the ENTER COR GROUP NUM: prompt on the command line. The selection is completed by entering a valid number (1 to 50). The selected COR group number is displayed on the command line.

“-”: This softkey is available only while a COR group is being edited. Pressing this softkey inserts a dash between a set of consecutive COR group members. It is valid only when it is inserted between consecutive COR group members. For example, 1 2 3 4 5 is equivalent to 1-5. The softkeys **CANCEL**, **DELETE** (this softkey appears after data has been entered), **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 21 - ARS: Day Zone Definition

- 4.25 This form defines the day zones for each day of the week. There is a maximum of three day zones. All days of the week must have a zone specification before this form can be saved. Refer to Figure 4-33 for the form layout.

5:55 PM 9-JAN-97 alarm status = NO ALARM

| DAY ZONE | MON. | TUE. | WED. | THU. | FRI. | SAT. | SUN. |
|--------------------|------|------|------|------|------|------|------|
| > 01 02 03 < | * | * | * | * | * | * | * |
| 01 | * | * | * | * | * | * | * |
| 1-DISABLE | 2- | | 3- | | 4- | | 5- |
| 6-QUIT | 7- | | 8- | | 9- | | 0- |

Figure 4-33 Form 21 Layout

Field Descriptions

DAY ZONE: This field lists the day zones for the system. Pressing the up and down arrow keys select different day zones. This field cannot be modified.

MON., TUE., WED., THU., FRI., SAT. and SUN.: These fields list the zone specification. Pressing the right and left arrow keys (or the TAB key on the CRT terminal) selects separate days. Only one day zone number can be assigned to each day of the week. When a day is assigned to a day zone, the form displays an asterisk (*) in that day field.

Softkeys

ENABLE/DISABLE: This softkey has two functions; it enables and disables the day zone specification for each day. Pressing the ENABLE softkey sets the selected day to the day zone that is displayed on the command line. The form displays an asterisk (*) in the selected day field opposite the chosen day zone. When the cursor is at an asterisk, this softkey displays DISABLE. Pressing the DISABLE softkey removes that day specification from the selected day zone. The asterisk disappears and the softkey displays ENABLE again.

The standard softkeys **CANCEL**, **ENTER**, and **QUIT** are also provided.

Form 22 - ARS: Modified Digit Table

4.26 This form specifies those digits that modify the user-dialed digits. The digit modification prepares the dialed digits for dialing out on certain trunks such as FX, TIE and WATS. Refer to the *Automatic Route Selection and Toll Control Practice* for details. Refer to Figure 4-34 for the form layout.

| 11:14 AM 10-JAN-97 | | alarm status = NO ALARM | | |
|--|-------------|-------------------------|-------|----------|
| ENTRY | QTY TO DEL | DIGITS TO BE INSERTED | | COMMENTS |
| > 01 02 03 04 05 06 07 08 09 10 11 12 | 1 | | | < |
| 01 | 1 | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-ENTRY NUM | 8-DELETE | 9- | 0- |

Figure 4-34 Form 22 Layout

Field Descriptions

ENTRY NUM: This field lists the entry numbers. There is a maximum of 100 entry numbers. The ENTRY NUM field links this form to Form 23, ARS: Route Definition. This field cannot be modified.

QTY TO DELETE: This field lists the quantity of digits that the system removes from the user-dialed digits before outpulsing on a trunk. A maximum of 25 digits can be deleted from each entry number. The digit "1" instructs the system to delete the first dialed digit.

DIGITS TO BE INSERTED: This field lists those digits that the system adds to the user-dialed digits for each entry number. A maximum of 38 digits can be inserted; including any pauses and wait for dial tone symbols. Special number sequences are:

- *1 = Pause for 5 Seconds
- *2 = Wait for Dial Tone
- *3 = Switch to DTMF for Subsequent Digits
- *4 = Stop or start displaying modified digits. Modified digits are displayed on the sets and in the SMDR records (SMDR must be enabled in CDE Form 16, Trunk Groups). The first time *4 appears in a digit string, the system stops displaying the following modified digits. The next time *4 appears the system starts displaying the following modified digits. You can repeat *4 in a digit string to stop or start the displaying of digits.

- *5 = Pause 10 Seconds
- *6 = Insert caller's ID (for analog networking)
- *7 = Insert caller's dialed account code (for analog networking)
- *8 = Insert PBX node ID number (for analog networking)
- *9 = Pause for 1 second.

The asterisk (*) character is generated on the Attendant Console and the terminal by pressing the * key. If however, the asterisk character is required in a string of characters, the * key must be pressed twice.

COMMENTS: This field is reserved for additional data (a maximum of 20 characters). It is stored by the system but not used.

Softkeys

ENTRY NUM: This softkey selects an entry number and displays it on the command line. Pressing the ENTRY NUM softkey displays the ENTER ENTRY NUM: prompt on the command line. The selection is completed by entering a valid number (1 to 100).

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 23 - ARS: Route Definition

4.27 This form defines each ARS Route by specifying the trunk group number, COR group number and the modified digit entry. Refer to 4-35 for the form layout.

6:00 PM 9-JAN-97
alarm status = NO ALARM

| ROUTE NUM | TRUNK GROUP | COR GROUP | MOD DIGIT ENTRY | COMMENTS |
|---|-------------|-----------|-----------------|----------|
| > 01 02 03 04 05 06 07 08 09 10 11 12 < | | | | |
| 01 | █ | | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-ROUTE NUM | 8- | 9- | 0- |

Customer Data Entry

Figure 4-35 Form 23 Layout

Field Descriptions

ROUTE NUM: This field lists the route numbers. Note that the ROUTE NUM field cannot be modified. There is a maximum of 200 route numbers.

TRUNK GROUP: This field displays the trunk group number specification (1 to 50) for each route number.

COR GROUP: This field lists the COR group number specification (1 to 50) for each route number. This field links this form to Form 20 (refer to Form 20, ARS: COR Group Definition). Those users with CORs in the listed COR Group number are restricted from using this route. If no COR group number is specified, then all users can use this route.

MOD DIGIT ENTRY: This field lists the entry number specification (1 to 100) for each route number. This field links this form to Form 22, ARS: Modified Digit Table.

COMMENTS: This field is reserved for additional data which is stored by the system but not used (a maximum of 20 characters).

Softkeys

ROUTE NUM: This softkey selects a route number and displays it on the command line. Pressing the ROUTE NUM softkey displays the ENTER ROUTE NUM: prompt on the command line. The selection is completed by entering a valid number from 1 to 200.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 24 - ARS: Route Lists

- 4.28 This form specifies the order that the route numbers are selected. There are 100 route list numbers; each route list number accommodates a maximum of six route numbers. Refer to Figure 4-36 for the form layout.

| 6:01 PM 9-JAN-97 | | | | alarm status = NO ALARM | | | | | | | |
|--|-------|------------|----|-------------------------|----|--------|----|----------|----|-------|----|
| LIST NUM | FIRST | SECOND | WT | THIRD | WT | FOURTH | WT | FIFTH | WT | SIXTH | WT |
| > 01 02 03 04 05 06 07 08 09 10 11 12 | | | | | | | | | | | < |
| 01 | █ | | | | | | | | | | |
| 1- | | 2- | | 3- | | 4-TOP | | 5-BOTTOM | | | |
| 6-QUIT | | 7-LIST NUM | | 8- | | 9- | | 0- | | | |

Figure 4-36 Form 24 Layout

Field Descriptions

LIST NUM: This field displays the route list numbers. Note that the LIST NUM field cannot be modified. There is a maximum of 100 list numbers.

FIRST, SECOND, THIRD, FOURTH, FIFTH and SIXTH: These fields specify the route numbers for each route list number. Valid entries are 01 to 200. These fields link this form to Form 23 (ARS: Route Definition).

WT: There are five of these; one for each of the SECOND, THIRD, FOURTH, FIFTH and SIXTH fields. ON in this field indicates that the chosen route number is an expensive route. The system indicates this by providing an audible warning tone when that route is selected.

Softkeys

LIST NUM: This softkey selects a route list number and displays it on the command line. Pressing the LIST NUM softkey displays the ENTER ROUTE LIST NUM: prompt on the command line. The selection is completed by entering a valid route list number (01 to 100).

DELETE/ADD: This softkey appears when the pointer is pointing to data (i.e., data on the command line). This softkey has two functions; it deletes and adds data to the form. Pressing the DELETE softkey removes the data from the selected field. The deletion is completed by pressing the ENTER softkey. If the delete key is pressed while the cursor is in the [FIRST] field, data on that line is deleted. The field is ready for new data and the softkey blanks. When the cursor is at a blank WT field on the command line, this softkey displays ADD. Pressing the ADD softkey enables the warning tone. The WT field displays ON and the softkey now displays DELETE.

The standard softkeys **CANCEL, ENTER, TOP, BOTTOM, and QUIT** are also provided.

Form 25 - ARS: Route Plans

4.29 This form assigns the route lists to the time and day zones. There are 18 time zones (six for each day zone). Each time zone has a start time that can be set by the installer. The last specified start time creates a time period from its start time to the first specified start time of that day zone. If a time zone has no assigned route list number, then all calls during that time period are restricted from this route plan. There are a maximum of 50 route plans. Refer to Figure 4-37 for the form layout.

| 3:47 PM 10-JAN-97 | | | alarm status = NO ALARM | | | |
|-------------------|------------|--------------|-------------------------|------------|------------|------------|
| TIME ZONE | DAY ZONE 1 | | DAY ZONE 2 | | DAY ZONE 3 | |
| | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST |
| 01 | | | | | | |
| 02 | | | | | | |
| 03 | | | | | | |
| 04 | | | | | | |
| 05 | | | | | | |
| 06 | | | | | | |
| 01 | | | | | | |
| 6-QUIT | | 7-ROUTE PLAN | | 8- | | 9- |
| | | | | 0- | | |

Figure 4-37 Form 25 Layout

Field Descriptions

TIME ZONE: This field lists the six time zones for each day zone. The TIME ZONE field cannot be modified.

START HOUR: There are three of these fields (one for each day zone). The START HOUR field specifies the starting time of each time zone. The time is represented by two digits in 24 hour format. For example, 18 represents 18:00.

ROUTE LIST: There are three of these fields (one for each day zone). The ROUTE LIST field displays the route list numbers and links this form to Form 24, ARS: Route Lists. Valid entries are 01 to 100.

Softkeys

ROUTE PLAN: This softkey has two functions. It displays the selected route plan number and enables the user to select an alternate route plan. Pressing the ROUTE PLAN softkey displays the following on the command line: CURRENT ROUTE PLAN: XX ENTER ROUTE PLAN NUM: ROUTE PLAN: where XX is route plan number 01 to 50. The route plan selection is completed by entering a new route plan number.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 26 - ARS: Digit Strings

- 4.30 This form (and its nested form) link the digits dialed by the user to the appropriate route, route list or route plan. It selects the relevant route (if there is only one route), or route list (if there is more than one route and the time of day is not important), or route plan (if the choice of routes vary with the time of day) by the user-dialed digits. Refer to Figure 4-38 for the form layout. Refer to the *Automatic Route Selection and Toll Control Practice* for details.

| | | | | | |
|----------------|---------------|------------------|----------------|-------------------------|--|
| 7:58 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| LEADING DIGITS | | RETURN DIAL TONE | | RESTRICTED COR GROUP | |
| 9 | | NO | | Unrestricted | |
| 9 | | NO | | Unrestricted | |
| 1- | 2- | 3- | 4- | 5- | |
| 6-QUIT | 7-LEADING DIG | 8-DELETE | 9-SHOW STRINGS | 0- | |

Customer Data Entry

Figure 4-38 Form 26 Layout

Field Descriptions

LEADING DIGITS: This field displays the first digits of each digit string for digit analysis. The maximum number of digits in this field is five.

RETURN DIAL TONE: If this field displays YES, the system provides a dial tone after the leading digits have been dialed. Alternately, the system does not provide a temporary dial tone when NO is displayed in this field. Refer to the *Automatic Route Selection and Toll Control Practice* for details.

RESTRICTED COR GROUP: This field lists the COR group which cannot dial the specified leading digit(s). If this field is left blank, then every COR group can access the specified leading digit(s).

Softkeys

YES/NO: This softkey has two functions; it enables or disables system dial tone for each entry. Pressing the YES softkey enables the system dial tone when that leading digit is accessed. The RETURN DIAL TONE field displays YES and the softkey now displays NO. Pressing the NO softkey disables the system dial tone when that leading digit is accessed. The RETURN DIAL TONE field displays NO and the softkey displays YES again. Note that this softkey only appears when the cursor is in the "RETURN DIAL TONE" field.

INSERT: This softkey adds new entries to the form. Pressing the INSERT softkey clears the command line and moves the cursor to the LEADING DIGITS field. The addition is completed by entering the new data for each field and pressing the ENTER softkey. Note that the system inserts the addition after the line that was displayed on the command line.

LEADING DIG: This softkey selects an entry in the LEADING DIGITS field. Pressing the LEADING DIG softkey displays the ENTER LEADING DIGITS: prompt on the command line. The selection is completed by entering a valid number. Valid entries are the digits 0 through 9 or an asterisk (*).

SHOW STRINGS: Pressing this softkey accesses the nested form for any defined leading digits entry. Refer to the ARS: Nested Digit Strings subform.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, ****MORE**** and **QUIT** are also provided.

Digit Strings Subform For Form 26

4.31 This form is reserved for specifying subsequent digits for each entry in the LEADING DIGITS field of the previous form. It can only be accessed from the previous form. Refer to Figure 4-39 for the form layout. Refer to the *Automatic Route Selection and Toll Control Practice* for details.

| | | | | | | | | | |
|-----------------------|--|---------------|--|-------------------------|--|-------------------|--|---------------|--|
| 8:01 PM | | 9-JAN-97 | | alarm status = NO ALARM | | | | | |
| DIGITS TO BE ANALYZED | | QTY TO FOLLOW | | LONG DISTANCE | | TERM TYPE AND NUM | | | |
| > 10 | | 7 | | NO | | ROUTE 1 < | | | |
| 10 | | 7 | | NO | | ROUTE 1 | | | |
| 1- | | 2- X | | 3- | | 4-N0X | | 5- ** MORE ** | |
| 6-QUIT | | 7-FIND STRING | | 8-DELETE | | 9-N1X | | 0- | |

Figure 4-39 Digit Strings Subform Layout

Field Descriptions

DIGITS TO BE ANALYZED: This field displays those digits for digit analysis. Digit analysis is required so that the appropriate route, route list or route plan can be selected. The total number of digits in this field, the number of digits in the QTY TO FOLLOW field plus the digits in the LEADING DIGITS field in the previous form (refer to the top level Digit Strings form) cannot exceed 26.

QTY TO FOLLOW: This field lists the number of digits that the user dials AFTER the analyzed digits. The 'Unknown' prompt in this field indicates that the number of subsequent digits is unknown to the system.

LONG DISTANCE: This field specifies which digit string entries require 'long distance' management. Several features (account codes, Hotel/Motel, etc.) use this to control access to ARS. Default condition is NO.

TERM TYPE AND NUM: This field specifies where the digit string terminates. If there is only one route, then ROUTE is selected. If there is more than one route, but the time of day is not important, then LIST is selected. If the choice of routes vary with the time of day, then PLAN is selected.

Softkeys

YES/NO: This softkey only appears when the cursor is at the LONG DISTANCE field. Pressing the YES softkey indicates to the system that this entry requires "long distance" management. The default condition is no "long distance" management required as indicated by NO in the LONG DISTANCE field.

UNKNOWN: This softkey appears only when the cursor is at the QTY TO FOLLOW field. Pressing the UNKNOWN softkey indicates to the system that the quantity of dialed digits AFTER the analyzed digits is unknown.

INSERT: This softkey adds new entries to the form. Pressing the INSERT softkey clears the command line and moves the cursor to the DIGITS TO BE ANALYZED field. The addition is completed by entering the new data for each field and pressing the ENTER softkey. Note that the system inserts the addition one line after the line that was displayed on the command line. The system automatically places all inserted or added strings in numerical ascending order with relation to existing strings.

NOX: This softkey functions as a wild card sequence, where N is any digit from 2 to 9. It represents half of the area codes in North America. Pressing this softkey displays NOX in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the beginning of a digit string.

ROUTE: This softkey only appears when the cursor is at the TERM TYPE AND NUM field. Pressing the ROUTE softkey terminates that entry at a route (the route number must still be defined). ROUTE appears in the TERM TYPE AND NUM field.

X: This softkey functions as a wild card digit; it represents any digit from 0 to 9. Pressing this softkey displays X in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the end of a digit string.

PLAN: This softkey only appears when the cursor is at the TERM TYPE AND NUM field. Pressing the PLAN softkey terminates that entry at a route plan (the number must still be defined). PLAN appears in the TERM TYPE AND NUM field.

FIND STRING: This softkey selects an entry in the DIGITS TO BE ANALYZED field. Pressing the FIND STRING softkey displays the ENTER DIGIT STRING: prompt on the command line. The selection is completed by entering a valid digit string. Note: The entered digit string does not have to be an exact match; the system accepts subsets of digit strings and moves the cursor to the closest entry.

N1X: This softkey functions as a wild card sequence, where N is any digit from 2 to 9. It represents half of the area codes in North America. Pressing this softkey displays N1X in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the beginning of a digit string.

LIST: This softkey appears only when the cursor is at the TERM TYPE AND NUM field. Pressing the LIST softkey terminates that entry at a Route List (the number must still be defined). LIST appears in the TERM TYPE AND NUM field.

1N1X, 1N0X, 0N1X, 0N0X: For area codes not specifically identified, and where dialing is preceded by a 1 or 0 (long distance access code), these wildcard sequences followed by 7 digits would cover all unspecified area codes. This allows wild card restriction of 555 and 976 numbers. These softkeys can only be pressed at the beginning of a digit string. They are accessed by pressing the ** MORE ** softkey once.

10XXX0N0X, 10XXX0N1X, 10XXX1N0X, 10XXX1N1X, 10XXX0, 10XXX1: These wildcard sequences, designed for the call aggregator market (i.e. hotels, motels, hospitals, universities), prevent unauthorized calls from being billed to the originating line, while allowing customers access to the long distance carriers of their choice. These softkeys can only be pressed at the beginning of a digit string. Press the ** MORE ** softkey twice to access 10XXX0N0X, 10XXX0N1X, 10XXX1N0X and 10XXX1N1X. Press ** MORE ** softkey three times to access 10XXX0 and 10XXX1.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, and **QUIT** are also provided.

Form 27 - ARS: Maximum Dialed Digits

- 4.32 This form specifies the maximum number of dialed digits allowed for each Class of Restriction. The purpose of this form is to accommodate countries with open numbering plans, where it is generally not possible to determine from the leading digits the number of digits to follow. For North America, the specified default value of Unlimited applies. Refer to the *Automatic Route Selection and Toll Control Practice* for detailed information and additional CDE considerations if a value other than 'Unlimited' is chosen. See Figure 4-40 for the form layout.

| COR | | MAXIMUM NUMBER OF DIALED DIGITS | | |
|--------|----|---------------------------------|-------|----------|
| 1 | | Unlimited | | |
| 2 | | Unlimited | | |
| 3 | | Unlimited | | |
| 4 | | Unlimited | | |
| 5 | | Unlimited | | |
| 6 | | Unlimited | | |
| 7 | | Unlimited | | |
| 8 | | Unlimited | | |
| 9 | | Unlimited | | |
| 10 | | Unlimited | | |
| 11 | | Unlimited | | |
| 12 | | Unlimited | | |
| 1 | █ | Unlimited | | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7- | 8-COR | 9- | 0- |

Figure 4-40 Form 27 Layout

Field Descriptions

COR: This field lists the COR (1 → 25). **Note:** The COR field cannot be modified.

Maximum Number of Dialed Digits: This field lists the allowed number of dialed digits, 1 to 25, plus the default value of Unlimited. Twenty-six is equivalent to UNLIMITED. Therefore, when 26 is entered the value UNLIMITED is displayed.

Softkeys

UNLIMITED: Pressing the UNLIMITED softkey enters the default value of 'Unlimited' in the Maximum Number of Dialed Digits field. If the cursor is positioned at the default value, 'Unlimited' is not displayed.

COR: When this softkey is pressed the user is prompted with ENTER COR NUMBER. After entering the COR number and pressing the ENTER softkey, the cursor is positioned to the COR specified. If the COR selected is out of range, the message "The value xx is outside valid range for COR (1 → 25)" is displayed.

The standard softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 28 - Form Access Restriction Definition

- 4.33 This form specifies the level of access for the various CDE forms. There are five levels of access; the installer level has the highest degree of access and the attendant level has the lowest. Each form is defined as read only, read/write or no access. When the system is first initialized, the installer level and MAINT1 level have read/write access for each form; the rest of the levels default to no access. Note that at each level of access the user can only modify those forms plus the forms at the lower levels of access. For example, the user at the supervisor level can only modify those forms at SUPERVISOR and ATTENDANT levels. Refer to Figure 4-41 for the form layout.

| 6:09 PM 9-JAN-97 | | alarm status = NO ALARM | | | | |
|---------------------------------|----------------|-------------------------|------------|----------|------|--|
| FORM NAME | INST | MAINT1 | MAINT2 | SUPER | ATT | |
| > 01 = SYSTEM CONFIGURATION | R/W | R/W | none | none | none | |
| 02 = FEATURE ACCESS CODES | R/W | R/W | none | none | none | |
| 03 = COS DEFINE | R/W | R/W | none | none | none | |
| 04 = SYS OPTIONS/SYS TIMERS | R/W | R/W | none | none | none | |
| 05 = TENANT INTERCONNECTION | R/W | R/W | none | none | none | |
| 06 = TENANT NIGHT SWITCHING | R/W | R/W | none | none | none | |
| 07 = CONSOLE ASSIGNMENTS | R/W | R/W | none | none | none | |
| 08 = ATTENDANT LDN ASGN | R/W | R/W | none | none | none | |
| 09 = STATIONS/SUPERSET TELEPHON | R/W | R/W | none | none | none | |
| 10 = PICKUP GROUPS | R/W | R/W | none | none | none | |
| 11 = DATA CIRCUIT DESCRIPTOR | R/W | R/W | none | none | none | |
| 12 = DATA ASSIGNMENT | R/W | R/W | none | none | none | |
| 01 = SYSTEM CONFIGURATION | █ R/W | R/W | none | none | none | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM | | |
| 6-QUIT | 7-SET PASSWORD | 8-ALL FORMS | 9-FORM NUM | 0- | | |

Figure 4-41 Form 28 Layout

Field Descriptions

FORM NAME: This field lists all the form numbers and names of the CDE package. The FORM NAME field cannot be modified. If the FORM NAME is listed as RE-SERVED, the form is not available.

INST, MAINT1, MAINT2, SUPER and ATT: These fields represent the five levels of access and list the access type (read only, read/write or no access) for each form. The selected level of access is not displayed on the softkeys. The INST field cannot be modified.

Softkeys

READ ONLY: Pressing the READ ONLY softkey restricts the user to viewing the selected form; no modifications can be made. The R prompt appears beside the selected form and under the selected access level.

READ/WRITE: Pressing the READ/WRITE softkey enables the user to view and modify the selected form. The form displays the R/W prompt to indicate this state.

NO ACCESS: Pressing the NO ACCESS softkey restricts form access. The form displays the 'none' prompt to indicate this state.

SET PASSWORD: This softkey changes the password for Customer Data Entry. Pressing the SET PASSWORD softkey shows a new softkey display (ATTENDANT, SUPERVISOR, MAINT2, MAINT1, and INSTALLER) and the following prompt: SELECT LEVEL OF ACCESS:. The user cannot change the password for a level of access higher than the current one.

For example, a user logged on as MAINT2 cannot change the password for MAINT1. After the user selects a level of access, the system prompts ENTER XXXXXXXX NEW PASSWORD:. When the new password is entered, the system prompts ENTER XXXXXXXX NEW PASSWORD TO VERIFY:. When changing the current level's password, the system first prompts ENTER XXXXXXXX OLD PASSWORD:, where XXXXXXXX is the selected level of access.

ALL FORMS: This softkey allows a user to change the level of access to all forms for a lower level user. For example, INSTALLER may use this to change the access for MAINT1, and MAINT2 may use this to change the access for SUPERVISOR.

FORM NUM: This softkey selects a form by number. Pressing the FORM NUM softkey displays the ENTER FORM NUMBER: prompt on the command line. The selection is completed by entering a valid form number (1 to 35).

The softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 29 - DTE Profile

4.34 In order for the data transceiver (DTRX) to communicate with the attached data terminal equipment (DTE), it is necessary to specify the programmable options which define the characteristics of the terminal. The data transceiver circuit provides data devices with the ability to dial a destination via a keyboard. The DTE profile form provides 25 programmable profiles.

Customer Data Entry

| 2:07 PM 12-JAN-97 | | alarm status = NO ALARM | | |
|-------------------|------------------------------|-------------------------|----------|----------|
| PROFILE NUMBER | NUMBER OF DATA SETS ASSIGNED | | COMMENTS | |
| > 01 | 1 | | | |
| 02 | 0 | | | |
| 03 | 0 | | | |
| 04 | 0 | | | |
| 05 | 0 | | | |
| 06 | 0 | | | |
| 07 | 0 | | | |
| 08 | 0 | | | |
| 09 | 0 | | | |
| 10 | 0 | | | |
| 11 | 0 | | | |
| 12 | 0 | | | |
| 01 | 1 | | █ | |
| 1- | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-PROFILE NUM | 8-SEL. OPTION | 9-REVIEW | 0- |

Figure 4-42 Form 29 Layout

Field Descriptions

PROFILE NUMBER: This field lists all the profile numbers 01 to 25. The PROFILE NUMBER field cannot be modified.

NUMBER OF DATA SETS ASSIGNED: This field lists the number of data sets assigned to each profile number.

COMMENTS: This field is reserved for additional data (a maximum of 20 characters). It is stored by the system but not used.

Softkeys

PROFILE NUM: The PROFILE NUM softkey allows a user to select a device by number. Pressing this softkey displays the ENTER PROFILE NUM: prompt. When the number has been entered, the command line updates and the line pointer moves to profile number. The selection is completed by pressing the ENTER softkey.

SEL. OPTION: A new form is displayed when the SEL. OPTION softkey is pressed. Refer to the Options Subform for Form 29.

REVIEW: A new form is displayed when the REVIEW softkey is pressed. Refer to the Review Subform for Form 29. This softkey appears when the number of datasets is greater than 0.

The softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Options Subform For Form 29

4.35 The system displays this form when the programmer presses the SEL. OPTION softkey in Form 29, Data Terminal Equipment Profile. The options displayed are for the profile number that was on the command line of Form 29.

| | | | | |
|---|----|-------------------------|-------|---|
| 6:11 PM 9-JAN-97 | | alarm status = NO ALARM | | |
| [PROFILE NUMBER : 1] DTE OPTIONS | | | | VALUE |
| > Terminal type Language DTRX Echoplex Editing Editing character delete (0 - 127, Decimal value of ASCII code) Editing line display (0 - 127, Decimal value of ASCII code) Inject <LF> after <CR> Number of pads after <CR> (0 - 7) Number of pads after <LF> (0 - 7) DTRX Inactivity Timer 1 - 60 seconds | | | | VIDEO TERM < ENGLISH DISABLED DISABLED 0 0 ALWAYS 0 0 10 |
| Terminal type | | | | VIDEO TERM |
| 1-TELEPRINTER | 2- | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7- | 8- | 9- | 0- |

Figure 4-43 Options Subform Layout

Field Descriptions

The header displays the profile number.

VALUE: The VALUE field displays the current setting for each option.

Softkeys

Some of the softkeys displayed are the alternative settings for the option displayed on the command line. Refer to *Parameters*, for details. The following softkeys are continuously present: **TOP**, **BOTTOM**, and **QUIT**.

Parameters

Terminal Type: This parameter is used to determine how the delete character is defined on a video or teleprinter terminal. A teleprinter terminal displays a “/” when the delete character is used and the video terminal transmits a <backspace>, <space>, <backspace>.

Language: Commands and responses for the DTRX can be English or French.

DTRX Echoplex: This parameter determines whether the DTRX (data transceiver), will echo back transmitted characters to the originating station. The exception is programmed keys in the DTE and data circuit descriptor forms.

Editing: Enabled, this option provides the user with editing function DTRX delete character, and DTRX display line.

Editing Character Delete: An ASCII code in decimal form is used to define a character as a delete key. If echoplex and DTRX editing options are enabled, a “/” appears as the delete character on a teleprinter and a <backspace>, <space>, <backspace>, is transmitted back to a video terminal.

Editing Line Display: An ASCII code in decimal form is used to define a character as a display line key. When DTRX editing is enabled and the ASCII code for display line is transmitted, the current DTRX command line and the input digits are displayed on a new line.

Inject <LF> After <CR>: This field is used to accommodate terminal variations in the handling of carriage returns (<CR>). Some terminals automatically insert line feed (<LF>) after carriage return. While connected to the data transceiver the following options are available:

NEVER: No linefeed insertions after <CR> detected.

FROM DTE: Insert <LF> after <CR> from DTE if the echoplex feature is enabled. The <CR> and <LF> is returned to the Data Terminal Equipment by the Data Transceiver after a <CR> was received from the DTE. All messages originated by the DTRX (data transceiver) would only have a <CR>. The DTE would typically provide this.

FROM SYSTEM (DTRX): Insert <LF> after <CR> from DTRX. All messages originated by the PABX that have a <CR> will have a <LF> injected. This does not include <CR> which are echoed back to the DTE. This option would be used if the DTE provided local echoing of characters transmitted.

ALWAYS: The <LF> will be injected if the <CR> is originated from the DTE or DTRX.

Number of Pads after <CR>: This field is used for terminals that require delays after a carriage return before receiving printable characters (printers with small or no buffers). Values entered range from 0 to 7. This option is valid only if echoplex is enabled.

Number of Pads after <LF>: This field is used for terminals that require delays after a line feed return before receiving printable characters (printers with small or no buffers). Values entered range from 0 to 7. This option is valid only if echoplex is enabled.

DTRX Inactivity Timer: This field specifies the length of time between the last character received or transmitted from a data device and the DTRX being dropped. Values range between 1 to 60 seconds; default is 10 seconds.

Review List SUBFORM for Form 29

- 4.36 This form appears when the REVIEW softkey is pressed in Form 29, DTE Profile. The form provides a list of users of a particular profile identified by their physical location.

| | | | | | | |
|------------------------|---------------|-----|-------------------------|-----|-----|----------|
| 2:08 PM 12-JAN-97 | | | alarm status = NO ALARM | | | |
| [PROFILE NUMBER : 1] | | BAY | SLT | CCT | SCT | COMMENTS |
| > | | 1 | 8 | 1 | 2 | < |
| | | 1 | 8 | 1 | 2 | |
| 1- | 2- | 3- | 4- | 5- | | |
| 6-QUIT | 7-PROFILE NUM | 8- | 9- | 0- | | |

Figure 4-44 Review List Subform Layout

Field Descriptions

The header line displays the profile number.

BAY, SLT, CCT, SCT: These fields list the bay, slot, circuit and subcircuit of the device programmed. These fields cannot be modified.

COMMENTS: This field displays the comments for each device from the Data Assignment form. It cannot be modified.

Softkeys

PROFILE NUM: When this softkey is pressed the command line displays 'ENTER PROFILE NUM:'. After entering a valid number and pressing the ENTER softkey, the screen will display the list of users of that DTE profile, if any.

The standard softkeys **CANCEL**, **ENTER** and **QUIT** are also provided.

Form 30 - Device Interconnection Table

4.37 This form specifies which devices may be connected. See Figure 4-45 for the form layout. The system allows a maximum of 25 devices.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|-------------------------|------------|----|-------|----------|--------|----------------|------------|----------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6:16 PM | 9-JAN-97 | alarm status = NO ALARM | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| > | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>01</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>02</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>03</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>04</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>05</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>06</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>07</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>08</td><td>*</td><td>*</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>09</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>10</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>11</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> <tr><td>12</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> </table> | 01 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 02 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 03 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 04 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 05 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 06 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 07 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 08 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 09 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 10 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 11 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | 12 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | < |
| 01 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 06 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 07 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 08 | * | * | . | . | . | . | . | . | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 09 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 12 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr><td>01</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td></tr> </table> | 01 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 01 | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 25%;">1-</td> <td style="width: 25%;">2-</td> <td style="width: 25%;">3-</td> <td style="width: 25%;">4-TOP</td> </tr> <tr> <td>5-BOTTOM</td> <td>6-QUIT</td> <td>7-INTERCON NUM</td> <td>8-DISALLOW</td> </tr> <tr> <td>9-REVIEW</td> <td>0-</td> <td></td> <td></td> </tr> </table> | 1- | 2- | 3- | 4-TOP | 5-BOTTOM | 6-QUIT | 7-INTERCON NUM | 8-DISALLOW | 9-REVIEW | 0- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1- | 2- | 3- | 4-TOP | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5-BOTTOM | 6-QUIT | 7-INTERCON NUM | 8-DISALLOW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9-REVIEW | 0- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Customer Data Entry

Figure 4-45 Form 30 Layout

Field Descriptions

Initially, the system interconnects all devices except trunks. The asterisk (*) character indicates the device the row represents is allowed to connect to the device the column represents. When the system inhibits device interconnection, it is indicated by the period (.) character. The device numbers are listed in the header line and the first column. The devices these numbers represent are listed in the nested REVIEW form.

Softkeys

INTERCON NUM: The INTERCON NUM softkey allows a user to select a device by number. Pressing this softkey displays the ENTER INTERCONNECT NUM: prompt. Entering the interconnect number (1 to 25) displays that device with a series of "*" characters (allow interconnection) and '.' characters (disallow interconnection). Cursor movement on the command line is controlled by the right and left cursor control keys.

DISALLOW/ALLOW: This softkey has two functions; it enables and disables interconnection between devices. Pressing the DISALLOW softkey disables the interconnection between those two devices unidirectionally. For example, when modifying connections for device 5 (the command line displays line 5) and the DISALLOW softkey is pressed when the cursor is under the sixth column, then device 5 cannot communicate with device 6. However, device 6 can still communicate with device 5. Total interconnection is inhibited only when a '.' (disallow) character is inserted at row 6 (device 6) under the fifth column (device 5). The softkey now displays the ALLOW prompt. Pressing the ALLOW softkey enables the unidirectional interconnection between the selected devices; the '*' character replaces the '.' character.

REVIEW: Pressing the REVIEW softkey displays a new form (refer to Review List Subform for Form 30). This form lists all the device types.

The standard softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are provided.

Review List Subform for Form 30

4.38 This form appears when the REVIEW softkey is pressed in the Device Interconnection Table Form. When entered from Form 30, this form displays a list of the device types. Refer to Figure 4-46 for the form layout. Note that the data in this form cannot be modified.

| 6:17 PM 9-JAN-97 | | alarm status = NO ALARM | | |
|------------------|--------------------------------|-------------------------|-------|------------------|
| ENTRY NUM | DEVICE TYPE DESCRIPTION | | | INTERCONNECT NUM |
| > 01 | Station/Set | | | 1 |
| 02 | Console | | | 2 |
| 03 | Loop Start Trunk | | | 3 |
| 04 | Ground Start Trunk | | | 4 |
| 05 | DID/Tie Trunk | | | 5 |
| 06 | E&M Trunk (2-Wire or 4-Wire) | | | 6 |
| 07 | RESERVED | | | 7 |
| 08 | RESERVED | | | 8 |
| 09 | RESERVED | | | 9 |
| 10 | RESERVED | | | 10 |
| 11 | RESERVED | | | 11 |
| 12 | RESERVED | | | 12 |
| █ 01 | Station/Set | | | 1 |
| 1- | 2-ENTRY NUM | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-INTERCON NUM | 8- | 9- | 0- |

Figure 4-46 Review List Subform Layout

Field Descriptions

ENTRY NUM: This field lists the entry numbers for the device types. There is a total of 25 entry numbers. The ENTRY NUM field cannot be modified.

DEVICE TYPE DESCRIPTION: This field lists the titles assigned to the entry numbers. The DEVICE TYPE DESCRIPTION field cannot be modified. The last 13 entries are reserved for future use.

INTERCONNECT NUM: This field lists all the interconnect numbers; it links this form to the previous form (refer to Form 30, Device Interconnection Table). The interconnect numbers range from 1 to 25. The INTERCONNECT NUM field cannot be modified.

ENTRY NUM: This softkey selects an entry number. Pressing the ENTRY NUM softkey displays the ENTER ENTRY NUM: on the command line. The selection is completed by entering a valid entry number (1 to 25).

INTERCON NUM: This softkey selects a device type by its interconnect number. Pressing the INTERCON NUM softkey displays ENTER INTERCONNECT NUM: on the command line. The selection is completed by entering a valid interconnect number (1 to 25).

The standard softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are provided.

Form 31 - System Abbreviated Dial Entry

4.39 This form specifies System Abbreviated Dial numbers. Refer to the *Features Description Practice* (under Abbreviated Dial) for details. See Figure 4-47 for the form layout.

| | | | | | |
|--------------|--------------|--------------|-----------|-------------------------|--|
| 8:09 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| INDEX NUMBER | | DIGIT STRING | | PRIVATE | |
| 1 | | 2411 | | | |
| 1 | | 2411 | | | |
| 1- | 2-FIND INDEX | 3- | 4-TOP | 5-BOTTOM | |
| 6-QUIT | 7- | 8-DELETE | 9-PRIVATE | 0- | |

Customer Data Entry

Figure 4-47 Form 31 Layout

Field Descriptions

INDEX NUMBER: This field lists the index numbers: there is one for each entry in the form. The System Abbreviated Dial Access Code followed by the index number forms the abbreviated dial number. Each index number can be a maximum of three digits.

DIGIT STRING: This field lists the digit strings: there is one for each Index number. The digit string can be a maximum of 26 digits for a non-private number, 25 digits for a private number. The following special characters may be entered:

- *1 = Pause for 5 seconds (for ONS Voice Mail feature)
- *3 = Wait for user to manually insert digits (2 digits expected)
- *4 = Send call forward condition (for ONS Voice Mail feature)
- *5 = Call to Call Announce Port. This code must be at the end of the number; it cannot have digits following it.
- *6 = Insert caller's ID (for ONS Voice Mail feature)
- *8 = Send digits of calling party (for ONS Voice Mail feature)

- *9 = Pause for 1 second (for ONS Voice Mail feature)
- ** = DTMF digit *
- # = DTMF digit #

PRIVATE: This field specifies which entries are private (as indicated by the PRIVATE prompt) and which are non-private (as indicated by a blank).

Softkeys

FIND INDEX: This softkey selects an index number. Pressing the FIND INDEX softkey displays ENTER INDEX NUM: on the command line. The selection is completed by entering a valid index number (a maximum of three digits).

INSERT: This softkey adds new digit strings to this form. Pressing the INSERT softkey clears the command line and moves the cursor to the INDEX NUMBER field. The addition is completed by entering a valid index number and digit string. The system inserts the addition in ascending numerical order according to the INDEX NUMBER field. Note that if there is no data in this form or if the line pointer is pointing to the last line of data, then this softkey does not appear.

PRIVATE/NON-PRIVATE: This softkey has two functions. Pressing the PRIVATE softkey sets the selected digit string entry to private; the PRIVATE prompt appears in the PRIVATE field and the softkey now displays the NON-PRIVATE prompt. Pressing the NON-PRIVATE softkey sets the selected digit string to non-private; the PRIVATE field blanks and the softkey displays the PRIVATE prompt once again.

The softkeys **CANCEL, ENTER, DELETE, TOP, BOTTOM, and QUIT** are provided.

Form 32 - Customer Data Print

4.40 This form lists all the customer data entry options that can be sent to an output device, such as a printer or a terminal. The options are selected by Print Option Number. Note that this form cannot be modified. Refer to Table 3-1 for a complete list of the form numbers and to Figure 4-48 for the form layout. Print Options with "*" are subforms of the preceding form.

| | | | | |
|---|---|-------------------------|---------|----------|
| 6:19 PM 9-JAN-97 | | alarm status = NO ALARM | | |
| PRINT OPTION | CDE DATA PRINT | | | |
| > 01 02 03 04 05 06 07 08 09 09* 10 11 | System Configuration Feature Access Codes COS Definition System Options/System Timers Tenant Interconnection Table Tenant Night Switching Console Assignments Attendant LDN Assignments Station/SUPERSET Telephones Line/SUPERSET Telephone Appearances Pickup Groups Data Circuit Descriptors | | | |
| █ 01 | System Configuration | | | |
| 1- | 2-PRINT ALL | 3- | 4-TOP | 5-BOTTOM |
| 6-QUIT | 7-PRINT OPTION | 8- | 9-PRINT | 0- |

Figure 4-48 Form 32 Layout

Field Descriptions

PRINT OPTION: This field lists the print option numbers for the CDE options that can be sent to an output device (a terminal or a printer). There is a maximum of 50 print option numbers. The PRINT OPTION field cannot be modified.

CDE DATA PRINT: This field lists the form names associated with the print option numbers. Print options with the form name RESERVED are not available. The CDE DATA PRINT field cannot be modified.

Softkeys

PRINT ALL: This softkey transmits the contents of all the CDE Data Print option ranges to an output device (printer or terminal). Pressing the PRINT ALL softkey blanks the softkey display (with the exception of the QUIT softkey).

Further CDE is prohibited while PRINT ALL is in effect. The command line sequentially prompts the user to enter the desired ranges for options. The softkey ENTER must be pressed after each entry. The Data Print options are listed below:

1. PRINT FROM COS START: TO COS END
2. PRINT FROM TRK CCT DESC START: TO TRK CCT DESC END
3. PRINT FROM DATA CCT DESC START: TO DATA CCT DESC END
4. PRINT FROM DTE PROFILE START: TO DTE PROFILE NUM. END
5. PRINT FROM T1 LINK DESC. START: TO T1 LINK DESC. END.

When printing starts, the command line displays: CDE DATA PRINT IN PROGRESS and the only softkey available is ABORT.

Note: The system does not generate an error message if the specified printer is not operational.

ABORT: This softkey appears whenever a print is in progress. Pressing this softkey cancels the current active printout.

PRINT OPTION: This softkey selects a print option number. Pressing the PRINT OPTION softkey displays ENTER PRINT OPTION: on the command line. The selection is completed by entering a valid print option number. The command line displays the selected option.

PRINT: This softkey transmits the contents of the selected print option to an output device (printer or terminal). Pressing the PRINT softkey blanks the softkey display (except for the ABORT softkey) for the duration of the print operation. When completed, the system displays CDE DATA PRINT OPTION XX HAS COMPLETED PRINTING where XX is the print option number. The softkey display returns to the original format.

The standard softkeys **CANCEL**, **ENTER**, **DELETE**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Softkeys

ACTIVE/INACTIVE: This softkey has two functions. Pressing the ACTIVE softkey activates the selected account code entry so that the account code can be used. The ACTIVE prompt appears in the ACTIVE field and the softkey now displays the INACTIVE prompt. Pressing the INACTIVE softkey sets the selected Account Code entry to 'Inactive' and the account can no longer be accessed. The ACTIVE field now displays the INACTIVE prompt and the softkey displays the ACTIVE prompt once again. Note that this softkey only appears when the cursor is in the ACTIVE field.

NULL COS/NULL COR: This softkey has two functions; it deletes selected COS and COR number entries. When the cursor is in a COS field which has a COS number, the NULL COS prompt appears on the softkey display. Pressing the NULL COS softkey erases the data in the COS field; the NULL COS prompt disappears only when the cursor moves to the next field. Similarly, when the cursor is in a COR field which has a COR number, the NULL COR prompt appears on the softkey display. Pressing the NULL COR softkey erases the data in the COR field; the NULL COR prompt disappears only when the cursor moves to the next field.

INSERT: The INSERT softkey adds a new account code to this form. Pressing this softkey opens a window with a clear command line and moves the cursor to the ACCOUNT CODE field. The new account code is programmed by entering an account code value, a COS number and a COR number (if required). The system inserts the new account code in its appropriate sequential position. The line pointer now points to the new account code. Note that if there is no data in this form or if the line pointer is pointing to the last line of data, then this softkey does not appear.

DELETE RANGE: Pressing the DELETE RANGE softkey displays the FIRST ACCOUNT CODE TO DELETE: prompt on the command line. After an Account Code has been entered, the display returns the LAST ACCOUNT CODE TO DELETE: prompt. The deletion is completed by entering an Account Code. All Account Code entries between and including these specified Account Codes are removed from the form. If an invalid account code is entered the system will display 'Non-existent account code value has been entered'. Pressing CANCEL followed by QUIT returns the display without any modifications.

FIND: This softkey selects an account code and appears only when there is an account code in the form. Pressing the FIND softkey displays the ENTER ACCOUNT CODE: prompt on the command line. The selection is completed by entering a valid account code.

The standard softkeys **CANCEL**, **ENTER**, **DELETE**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 34 - Directed IO

4.42 This form allows the user to specify the location of the system printer ports, designate the type of printout for each printer, and define whether the printout is guaranteed or not (will or will not print). Data outputs such as Traffic Measurement, SMDR, Hotel/Motel can be routed to any data port with an asynchronous dataset. If no new point is specified, printouts continue to default to the system printer RS-232 port. If the printer specified is currently active, then any request to print is queued. The system can support 7 different printers. When the form is entered for the first time the default printer routing is displayed for all valid printouts. See Figure 4-50 for the form layout.

| | | | | | |
|----------------|------------------|----------|---------------|-------------------------|------------|
| 8:13 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| EXT NUM | PRINTOUT | | PRINTOUT TYPE | | GUARANTEED |
| > Printer Port | Maintenance Logs | | Autoprint | | NO < |
| Printer Port | Maintenance Logs | | Autoprint | | NO |
| 1- | 2- | 3-ADD | 4-TOP | 5-BOTTOM | |
| 6-QUIT | 7- | 8-DELETE | 9- | 0- | |

Figure 4-50 Form 34 Layout

Field Descriptions

EXT NUM: This field lists printer ports and extension numbers of programmed datasets. This form is linked to Form 12, Data Assignment.

PRINTOUT: This field lists the specified data outputs, such as Traffic Measurement, SMDR, Hotel/Motel, DATA SMDR, etc., for each programmed printer. Values in this field are entered through softkey commands. Note that the PMS (Property Management System) softkey is displayed only if the PMS system option is enabled.

PRINTOUT TYPE: This field lists the type of printout provided for each data output such as Autoprint, Directed and Monitor. Values in this field are entered through softkeys. The softkeys displayed will depend upon the data output programmed in the PRINTOUT field. Table 4-10 lists available softkeys as determined by the PRINTOUT field.

| Table 4-10 Available Softkeys | |
|-------------------------------|------------------------------|
| Application | Printout Type Options |
| Maintenance Logs | AUTOPRINT, DIRECTED, MONITOR |
| Traffic Measurement | AUTOPRINT, DIRECTED |
| SMDR | AUTOPRINT |
| CDE Data Print | DIRECTED |
| Hotel/Motel Wakeup | AUTOPRINT |
| Hotel/Motel Audit | DIRECTED |
| PMS | AUTOPRINT |
| ACD Agent Summary | AUTOPRINT |
| ACD Monitor Print | DIRECTED |
| ACD Group Summary | MONITOR |
| MAI* | AUTOPRINT |

* If software option is enabled.

GUARANTEED: This field is only modifiable for SMDR and Data SMDR printouts. The field defaults to NO in all other cases. If this field is set to YES, SMDR records are guaranteed to print without losing records.

Softkeys

DELETE: Pressing the DELETE softkey deletes from the form the printout listed at the cursor position. The ENTER softkey must then be pressed to change the database. The user is alerted if the printout is currently active (printing or queued to print) before the delete is performed. If the printout is active, the user can cause the immediate deletion of the printout by pressing the CONTINUE softkey or cancel the delete operation by pressing the CANCEL softkey. When the deletion is completed the message 'DELETION COMPLETED' is returned. The printer is deleted when the last printout directed to it is deleted.

ADD: This softkey appears upon entry to the form and is used to insert additional printer locations and/or extension numbers of datasets. When the ADD softkey is pressed, the form is in the ADD mode, and the following softkeys are presented.

PRINTER PORT: This softkey appears when the cursor is positioned on the EXT NUM field. The programmer can enter a valid dataset number or press the PRINTER PORT softkey to enter printer port in the EXT NUM field.

SMDR: This softkey defines the printout as an SMDR printout.

CDE DATA: This softkey appears after the MORE softkey has been pressed. It defines the selected printout as a CDE DATA record, allowing the user to print the CDE programmable data to a specified printer.

DATA SMDR: This softkey defines the printout as a DATA SMDR. DATA SMDR is a record of internal data calls.

ACD AGT SUM: This softkey appears after the MORE softkey has been pressed. Available only if system software contains ACD Option. Refer to the *ACD TELEMARKETER Application Package Practice* for further information.

ACD MONITORS: This softkey appears after the MORE softkey has been pressed. Available only if system software contains ACD Option. Refer to the *ACD TELEMARKETER Application Package Practice* for further information.

ACD GRP SUMMARY: This softkey appears after the MORE softkey has been pressed. Available only if system software contains ACD Option. Refer to the *ACD TELEMARKETER Application Package Practice* for further information.

TRAFFIC: This softkey defines the printout as a traffic measurement report.

MAINT LOGS: This softkey defines the printout as a maintenance log printout.

HM WAKEUP: This softkey defines the printout as a report of wakeup calls.

HM AUDIT: This softkey defines the printout as an audit report.

PMS: This softkey appears only if Property Management System is enabled in the CDE System Options/System Timers form. When the programmer presses the PMS softkey, "PMS Port" appears in the PRINTOUT field the AUTOPRINT softkey appears. Pressing the AUTOPRINT softkey completes programming of the PMS port.

MAI: This softkey appears only if Mitel Application Interface is enabled in the CDE System Options/System Timers form. When the programmer presses the MAI softkey, "MAI" appears in the PRINTOUT field and the AUTOPRINT softkey appears. Pressing the AUTOPRINT softkey completes programming of the MAI port.

AUTOPRINT: The printout occurs automatically when a certain condition in the system is met.

DIRECTED: The printout occurs at the user's request.

MONITOR: This softkey is available only if the PRINTOUT field is set to maintenance logs. The logs are printed as they occur.

YES: Pressing YES guarantees the printing of the record. By default, the GUARANTEED field is set to NO.

NO: This softkey appears if the GUARANTEED field has been set to YES. Pressing this softkey restores it to NO.

The standard softkeys **CANCEL**, **ENTER**, **DELETE**, **TOP**, **BOTTOM**, ****MORE****, and **QUIT** are also provided.

Form 35 - Global Find Access Code

- 4.43 This form lists the access codes in the CDE database, including ARS Leading Digits. Callback Busy and Executive Busy Override are excluded, since they can only be dialed when receiving busy tone. This form exists to provide access code information conveniently to the user. Codes can be assigned, modified or deleted only in the appropriate forms.

| 6:31 PM 9-JAN-97 | | alarm status = NO ALARM | | | | |
|------------------|---------------|-------------------------|-------|-----|----------|---------------|
| ACCESS CODE | DEFINED | BAY | SLT | CCT | SCT | MULTIPLE APP. |
| > 1801 | PBX SUPERSET | 1 | 08 | 01 | 1 | N/A |
| 1802 | PBX SUPERSET | 1 | 08 | 02 | 1 | N/A |
| 1803 | PBX SUPERSET | 1 | 08 | 03 | 1 | N/A |
| 1804 | PBX SUPERSET | 1 | 08 | 04 | 1 | N/A |
| 1805 | PBX SUPERSET | 1 | 08 | 05 | 1 | N/A |
| 1806 | PBX SUPERSET | 1 | 08 | 06 | 1 | N/A |
| 1807 | PBX SUPERSET | 1 | 08 | 07 | 1 | N/A |
| 1808 | PBX SUPERSET | 1 | 08 | 08 | 1 | N/A |
| 1809 | PBX SUPERSET | 1 | 08 | 09 | 1 | N/A |
| 1810 | PBX SUPERSET | 1 | 08 | 10 | 1 | N/A |
| 1811 | PBX SUPERSET | 1 | 08 | 11 | 1 | N/A |
| 1812 | PBX SUPERSET | 1 | 08 | 12 | 1 | N/A |
| 1801 | PBX SUPERSET | 1 | 08 | 01 | 1 | N/A |
| 1- | 2- | 3- | 4-TOP | | 5-BOTTOM | |
| 6-QUIT | 7-ACCESS CODE | 8- | 9- | 0- | | |

Figure 4-51 Form 35 Layout

Field Descriptions

ACCESS CODE: This field lists all programmed access codes as assigned in numerical order by the first digits, for example 10, 111, 1210, 132, 20.

DEFINED: This field lists the areas where access codes have been assigned.

BAY, SLOT, CCT and SCT: These fields list the physical location of devices, and LDNs.

MULTIPLE APP: This indicates if there are multiple appearances of number (LDNs or extension numbers) - this will be one of YES, NO or N/A.

Softkeys

ACCESS CODE: Pressing the ACCESS CODE softkey displays ENTER ACCESS CODE prompt on the command line. After the user enters the access code and presses the ENTER softkey, the code is then verified by the system. If the number entered is not presently used as an access code, the following message is displayed: The access code xxx does not exist.

NEXT: This softkey is displayed when an unassigned number is entered at the ENTER ACCESS CODE prompt, and is cancelled. Pressing this softkey displays the next access code that follows the one requested.

The standard softkeys **CANCEL**, **ENTER**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 36 - Modem Assignment

4.44 This form assigns pooled modems to the system database. A pooled modem consists of a modem connected to an ONS or OPS circuit and a dataset connected to a digital line circuit. Each line of the form establishes the software association between the ONS or OPS circuit and the digital line circuit for one pooled modem.

6:32 PM 9-JAN-97 alarm status = NO ALARM

| BAY | SLT | CCT | CDN | BAY | SLT | CCT | EXTN | TEN | DTE | COS | COR | MODE | DIAL | COMMENTS |
|--------|-----|-----|---------------|-----|-----|-----|------|-----|-----|-----|-----|------|------|----------|
| > 1 | 01 | 02 | | | | | | | | | | | | < |
| 1 | 01 | 03 | | | | | | | | | | | | |
| 1 | 01 | 04 | | | | | | | | | | | | |
| 1 | 01 | 05 | | | | | | | | | | | | |
| 1 | 01 | 06 | | | | | | | | | | | | |
| 1 | 01 | 07 | | | | | | | | | | | | |
| 1 | 01 | 08 | | | | | | | | | | | | |
| 1 | 01 | 09 | | | | | | | | | | | | |
| 1 | 01 | 10 | | | | | | | | | | | | |
| 1 | 01 | 11 | | | | | | | | | | | | |
| 1 | 01 | 12 | | | | | | | | | | | | |
| 1 | 01 | 02 | | | | | | | | | | | | |
| 1-MOVE | | | 2-FIND EXT | | | | 3- | | | 4- | | | 5- | |
| 6-QUIT | | | 7-BAY/SLT/CCT | | | | 8- | | | 9- | | 0- | | |

Figure 4-52 Form 36 Layout

Field Descriptions

BAY/SLT/CCT: The three left-most columns contain the BAY/SLT/CCT numbers of all unassigned ONS and OPS circuits. The system provides this information.

CDN: A Circuit Descriptor Number (CDN) must be assigned to each DNIC device. The default CDN is 1. Circuit Descriptors are programmed in the CDE Data Circuit Descriptor Form.

BAY/SLT/CCT: The second set of BAY/SLT/CCT columns lists the DNIC circuits associated with each ONS (or OPS) circuit. BAY/SLT/CCT numbers assigned here do not appear in the Data Assignment form or the Stations/*SUPERSET* Telephones form.

EXTN: This column lists the extension numbers assigned to the pooled modems.

TEN: This column lists the tenant numbers to which the pooled modems are assigned. The default tenant number is 1.

DTE: This column lists the optional DTE Descriptor that applies to each pooled modem. The DTE Descriptor is needed for incoming or internal modem pooling calls that require a DTRX. DTE Descriptors are programmed in the CDE DTE Descriptor Form.

COS: This column lists the Class of Service (COS) of each pooled modem. The default COS is 1.

COR: This column lists the Class of Restriction (COR) of each pooled modem. The default COR is 1. An entry is required in this column because outgoing calls connect to trunks and are routed via ARS.

MODE: This column lists the mode of operation for each modem. The options are ANSWER, ORIGINATE, or BOTH. The default is BOTH.

DIAL: This column lists the auto-dial capability of each modem. The options are AUTODIAL or NON AUTODIAL. The default is NON AUTODIAL.

COMMENTS: There is a COMMENTS field of 15 characters for each modem listed.

Softkeys

MOVE: This softkey relocates a device via its bay, slot, and circuit numbers. When the MOVE softkey is pressed, the command line requests the FROM location (BAY: SLOT: CCT:). When the location is specified and the ENTER softkey is pressed, the command line requests the TO location. The new location is designated and the ENTER softkey is pressed. Entering invalid numbers inhibits cursor movement.

FIND EXT: This softkey locates a pooled modem by its extension number.

ANSWER: This softkey appears when the cursor is on the MODE field. Pressing it enables the modem to operate in answer mode only.

NON AUTODIAL: This softkey appears when the cursor is on the DIAL column. Pressing it tells the system that the modem does not dial automatically.

AUTODIAL: This softkey appears when the cursor is on the DIAL column. Pressing it tells the system that the modem can dial automatically.

ORIGINATE: This softkey appears when the cursor is on the MODE field. Pressing it enables the modem to operate in originate mode only.

BOTH: This softkey appears when the cursor is on the MODE field and the ANSWER or ORIGINATE softkey has been pressed. Pressing the BOTH softkey enables the modem to operate in both answer and originate modes.

DELETE FIELD: This softkey appears when the cursor is on the DTE field and a DTE Descriptor number has been entered. Pressing the DELETE FIELD softkey restores the field to its default, blank.

The standard softkeys **CANCEL**, **BAY/SLT/CCT**, **ENTER**, **DELETE**, **TOP**, **BOTTOM**, and **QUIT** are also provided.

Form 37 - Guest RM SUPERSET Keys Template

4.45 Form 37 (see Figure 4-53) provides 3 preprogrammed sets (templates) of speed dial and feature keys for hotel/motel guest room phones. In each COS, the programmer can enable one template which will apply to all *SUPERSET 410*, *SUPERSET 420* and *SUPERSET 430* telephones in that COS that have Room Status Applies enabled.

| 6:33 PM 9-JAN-97 | | alarm status = NO ALARM | | |
|------------------|-------|-------------------------|-------------------|---------|
| TEMPLATE 1 | KEY | TYPE | SPEED DIAL NUMBER | PRIVATE |
| | 02 | Speed Dial | | |
| | 03 | Speed Dial | | |
| | 04 | Speed Dial | | |
| | 05 | Speed Dial | | |
| | 06 | Speed Dial | | |
| | 07 | Speed Dial | | |
| | 08 | Speed Dial | | |
| | 09 | Speed Dial | | |
| | 10 | Speed Dial | | |
| | 11 | Speed Dial | | |
| | 12 | Speed Dial | | |
| | 02 | Speed Dial | | |
| 1- | 2- | 3-FEATURE | 4-TEMPLATE NO | 5- |
| 6-QUIT | 7-KEY | 8- | 9- | 0- |

Figure 4-53 Form 37 Layout

Field Descriptions

TYPE: This field lists the function of each key, either speed dial (the default) or a feature (e.g. Do Not Disturb).

SPEED DIAL NUMBER: If the key is a speed dial key, the programmer enters the number here.

PRIVATE: If the key is a speed dial key, the programmer can prevent the user from displaying the number by selecting the PRIVATE feature for this field.

Softkeys

FEATURE: Pressing this softkey makes the set key a feature access key. The following softkeys appear:

| | |
|--------------|--------------|
| ACCOUNT CODE | DOUBLE FLASH |
| AUTO ANSWER | FORWARD CALL |
| CALL/ATTN | MUSIC |
| CALLBACK | NIGHT ANSWER |
| CALL FORWARD | OVERRIDE |
| CALL PICKUP | PA PAGING |
| CAMPON | PRIVACY REL |
| DATA DISC | RELEASE |
| DIRECT PAGE | SINGLE FLASH |
| DO NOT DIST | SWAP |

These softkeys are the same ones that appear in the nested Expand Set form of the Stations/*SUPERSET* Telephones form. Refer to Form 09 for more information.

TEMPLATE NO: Pressing the TEMPLATE NO softkey prompts the user to "ENTER TEMPLATE NUMBER:". Valid template numbers are 1, 2 and 3. When a valid template number is entered, the new template form is displayed.

KEY: Pressing this key prompts the user to "ENTER KEY NUM:". The valid range for the key number is 2 - 12.

PRIVATE: This softkey appears when a speed dial number has been entered and the cursor is on the PRIVATE field. Pressing this key makes a non-private speed dial number private. When a speed dial number is entered under the SPEED DIAL NUMBER column, just tab over to the PRIVATE column and press the PRIVATE softkey to make the number private. The word PRIVATE will appear under the PRIVATE column.

NON PRIVATE: This softkey appears when the cursor is on the PRIVATE field of a line containing a private speed dial number. Pressing this key makes a private speed dial number non-private.

The standard softkeys **CANCEL**, **DELETE**, **ENTER** and **QUIT** are also provided.

Form 38 - ACD Keys Template

- 4.46 The ACD Keys Template form provides up to three different function key configurations for each ACD position: agent, supervisor and senior supervisor. In each COS, however, only one template for one position type can be enabled. Line appearance keys assigned in the Stations/*SUPERSET* Telephones form have priority over ACD feature keys.

| AGENT [1] | | KEY | TYPE | SPEED DIAL NUMBER | PRIVATE |
|-----------|--------------|----------|----------------|-------------------|---------|
| > | | 02 | Speed Dial | 5551212 | < |
| | | 03 | Speed Dial | | |
| | | 04 | Speed Dial | | |
| | | 05 | Speed Dial | | |
| | | 06 | Speed Dial | | |
| | | 07 | Speed Dial | | |
| | | 08 | Speed Dial | | |
| | | 09 | Speed Dial | | |
| | | 10 | Speed Dial | | |
| | | 11 | Speed Dial | | |
| | | 12 | Speed Dial | | |
| | | 13 | Speed Dial | | |
| | | 02 | Speed Dial | 5551212 | |
| 1-AGENT | 2-SUPERVISOR | 3-SENIOR | 4-ACD KEYS | 5- | |
| 6-QUIT | 7-KEY | 8-DELETE | 9-NON-ACD KEYS | 0- | |

Figure 4-54 Form 38 Layout

Field Descriptions

The header lists the ACD position to which the template applies and the template number (1, 2 or 3).

Key: This field lists the line select keys. The keys are numbered on the set from bottom to top. Key 01, the prime line key, is not shown because it cannot be reprogrammed.

Type: This field lists the function of each key. The default is speed dial.

Speed Dial Number: This field lists the speed dial number for each speed dial key.

Private: The word 'Private' in this field indicates that the speed dial number is private and cannot be displayed at the set.

Softkeys

AGENT: Pressing the AGENT softkey prompts the user to enter an agent template number "ENTER AGENT TEMPLATE NUMBER:". When a valid template number (1-3) is entered, the selected agent keys template is displayed. The title line is updated with the agent template number.

SUPERVISOR: Pressing the SUPERVISOR softkey prompts the user to enter a supervisor template number "ENTER SUPERVISOR TEMPLATE NUMBER:". When a valid template number (1-3) is entered, the selected supervisor keys template is displayed. The title line is updated with the supervisor template number.

SENIOR: Pressing the SENIOR softkey prompts the user to enter a senior supervisor template number "ENTER SENIOR SUPERVISOR TEMPLATE NUMBER:". When a valid template number (1-3) is entered, the selected senior supervisor keys template is displayed. The title line is updated with the senior supervisor template number.

ACD KEYS: Pressing the ACD KEYS softkey provides a set of softkeys used to assign ACD feature keys to the set's line select keys. The feature keys presented depend on the type of keys template being programmed. All templates have a QUEUE STATUS key available. In addition, an agent template can have a MAKE BUSY key and a supervisor template can have an AGENT STATUS key. Both the SUPERVISOR and SENIOR SUPERVISOR can be provided with a SHIFT key.

KEY: Pressing the KEY softkey prompts the user to enter a key number (2-15). When a valid line key number is entered, the cursor points to that line. The command line displays the line, ready for editing.

PRIVATE: Pressing the PRIVATE softkey makes the programmed speed dial number private.

NON PRIVATE: Pressing the NON PRIVATE softkey makes a private speed dial number non-private.

SINGLE FLASH: Pressing the SINGLE FLASH softkey provides the ability to send TRANS/CONF, dial the Flash Over Trunk access code, then go into either dial state or talk state (if the CENTREX Flash Over Trunk option is enabled in the COS of the trunk).

DOUBLE FLASH: Pressing the DOUBLE FLASH softkey provides the ability to send TRANS/CONF then dial the Double Flash Over Trunk access code.

The standard softkeys **QUIT** and **DELETE** are also provided.

Form 39 - ACD Agent Groups

- 4.47 The ACD AGENT GROUPS CDE form lists the agents in each ACD group. It cannot be accessed unless the "ACD Enable" system option is enabled. The title line contains the agent group number and name. Entries in this form are sorted by ID. See Figure 4-55.

| | | | | | |
|----------------------|--|---------------|--|-------------------------|--|
| 6:45 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| [ACD GRP: 1 MITEL] | | AGENT ID | | AGENT NAME | |
| | | 1901 | | P. MOSHER | |
| | | 1902 | | J. THOMAS | |
| | | 1901 | | P. MOSHER | |
| 1-ACD GRP NAME | | 2-FIND ID | | 3-ADD | |
| 6-QUIT | | 7-AGENT GROUP | | 8-DELETE | |
| | | 4-TOP | | 5-BOTTOM | |
| | | 9-OPTIONS | | 0- | |

Figure 4-55 Form 39 Layout

Field Descriptions

The header shows the ACD group number, and ACD group name.

AGENT ID: This field lists the agent ID. This is an access code that identifies the agent to the system. The form lists the agents in numerical order by agent ID.

AGENT NAME: This field lists the agent name. Use of this field is optional, but recommended.

COS: This field lists the agent's class of service.

Softkeys

ACD GRP NAME: Pressing the ACD GRP NAME key displays ENTER ACD GROUP NAME: on the command line. This softkey appears only if there is at least one agent in the group, because a group cannot exist without members. The name can be up to eight characters long.

FIND ID: Pressing the FIND ID key displays ENTER AGENT ID: on the command line. The system searches the data base for the requested agent. If found, the group containing this agent is displayed with the cursor pointing at the agent.

ADD: Pressing the ADD key permits the programmer to enter the information needed to add an agent to the displayed group. When the Agent ID has been entered, the ENTER softkey appears. Optionally, the programmer can fill in the agent name and COS fields prior to pressing the ENTER softkey. If nothing is entered, the name defaults to blanks and the COS to 1. The added agent will appear in the correct position in the sorted list. If the agent is already assigned to another agent group, the system warns the programmer on the command line and asks the programmer to CONFIRM or CANCEL the entry via softkeys. If the programmer confirms it, any previous group assignment for that agent is deleted. Agents can be reassigned in this way at any time, even while the agent is active. When reassigning an agent, only the ID field should be filled in. The NAME and COS fields will be filled automatically when the ENTER key is pressed.

AGENT GROUP: Pressing the AGENT GROUP softkey displays ENTER ACD GROUP NUM: on the command line. When the ACD Group number is entered, the requested group is displayed.

OPTIONS: Pressing the OPTIONS key displays the options sub-form. This softkey is not provided if the group is empty.

The standard softkeys **DELETE**, **TOP**, **BOTTOM** and **QUIT** are also provided.

Options Subform for Form 39

4.48 For each agent group a set of options can be set to control the ACD group environment (see Figure 4-56).

| | | | | |
|-------------------------|---------------------------------|-------------------------|------|--------|
| 6:47 PM 9-JAN-97 | | alarm status = NO ALARM | | |
| [ACD GRP: 1 MITEL] | | OPTIONS | | STATUS |
| > | Afterwork Timer (MM:SS) | | 0:00 | < |
| | Overflow Timer (MM:SS) | | 9:00 | |
| | First Status Threshold (MM:SS) | | 3:00 | |
| | Second Status Threshold (MM:SS) | | 6:00 | |
| Afterwork Timer (MM:SS) | | 0:00 | | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7- | 8- | 9- | 0- |

Figure 4-56 Option Subform Layout

Field Descriptions

OPTIONS: This field displays the option name. For options with a numerical value, the format and units of measure are given in brackets (e.g. MM:SS for minutes:seconds).

STATUS: This field displays the current setting of the option.

Softkeys

The standard softkey **QUIT** is provided.

Parameters

Afterwork Timer: After an ACD call has ended, this timer provides a time period for the agent to complete paperwork. The agent will receive no ACD calls during this period. The timer has a range of 00:00 to 15:00. The default is 00:00.

Overflow Timer: This timer specifies the maximum time a call can wait for answer in this ACD group. When the time period has elapsed, the call is sent to the overflow destination. The timer has a range of 00:00 to 54:00 (Minutes:Seconds). The default is 00:00.

First Status Threshold: This threshold time provides a visual indication to the supervisor that the system has reached a defined level of activity. When any call has waited for the defined time period, the supervisor's Queue Status LCD shows a light circle in a dark square. The threshold has a range of 00:00 to 54:00 (Minutes:Seconds). The default is 03:00. The first threshold time must be less than the second threshold time.

Second Status Threshold: This threshold time provides a visual indication to the supervisor that the system has reached a defined level of activity. This is a higher level of activity than the first status threshold represents. When any call has waited for the defined time period, the supervisor's Queue Status LCD shows a dark square. The threshold has a range of 00:00 to 54:00 (Minutes:Seconds). The time must exceed that defined for the first status threshold.

Form 40 - ACD Supervisors

4.49 The ACD Supervisors form shows the ID numbers and names of ACD senior supervisors. A subform lists the supervisors. These forms cannot be accessed unless the "ACD Enable" system option is enabled. Refer to Figure 4-57.

Customer Data Entry

6:50 PM 9-JAN-97 alarm status = NO ALARM

| ACD SENIOR SUPERVISOR ID CODES | NAME | COS |
|--------------------------------|--------------|----------|
| 1903 | | 1 |
| ■ 1903 | | 1 |
| 1-FIND GROUP | 2-FIND SUPER | 3-ADD |
| 6-QUIT | 7- | 8-DELETE |
| | | 4-TOP |
| | | 9-EXPAND |
| | | 5-BOTTOM |
| | | 0- |

Figure 4-57 Form 40 Layout

Field Descriptions

SENIOR SUPERVISOR IDS: This field lists the senior supervisor ID codes. The form is sorted by ID code.

NAME: Senior supervisor and supervisor names are carried to the set where they log on. Their ID's are used for logging on.

COS: This field specifies the class of service of each senior supervisor. The range is 1 to 50.

Softkeys

FIND GROUP: The FIND GROUP softkey displays ENTER ACD GROUP NUM: on the command line. When the group number is entered, the requested group is displayed. If the requested group is assigned to a senior supervisor, that senior supervisor's sub-form is shown, with the cursor pointing at the requested group.

FIND SUPER: The FIND SUPER softkey displays ENTER SUPERVISOR OR SENIOR SUPERVISOR ID: on the command line. The data base is searched for this senior supervisor or supervisor ID. If the requested senior supervisor exists, the top level form is shown, with the cursor pointing at the requested ID. If the requested supervisor exists, the sub-form is shown, with the cursor pointing at the requested ID.

ADD: This softkey appears upon entry to the form and is used to add additional senior supervisors to the form. When assigning an agent as a senior supervisor, only the ID field needs to be filled in. The NAME field will be filled automatically when the ENTER key is pressed. When the ADD softkey is pressed, the form is in the ADD mode. To leave ADD mode, use the QUIT softkey.

EXPAND: The EXPAND softkey displays the expand sub-form, which lists all the groups of the supervisors under the current senior supervisor. The sub-form is sorted by supervisor ID code. All groups reporting directly to the senior supervisor are listed at the end of the form in order of group number.

The standard softkeys **DELETE**, **TOP**, **BOTTOM** and **QUIT** are also provided.

Expand Sub-form for Form 40

- 4.50 For each senior supervisor, this form, shown in Figure 4-58, lists the assigned ACD Groups and their supervisors. The programmer positions the line pointer at the desired senior supervisor in the ACD senior supervisors form and presses the EXPAND softkey.

| | | | | | |
|---------------------|--|--------------|--|-------------------------|--|
| 6:52 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| GRPS OF SENIOR 1903 | | SUPER ID | | SUPER NAME | |
| COS | | | | | |
| | | | | | |
| 1-FIND GROUP | | 2-FIND SUPER | | 3-ADD | |
| 6-QUIT | | 7- | | 8- | |
| | | | | 9- | |
| | | | | 0- | |

Figure 4-58 Expand Subform Layout

Field Descriptions

The subform header shows the senior supervisor's name and ID. If the senior supervisor has no name programmed, the header will show the senior supervisor's number.

GRPS OF: This field lists the agent groups reporting to the senior supervisor. All groups reporting directly to the senior supervisor (with no supervisor) are listed at the bottom of the form, sorted by agent group number. Groups that have supervisors are sorted by supervisor ID. Groups with the same supervisor are sorted by agent group number.

SUPER ID: This field lists the supervisor ID number for each supervisor under the senior supervisor. If a group has no supervisor, the field displays NO SUPER.

SUPER NAME: The supervisor's name can be programmed in this column. It can be up to 10 characters long; it must not begin with the character "*".

COS: This field lists the class of service of each supervisor.

Softkeys

FIND GROUP: The FIND GROUP softkey displays ENTER ACD GROUP NUM: on the command line. When the group number is entered, the requested group is dis-

played. If the requested group is assigned to a senior supervisor, that senior supervisor's sub-form is shown, with the cursor pointing at the requested group.

FIND SUPER: The FIND SUPER softkey displays ENTER SUPERVISOR OR SENIOR SUPERVISOR ID: on the command line. If the requested senior supervisor exists, the top level form is shown, with the cursor pointing at the requested ID. If the requested supervisor exists, the sub-form is shown, with the cursor pointing at the requested ID.

ADD: Pressing the ADD key assigns a group and its supervisor to the displayed senior supervisor. Any previous assignment for that group is deleted. Groups can be re-assigned at any time, even while active.

NO SUPER: The NO SUPER key assigns the agent group directly to the senior supervisor; the group has no supervisor.

The standard softkeys **DELETE**, **TOP**, **BOTTOM** and **QUIT** are also provided.

Form 41 - ACD Path

4.51 This CDE form defines routing for ACD calls. It cannot be accessed unless the "ACD Enable" System option is enabled. Each path has its own form.

| | | | | | |
|---|------------|---------------|---------|-------------------------|-----------------------|
| 8:22 PM | | 9-JAN-97 | | alarm status = NO ALARM | |
| [ACD PATH: 1] | | | OPTIONS | | STATUS |
| > Access Code For This ACD Path Primary ACD Agent Group Delay For Ringback (MM:SS) Recording 1 : Start Time (MM:SS) Access Code Music Source Following Recording 2 : Start Time (MM:SS) Access Code Music Source Following Recording 3 : Start Time (MM:SS) Access Code Music Source Following | | | | | 72 1 00:03 < |
| Access Code For This ACD Path | | | | | 72 |
| 1- | 2- | 3-PATH NAME | 4-TOP | 5-BOTTOM | |
| 6-QUIT | 7-ACD PATH | 8-DELETE PATH | 9- | 0- | |

Figure 4-59 Form 41 Layout

Field Descriptions

The header displays the ACD path number and name.

OPTIONS: The options field lists programmable timers and options for the ACD path.

STATUS: The status field is the only field that can be edited; however, no fields on an ACD path can be edited without first assigning the "Access Code For This ACD Path", and the "Primary ACD Agent Group" (the first two lines on the form).

Softkeys

PATH NAME: The PATH NAME softkey displays ENTER PATH NAME: on the command line. When the name (up to 8 characters) is entered, it appears on the form top line, beside the path number. This softkey appears only after the first two lines of the form are both filled.

ACD PATH: Pressing the ACD PATH softkey displays ENTER ACD PATH NUMBER: on the command line. This softkey appears whenever the first two lines of the form are either both filled or both empty.

DELETE PATH: Pressing the DELETE PATH softkey displays the CANCEL and CONFIRM softkeys. Pressing CONFIRM deletes the ACD path. Pressing CANCEL restores the softkeys without deleting the ACD path.

DELETE FIELD: Blanks the current status field.

DROP CALL: Appears only when the cursor is in the "Interflow Point Access Code" line - the STATUS will be set to "DROP CALL".

YES/NO: Enables / disables the "Allow Overflow to Interflow Point Before Timeout" or "Interflow Enabled" parameters.

Parameters

| ACD PATH PARAMETERS |
|---|
| Access Code For This ACD Path |
| Primary ACD Agent Group |
| Delay For Ringback (MM:SS) |
| Recording 1 :Start Time (MM:SS) |
| Access Code |
| Music Source Following |
| Recording 2 :Start Time (MM:SS) |
| Access Code |
| Music Source Following |
| Recording 3 :Start Time (MM:SS) |
| Access Code |
| Music Source Following |
| Recording 4 :Start Time (MM:SS) |
| Access Code |
| Music Source Following |
| Overflow 1 Agent Group |
| Overflow 2 Agent Group |
| Overflow 3 Agent Group |
| Interflow Enabled |
| Interflow Timeout (MM:SS) |
| Interflow Point Access Code (Default = DROP CALL) |
| Allow Overflow to Interflow Point Before Timeout |
| Priority |
| Service Time |
| Immediately Interflow when no Agents Logged In |
| Tenant |

Access Code For This ACD Path and **Primary ACD Agent Group** must be defined to establish an ACD path. Until this is done, no other options can be edited.

Delay For Ringback (MM:SS): Allows the caller to hear ringback before being connected to an agent.

Recording n: Start Time (MM:SS) is counted from when a caller has finished the Delay For Ringback period. The range of this timer is 00:00 to 54:00. Recording 1 must be defined before Recording 2, Recording 2 before Recording 3, Recording 3 before Recording 4. For example, the programmer cannot edit "Recording 3: Start Time", unless "Recording 2" and "Recording 1" are both defined. If <cursor down> is pressed from a blank "Recording n: Start Time" field, the cursor moves to "Overflow 1 Agent Group". Each recording's start time must be later than the preceding recording's start time.

Recording n: Access Code must be an access code for a recording hunt group. The programmer cannot make an entry for this option until a start time is defined for the recording. Once a recording start time is entered, the programmer can only move back and forth between the Start Time and Access Code fields for that recording, until both fields are filled or deleted (by the DELETE FIELD key). PATH NAME, ACD PATH, and DELETE PATH keys are removed during this time too.

Music Source Following defines, for each recording, an ONS port to which the caller will be connected when the recording ends. The ONS port is permanently off-hook with a music source connected. The caller stays connected until the call is answered or another scheduled recording plays. If no music source is defined, the Music on Hold source is used. If this is not provided, the caller receives silence.

Overflow 1 Agent Group must be defined before **Overflow 2 Agent Group**, **Overflow 2 Agent Group** before **Overflow 3 Agent Group**. If <cursor down> is pressed from a blank "Overflow X Agent Group", the user is positioned at the "Interflow Timeout" field.

Interflow Enabled, when set to YES, allows the waiting ACD call to exit ACD and be answered at a defined interflow point. Default is NO.

Interflow Timeout (MM:SS) specifies when a waiting ACD call should be directed to the interflow point. The timer has a range of 00:01 to 54:00. The default is 54 minutes.

Interflow Point Access Code can be an extension number, another ACD path, a hunt group (including a UCD agent hunt group), a system abbreviated dial number, night bells or DROP CALL.

Priority for the ACD path has a range of 1 (highest priority) to 99. Calls are answered in order of priority. Default priority is 99.

Service Time: Defines a standard time to answer (from 1 second to 54 minutes), used in the measurement of ACD path performance. Statistics can be seen from the ACD Path Monitors and Path Summary Reports (see the *ACD TELEMARKETER Application Package Practice*).

Immediately Interflow when no Agents Logged In: When set to YES, and "Interflow Enabled" is YES, then any callers dialing in to an ACD path will interflow immediately when no agents are logged in. This interflow takes place regardless of the status of the "Interflow Timeout," or the option "Allow Overflow to Interflow Point Before Timeout," or the "Interflow Point Access Code" having a value of DROP CALL. The field default is NO.

Tenant: When a tenant number is assigned to the ACD Path, DID and TIE trunks which dial into the ACD path directly will follow the routing for this tenant as defined in Form 19 - Call Rerouting Table. Enter a valid number (1 to 25). The default is blank (no tenant).

Form 42 - T1 Link Descriptors

4.52 The T1 Link Descriptors form defines the parameters that control the behavior of each T1 link. The form provides 10 programmable descriptors. The main form displays the number of users of each descriptor. A 20-character comment field is provided for each descriptor.

3:58 PM 10-JAN-97 alarm status = MAJOR

| DESCRIPTOR | LINK TYPE | NUMBER OF LINKS ASSIGNED | COMMENTS | |
|------------|-----------|--------------------------|----------|----|
| 01 | T1 DS1 | 1 | | |
| 02 | T1 DS1 | 0 | | |
| 03 | T1 DS1 | 0 | | |
| 04 | T1 DS1 | 0 | | |
| 05 | T1 DS1 | 0 | | |
| 06 | T1 DS1 | 0 | | |
| 07 | T1 DS1 | 0 | | |
| 08 | T1 DS1 | 0 | | |
| 09 | T1 DS1 | 0 | | |
| 10 | T1 DS1 | 0 | | |
| 01 | T1 DS1 | 1 | | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7- | 8-SEL. OPTION | 9-REVIEW | 0- |

Customer Data Entry

Figure 4-60 Form 42 Layout

Field Descriptions

DESCRIPTOR: This field lists the descriptor numbers. It cannot be edited.

LINK TYPE: This field lists the type of link for each descriptor. Only T1 DS1 is available. This field cannot be changed.

NUMBER OF LINKS ASSIGNED: This field lists the number of links assigned this descriptor in the T1 Link Assignment form.

COMMENTS: This 20-character field is provided for the programmer's notes. The system does not use this information.

Softkeys

SEL. OPTION: Pressing the SELECT OPTION softkey displays the Link Descriptor Options subform for the descriptor on the command line.

*567
699
5602*

REVIEW: Displays the Review List subform for the descriptor on the command line, a read-only form that provides a list of users for each descriptor. This softkey appears only if the number of links is greater than 0.

The standard softkey **QUIT** is also provided.

Link Descriptor Options Subform for Form 42

Note: Altering this form may have side effects on T1 links in operation.

```

6:59 PM  9-JAN-97                                alarm status = NO ALARM

```

| [LINK DESCRIPTOR NUMBER : 1] | | IN/OUT GOING | VALUE | |
|--------------------------------|--|----------------------|--|----|
| > | Alarm debounce timer | (300 - 3200 ms) | 2500 < | |
| | B8ZS zero code suppression | | NO | |
| | Slip rate - maintenance limit | (0 - 9000) /24 hrs | 255 | |
| | Slip rate - service limit | (0 - 9000) /24 hrs | 7000 | |
| | Slip rate - network sync limit | (0 - 9000) /24 hrs | 7 | |
| | BER - maintenance limit (10**n , n = (3,4,5,6)) / hour | | 4 | |
| | BER - service limit (10**n , n = (3,4,5,6)) / hour | | 3 | |
| | Framing losses - maintenance limit | (0 - 9000) /24 hrs | 255 | |
| | Framing losses - service limit | (0 - 9000) /24 hrs | 9000 | |
| | RTS timer - service limit exceeded | (1 - 255 min) | 30 | |
| | RTS timer - net slip limit exceeded | (1 - 255 min) | 30 | |
| | RTS timer - after alarm | (0 - 300 sec) | 10 | |
| | Alarm debounce timer | (300 - 3200 ms) | <input checked="" type="checkbox"/> 2500 | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7- | 8- | 9- | 0- |

Figure 4-61 Link Descriptor Options Subform Layout

Field Descriptions

The header line displays the link descriptor number and the direction of the link.

Value: This field lists the selected value for each parameter.

Softkeys

YES/NO: This softkey appears only when the command line displays the B8ZS Zero Code Suppression parameter. (All other parameters require numeric entries and have no softkeys). Pressing the softkey changes the state of the parameter. If the parameter is set to YES, the softkey is NO, if the parameter is set to NO, the softkey is YES.

CONFIRM: This softkey appears when an option value has been changed. Press the CONFIRM softkey to enter the change in the database.

The standard softkeys **CANCEL**, **ENTER** and **QUIT** are also provided.

Parameters

Alarm Debounce Timer: The alarm debounce timer defines the length of time a fault condition must be present before it is reported to the main controller, and the link is removed from service. The range of the timer is 300 to 3200 ms. The reportable fault conditions are:

- Failure of power supply
- Loss of incoming signals at 1544 Kbps
- Loss of frame alignment (synchronization)
- Alarm indication received from the remote end

B8ZS Zero Code Suppression: Special encoding is used when a data byte for a channel contains consecutive bits of the same level. There are two of these line code options available: Alternate Mark Inversion (AMI) and Bipolar 8 Zero Substitution (B8ZS). In AMI, a 1 is transmitted as a pulse and a 0 is transmitted as no pulse. Consecutive 1's are sent as pulses of opposite polarity. If a channel data byte contains all 0's, bit 2 is forced to a 1. In B8ZS encoding, consecutive 1's are sent as pulses of opposite polarity, as in AMI. A block of eight 0's is replaced by a special eight bit sequence.

Slip Rate Limits: Slip is the deletion or repetition of a single frame of information in a digital bit stream. There are 3 slip rate limits: maintenance, service and network. The slip rate limit is between 0 and 9000 slips over a 24 hour period.

BER Limits: BER is the bit error rate over the last hour. There are two BER rate limits: maintenance and service. The bit error rate limit is between 10^{-3} (1 error per 1000 bits) and 10^{-6} (1 error per 1,000,000 bits) over a 24-hour period.

Framing Loss Limits: Framing loss occurs when the digital trunk cannot find the proper framing bit sequence in the incoming bit stream. It is thus unable to ensure correct decoding of the channels. There are two framing loss limits maintenance and service. The framing loss error rate is between 0 and 9000 losses over a 24-hour period.

Limit Definitions

Maintenance: When a maintenance limit is exceeded, the system generates a maintenance log.

Service: When a service limit is exceeded, the system generates a maintenance log and removes the link from service.

Slip Rate - Network Sync Limit: When this limit is exceeded, the system generates a maintenance log and selects a new sync source.

RTS Timer - Service Limit Exceeded: This timer specifies the minimum time for which the link is removed from service after a service limit has been exceeded. When the timer expires, the link is returned to service only if the error rate on the link is less than 1/24th the maintenance limit. The range of the timer is 1 to 255 minutes.

RTS Timer - Net Slip Limit Exceeded: This timer specifies the minimum time for which the link is removed as the sync source after the net slip limit has been exceeded. When the timer expires, the link is again available to the system as a sync source only if the

598
824
1091

number of slips on the link is less than the net slip limit. The range of the timer is 1 to 255 minutes.

RTS Timer - After Alarm: This timer specifies how long the link will remain unavailable after an alarm condition has cleared.

Form 43 - T1 Link Assignment

4.53 Form 43 (see Figure 4-62) assigns one of the ten link descriptors to each link. Altering this form may have side effects on T1 links in operation.

| 3:56 PM 10-JAN-97 | | alarm status = MAJOR | | |
|-------------------|-----|----------------------|---------------|----------|
| TRUNK TYPE | BAY | SLOT | LINK DESC NUM | COMMENTS |
| > | 01 | 05 | 01 | < |
| | 01 | 05 | █ 01 | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7- | 8-DELETE | 9- | 0- |

Figure 4-62 Form 43 Layout

Field Descriptions

TRUNK TYPE: This field cannot be edited.

BAY, SLOT: This field lists the bay and slot location of the T1 trunk cards in the system.

LINK DESC NUM: This field lists the link descriptor that applies to each T1 trunk card.

COMMENTS: The comments field can store 15 characters.

Softkeys

CONFIRM: This softkey appears when an option value has been changed. Press the CONFIRM softkey to enter the change in the database.

The standard softkeys **ENTER** and **QUIT** are also provided.

Form 44 - T1 Network Sync

- 4.54 This form, shown in Figure 4-63, determines the order in which the links will be used as the network synchronization clock source. When the error threshold of the first clock source is crossed, the second clock is used as the sync source, etc. Altering this form may have side effects on T1 links in operation.

4:01 PM 10-JAN-97 alarm status = MAJOR

| DESCRIPTION | | BAY | SLOT | COMMENTS |
|---|----|----------|------|----------|
| > First clock source Second clock source Third clock source Fourth clock source Fifth clock source Sixth clock source Seventh clock source Eighth clock source | | 1 | 05 | < |
| First clock source | | 1 | 05 | |
| 1- | 2- | 3- | 4- | 5- |
| 6-QUIT | 7- | 8-DELETE | 9- | 0- |

Figure 4-63 Form 44 Layout

Field Descriptions

DESCRIPTION: This field lists the clock sources, first through eighth, for system synchronization to the T1 network. This field cannot be edited.

BAY, SLOT: This field lists the bay/slot location of the T1 trunk cards in the system.

LINK DESC NUM: This field lists the link descriptor that applies to each T1 trunk card.

COMMENTS: The comments field can store 16 characters.

Softkeys

CONFIRM: This softkey appears when an option value has been changed, followed by the QUIT softkey. Press the CONFIRM softkey to enter the change in the database and exit the form.

The standard softkeys **ENTER**, **DELETE** and **QUIT** are also provided.

Form 45 - Key System Telephones

4.55 This form assigns key system telephones to the system. See Figure 4-64 for the form layout.

| 3:05 PM | | 10-JAN-97 | | alarm status = NO ALARM | | | | | | | |
|---------|-----|-----------|-----|-------------------------|-----|-----|--------------|------|--------------|-------|----------|
| BAY | SLT | CCT | TEN | EXTN | COS | COR | TYPE | PAGE | NAME | ASSOC | COMMENTS |
| > 1 | 08 | 11 | 1 | 3300 | 1 | 1 | 430 | | | | < |
| 1 | 08 | 11 | 1 | 3300 | 1 | 1 | 430 | | | | |
| 1-MOVE | | | | 2-FIND EXT | | | 3-EXPAND SET | | 4-EXPAND PKM | | 5-RANGE |
| 6-QUIT | | | | 7-BAY/SLT/CCT | | | 8-DELETE | | 9-REVIEW | | 0- |

Figure 4-64 Form 45 Layout

Field Descriptions

BAY, SLT and CCT: These fields list the physical location number of each *SUPERSET* telephone. They are generated by the system based on what was entered in the PROGRAMMED field of Form 01, System Configuration. This field cannot be modified.

TEN: This field lists the tenant group number for each *SUPERSET* telephone. Default tenant number is one.

EXTN: This field lists the intercom line extension number of each *SUPERSET* telephone.

COS: This field lists the class-of-service number for each *SUPERSET* telephone. Default COS number is 1.

COR: This field lists the class-of-restriction number for each *SUPERSET* telephone. Default COR number is 1.

TYPE: **SUB** is displayed for a *SUPERSET 430* programmed as an enhanced sub-attendant. **401** is displayed when a *SUPERSET 401+* is being programmed. **410** for a *SUPERSET 410*, **420** for a *SUPERSET 420*, and **430** is displayed when a *SUPERSET 430* is being programmed. **DMP** is displayed for a DNIC Music On Hold/Pager unit. For *SUPERSET 410*, *SUPERSET 420* and *SUPERSET 430* telephones that are programmed with a PKM, an asterisk (*) precedes the set type (e.g., ***420**).

PAGE: Shows the paging group that the telephone is in (the default is a blank field - no paging group). Valid entry is a number between 1 and 50.

NAME: This field is reserved for a set name up to ten characters long. The name's first character must NOT be an asterisk (*).

ASSOC: Associates the device in the TYPE field with another device. A *SUPERSET* telephone can be associated with a modem (enter the ONS port extension number). Each *SUPERSET* telephone can be associated with only one modem. However, they can be associated with the same modem.

COMMENTS: This field is reserved for additional data (a maximum of 15 characters). It is stored by the system but not used.

Softkeys

MOVE: This softkey relocates a device via its bay slot, and circuit numbers. When the MOVE softkey is pressed, the command line requests the FROM location (BAY: SLOT: CCT:). When the location is specified and the ENTER softkey is pressed, the command line requests the TO location. The new location is designated and the ENTER softkey is pressed. Note that entering invalid numbers inhibits cursor movement.

FIND EXT: This softkey selects a device by its extension number. Pressing the FIND EXT softkey displays the ENTER EXTENSION NUM: prompt on the command line. The selection is completed by entering an extension number of the intercom line number of a *SUPERSET* telephone. The selected device information appears on the command line.

EXPAND SET: Pressing this softkey displays the expand set subform. Refer to *Expand Set Subform*.

EXPAND PKM: Pressing this softkey displays the Expand PKM subform. The Expand Key subform allows you to assign up to three Programmable Key Modules (PKMs) to *SUPERSET 410*, *SUPERSET 420*, and *SUPERSET 430* telephones. It also allows you to program the keys on the PKM. Refer to *Expand PKM Subform*. The EXPAND PKM softkey appears only when you are reviewing or programming a *SUPERSET 410*, *SUPERSET 420*, or *SUPERSET 430* telephone. (* indicates a PKM is assigned.)

RANGE: This softkey facilitates block programming for key system telephones. Pressing this softkey displays the prompt: FROM BAY: SLOT: CIRCUIT:. Enter valid bay, slot and circuit numbers for the first device and press the ENTER softkey. The system then prompts TO BAY: SLOT: CIRCUIT:. Enter valid bay, slot and circuit numbers for the last device and press the ENTER softkey. Enter tenant group, extension number, COS and COR for the first device, if this has not been done already. Press the ENTER softkey. The system automatically assigns incremented extension numbers, the same COS, COR and tenant group numbers to the rest of the devices in the block.

REVIEW: Presents two more softkeys:

SET APP: Displays a new form - refer to *Review (Set App) Subform*. This form lists all programmed appearances of the selected extension number on other *SUPERSET* telephones. This key appears only when a device has been defined.

PAGING GROUP: Displays a new form - refer to *Review (Paging Group) Subform*. This form lists all of the sets in the paging group.

DEVICE TYPE: Allows the line circuit to be programmed as a specific device type. This softkey appears only when a DNIC circuit is not programmed (only the BAY, SLT, CCT and TYP fields have entries). Programming any other fields "freezes" the device

type at its current value. After this, only the fields valid for that device type are available. The following softkeys are presented after pressing the DEVICE TYPE softkey:

- DMP:** Sets the TYP field to **DMP** for the DNIC MOH/Pager Unit.
- SUB ATT:** Sets the TYPE field to **SUB** and designates the device type as an Enhanced Subattendant. For further information, see Subattendant - Enhanced Functions, in the *Features Description Practice*.
- SS401:** Sets the TYPE field to **401** and designates the device type as a *SUPERSET 401+*.
- SS410:** Sets the TYPE field to **410** and designates the device type as a *SUPERSET 410*.
- SS420:** Sets the TYPE field to **420** and designates the device type as a *SUPERSET 420*.
- SS430:** Sets the TYPE field to **430** and designates the device type as a *SUPERSET 430*.

The device type can be changed by deleting all of the programmed entries - the DEVICE TYPE softkey will then reappear.

The standard softkeys **BAY/SLT/CCT**, **CANCEL**, **DELETE**, **ENTER**, ****MORE**** and **QUIT** are also provided.

Expand Set Subform and Expand PKM Subform for Form 45

Expand Set Subform

This form appears when the EXPAND SET softkey is pressed in the Key System Telephones form. It is used to program *SUPERSET* telephones line appearances and feature keys. Refer to Figure 4-65 for the form layout. This form is not available for *SUPERSET 401+* telephones.

3:08 PM 10-JAN-97
alarm status = NO ALARM

| KEY | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK ACC | LABEL |
|-----------|------------|---------------|-------|-----------|-----|-------------|---------|---------------|
| *01 | Intercom | In/Out | Immed | No | | 3300 | | |
| > 02 | Speed Dial | | | | | | | < |
| 03 | Speed Dial | | | | | | | |
| 04 | Speed Dial | | | | | | | |
| 05 | Speed Dial | | | | | | | |
| 06 | Speed Dial | | | | | | | |
| 07 | Speed Dial | | | | | | | |
| 08 | Speed Dial | | | | | | | |
| 09 | Speed Dial | | | | | | | |
| 10 | Speed Dial | | | | | | | |
| 11 | Speed Dial | | | | | | | |
| 12 | Speed Dial | | | | | | | |
| 02 | Speed Dial | | | | | | | |
| 1-CO LINE | | 2-CO LINE GRP | | 3-BLF/DSS | | 4-LINE PREF | | 5- ** MORE ** |
| 6-QUIT | | 7-KEY | | 8- | | 9- | | 0- |

Figure 4-65 Expand Set Subform Layout

Expand PKM Subform

This form appears when you press the EXPAND PKM softkey in the Key System Telephones form. You use this form to program PKM line appearances and feature keys. Refer to Figure 4-69 for the form layout. This form is not available to the SUPERSET 401+ telephone.

3:10 PM 10-JAN-97 alarm status = NO ALARM

| KEY | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK ACC | LABEL |
|-----------|------------|---------------|------|------------|-----|----------|---------|---------------|
| > 1 01 | Speed Dial | | | | | | | |
| 1 02 | Speed Dial | | | | | | | |
| 1 03 | Speed Dial | | | | | | | |
| 1 04 | Speed Dial | | | | | | | |
| 1 05 | Speed Dial | | | | | | | |
| 1 06 | Speed Dial | | | | | | | |
| 1 07 | Speed Dial | | | | | | | |
| 1 08 | Speed Dial | | | | | | | |
| 1 09 | Speed Dial | | | | | | | |
| 1 10 | Speed Dial | | | | | | | |
| 1 11 | Speed Dial | | | | | | | |
| 1 12 | Speed Dial | | | | | | | |
| 1 01 | Speed Dial | | | | | | | |
| 1-CO LINE | | 2-CO LINE GRP | | 3-BLF/DSS | | 4- | | 5- ** MORE ** |
| 6-QUIT | | 7-KEY | | 8-SAVE PKM | | 9-REVIEW | | 0- |

Figure 4-66 Form 45 Expand PKM Subform Layout

Field Descriptions

The asterisk (*) indicates the line preference for the set - see LINE PREF softkey below.

KEY: This field lists the SUPERSET Telephone Line Select key numbers and cannot be modified. If the keys are on Programmable Key Modules (PKMs), the key numbers are preceded by a 1, 2, or 3. The 1, 2, or 3 indicates the order in which you associated the PKM with the set. Therefore, the keys belonging to the first PKM that you associated with the set will be preceded by a "1"; the keys belonging to the second PKM will be preceded by a "2"; and the keys belonging to the third PKM will be preceded by a "3".

Note: The SUPERSET 410 has six programmable keys; SUPERSET 420 and SUPERSET 430 each have 12 programmable keys. The error message "Invalid key for set in use" will appear if the user attempts to program keys 7 to 12 of a SUPERSET 410 which has been installed on a circuit which as been programmed for a SUPERSET 420 or a SUPERSET 430.

TYPE: This field lists the key function. If it is a Speed Dial key, the default assignment, the words "Speed Dial" are shown. If it is a line appearance, the line type is shown. If it is a feature key, the feature name is shown. If the line is a BLF appearance or a DSS key, the key type is "Busy Lamp". To change the type of an assigned key, the existing assignment must be deleted. Key 1 defaults to the Intercom line and cannot be deleted or modified. Refer to the *Features Description Practice*, for details on line types.

000
 38
 801
 5689

805 509 1931

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DIR: If the key is a line appearance, the directional variant of the line (In/Out, O/G or I/C) is shown.

RING: If the key is a line appearance, the ringing variant of the line (Immed, Delay, or None) is shown.

SEC: If the key is a line appearance, this field indicates (Yes or No) whether the secretarial variant is enabled. For a busy lamp key, setting this field to YES causes an immediate release when the DSS key is pressed.

DSS: A YES in this field indicates that the key is a DSS key.

EXT NUM: This field contains the extension number of the line. This applies to the intercom line, key lines, multiple call lines, personal outgoing lines or BLF/DSS lines. When this field is filled for a specific key, no entry is allowed in the corresponding TRK ACC field. The EXT NUM field is blank if the key directly selects a trunk.

TRK ACC: This is either a trunk number (CO Line) or an ARS leading digit string for a CO line group. These come from Form 14, Non-Dial-In Trunks, or Form 26, ARS: Digit Strings. Only non-dial-in trunks may be entered here. Note that when this field is filled for a specific key, no entry is allowed in the corresponding EXT NUM field.

LABEL: Only used if the key type is defined as LDN, and the device type is a subattendant. The only exception is, if the key type is 'Recall', the LABEL field is automatically RECALL. For all other LDN keys, any character string may be entered up to 12 characters in length. Note: These are keys on the set, defined in the TYPE field.

Softkeys

BLF/DSS: Programs the selected key as a busy lamp field appearance (for the associated extension number).

BOTH WAY: Pressing this softkey enables the selected *SUPERSET* key (line appearance) to originate and receive calls. The DIR field displays the In/Out indication.

CO LINE: Assigns the selected *SUPERSET* key as a CO Line appearance. This gives the telephone direct access to a trunk. Only non-dial-in trunks can be specified. Up to 16 telephones can have an appearance of the same trunk. The SEC, DSS, EXT NUM and LABEL fields are not accessible.

CO LINE GRP: Assigns the selected key as a CO line group key. This gives the telephone direct access to a group of trunks through ARS. It is the responsibility of the installer to program access limitations via CORs (Form 20 and Form 26). The TRK ACC field must match an ARS leading digit string from Form 26.

DELAY RING: Pressing this softkey causes incoming calls to flash the selected key (line appearance) for a programmable period of time and then ring the *SUPERSET* telephone for incoming calls. The "Delay" indication appears in the RING field. The duration of the ring delay is controlled by COS Option 253, the Call Forward - Don't Answer Timer).

DELETE PKM: This softkey appears when a PKM with unassigned keys has been selected (i.e., all keys are speed call keys). Pressing this softkey deletes the PKM, and exits the PKM subform.

DSS: Appears only in the DSS field. Enables the DSS key associated with a BLF appearance. The YES indication appears in the DSS field.

FEATURE: Pressing this softkey assigns the selected *SUPERSET* line appearance key as a feature access key. This applies to a *SUPERSET 410*, *SUPERSET 420*, or a *SUPERSET 430*. The following softkeys appear when the cursor is at the TYPE field and the FEATURE softkey is pressed:

| | | |
|--------------|--------------|----------------------------------|
| AUTO ANSWER | PA PAGING | PRIVACY REL (Privacy Release) |
| ACCOUNT CODE | OVERRIDE | DO NOT DIST (Do Not Disturb) |
| CAMPON | CALL PICKUP | CALL/ATTN (Data Call Connect) |
| MUSIC | CALL FORWARD | DATA DISC (Data Call Disconnect) |
| NIGHT ANSWER | CALLBACK | SWAP (Trade Calls) |
| SINGLE FLASH | DOUBLE FLASH | DIRECT PAGE |
| FORWARD CALL | RELEASE | |

Note: Refer to the *Features Description Practice* for a description of the feature keys available for digital *SUPERSET* telephones.

HOLD POS: This applies only to enhanced subattendant positions. Programs the selected key as an enhanced sub-attendant hold slot. Hold Pos is displayed in the TYPE field. No other fields may be programmed. An enhanced sub-attendant may have up to three hold slots.

IMMED RING: Pressing this softkey programs the selected *SUPERSET* key (line appearance) to ring the *SUPERSET* telephone immediately for incoming calls. The form displays "Immed" in the RING field to indicate this condition.

IN ONLY: Pressing this softkey restricts the selected *SUPERSET* key (line appearance) to receiving incoming calls only. No call originations are permitted. The DIR field displays "I/C".

KEY: This softkey selects a *SUPERSET* key by number. Pressing the KEY softkey displays the ENTER KEY NUM: prompt on the command line.

KEY LINE: Pressing this softkey assigns the selected *SUPERSET* key as a key line appearance. "Key" appears in the TYPE field. Then use the TAB or → key to move the cursor to the DIRECTION field.

LDN: This applies only to enhanced subattendant positions. Programs the selected key as an enhanced sub-attendant LDN key. LDN is displayed in the TYPE field. At this point, a ring type can be selected, an extension number entered, and a label entered. The label is displayed on the *SUPERSET 430* display. An enhanced sub-attendant may have up to three LDN positions.

LINE PREF: Allows selection of the preferred line. This can be one of: INTERCOM key, CO LINE key, CO LINE GRP key, PERSONAL O/G key or MANUAL (must press a line key) - no other line types are permitted to be the preferred origination line. The line programmed as the preferred line will have an asterisk (*) beside its number in the KEY field.

MULTI-CALL: Pressing this softkey assigns the selected *SUPERSET* key as a multiple call line appearance. "Multiple" appears in the TYPE field. Then use the TAB or → key to move the cursor to the DIRECTION field.

NO RING: Pressing this softkey prevents incoming calls from ringing the *SUPERSET* telephone ringer. Only the line appearance flashes. The "None" indication appears in the RING field.

NON DSS: Appears only in the DSS field. Disables the DSS key associated with a BLF appearance. The NO indication appears in the DSS field.

NON SECR: Pressing this softkey disables the secretarial function for the selected *SUPERSET* key (line appearance). The NO indication appears in the SECRETARIAL field. For a DSS key, this disables the secretarial option.

PERSONAL O/G: This softkey appears after the ** MORE ** softkey is pressed. Pressing the PERSONAL O/G softkey designates the selected *SUPERSET* key as a personal outgoing line. No other fields can be edited. Press the ENTER softkey. "Personal" appears in the TYPE field. "O/G" appears in the DIR field. "None" appears in the RING field, and "No" appears in the SEC field.

RECALL: This applies only to enhanced subattendant positions. Programs the selected key as an enhanced sub-attendant recall key. Recall is displayed in the TYPE field. The only other field that may be programmed is the RING field. An enhanced sub-attendant may have only one recall key.

REVIEW: Presents the set application review subform (refer to *Review Subform - Set App*).

SAVE PKM: This softkey is presented the first time a PKM is created. It allows the user to save the PKM without entering any key assignments, thereby designating all keys as speed call keys. Pressing this softkey saves the PKM and exits the PKM subform.

SECRETARIAL: Pressing this softkey enables the secretarial function for the selected *SUPERSET* key (line appearance). The YES indication appears in the SECRETARIAL field. When a line select key is set as a secretarial key, then the user can override the DO NOT DISTURB feature on the *SUPERSET* telephone corresponding to that line appearance. For a DSS key, this enables the secretarial option.

The standard softkeys **CANCEL**, **DELETE**, **ENTER**, **** MORE **** and **QUIT** are also provided.

Review Subform (SET APP) for Form 45

- 4.56 This form appears when the REVIEW and SET APP softkeys are pressed in the Key System Telephones form, or when the REVIEW softkey is pressed in the Expand Set Subform for Form 45. This form lists all programmed appearances of the selected extension number on other *SUPERSET* telephones. When entered from the Station/*SUPERSET* form, this form displays a list of all programmed appearances of the selected extension number. When entered from the Expand Set Subform or Expand PKM Subform, the form displays all appearances of the selected key's extension number, trunk number, or subattendant LDN number. Refer to Figure 4-67 for the form layout.

3:12 PM 10-JAN-97 alarm status = NO ALARM

| Key SET : 3300 | BAY | SLOT | CCT | EXT NUM | SET TYPE | KEY |
|----------------|---------------|------|----------------|---------|-----------|-----|
| > | 1 | 08 | 11 | 3300 | Key SET | 1 < |
| | 1 | 08 | 11 | █ 3300 | Key SET | 1 |
| 1- | 2-CO LINE GRP | | 3-TRUNK NUMBER | | 4-LDN NUM | 5- |
| 6-QUIT | 7- | | 8- | | 9-EXT NUM | 0- |

Customer Data Entry

Figure 4-67 Review (Set App) Subform Layout

Field Descriptions

The header line displays the selected line appearance access number. For telephones, the type (set, station, subattendant) and application (PBX or KEY system) is shown, along with the extension number. For trunks, the type (trunk number, CO line, CO line group) is shown along with the trunk number, or leading ARS digits. Extension numbers are also shown for LDNs and logical lines.

BAY, SLT and CCT: These fields list the bay, slot and circuit numbers of each extension or *SUPERSET* telephone that has an appearance of the selected line. These fields cannot be modified. The system generates them based on the PROGRAMMED field of Form 01, System Configuration.

SET TYPE: This field displays the listed device type; PBX STATION indicates an industry standard telephone, PBX SET indicates a *SUPERSET* telephone, KEY SET indicates a key system telephone, Key SUB-ATT indicates a subattendant for a key

system tenant group, PBX SUB-ATT indicates a subattendant for a PBX tenant group, and CONSOLE indicates an attendant console.

KEY: For listed *SUPERSET* telephones, the KEY field displays the key number where the line appears.

EXT NUM: This field displays the extension number assigned to a particular bay/slot/circuit.

Softkeys

TRUNK NUMBER: This softkey selects a trunk, and shows all sets which have appearances of it. Pressing this softkey displays ENTER TRUNK NUM: prompt on the command line. The trunk selection is completed by entering a valid trunk number (1 - 200), and pressing the ENTER softkey.

EXT NUM: This softkey selects an extension number, and shows all sets which have appearances of it. Pressing this softkey displays the ENTER EXTENSION NUM: prompt. The selection is completed by entering a valid Station Number or *SUPERSET* telephone Number and then pressing the ENTER softkey.

LDN NUM: Selects an LDN number, and shows all sets which have appearances of it. Pressing this softkey displays the ENTER LDN NUM: prompt. The selection is completed by entering a valid LDN number and then pressing the ENTER softkey.

CO LINE GRP: Applies only to key system telephones. Selects a CO line group access code, and shows all sets which have appearances of it. Pressing this softkey displays the ENTER ARS LEADING DIGIT STRING: prompt. The selection is completed by entering a valid access code and then pressing the ENTER softkey.

The standard softkeys **CANCEL**, **ENTER**, and **QUIT** are also provided.

Review Subform (PAGING GROUP) for Form 45

- 4.57 This form appears when the REVIEW and PAGING GROUP softkeys are pressed in the key system telephones form. This form lists all of the sets in the paging group. See Figure 4-68 for the form layout.

Field Descriptions

The header line displays the page group, and the page group name (if programmed).

EXTN: This field displays the extension number of the page group members.

BAY, SLT and **CCT:** These fields list the bay, slot and circuit numbers of the page group members.

COMMENTS: This field displays the COMMENTS field from the corresponding lines in Form 45, Key System Telephones.

| | | | | | | |
|------------------------|--------|-------------------------|-----------|-----|-----|----------|
| 3:15 PM 10-JAN-97 | | alarm status = NO ALARM | | | | |
| [PAGING GROUP : 1] [] | | EXTN | BAY | SLT | CCT | COMMENTS |
| > | | 3300 | 01 | 08 | 11 | < |
| | | 3300 | 01 | 08 | 11 | |
| 1- | 2-NAME | 3-PAGING GROUP | | 4- | 5- | |
| 6-QUIT | 7- | 8- | 9-EXT NUM | | 0- | |

Figure 4-68 Review (Paging Group) Subform Layout

Softkeys

NAME: Specifies a character name for the selected paging group. The "ENTER PAGING GROUP NAME:" prompt is displayed. Selection is completed by entering a character string (maximum eight characters), followed by the ENTER softkey. The page group name is then displayed in the header line.

PAGING GROUP: Selects a paging group. The "ENTER PAGING GROUP:" prompt is displayed. Selection is completed by entering a valid page group number (1 - 50), followed by the ENTER softkey.

EXT NUM: This softkey selects a device by its extension number. Pressing this softkey displays the "ENTER EXTENSION NUM:" prompt. The selection is completed by entering a valid Key System *SUPERSET* telephone number and then pressing the ENTER softkey.

The standard softkeys **CANCEL**, **ENTER**, and **QUIT** are also provided.

Form 46 - Key System Toll Control

- 4.58 This form serves to verify dialed digits for the CO line key feature. This is similar to, but independent from Form 26 (ARS: Digit Strings). See Figure 4-69 for the form layout.

| DIGITS TO BE ANALYZED | | QTY TO FOLLOW | LONG DST | TERM TYPE AND NUM | COR GROUP |
|-----------------------|---------------|---------------|----------|-------------------|-----------|
| > | | | | | < |
| 1- | 2- X | 3- | 4-N0X | 5- ☒☒ MORE ☒☒ | |
| 6-QUIT | 7-FIND STRING | 8- | 9-N1X | 0- | |

7:08 PM 9-JAN-97

alarm status = NO ALARM

Figure 4-69 Form 46 Layout

Field Descriptions

DIGITS TO BE ANALYZED: This field displays those digits for digit analysis. Digit analysis is required so that they can be verified. The total number of digits in this field, plus the number of digits in the QTY TO FOLLOW field cannot exceed 25.

QTY TO FOLLOW: This field lists the number of digits that the user dials AFTER the analyzed digits. The 'Unknown' prompt in this field indicates that the number of subsequent digits is unknown to the system.

LONG DISTANCE: This field specifies which digit string entries require "long distance" management. When this field displays YES, the system expects an account code for that digit string entry from users with COS Option 201 (Account Code, Forced Entry - Long Distance Calls) enabled. Default condition is NO.

TERM TYPE AND NUM: Allows for selection of a termination type (TRUNK or trunk GROUP) and a number (valid trunk number: 1-200; valid trunk group number: 1-50). If TRUNK is chosen as the termination type, only non-dial-in trunks may be entered.

COR GROUP: Specifies a COR group which is restricted from accessing the digit string. If the field is left blank, all COR groups can access the digit string. This links the form to Form 20 (ARS: COR Group Definition). Valid COR group numbers: 1-50.

Softkeys

YES/NO: This softkey only appears when the cursor is at the LONG DISTANCE field. Pressing the YES softkey indicates to the system that this entry requires "long distance" management. While NO indicates no "long distance" YES appears in the LONG DIS-

TANCE field. The default condition is no "long distance" management required as indicated by the NO prompt.

UNKNOWN: This softkey appears only when the cursor is at the QTY TO FOLLOW field. Pressing the UNKNOWN softkey indicates to the system that the quantity of dialed digits AFTER the analyzed digits is unknown.

INSERT: This softkey adds new entries to the form. Pressing the INSERT softkey clears the command line and moves the cursor to the DIGITS TO BE ANALYZED field. The addition is completed by entering the new data for each field and pressing the ENTER softkey. Note that the system inserts the addition one line after the line that was displayed on the command line. The system automatically places all inserted or added strings in numerical ascending order with relation to existing strings.

TRUNK: Appears when the cursor is in the TERM TYPE AND NUM field. Sets the termination point device as a trunk. A trunk number is then entered (1 - 200) - this must be a valid non-dial-in trunk number.

GROUP: Appears when the cursor is in the TERM TYPE AND NUM field. Sets the termination point device as a trunk group. A trunk group number is then entered (1 - 50) - this must be a valid trunk group number.

N0X: This softkey functions as a wild card sequence, where N is any digit from 2 to 9. It represents half of the area codes in North America. Pressing this softkey displays N0X in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the beginning of a digit string.

X: This softkey functions as a wild card digit; it represents any digit from 0 to 9. Pressing this softkey displays X in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the end of a digit string.

FIND STRING: This softkey selects an entry in the DIGITS TO BE ANALYZED field. Pressing the FIND STRING softkey displays the ENTER DIGIT STRING: prompt on the command line. The selection is completed by entering a valid digit string. The entered digit string does not have to be an exact match; the system accepts subsets of digit strings and moves the cursor to the closest entry.

N1X: This softkey functions as a wild card sequence, where N is any digit from 2 to 9. It represents half of the area codes in North America. Pressing this softkey displays N1X in the DIGITS TO BE ANALYZED field. Note that this softkey can only be pressed at the beginning of a digit string.

1N1X, 1N0X, 0N1X, 0N0X: For area codes not specifically identified, and where dialing is preceded by a 1 or 0 (long distance access code), these wildcard sequences followed by 7 digits would cover all unspecified area codes. This allows wild card restriction of 555 and 976 numbers. They are accessed by pressing the ** MORE ** softkey once.

10XXX0N0X, 10XXX0N1X, 10XXX1N0X, 10XXX1N1X, 10XXX0, 10XXX1: These wildcard sequences, designed for the call aggregator market (i.e. hotels, motels, hospitals, universities), prevent unauthorized calls from being billed to the originating line, while allowing consumers access to the long distance carrier of their choice. 10XXX0N0X, 10XXX0N1X, 10XXX1N0X and 10XXX1N1X are accessed by pressing the ** MORE ** softkey twice; 10XXX0 and 10XXX1 are accessed by pressing the ** MORE ** softkey three times.

Standard softkeys **CANCEL**, **DELETE**, **ENTER**, ****MORE**** and **QUIT** are provided.

Appendix A

Programming Error Messages

| Table A-1 Programming Error Messages | |
|--|--|
| Error Message | Meaning |
| XXXXX is an ACD agent ID | A supervisor with ACD ID XXXXX, cannot be displayed, as requested via the FIND SUPER key, because this ID belongs to an agent, not a supervisor. |
| XXXXX is an ACD supervisor | The ID entered for the FIND ID key belongs to a senior supervisor or supervisor. |
| XXXXX already has day zone X specified | The selected day already has a day zone specification. Only one day zone can be specified per day. Refer to Form 25, ARS: Route Plans. |
| XXXXX has no zone specified | All days of the week must have a day zone specification. |
| *3 must be followed by 01 to 14 | In Form 31, System Abbreviated Dial Entry, the “*3” indicates that the subsequent digits will be manually dialed. The number of digits that will be manually dialed follows the “*3” indicator, and can be from 01 to 14. |
| *5 cannot be followed by further digits | In Form 31, System Abbreviated Dial Entry, the “*5” indicates that the previous number is an intercom number. Therefore, no digits can follow the “*5” terminator. |
| * must be followed by 1, 3, 4, 5, 6, 8, 9, or * | In Form 31, System Abbreviated Dial Entry, only the numbers “1”, “3”, “4”, “5”, “6”, “8”, “9” or “*” are valid entries after an “*” entry. |
| Access code XXXXX is already assigned | The access code is used elsewhere in the database. Select another access code. Refer to Form 35, Global Find Access Code, for a list of assigned codes. |
| Access Code XXXXX conflicts with the Access Code for HUNT GROUP NUM XX | The code entered has already been defined as a hunt group access code in Form 17, Hunt Groups. Select a new code or change the hunt group access code. |
| Access Code XXXXX conflicts with an ARS Leading Digits Entry | The system does not allow a partial match between an ARS leading digit and an access code. Leading digit strings must be unique. Refer to Form 26, ARS: Digit Strings and select a new code or change the ARS leading digit entry. |
| Access Code XXXXX conflicts with an Attendant LDN Access Code | The code entered has already been defined as an LDN access code in Form 08, Attendant LDN Assignments. Select a new code or change the LDN assignment. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|--|--|
| Access Code XXXXX conflicts with a Console Access Code | The code entered has already been defined as an extension number for a console in Form 07, Console Assignments. Select a new code or change the console extension number. |
| Access Code XXXXX conflicts with the Feature Access Code for FEATURE NUMBER XX | The code entered has already been defined as a feature access code. Select a new code or change the code in Form 02, Feature Access Codes. |
| Access Code XXXXX conflicts with a Night Bell Access Code | The code entered has already been defined as an extension number for a night bell in Form 18, Miscellaneous System Ports. Select a new code or change the night bell extension number. |
| Access Code XXXXX conflicts with a station number or <i>SUPERSET</i> Prime Line number | The code entered has already been defined as a station number or the prime line number of a <i>SUPERSET</i> telephone. Select a new code or change the station number (or prime line number) in Form 09, Station/ <i>SUPERSET</i> Telephones. |
| Access Code XXXXX conflicts with <i>SUPERSET</i> line number | The code entered has already been defined as a <i>SUPERSET</i> line extension number in Form 09, <i>SUPERSET</i> Telephone Lines. Select a new code or change the <i>SUPERSET</i> line extension number. |
| Access code XXXXX does not correspond to a Stn, Set or logical line | Only those access codes (extension numbers) which correspond to a station, <i>SUPERSET</i> key or logical line can be used. |
| Access code XXXXX does not exist | The selected access code has not been assigned. |
| Access Code XXXXX does not match with ARS Leading Digits Entry | The access code entered does not match the Direct to ARS access code assigned in Form 02, Feature Access Codes. The access code must be a defined ARS leading digit string. |
| Access code entered is not for a station, <i>SUPERSET</i> or logical line | An invalid access code has been entered and the ENTER key is pressed. |
| The access code for field XXX is invalid | The extension number, hunt group access code, night bell extension number or attendant console directory number assigned to one of the DAY, N1 or N2 fields in Form 19, Call Rerouting Table is invalid. Assign a new code in that field. |
| Access codes for fields XXX & XXX are invalid | The extension numbers, hunt group access codes, night bell extension numbers, or attendant console directory numbers assigned to two of the DAY, N1 or N2 fields in Form 19, Call Rerouting Table are invalid. Assign new codes in the fields. |
| Access codes for fields XXX, XXX & XXX are invalid | The extension numbers, hunt group access codes, night bell extension numbers or attendant console directory numbers assigned to the DAY, N1 and N2 fields in Form 19, Call Rerouting Table are invalid. Assign new codes in the fields. |

| Table A-1 Programming Error Messages (continued) | |
|---|--|
| Error Message | Meaning |
| Access code XXXXX is not a valid answer point | The following are valid answer points for the DAY, N1 and N2 fields in Form 14, Non-Dial-In Trunks: <ul style="list-style-type: none"> - an LDN on the attendant console, - a rotary dial or DTMF set extension number, - a <i>SUPERSET</i> telephone directory number, - a hunt group access code or, - a night bell extension number. |
| Account codes of unspecified lengths exist; delete these first | Ensure that all of the account codes in Form 33, Account Code Entry are equal to the specified account code length in Form 04, System Options/System Timers. |
| Account code value exists in the database | In Form 33, Account Code Entry, the entered account code already exists. Select a new account code. |
| ACD agent group XX has no members | The agent group added to the form is empty. It must have members before it can be put in this form. |
| ACD agent group XX already assigned to a supervisor | The ACD agent group which has been edited or inserted into the sub-form, is already programmed under some other supervisor. |
| ACD Agent Group XX not assigned to a supervisor | ACD group XX, requested by the FIND GROUP key, cannot be displayed, because it has not been assigned to a supervisor yet. |
| ACD groups under XXXXX must first be deleted | This senior supervisor cannot be deleted from the first-level form by the DELETE key, because there are ACD groups defined under this senior supervisor. |
| Agent XXXXX does not exist | The ID entered for the FIND ID key does not exist in the database. |
| Agent XXXXX is on line and cannot be deleted | The DELETE key cannot be used on an agent who is on line. |
| Agent group XX does not exist | The selected overflow agent group does not exist. |
| Agent Group XX has no members | The selected primary ACD agent group or overflow agent group is empty. It must have members before it can be put in this form. |
| AGENT STATUS not allowed when multiple QUEUE STATUS keys are programmed | No agent status keys are allowed on an ACD supervisor key template when multiple queue status keys are programmed. |
| All members must be idle before changing Hunt Group type | The user attempted to change the hunt group type. The user needs to wait for all of the devices to be free or take them out of service before changing the group type. |
| Alternate music sources cannot have keyline or multi-call line appearances | Music sources cannot be line appearances. |
| ARS Leading Digits XXXX have not been assigned | The access code is valid, but it has not been assigned to any sets. |
| Associated device already has three <i>SUPERSET</i> DSS or PKM modules attached | An attempt was made to associate more than three PKM modules with a device. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|--|
| Associated device has a key template established in its COS | An attempt was made to associate a PKM module with a set that has a key template enabled in its COS. |
| Association of <i>SUPERSET</i> DSS or PKM Module to <i>SUPERSET</i> must be removed | An attempt was made to delete a <i>SUPERSET</i> that has one or more PKM modules associated with it. |
| Attempting to add invalid access code | A PBX PKM may only be associated with a PBX set. A key system PKM may only be associated with a key system set. A PKM must be associated with a <i>SUPERSET</i> telephone; not with a standard telephone set. |
| Attempting to add more than XXX members to this group | There are a maximum of 50 members for each pickup group, trunk group and hunt groups. Note: 100 max. for hunt groups. Maximum 16 members in a paging group. |
| Attempting to define multiple appearances of LDN XXX on this set | An LDN may appear only once on a given set. |
| Attempting to define multiple KEY LINE appearances of XXXXX on this SET | An access code for a key line appearance cannot be duplicated on another Key Line appearance on that <i>SUPERSET</i> telephone. Refer to Form 09, (Expand Set Subform) <i>SUPERSET</i> Telephone Lines. |
| Attempting to define multiple key types for Access Code XXX | In Form 09, Stations/ <i>SUPERSET</i> Telephones, only one key type can be assigned to each station number. |
| Attempting to define multiple key types for Trunk Number XX | In Form 09, Stations/ <i>SUPERSET</i> Telephones or Form 45, Key System Telephones, only one key type can be assigned to each trunk number. |
| Attempting to delete an ACD path that is currently in use | This ACD path cannot be deleted because there are ACD calls currently being handled via this path. |
| Attempting to enter invalid access code | An invalid access code was entered. Note: a blank access code is not allowed. |
| Attempting to program more than 32 appearances for <i>SUPERSET</i> line | A single <i>SUPERSET</i> line may have a maximum of 32 appearances on other sets. |
| Attempting to program more than XX appearances for sub-attendant LDN | There is a limited number of appearances for any line appearance on sets in the system and the user attempted to exceed this limit. |
| Attempting to remove an Agent Group that has calls waiting | This message will be displayed if the primary agent group or the overflow agent groups have calls waiting and the user is attempting to change or delete the agent group or delete the path. |
| Attempting to remove a Music Source that is currently in use | Someone is listening to the music source so it cannot be removed. This message can occur when attempting to change or delete a music source, deleting the recording that the music source is in, or deleting the path. |
| Attempting to remove a Recording that is currently in use | Someone is using the recording hunt group so it cannot be removed. This message can occur when attempting to change or delete the recording or when deleting the path. |

| Table A-1 Programming Error Messages (continued) | |
|---|--|
| Error Message | Meaning |
| Attempting update/delete of a device that is currently in use | The selected device is being used; modify this device at a later time. |
| Automated Attendant hunt group may not contain <i>SUPERSETs</i> | An auto attendant hunt group can only contain industry standard telephones. |
| Bay/Slot/Circuit XX/XX/XX is already assigned | The specified bay/slot/circuit is assigned elsewhere. Select a new bay/slot/circuit number or change the assignment of that bay/slot/circuit number. Refer to Form 01, System Configuration and Form 09, Stations/ <i>SUPERSET</i> Telephones. |
| Bay/Slot/Circuit XX/XX/XX is already programmed elsewhere | The specified bay/slot/circuit is assigned elsewhere. Select a new bay/slot/circuit number or change the assignment of that bay/slot/circuit number. Refer to Form 07, Console Assignment, Form 09, Stations/ <i>SUPERSET</i> Telephones and Form 12, Data Assignment. |
| Bay/Slot/Circuit - XX/XX/XX cannot be programmed | Devices are assigned to the selected bay/slot/circuit. These devices must be deleted before a new card type can be programmed for the bay/slot/circuit. |
| Bay/Slot/Circuit - XX/XX/XX is not present | The specified circuit number is not applicable for these bay and slot numbers. Re-enter the bay and slot numbers without the circuit number or enter 0 for the circuit number. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a console | The selected bay/slot/circuit is not a console. Refer to Form 01, System Configuration and reprogram this bay/slot/circuit as a console. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a DIAL-IN trunk | The selected bay/slot/circuit is programmed as a Non-Dial-In Trunk. Refer to Form 14, Dial-In Trunks. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a DMP DEVICE | The selected device is not a Music-on-Hold/Paging Unit. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a DNIC | The selected bay/slot/circuit is not a DNIC circuit. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a MUSIC/PAGER MODULE | The selected bay/slot/circuit is not a music/pager assignment. Refer to Form 01, System Configuration and reprogram this bay/slot/circuit as a Music/Pager Module. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a NON-DIAL-IN trunk | The selected bay/slot/circuit is programmed as a dial-in Trunk. Refer to Form 15, Dial-In Trunks. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a RECEIVER MODULE | Relays (Subcircuits 5 and 6) are located on the Receiver/Relay Module only. Ensure that there is a Receiver/Relay Module on a Universal Card at that location in Form 01, System Configuration. |
| Bay/Slot/Circuit - XX/XX/XX has incompatible device type programmed. | The user attempted to range program over different card types, a circuit that has a BLF programmed or a circuit that has a SUB (enhanced subattendant) programmed. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|---|
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a trunk | The selected trunk number corresponds to a bay/slot/circuit that is not programmed as a trunk. |
| Bay/Slot/Circuit - XX/XX/XX is not programmed as a UNIVERSAL CARD | The selected bay/slot/circuit is not a Universal Card assignment. Refer to Form 01, System Configuration and reprogram this bay/slot/circuit as a Universal Card. |
| Cannot change tenant grp, if a member of Modem Pool Hunt Group | The user attempted to change the tenant of a modem which was a member of a modem pool hunt group. |
| Cannot delete last agent while callers are waiting on ACD Group XX | The user attempted to delete the last agent from ACD group XX, which would delete group XX itself. However, there are ACD calls waiting for this group, so the deletion cannot be permitted at this time. |
| Cannot disable option when Automated Attendant programming is present | The user attempted to disable System Option 16 - Automated Attendant when there are auto attendant groups programmed in the system. |
| Cannot enable DTRX due to invalid mode or DTE not assigned | The user attempted to enable the DTRX option in the hunt group options form for a modem hunt group for which DTRX does not apply. The group has to be in ANSWER or BOTH mode. |
| Cannot modify LEADING DIGITS until digit strings deleted | In Form 26, ARS: Digit Strings, the digit entries in the DIGITS TO BE ANALYZED field must be deleted before the digit entries in the LEADING DIGITS field can be modified. |
| Cannot update music/pager assignment - must delete and re-enter | To modify the selected music/pager assignment, it must first be deleted and then re-entered. |
| Can only use "X" wildcard at end of strings | The X softkey can only be pressed at the end of a digit string entry. Refer to Form 26, ARS: Digit Strings. |
| Circuit descriptor type must match programmed trunk hardware type | The selected trunk circuit descriptor type in Form 13, Trunk Circuit Descriptors must match the specified Trunk Card type in Form 01, System Configuration. |
| Configuration cannot be changed for the Bay/Slot/Circuit - XX/XX/XX | In Form 01, System Configuration, the data in the PROGRAMMED field cannot be matched to the data in the INSTALLED field as devices are already assigned to that physical location. Cannot change the configuration until the devices are de-assigned. |
| Console has LDN assigned - cannot delete | An attendant console can only be deleted from the system if all of its LDN assignments are removed first. Refer to Form 08, Console LDN Assignments. |
| Consoles that share an LDN access code must be in the same TENANT GROUP | Attendant consoles that share the same LDN access code must also share the same tenant group. Refer to Form 07, Console Assignments. |
| COR group out of range. Valid range is (1 - 50) | There are a maximum of 50 COR groups. |

| Table A-1 Programming Error Messages (continued) | |
|---|--|
| Error Message | Meaning |
| COR value is out of range | In Form 32, Customer Data Print, the COR value specified must be valid (1 → 25 for each COR group). There are a maximum of 50 COR groups. Refer to Form 20, ARS: Class of Restriction Groups. |
| COS number must be 1 to 50 | Valid range for COS numbers is 1 to 50. |
| COS value is out of range | In Form 32, Customer Data Print, the COS value specified must be valid (1 → 50). |
| The current associated set is using a key on the PKM | An attempt was made to change the association of a PKM while the associated set is using a line on the set. |
| Data port of the DNIC console must be deleted first | The user is attempting to delete the DNIC console in Form 07 without first deleting its data port in Form 12. |
| Database is out of sync | The database copy in RAM does not match the database copy on the CMOS. Delete the selected device and re-enter the device in the appropriate form. |
| Delete ACD Group XX from ACD PATH YY before deleting last agent | The user attempted to delete the last agent from group XX, which would have the effect of deleting group XX itself. However, group XX is referenced in the ACD PATH form, for path number YY, so it must be deleted from that form first. Then the user will be allowed to delete the last agent, and thus delete the group. |
| Delete ACD Group XX from ACD SUPERVISORS form before deleting last agent | The user attempted to delete the last agent from group XX, which would delete group XX itself. However, group XX is referenced in the ACD Supervisors form, so it must be deleted from that form first. |
| Delete in Hunt Group Form first | The user attempted to delete the last member of a hunt group programmed as an overflow point, which would delete the hunt group itself. The member must be deleted from Form 17 first. |
| Delete trunk at Bay/Slot/Circuit - XX/XX/XX before adding 2nd T1 ISDN Card. | The system cannot configure the peripheral bay as an ISDN node because the 24th circuit of the first T1 Trunk Card is programmed in either Form 14 or Form 15. Delete the trunk that is programmed on the 24th circuit of the first T1 Trunk Card. |
| DISA trunks cannot have prefix or absorb digits programmed | The user was trying to program these fields for a DISA trunk. |
| DNIC console cannot originate a DTRX call | The data port for a DNIC console cannot have the DTE field in Form 12 filled out since it cannot originate a DTRX. |
| DTE field is not programmed for this device | First member of a modem hunt group has the DTE field programmed. User attempted to add a member without the DTE field programmed - must be consistent within the hunt group. |
| DTE field is programmed for this device | First member of a modem hunt group does not have the DTE field programmed. User attempted to add a member with the DTE field programmed - must be consistent within the hunt group. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|--|
| Entered string is not in the system | In Form 26, ARS Nested Digit Strings, the selected digit string is not defined. |
| Error in "*" sequences. * (1,2,3,4,5,6,7,8,9,*) are the only valid sequences | <p>The asterisk sequence in the DIGITS TO BE INSERTED field in Form 22, ARS: Modified Digit Table is restricted to the following:</p> <ul style="list-style-type: none"> *1 = Pause for 5 seconds, *2 = Wait for Dial Tone, *3 = Switch to DTMF for subsequent digits, *4 = Stop or start displaying modified digits. <p>Modified digits are displayed on the sets and in the SMDR records. The first time *4 appears in a digit string the system stops displaying the following modified digits. The next time *4 appears the system starts displaying the following modified digits.</p> <ul style="list-style-type: none"> *5 = Pause 10 seconds, *6 = Insert caller's ID, *7 = Insert caller's dialed account code, *8 = Insert PBX node ID number, *9 = Pause for 1 second, ** = asterisk character. |
| Error in COR members. Use spaces between CORs. e.g. 1 3 5-14 25 | The members for each COR group must be separated by a space. For consecutive CORs, a dash is inserted. |
| Error in QTY TO DELETE field Can only delete up to 25 | Only 25 digits can be deleted. Refer to the QTY TO DELETE field in Form 22, ARS: Modified Digit Table. |
| Extn. XXXX can't have a key template and a SUPERSET DSS/PKM module at the same time | A telephone may not be programmed with both a key template and an associated SUPERSET DSS or PKM Module at the same time. |
| Extension number XXXXX does not exist | The selected extension number is undefined. The extension number must first be defined in Form 09, Stations/SUPERSET Telephones. |
| Extension number XXXXX has not been assigned a paging group | That extension number is not in a paging group. |
| EXTENSION NUMBER XXXXX is a member of HUNT GROUP XX | The selected extension number is a member of the hunt group shown. An extension number can be a member of only one hunt group at a time. |
| EXTENSION NUMBER XXXXX is a member of PICKUP GROUP XX | The selected extension number is a member of the pickup group shown. An extension number can be a member of only one pickup group at a time. |
| FEATURE NUMBER XX conflicts with system option YY in Form 4 | The given feature conflicts with the specified system option in Form 4. The option and the feature access code cannot be programmed at the same time. |
| Feature Number out of range Valid range is (1 - 45) | Feature numbers range from 1 to 45. Refer to Form 02, Feature Access Codes. |
| First account code position value greater than last | When Print Option Number 14 in Form 32, Customer Data Print is selected, the first specified account code must be less than the last specified account code. |

| Table A-1 Programming Error Messages (continued) | |
|--|---|
| Error Message | Meaning |
| First digit in Access Code must be '*' | The Key System - Retrieve Personal Speed Call feature access code must begin with an asterisk (*). |
| First digit in digit string cannot be a '*' | This will conflict with the Key System - Retrieve Personal Speed Call. If asterisks (*) are required, program them into the Modified Digit Table. |
| Form access disallowed; enable verified account codes system option | To access Form 33, Account Code Entry, System Option 05, Verified Account Code must first be enabled. Refer to Form 04, System Options/System Timers. |
| Form number XX cannot be accessed | The selected form number is reserved for future use or the selected form number has restricted user access. Refer to Form 28, Form Access Restriction Definition for the level of access for each form. |
| Form number out of range | The selected form number is invalid. See Table 3-1. |
| High power card cannot be programmed at this Bay/Slot/Circuit | The Universal Card can only be assigned to those card slots rated for high power consumption. These are the upper slots of any digital bay. |
| Hour value XX is out of range | The hour value can range from 01 to 24. Refer to Form 04, System Options/System Timers. |
| Hunt group must have an access code assigned before name can be programmed | The user attempted to program a name for the hunt group before an access code was programmed. The access code has to be done first. |
| Incorrect specification of Bay/Slot/Circuit for range programming | The specified start bay/slot/circuit numbers must be less than the end bay/slot/circuit numbers. |
| Inserted too many digits Up to 38 allowed, with 'n' counted as 1 | The specified entry exceeds the maximum. A maximum of 38 entries are allowed in the DIGITS TO BE INSERTED field in Form 22, ARS: Modified Digit Table. |
| Invalid default destination | The user attempted to program an invalid default destination for an auto attendant group. See Practice 9109-098-625-NA, Automated Attendant Application Package, for a list of valid destinations. |
| Invalid digit to insert Use 0-9 or "*" (1,2,3,4,5,*)" only | The specified entry is invalid. The entries in the DIGITS TO BE INSERTED field are restricted to the following: <ul style="list-style-type: none"> - 0 to 9 and - the valid asterisk sequences. |
| Invalid key for set in use | The user attempted to program invalid keys (7 to 12) for a <i>SUPERSET 410</i> on expanded set forms for Form 09 and Form 45. |
| Key number XX cannot be programmed as the Origination Line Preference key | This key can be an INTERCOM key, CO line key, CO line group key, MANUAL, or PERSONAL O/G key. |
| Maximum ACD positions allowed are already assigned | The user attempted to insert a 1000th ACD position into the system. Only 999 are allowed. ACD positions include agents, supervisors and senior supervisors. |
| Maximum Afterwork Timer is 15:00 | The user entered a timer out of range. |
| Maximum T1 trunk cards are programmed. | No more T1 trunk cards can be programmed. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|--|
| Maximum Time is 54:00 | The user entered a timer out of range. |
| Minute value XX is out of range | The minute value can range from 01 to XX, where XX is option specific. Refer to Form 04, System Options/System Timers. |
| MODIFIED DIGIT ENTRY out of range Valid range is (1 - 50) | The selected entry number is invalid. The range is 1 to 50. Refer to Form 22, ARS: Modified Digit Table. |
| Modified digit table entries are from 1 to 50 | The selected entry number is invalid. The range is 01 to 50. Select a new entry number. Refer to Form 22, ARS: Modified Digit Table. |
| Multiple QUEUE STATUS keys not allowed with AGENT STATUS keys | Multiple queue status keys are not allowed on an ACD supervisor key template when agent status keys are programmed. |
| Must delete all appearances of XXX from CALL REROUTING TABLE | This ACD path cannot be deleted, because its access code appears in the CALL REROUTING table (Form 19). |
| Must delete all appearances of XXXXX from CALL REROUTING TABLE | The selected device must have its access code or extension number deleted from the Call Rerouting Table before it can be removed from the system. Refer to Form 19, Call Rerouting Table. |
| Must delete all appearances of XXXXX from Key System Telephones Form | This digit string is used in Form 45 as CO Line Group Keys - must delete this first. Use the REVIEW form in the Key Sets form to review the list of <i>SUPERSETs</i> using this leading digit. |
| Must delete all appearances of XXX in NON-DIAL-IN trunks | This ACD path cannot be deleted because its access code appears in the NON-DIAL-IN TRUNKS form (Form 14). |
| Must delete all appearances of XXX on all sets before deleting trunk | This trunk is programmed on a set as a CO line key in Form 45 - must delete there first. |
| Must delete all appearances of XXXXX in Hunt Group Options form | The user attempted to delete a device which is programmed in the Hunt Group Options form as a default destination for auto attendant or an overflow point. |
| Must delete all Digit Strings that begin with a '*' | Before programming this access code, go to the SHOW STRINGS subform of Form 26 - ARS: Digit Strings, and delete all digit strings beginning with an asterisk (*). |
| Must delete all key definitions before deleting set | The selected <i>SUPERSET</i> telephone must have all its key definitions deleted before it can be removed from the system. Refer to Form 09, (Expand Set Subform) <i>SUPERSET</i> Telephone Lines. |
| Must delete appearances of XXXXX from answer points in NON-DIAL-IN TRUNKS | The selected device must have its access code or extension number deleted from the answer points in Form 14, Non-Dial-In Trunks before it can be removed from the system. |

| Table A-1 Programming Error Messages (continued) | |
|--|---|
| Error Message | Meaning |
| Must delete BLF appearances starting on device XXXX before deleting | The user attempted to delete a device which has BLF appearances on the specified device. The appearances must be deleted first. |
| Must delete the appearances of XXXXX on all sets before deleting set | All appearances of the station number (or prime line number) must be deleted before that set can be removed from the system. |
| Must enter first choice for route list to be defined (leave no gaps) | In Form 24, ARS: Route Lists, the FIRST field must be specified with a valid route list number before the SECOND field is specified. |
| Must enter LEADING DIGITS | To complete the entry in Form 26, ARS: Digit Strings, must enter digits in the LEADING DIGITS field. |
| Must first disable Option 217 in COS (1 - 50) | COS Option 217 Direct To ARS must be disabled before the Direct To ARS feature access code can be deleted. |
| Must program Direct To ARS access code first | The user attempted to enable COS Option 217, Direct To ARS when there is no feature access code programmed in Form 02 for this feature. Form 02 must be programmed first. |
| Neither Option #248 Nor #249 are enabled yet | One of these COS Options must be enabled for correct system operation. |
| No CONSOLE MODULES are programmed | The console module must be assigned to a bay/slot/circuit/subcircuit in Form 01, System Configuration. |
| No DIAL-IN trunk cards are programmed | A card that supports dial-in trunks must be defined in Form 01, System Configuration. |
| No DNIC cards are programmed | To access Form 45, there must be DNIC cards programmed into Form 01. |
| No more space available for comments | Subsequent comments that are entered in the CDE Forms are not saved. |
| Non-existent account code value has been entered | During a search in Form 32, Customer Data Print, the entered account code does not exist. Select another account code. |
| No NON-DIAL-IN trunk cards are programmed | A card that supports non-dial-in trunks must be defined in Form 01, System Configuration. |
| No STATION or SUPERSET cards are programmed | A card that supports rotary dial or DTMF sets or a card that supports SUPERSET telephones must be defined in Form 01, System Configuration. |
| No trunks are assigned to circuit descriptor number X | The trunk circuit descriptor number entered has not been specified in Form 13, Trunk Circuit Descriptors. |
| NUMBER OF DIGITS TO ABSORB must be in the range (0 - 8) | In the M field of Form 15, Dial-In Trunks, the maximum quantity of digits allowed is 8. |
| ONS limit exceeded for this part of Bay | The maximum number of ONS cards allowed has been exceeded. |
| ONS Port access code XXXXX does not exist | The access code entered for the Music Source Following a Recording is non-existent or illegal. |
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Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|---|
| Option XX conflicts with this option | The selected option is mutually exclusive with the option number shown. |
| Option number XXX is out of range; must be between XXX and XXX | The selected option number is out of range. For COS Options, the valid range is 100 to 908. For System Options, the valid range is 1 to 52. |
| Only 1 PER bay is allowed 2 T1 Trunk cards, all others can only have 1 | This message appears if you attempt to program a second T1 Trunk Card in more than one node. |
| Overflow Agent Groups must be unique | The selected overflow agent group is a duplicate of an overflow already specified for this path, or it is the primary agent group for this ACD path. |
| Pager X is already assigned to a Night Bell. | The pager number specified has already been assigned to a Night Bell in this form. |
| Pager X is not programmed | The selected pager is not a Music-on-Hold/Paging Unit. |
| The paging group XX has not been assigned | No members in specified group - group undefined. |
| The power rating of the UNIVERSAL CARD is exceeded | The power rating of the Universal Card is 10. Therefore, the number of modules that can be installed on the Universal Card depends on the individual power rating of the modules. The Receiver/Relay Module has a power rating of 2, the Music on Hold/Pager Module has a power rating of 1 and the E&M Trunk Module has a power rating of 3. |
| Print Option out of range Valid range is (1-50) | In Form 32, Customer Data Print, there are only 50 print option numbers. Select a new print option number. |
| This printer specification has already been programmed | System already contains printer parameters. |
| Recording access code XXXXX does not exist | The access code entered for a recording is non-existent or illegal. The code must be for a recording hunt group. |
| Recording 1 Start Time must be > = Delay For Ringback | The values for these two items must be adjusted as indicated. |
| ROUTE LIST out of range Valid range is (1 - 100) | The selected route list number is invalid. The range is 1 to 100. Refer to Form 24, ARS: Route Lists. |
| ROUTE out of range Valid range is (1 - 200) | The selected route number is invalid. The range is 1 to 200. Refer to Form 23, ARS: Route Definition. |
| ROUTE PLAN out of range Valid range is (1 - 50) | The selected route plan number is invalid. The range is 1 to 50. Refer to Form 25, ARS: Route Plans. |
| RTE PLN= X, DZ= X, TZ= X, Field= ROUTE LIST: Error= entry must be blank | The entered route list number does not have a corresponding entry in the START HOUR field. Therefore, the ROUTE LIST field must be cleared or a starting time must be specified in the START HOUR field. Refer to Form 25, ARS: Route Plans. |

| Table A-1 Programming Error Messages (continued) | |
|---|--|
| Error Message | Meaning |
| RTE PLN= X, DZ= X, TZ= X, Field= START HOUR, Error = Entry < = previous entry | The START HOUR field entry is less than or equal to the previous START HOUR field entry. The entries in the START HOUR field must be listed in ascending order. Refer to Form 25, ARS: Route Plans. |
| RTE PLN= X, DZ= X, TZ= X, Field= START HOUR, Error= Entry cannot be deleted | A blank entry in the START HOUR field represents 24 hours. Therefore, the subsequent entry in the START HOUR field is less than or equal to the blank entry. Starting times must be listed in ascending order. Refer to Form 25, ARS: Route Plans. |
| Start time of a recording must be < Interflow timeout | Adjust the start time as indicated. |
| Start time of a recording must be < start time of the next recording | The recording start times should be adjusted as indicated. |
| A sub-attendant prime cannot have keyline or multi-call line appearances | The line must be a single appearance (the prime) in the system. |
| The <i>SUPERSET</i> specified and the PKM have the same feature key | The module and the set have been programmed with the same feature key. |
| The <i>SUPERSET</i> specified and the PKM have the same key line key | An attempt was made to move a PKM to a set that already has an appearance of a DTS, PRIVATE or KEY line that is already on the module. |
| Supervisor XXXXX does not exist | A supervisor with ID XXXXX cannot be displayed as requested via the FIND SUPER key because this access code has not been assigned to a supervisor. |
| System Option XX conflicts with FEATURE NUMBER YY in Form 2 | The given system option conflicts with the specified feature number in Form 02. The option and the feature access code cannot be programmed at the same time. |
| System Option 106 must be disabled | This option must be disabled before auto attendant groups can be programmed. |
| System Option 106 must be enabled | This option must be enabled before auto attendant groups can be programmed. |
| System Option 59 must be programmed before creating an Auto-Attendant group | This option must have a value programmed before an auto attendant group can be programmed. |
| T1 card (for ISDN Node) in slot 2, 4, 6, 8 only | Program ISDN Node T1 cards only in slots 2, 4, 6, or 8. |
| T1 card (for PER Node) in 5th or 6th slot only | Program PER Node T1 cards only in slots 5 or 6. |
| TENANT NUMBER is out of range Valid range is 1 to 25 | There are a maximum of 25 tenant groups. |
| Too many agents programmed, must delete some | The maximum number of agents allowed by your System ID has been reached. Additional agents cannot be programmed. |
| Too many devices programmed, must delete some | The maximum number of devices allowed by your System ID has been reached. Additional agents cannot be programmed. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|---|--|
| TOTAL DIGITS EXPECTED must be in the range (1-9) | In Form 15, Dial-In Trunks, the N field (total digits expected) is restricted to digits 1 to 9. (Generic 1004 and below). |
| TOTAL DIGITS EXPECTED must be in the range (0 - 10) | In Form 15, Dial-In Trunks, the N field (total digits expected) is restricted to digits 0 to 10. (LIGHTWARE only). |
| Total string is too long Limit is 26 digits | The total number of digits in the DIGITS TO BE ANALYZED field plus the digits in the LEADING DIGITS field cannot exceed 26. Refer to Form 26, ARS: Digit Strings. |
| TRUNK NUMBER XX does not correspond to a CO trunk | Trunk number entered was either a dial-in trunk or a non-existent trunk. Only non-dial-in trunks may be entered here. Only CO trunks can be assigned as DTS in Form 09, (Expand Set Subform) SUPERSET Telephone Lines. |
| TRUNK NUMBER XXX is already assigned | Trunk numbers can be assigned to only one trunk. Trunk numbers are assigned in Form 14, Non-Dial-In Trunks and Form 15, Dial-In Trunks. |
| TRUNK NUMBER XXX has not been assigned | Entered trunk number does not correspond to a trunk. It must be defined in Form 14, Non-Dial-In Trunks or Form 15, Dial-In Trunks. |
| TRUNK GROUP must be entered for a route to be defined | To complete the route definition, the trunk group number must be specified. Refer to Form 23, ARS: Route Definition. |
| TRUNK NUMBER XXX is a member of TRUNK GROUP XX | The selected trunk number is a member of the trunk group shown. A trunk number can be a member of only one trunk group at a time. |
| Unable to delete - A device is programmed for the Bay/Slot/Circuit - XX/XX/XX | Circuits are assigned to the selected card in that bay and slot. Cannot delete the card in that slot until the devices are de-assigned from the forms. |
| Unable to locate extension XXXXX | The selected extension number is not assigned to any station or set. Refer to Form 09 or Form 45. |
| Unable to locate extension XXXXX assigned to a PICKUP GROUP | The selected extension number is not assigned to any station or set. Refer to Form 09 or Form 45. |
| Unable to stop CDE print Try again later | The customer data print process cannot be halted. Try again later. |
| Undefined index number or digit string | In Form 31, System Abbreviated Dial Entry, either the Index Number or the Digit String is blank. Specify the required Index Number or Digit String. |
| Unmatched Account code length; system option account code length enabled | The length of the entered account code does not match the account code length specified in System Option 55. (See Form 04, System Options/System Timers). Enter a new account code or change the Account Code Length option. |

| Table A-1 Programming Error Messages (continued) | |
|---|---|
| Error Message | Meaning |
| Unprogram all non-T1 ISDN Cards from bay X before adding 2nd T1 ISDN Card | This message appears if you try to program a second T1 Card while any card, other than a T1 Trunk Card, is programmed in a 96-port bay. |
| User currently programming feature keys Try again later | Cannot EXPAND SET while set user is accessing Program Feature Key feature. |
| Valid COS range must be entered before COS print is initiated | Before a print operation can occur, a valid COS range must be entered (1 to 50). Refer to Form 03, COS Define. |
| Valid TRK CCT DESC range must be entered before print is initiated | This error occurs in Form 32, Customer Data Print. The valid trunk circuit descriptor range is 1 to 25. |
| Value XX is outside valid range for ACD Agent Group (1-50) | The ACD group number entered is out of range. |
| Value X is outside valid range for BAY (1 - 5) | The selected bay number is invalid. The range is 1 to 5. |
| Value XX is outside valid range for CIRCUIT (1 - XX) | The selected circuit number is invalid. |
| Value XX is outside valid range for CIRCUIT DESCRIPTORS (1 - 25) | There are a maximum of 25 trunk circuit descriptors. |
| Value XX is outside valid range for COR (1 - 25) | The selected COR group number is out of range. The range is 1 to 25. |
| Value XX is outside valid range for COS (1 - 50) | The selected COS number is out of range; the range is 1 to 50. |
| Value XX is outside valid range for ENTRY NUMBER (1 - XX) | In Form 18, Miscellaneous System Ports, there are only 38 entry numbers. |
| Value X is outside valid range for HUNT GROUP (1 - 50) | The selected hunt group number is invalid. The range is 1 to 50. |
| Value XX is outside valid range for INTERCONNECT NUMBER (1 - XX) | In Form 30, Device Interconnection Table, there are only 25 Interconnect Numbers. |
| Value XX is outside the valid range for KEY NUMBERS | The selected <i>SUPERSET</i> key number is invalid. Key numbers range from 2 to 15 for <i>SUPERSET</i> telephones, and 1 to 32 for <i>SUPERSET</i> DSS Modules. |
| Value XX is outside the valid range for PAGER (1-9) | The pager number specified is invalid. The range is 1 to 9. |
| Value XX is outside the valid range for PAGING GROUP (1 - 50) | The selected paging group number is invalid. The range is 1 to 50. |
| Value XX is outside valid range for PICKUP GROUP (1 - 50) | The selected pickup group number is invalid; the range is 1 to 50. |
| Value XX is outside the valid range for the selected timer option | The selected timer value is invalid. Refer to Table 4-7, Trunk Options for a list of valid timer values. |
| Value XX is outside valid range for SLOT (1 - XX) | The selected slot number is invalid. |
| Value XX is outside valid range for START HOUR (0 - 23) | In Form 25, ARS: Route Plans, the START HOUR specifies the starting time for each time zone. The time is represented by two digits in 24-hour format. |

Table A-1 Programming Error Messages (continued)

| Error Message | Meaning |
|--|---|
| Value XX is outside valid range for SUBCIRCUIT (X - X) | Subcircuits 1 to 4 refer to the DTMF Receivers; they cannot be accessed. The only subcircuits that can be accessed are the relays on the Receiver/Relay Module. These are subcircuits 5 and 6. |
| Value XX is outside valid range for TENANT (1 - 25) | The selected tenant group number is invalid; the range is 1 to 25. Tenant group numbers are used in the following forms: Form 05, Tenant Interconnection Table, Form 06, Tenant Night Switching Control, Form 07, Console Assignments, Form 09, Stations/ <i>SUPERSET</i> Telephones, Form 12, Data Assignment, Form 14, Non-Dial-In Trunks, Form 15, Dial-In Trunks and Form 19, Call Rerouting Table. |
| Value X is outside valid range for TRUNK GROUP (1 - 50) | The selected trunk group number is invalid. The range is 1 to 50. |
| Value XXX is outside valid range for TRUNK NUMBERS (1 - 200) | Trunk numbers range from 1 to 200. |
| Value 0 is outside valid range (1-99) | The selected ACD path or priority is invalid. |
| Verified account codes system option must be enabled first | In Form 33, Account Code Entry, the account code can only be modified if System Option 05, Verified Account Codes is enabled. Refer to Form 04, System Options/System Timers. |
| Voice port of the DNIC console must be programmed first | The DNIC console must be programmed first in Form 07 before its data port can be programmed in Form 12. |
| Warning: This path will be deleted unless 1st two status lines are assigned | The user attempted to QUIT this form with "Access Code for This ACD Path" or "Primary ACD Agent Group" field blank. A path is meaningless without these two pieces of information. The user is now provided with two keys: QUIT, which quits the form and deletes this path, and BACK TO FORM (softkey 0), which returns the user to the form. |
| Warning: Reassigning agent from group XX CONFIRM or CANCEL | The inserted ID is one that is already programmed in group XX. This agent will be reassigned now to the current ACD group. Press either the CONFIRM or CANCEL softkey. |
| Warning: Rec X info will be deleted unless Start Time & Access Code assigned | The user attempted to QUIT the form while only one of the indicated status fields for Recording X was assigned. Recording info is meaningless without both these pieces of info. The user is provided with two keys now: QUIT, which quits the form and deletes all entered info about Recording X, and BACK TO FORM (softkey 0) which returns the user to the form. |
| Page 16 of 16 | |

Appendix B

Blank CDE Forms

This appendix contains blank CDE forms that you can use to plan system programming.

Forms that cannot be edited are not shown in this appendix.

You begin planning the programming by defining the location of all peripheral cards and modules in the system.

For information on the actual CDE forms, refer to the main body of this document. Further information on individual features is contained in the *Features Description Practice*.



FORM 01 - SYSTEM CONFIGURATION

| Bay | Slot | Cct | Programmed |
|----------------------------|------|-----|------------|
| | 1 | | |
| | 2 | | |
| | 3 | | |
| | 4 | | |
| | 5 | | |
| For universal modules only | 1 | | |
| | 2 | | |
| | 3 | | |
| | 4 | | |
| | 6 | | |
| For universal modules only | 1 | | |
| | 2 | | |
| | 3 | | |
| | 4 | | |
| | 7 | | |
| For universal modules only | 1 | | |
| | 2 | | |
| | 3 | | |
| | 4 | | |
| | 8 | | |
| For universal modules only | 1 | | |
| | 2 | | |
| | 3 | | |
| | 4 | | |

FORM 02 - FEATURE ACCESS CODES

| Feature Numbers | Feature Names | Access Codes |
|-----------------|---|--------------|
| 01 | Account Code Access | |
| 02 | Auto-Answer Activation | |
| 03 | Call Forwarding - All Calls | |
| 04 | Call Forwarding - Internal Only | |
| 05 | Call Forwarding - External Only | |
| 06 | Call Forwarding - I'm Here | |
| 07 | Call Forwarding - Cancel I'm Here | |
| 08 | Dial Call Pickup | |
| 09 | Directed Call Pickup | |
| 10 | Do Not Disturb | |
| 11 | Extension General Attendant Access | |
| 12 | Paging Access To Default Zone(s) | |
| 13 | Paging Access To Specific Zones | |
| 14 | TAFAS - Any | |
| 15 | TAFAS - Local Tenant | |
| 16 | Hold Pickup Access (Attendant Hold Slots) | |
| 17 | Console Lockout Access Code | |
| 18 | Maintenance Functions (Test Line) | |
| 19 | Direct Inward System Access | |
| 20 | Callback Busy <<single digit>> | |
| 21 | Call Hold | |
| 22 | Call Hold Retrieve (Local) | |
| 23 | Call Hold Retrieve (Remote) | |
| 24 | Abbreviated Dial Access | |
| 25 | Clear All Features | |
| 26 | SUPERSET 4 Telephone Loopback Test | |
| 27 | Tone Demonstration | |
| 28 | ADL Call Setup | |
| 29 | ADL Disconnect | |
| 30 | Last Number Redial | |
| 31 | Executive Busy Override <<single digit>> | |

Customer Data Entry

| Feature Numbers | Feature Names | Access Codes |
|-----------------|--|--------------|
| 32 | Automatic Wakeup | |
| 33 | Call Park | |
| 34 | Node ID | |
| 35 | Maid In Room | |
| 36 | <i>SUPERSET</i> Telephone Room Status Display | |
| 37 | Direct To ARS | |
| 38 | UCD Agent Login / Logout | |
| 39 | Analogue Network Accept Caller's Extension | |
| 40 | <i>SUPERSET</i> Tel. Maid In Room Status Display | |
| 41 | Send Message | |
| 42 | Call Message Sender of Oldest Message | |
| 43 | Callback - No Answer | |
| 44 | ACD Login / Logout | |
| 45 | ACD Silent Monitoring | |
| 46 | Flash Over Trunk | |
| 47 | Program Feature Key | |
| 48 | Key System - Direct Paging Access | |
| 49 | Key System - Group Page Meet Me Answer | |
| 50 | Key System - Direct CO Line Select | |
| 51 | Key System - Store Personal Speed Call | |
| 52 | Key System - Retrieve Personal Speed Call | |
| 53 | Double Flash Over Trunk | |
| | | Page 2 of 2 |

FORM 03 - CLASS OF SERVICE DEFINE

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | | |
|--------------------|---|-------------------------------------|--|--|--|--|
| 100 | Attendant Bell Off | | | | | |
| 101 | Attendant O/G Restriction/Room Status Setup | | | | | |
| 102 | Attendant Display of System Alarms | | | | | |
| 103 | Attendant DISA Code Setup | | | | | |
| 104 | Attendant Flexible Night Service Setup | | | | | |
| 105 | Attendant Guest Room Key | | | | | |
| 106 | Attendant New Call Tone | | | | | |
| 107 | Attendant Automatic Call Forward - No Answer | | | | | |
| 108 | Attendant Audible Lockout Alarm | | | | | |
| 109 | Attendant Serial Call | | | | | |
| 110 | Attendant Abbr Dial Confidential Number Display | | | | | |
| 111 | Attendant Abbreviated Dial Programming | | | | | |
| 112 | Attendant Station Busy-Out | | | | | |
| 113 | Attendant Call Block Key | | | | | |
| 114 | Attendant Trunk Busy-Out | | | | | |
| 115 | Attendant - Timed Recall (No Answer) 5 -240 Sec; 0=Disabled | | | | | |
| 116 | Attendant - Timed Recall (Hold) 10 - 240 Sec; 0=Disabled | | | | | |
| 117 | Attendant - Timed Recall (Camp On) 5 - 240 Sec; 0=Disabled | | | | | |
| 118 | Attendant Call Forward - No Ans Timer 10 - 240 Sec. | | | | | |
| 119 | Attendant Tone Signalling | | | | | |
| 120 | Attendant Conference Disable | | | | | |
| 121 | Attendant Station Do Not Disturb | | | | | |
| 122 | Attendant Setup Time/Date | | | | | |
| 123 | Attendant Call Forward Setup and Cancel | | | | | |
| 124 | Attendant Hold Position Security | | | | | |
| 125 | Attendant Multi-New Call Tone | | | | | |
| 150 | Sub-Attendant Station Setup Advisory Messages | | | | | |
| 200 | Account Code, Forced Entry - External Calls | | | | | |
| 201 | Account Code, Forced Entry - Long Distance Calls | | | | | |
| 202 | Alarm Call | | | | | |
| 203 | Broker's Call | | | | | |
| 204 | Call Block Applies (Room To Room) | | | | | |

Customer Data Entry

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | | |
|--------------------|--|-------------------------------------|--|--|--|--|
| 205 | Flash For Waiting Call | | | | | |
| 206 | Call Forwarding - Busy | | | | | |
| 207 | Call Forwarding - Don't Answer | | | | | |
| 208 | Call Forwarding - External | | | | | |
| 209 | Call Forwarding - Follow Me | | | | | |
| 210 | Call Forwarding Inhibit on Dial-In Trunks | | | | | |
| 211 | Call Hold and Retrieve Access | | | | | |
| 212 | Can Flash If Talking to an Incoming Trunk | | | | | |
| 213 | Can Flash If Talking to an Outgoing Trunk | | | | | |
| 214 | Cannot Dial a Trunk after Flashing | | | | | |
| 215 | Cannot Dial a Trunk if Holding or in Conf with One | | | | | |
| 216 | Data Security | | | | | |
| 217 | Direct To ARS | | | | | |
| 218 | Directed Call Pickup | | | | | |
| 219 | Discriminating Dial Tone | | | | | |
| 220 | Do Not Disturb | | | | | |
| 221 | Clear All Features | | | | | |
| 222 | Call Forward Inhibit on Hold Timeout | | | | | |
| 223 | Flash Disable | | | | | |
| 224 | Flash for Attendant | | | | | |
| 225 | Hold Pickup (Attendant Paged Access) | | | | | |
| 226 | Inward Restriction (DID) | | | | | |
| 227 | Lockout Alarm Applies | | | | | |
| 228 | Manual Line (Dial 0 Hotline) | | | | | |
| 229 | COV Voice Mail Port | | | | | |
| 230 | Message Register Overflow Alarm | | | | | |
| 231 | Message Waiting Setup - Bell | | | | | |
| 232 | Message Waiting Setup - Lamp | | | | | |
| 233 | Never a Consultee | | | | | |
| 234 | Never a Forwardee | | | | | |
| 235 | Originate Only | | | | | |
| 236 | Outgoing Trunk Callback | | | | | |
| 237 | Outgoing Trunk Camp-On | | | | | |
| 238 | Override Security | | | | | |

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | |
|--------------------|---|-------------------------------------|--|--|--|
| 239 | Priority Dial 0 | | | | |
| 240 | Line Privacy | | | | |
| 241 | Receive Only | | | | |
| 242 | Repeated Camp-On Beep | | | | |
| 243 | Non-Busy Extension | | | | |
| 244 | Room Status Applies | | | | |
| 245 | Abbreviated Dialing Access | | | | |
| 246 | SMDR - Extended Record | | | | |
| 247 | SMDR - Record Meter Pulses | | | | |
| 248 | TAFAS Any Access | | | | |
| 249 | TAFAS Access Tenant | | | | |
| 250 | TAFAS Access During Day Service | | | | |
| 251 | Transfer Dial Tone | | | | |
| 252 | Broker's Call with Transfer | | | | |
| 253 | Call Forward - Don't Answer Timer 2 - 6 Rings | | | | |
| 254 | PBX Telephones- Call Hold Recall Timer 1 - 10 Min | | | | |
| 255 | Repeated Camp-On Beeps Timer 5 - 15 Seconds | | | | |
| 256 | UCD Music On Hold Timer 0 - 50 Minutes | | | | |
| 257 | Flash Over Trunk | | | | |
| 258 | Display Prime as Forwarder | | | | |
| 259 | Message Sending | | | | |
| 260 | Internal / External Split Call Forwarding | | | | |
| 261 | ONS Voice Mail Port | | | | |
| 262 | Ignore Forward Busy with Free Appearance | | | | |
| 263 | Delay Ring Timer 2 - 6 Rings | | | | |
| 264 | Half Fwd NA timer for DID call when VM msg on | | | | |
| 265 | Voice Mail System Speed Dial Index 0 - 255 | | | | |
| 300 | Automatic Callback | | | | |
| 301 | Camp-On | | | | |
| 302 | Flash-in Conference | | | | |
| 303 | Paging Zone 1 Access | | | | |
| 304 | Paging Zone 2 Access | | | | |
| 305 | Paging Zone 3 Access | | | | |
| 306 | Paging Zone 4 Access | | | | |

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Customer Data Entry

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | | |
|--------------------|--|-------------------------------------|--|--|--|--|
| 307 | Paging Zone 5 Access | | | | | |
| 308 | Paging Zone 6 Access | | | | | |
| 309 | Paging Zone 7 Access | | | | | |
| 310 | Paging Zone 8 Access | | | | | |
| 311 | Paging Zone 9 Access | | | | | |
| 312 | Paging Default (0 - 9) (0 Gives All Enabled Zones) | | | | | |
| 313 | CO Trunk to CO Trunk Connect | | | | | |
| 314 | CO Trunk to Tie Trunk Connect | | | | | |
| 315 | CO Trunk to DID Trunk Connect | | | | | |
| 316 | Tie Trunk to Tie Trunk Connect | | | | | |
| 317 | Tie Trunk to DID Trunk Connect | | | | | |
| 318 | DID Trunk to DID Trunk Connect | | | | | |
| 319 | Extension Non-CO Trunk to Trunk Connect | | | | | |
| 320 | Transparent Multi-Console Operation | | | | | |
| 326 | Account Code, Forced Entry - Data Internal Calls | | | | | |
| 327 | Account Code, Forced Entry - Data External Calls | | | | | |
| 328 | Account Code, Forced Entry - Data Long Dist. Calls | | | | | |
| 400 | Contact Monitor | | | | | |
| 401 | Call Park | | | | | |
| 402 | Long Loop (Off-Premise Extensions Only) | | | | | |
| 403 | Trunk Recall Partial Inhibit | | | | | |
| 404 | Recording Failure to Hangup Timer (1 - 255 Sec) | | | | | |
| 500 | Override | | | | | |
| 501 | Override Announce | | | | | |
| 502 | Display ANI/DNIS/CLASS Information | | | | | |
| 503 | Display CLASS Name | | | | | |
| 600 | <i>SUPERSET</i> Telephone - Auto-Answer | | | | | |
| 601 | <i>SUPERSET</i> Telephone - Auto-Hold Disable | | | | | |
| 602 | <i>SUPERSET</i> Telephone - Background Music | | | | | |
| 603 | <i>SUPERSET</i> Telephone - Disconnect Alarm | | | | | |
| 604 | PBX <i>SUPERSET</i> Tel. - Automatic Outgoing Line | | | | | |
| 605 | <i>SUPERSET</i> Telephone - Message Program | | | | | |
| 606 | <i>SUPERSET</i> Tel. - Enhanced Answering Position | | | | | |
| 607 | <i>SUPERSET</i> Telephone - Associated Modem Line | | | | | |

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | |
|--------------------|---|-------------------------------------|--|--|--|
| 608 | <i>SUPERSET</i> Telephone - Room Status Display | | | | |
| 609 | <i>SUPERSET</i> Telephone - Night Service Switching | | | | |
| 610 | <i>SUPERSET</i> Tel. - Guest Room Template (0 - 3) (DN) | | | | |
| 611 | <i>SUPERSET</i> Telephone - Limited New Call Ring | | | | |
| 612 | <i>SUPERSET</i> Telephone - Headset Operation | | | | |
| 613 | Display ANI Information Only | | | | |
| 614 | <i>SUPERSET</i> Telephone - Handset Volume Saved | | | | |
| 650 | ACD - Agent Template (0 - 3; 0 = Disable) | | | | |
| 651 | ACD - Supervisor Template (0 - 3; 0 = Disable) | | | | |
| 652 | ACD - Senior Supervisor Template (0 - 3; 0 = Disable) | | | | |
| 653 | ACD - Agent Always Auto-Answer | | | | |
| 654 | ACD - Display Path Always | | | | |
| 680 | Key System - Direct CO Access | | | | |
| 681 | Key Set/Sub Att. - Call Hold Notify Timer (0 -600 s) | | | | |
| 683 | Key System - Direct Paging Handsfree Answerback | | | | |
| 700 | SMDR - Does Not Apply | | | | |
| 701 | No Dial Tone | | | | |
| 702 | SMDR - Overwrite Buffer | | | | |
| 703 | Message Register Applies | | | | |
| 704 | Incoming / Internal Modem Pooling Access | | | | |
| 705 | Automatic Overflow From Attendant | | | | |
| 709 | Follow External Call Forward | | | | |
| 800 | ANI Applies | | | | |
| 801 | Incoming Trunk Call Rotary | | | | |
| 802 | Limited Wait for Dial Tone | | | | |
| 803 | SMDR - Drop Calls < n Digits (0 ... 11, 0 = disable) | | | | |
| 804 | SMDR - Drop Incomplete Outgoing Calls | | | | |
| 805 | Trunk No Dial Tone Alarm | | | | |
| 806 | SMDR - Record Incoming Calls | | | | |
| 807 | SMDR - Display Private Speedcall | | | | |
| 808 | Special DISA | | | | |
| 809 | Standard Ring Applies | | | | |
| 810 | DISA During Night Service Only | | | | |
| 811 | ANI/DNIS Trunk | | | | |

Customer Data Entry

| COS Option Numbers | Class Of Service Option Name | Enter COS # (01 to 50) and COS Name | | | | |
|--------------------|--------------------------------------|-------------------------------------|--|--|--|--|
| 812 | Loop Start Trunk to ACD Path Connect | | | | | |
| 814 | SMDR - Record ANI/DNIS/CLASS | | | | | |
| 816 | CENTREX Flash Over Trunk | | | | | |
| 900 | Data Station Queuing | | | | | |
| 901 | DTRX Herald | | | | | |
| 902 | DTRX Message Code | | | | | |
| 903 | DTRX Message Code Text | | | | | |
| 904 | DTRX Complete Message Text | | | | | |
| 905 | DTRX Herald Text Select (1- 4) | | | | | |
| 906 | DATA SMDR - Does Not Apply | | | | | |
| 907 | DATA SMDR - Extended Record | | | | | |
| 908 | DATA SMDR - Overwrite Buffer | | | | | |

FORM 04 - SYSTEM OPTIONS & TIMERS

| Option Number | System Options / System Timers | Option Status |
|---------------|--|---------------|
| 01 | 24 Hour Clock | |
| 02 | Message Lamp Test Enable | |
| 03 | Single Paging Amplifier | |
| 04 | Message Waiting and Message Register Clear Print | |
| 05 | Verified Account Codes | |
| 06 | Analogue Networking SMDR | |
| 07 | Cancel 24-Hour Message Waiting | |
| 08 | Five-Digit SMDR | |
| 09 | Attendant Call Block | |
| 10 | Attendant Conference Beeps | |
| 11 | Automatic Wake-up | |
| 12 | Automatic Wake-up Alarm | |
| 13 | Automatic Wake-up Print | |
| 14 | Automatic Wake-up Music | |
| 15 | Data Demultiplexer | |
| 17 | Discriminating Ringing | |
| 18 | Discriminating Ringing Always | |
| 20 | Holiday Messages | |
| 21 | Incoming to Outgoing Call Forward | |
| 22 | Last Party Clear - Dial Tone | |
| 23 | Message Register Count Additional Supervisions | |
| 24 | Message Register Audit | |
| 25 | Message Register Zero After Audit | |
| 26 | No Overlap Outpulsing | |
| 27 | Room Status Audit | |
| 28 | SMDR Indicate Long Call | |
| 29 | Telephone Last Number Redial | |
| 31 | Satellite PBX | |
| 32 | Outgoing Call Restriction | |
| 33 | Room Status | |
| 34 | Auto Room Status Conversion / Auto Wake-up Print | |
| 36 | End Of Dial Character (#) | |
| 37 | Calibrated Flash | |
| 38 | Switch-Hook Flash | |

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Customer Data Entry

| Option Number | System Options / System Timers | Option Status |
|---------------|--|---------------|
| 39 | DATA SMDR Indicate Long Calls | |
| 40 | Message Register Follows Talker | |
| 42 | ACD Silent Monitoring | |
| 43 | ACD Silent Monitoring Beeps | |
| 44 | ACD Reports | |
| 46 | Digit Translation Plan (0 - 3) | |
| 47 | ARS Unknown Digit Length Time-out (2 - 15 Seconds) | |
| 48 | Limited Wait For Dial Tone (1 - 15 Seconds) | |
| 49 | Pseudo Answer Supervision Timer (10 - 60 Seconds) | |
| 50 | Dialing Conflict Timer (2 - 10 Seconds) | |
| 51 | Final Ring Time-out (1 - 30 Minutes) | |
| 52 | Minimum Flash Timer (20 - 50 ms; in 10 ms increments) | |
| 53 | Maximum Flash Timer (20 - 150 ms; in 10 ms increments) | |
| 54 | DISA Answer Timer (1 - 8 Seconds) | |
| 55 | Account Code Length (Variable or 4 - 12 Digits) | |
| 56 | Auto Room Status Conversion / Wakeup Print Timer | |
| 57 | Vacant / Reserved Room Default Call Restriction | |
| 58 | Occupied Room Default Call Restriction | |
| 59 | Receivers Reserved for Non-Auto-Attendant Use | |
| 60 | Tone Plan | |
| 61 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 62 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 63 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 64 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 65 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 66 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 67 | CLASS Receivers in SPINE Bay #1 (0..6) | |
| 100 | Mitel Options Password | |
| 101 | System Identity Code | |
| 102 | System Type (ML, EL, H) | |
| 103 | Maximum Devices | |
| 104 | Maximum ACD Agents | |
| 105 | Mitel Application Interface | |
| 106 | Automated Attendant | |
| 107 | Lodging | |
| 108 | Property Management System | |
| 109 | Remote Software Download | |

FORM 05 - TENANT INTERCONNECTION TABLE

| Tenant Name | Tenant Number | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | - | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | | | - | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | | | | - | | | | | | | | | | | | | | | | | | | | | | |
| 05 | | | | | - | | | | | | | | | | | | | | | | | | | | | |
| 06 | | | | | | - | | | | | | | | | | | | | | | | | | | | |
| 07 | | | | | | | - | | | | | | | | | | | | | | | | | | | |
| 08 | | | | | | | | - | | | | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | - | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | - | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | - | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | - | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | - | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | - | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | - | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | - | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | - | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | - | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | - | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | - | |

Customer Data Entry



FORM 06 - TENANT NIGHT SWITCHING CONTROL

| Tenant Name | Tenant Number | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| | 01 | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | | |
| 01 | - | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 02 | | - | | | | | | | | | | | | | | | | | | | | | | | | | |
| 03 | | | - | | | | | | | | | | | | | | | | | | | | | | | | |
| 04 | | | | - | | | | | | | | | | | | | | | | | | | | | | | |
| 05 | | | | | - | | | | | | | | | | | | | | | | | | | | | | |
| 06 | | | | | | - | | | | | | | | | | | | | | | | | | | | | |
| 07 | | | | | | | - | | | | | | | | | | | | | | | | | | | | |
| 08 | | | | | | | | - | | | | | | | | | | | | | | | | | | | |
| 09 | | | | | | | | | - | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | - | | | | | | | | | | | | | | | | | |
| 11 | | | | | | | | | | | - | | | | | | | | | | | | | | | | |
| 12 | | | | | | | | | | | | - | | | | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | - | | | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | | - | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | - | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | - | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | - | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | - | | | | | | | | | |
| 19 | | | | | | | | | | | | | | | | | | | - | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | | | | - | | | | | | | |
| 21 | | | | | | | | | | | | | | | | | | | | | - | | | | | | |
| 22 | | | | | | | | | | | | | | | | | | | | | | - | | | | | |
| 23 | | | | | | | | | | | | | | | | | | | | | | | - | | | | |
| 24 | | | | | | | | | | | | | | | | | | | | | | | | - | | | |
| 25 | | | | | | | | | | | | | | | | | | | | | | | | | - | | |



FORM 08 - ATTENDANT LDN ASSIGNMENTS

Sheet ___ of ___

| Bay/Slv/Cct: | | Console Extension Number: | |
|--------------|------------|---------------------------|----------|
| KEY | DIR NUMBER | LABEL | COMMENTS |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 0 | | | |

| Bay/Slv/Cct: | | Console Extension Number: | |
|--------------|------------|---------------------------|----------|
| KEY | DIR NUMBER | LABEL | COMMENTS |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 0 | | | |



FORM 09 - "EXPAND SET" SUBFORM
SUPERSET Telephone Lines

Sheet ____ of ____

| Bay/Slt/Cct: _____ | | Set Type: _____ | | | | Extension Number: _____ | | |
|--------------------|-------|-----------------|-------|-----|-----|-------------------------|---------|-------|
| KEY* | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK NUM | LABEL |
| 01 | Prime | In/Out | Immed | No | No | | | |
| 02 | | | | | | | | |
| 03 | | | | | | | | |
| 04 | | | | | | | | |
| 05 | | | | | | | | |
| 06 | | | | | | | | |
| 07 | | | | | | | | |
| 08 | | | | | | | | |
| 09 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |

* The SUPERSET 410 telephone has 6 line keys.
 The SUPERSET 420 and SUPERSET 430 telephones have 12 line keys.

FFORM 09 - "EXPAND PKM" SUBFORM
Programmable Key Module Lines

Sheet ____ of ____

| PKM/KEY | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK NUM | LABEL |
|---------|-------|--------|-------|-----|-----|---------|---------|-------|
| 01 | Prime | In/Out | Immed | No | No | | | |
| 02 | | | | | | | | |
| 03 | | | | | | | | |
| 04 | | | | | | | | |
| 05 | | | | | | | | |
| 06 | | | | | | | | |
| 07 | | | | | | | | |
| 08 | | | | | | | | |
| 09 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |

Customer Data Entry

The PKM is only associated with SUPERSET 410, SUPERSET 420, and SUPERSET 430 telephones.



FORM 10 - PICKUP GROUPS

Sheet ___ of ___

| | | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|--|
| GROUP NUMBER (1 - 50): _____ | | | | | | | | | |
| EXTENSION NUMBERS | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

| | | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|--|
| GROUP NUMBER (1 - 50): _____ | | | | | | | | | |
| EXTENSION NUMBERS | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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| | | | | | | | | | |

| | | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|--|
| GROUP NUMBER (1 - 50): _____ | | | | | | | | | |
| EXTENSION NUMBERS | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |



FORM 11 - DATA CIRCUIT DESCRIPTORS

| DESCRIPTOR | NUMBER OF DATA CIRCUITS ASSIGNED * | COMMENTS |
|---|------------------------------------|----------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| *This field is automatically updated by the system based on entries in Form 12. | | |



 Customer Data Entry

DATA CIRCUIT DESCRIPTOR OPTIONS
 "Select Option" Subform of Form 11

| OPTION NAME | DATA CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | |
|--|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | _ 1 | _ 2 | _ 3 | _ 4 | _ 5 | _ 6 | _ 7 | _ 8 | _ 9 | _ 0 |
| Session Inactivity Disconnect Timer 0 - 255 minutes | | | | | | | | | | |
| Guard Timer 0 - 99 seconds | | | | | | | | | | |
| Minimum Baud Rate 110, 150, 300, 600, 1200, 2400, 4800, 9600 or 19.2K | | | | | | | | | | |
| Default Baud Rate 110, 150, 300, 600, 1200, 2400, 4800, 9600 or 19.2K | | | | | | | | | | |
| Maximum Baud Rate 110, 150, 300, 600, 1200, 2400, 4800, 9600 or 19.2K | | | | | | | | | | |
| Always Use Default Baud Rate When Called YES or NO | | | | | | | | | | |
| DTR Off Disconnect Timer 0 - 99 seconds | | | | | | | | | | |
| DTR to CTS Delay Timer 0 - 9900 msec (100 msec increments) | | | | | | | | | | |
| DTR Forced High YES or NO | | | | | | | | | | |
| RTS Forced High YES or NO | | | | | | | | | | |
| DSR is Held High When Device is Idle YES or NO | | | | | | | | | | |
| CTS is Held High When Device is Idle YES or NO | | | | | | | | | | |
| Originate A DTRX Call With a Low ->High Transition of DTR YES or NO | | | | | | | | | | |
| Action Taken if the Idle DTE has DTR Low (Auto-Answer) TOGGLE RI, RAISE DSR, RAISE DCD or REFUSE | | | | | | | | | | |
| Pooled Modem Communication Established Indicator DCD or DSR | | | | | | | | | | |
| First Modem Tone 2025, 2100 or 2225 Hz | | | | | | | | | | |
| Second Modem Tone 2025, 2100 or 2225 Hz | | | | | | | | | | |
| ASYNC: Keyboard Origination Allowed (Auto Baud) YES or NO | | | | | | | | | | |
| ASYNC: ADL Auto Baud YES or NO | | | | | | | | | | |
| ASYNC: Flow Control CTS, XON/XOFF, NONE, PIN 25HI/CTS or PIN 25LO/CTS | | | | | | | | | | |

| OPTION NAME | DATA CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | |
|---|---|----|----|----|----|----|----|----|----|----|
| | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 |
| ASYNC: XON Character 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| ASYNC: XOFF Character 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| ASYNC: Break Key Function SYS ATT or TRANSPARENT | | | | | | | | | | |
| ASYNC: PBX Attention Character 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| ASYNC: Parity ODD, EVEN, NONE, SPACE or MARK | | | | | | | | | | |
| ASYNC: Character Length 7 or 8, 8 implies "no parity" | | | | | | | | | | |
| ASYNC: Number of Stop Bits 1 or 2 | | | | | | | | | | |
| ASYNC: Autobaud to Host Character 1 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| ASYNC: Autobaud to Host Character 2 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| ASYNC: Delay Between Autobaud Characters 0 - 1270 msec (10 msec increments) | | | | | | | | | | |
| DS2100: Operating Mode ASYNCHRONOUS or SYNCHRONOUS | | | | | | | | | | |
| SYNC: Rate Adaptation Scheme MiNET or X.31 | | | | | | | | | | |
| SYNC: Clock Source INTERNAL, SYSTEM, TX EXT or TX & RX EXT | | | | | | | | | | |
| Page 2 of 2 | | | | | | | | | | |

Customer Data Entry

FORM 13 - TRUNK CIRCUIT DESCRIPTORS

| DESCRIPTOR | TRUNK TYPE | COMMENTS |
|------------|------------|----------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |

Customer Data Entry

4-Circuit CO / 4-Circuit DISA Trunks
"Select Option" Subform of Form 13

Sheet ___ of ___

| 4-CIRCUIT CO TRUNK and 4-CIRCUIT DISA TRUNK OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | |
|--|---------------------|--|----|----|----|----|----|----|----|----|----|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | |
| Impedance | 600 Ohms or COMPLEX | | | | | | | | | | | | | |
| Dictation Trunk | YES or NO | | | | | | | | | | | | | |

E&M Module / E&M Module DISA Trunks
"Select Option" Subform of Form 13

Sheet ___ of ___

| E&M MODULE and E&M MODULE DISA OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | | | | | | | | |
|---|--|--|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | | | | | | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Impedance | 600 Ohms or COMPLEX ** use the DIP switch on the module to program ** | | | | | | | | | | | | | | | | | | | | |
| E Lead Invert | YES or NO | | | | | | | | | | | | | | | | | | | | |
| M Lead Invert | ** for Type 5 operation ** YES or NO | | | | | | | | | | | | | | | | | | | | |
| Disconnect Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Release Acknowledge Timer | 2000 - 9900 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Guard Timer | 200 - 1000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Dictation Trunk | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Incoming Start Type | IMMED, WINK or DELAY | | | | | | | | | | | | | | | | | | | | |
| Debounce Timer | 20 - 150 ms (10 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Wink Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Outgoing Start Type | IMMED, WINK, DELAY or DELAY INT | | | | | | | | | | | | | | | | | | | | |
| Digit Outpulsing Ratio | 60/40, 30/20 or 66/33 | | | | | | | | | | | | | | | | | | | | |
| Outpulse Delay Timer | 100 - 2000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Timer | 200 - 700 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Type | LOOP FLASH or RING GROUND | | | | | | | | | | | | | | | | | | | | |
| Flash Over Trunk | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Interdigit Timer | 300 - 800 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Wait For Delay Timer | 300 - 5000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines | YES or NO | | | | | | | | | | | | | | | | | | | | |

E&M Card / E&M Card DISA Trunks
"Select Option" Subform of Form 13

Sheet ____ of ____

| E&M CARD and E&M TRUNK DISA OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | |
|--|---------------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|--|--|
| | | _ 1 | _ 2 | _ 3 | _ 4 | _ 5 | _ 6 | _ 7 | _ 8 | _ 9 | _ 0 | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | |
| Impedance | 600 Ohms or COMPLEX | | | | | | | | | | | | | |
| Remote End is a Satellite | YES or NO | | | | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines | YES or NO | | | | | | | | | | | | | |
| Dictation Trunk | YES or NO | | | | | | | | | | | | | |

Page 1 of 1

Customer Data Entry



2-Circuit DID/TIE / 2-Circuit TIE DISA Trunks
"Select Option" Subform of Form 13

Sheet ____ of ____

| 2-Circuit DID/TIE and 2-Circuit TIE DISA OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | |
|---|---------------------|--|----|----|----|----|----|----|----|----|----|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | |
| Impedance | 600 Ohms or COMPLEX | | | | | | | | | | | | | |
| Remote End is a Satellite | YES or NO | | | | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines | YES or NO | | | | | | | | | | | | | |

6-Circuit DID Trunk
"Select Option" Subform of Form 13

Sheet ____ of ____

| 6-CIRCUIT DID OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | | | | | | | |
|--|----------------------------|--|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | | | | | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | | | | | | | |
| Impedance | 600 Ohms or COMPLEX | | | | | | | | | | | | | | | | | | | |
| Disconnect Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | |
| Release Acknowledge Timer | 2 - 120 sec | | | | | | | | | | | | | | | | | | | |
| Guard Timer | 200 - 1000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | |
| Start Type | IMMED, WINK or DELAY | | | | | | | | | | | | | | | | | | | |
| Debounce Timer | 20 - 150 ms (10 ms inc) | | | | | | | | | | | | | | | | | | | |
| Wink Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite | YES or NO | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines | YES or NO | | | | | | | | | | | | | | | | | | | |

Customer Data Entry

T1 E&M / T1 E&M DISA Trunks
"Select Option" Subform of Form 13

Sheet ___ of ___

| T1 E&M and T1 E&M DISA OPTIONS | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | |
|---|--|----|----|----|----|----|----|----|----|----|
| | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 |
| Reverse to Idle YES or NO | | | | | | | | | | |
| Far-End Gives Answer Supervision YES or NO | | | | | | | | | | |
| Inhibit Automatic Supervision YES or NO | | | | | | | | | | |
| No Seize Alarm YES or NO | | | | | | | | | | |
| No Release Alarm YES or NO | | | | | | | | | | |
| Toll Office YES or NO | | | | | | | | | | |
| Is this a CO YES or NO | | | | | | | | | | |
| DTMF YES or NO | | | | | | | | | | |
| Save Busy-Out Status YES or NO | | | | | | | | | | |
| Disconnect Timer 150 - 300 ms (50 ms inc) | | | | | | | | | | |
| Release Acknowledge Timer 2 - 240 sec (2sec inc) | | | | | | | | | | |
| Guard Timer 200 - 1000 ms (100 ms inc) | | | | | | | | | | |
| Incoming Start Type IMMED, WINK or DELAY | | | | | | | | | | |
| Debounce Timer 20 - 150 ms (10 ms inc) | | | | | | | | | | |
| Wink Timer 150 - 300 ms (50 ms inc) | | | | | | | | | | |
| Outgoing Start Type IMMED, WINK, DELAY or DELAY INT | | | | | | | | | | |
| Digit Outpulsing Ratio 60/40, 30/20 or 66/33 | | | | | | | | | | |
| Outpulse Delay Timer 100 - 2000 ms (100 ms inc) | | | | | | | | | | |
| Flash Timer 200 - 700 ms (100 ms inc) | | | | | | | | | | |
| Flash Type LOOP FLASH or RING GROUND | | | | | | | | | | |
| Flash Over Trunk YES or NO | | | | | | | | | | |
| Interdigit Timer 300 - 800 ms (100 ms inc) | | | | | | | | | | |
| Wait For Delay Timer 300 - 5000 ms (100 ms inc) | | | | | | | | | | |
| Remote End is a Satellite YES or NO | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines YES or NO | | | | | | | | | | |

T1 DID/TIE / T1 TIE DISA Trunks
"Select Option" Subform of Form 13

Sheet ____ of ____

| T1 DID/TIE and T1 TIE DISA OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | | | | | | | | |
|--|---------------------------------|--|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | | | | | | | | |
| Reverse to Idle | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Far-End Gives Answer Supervision | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Inhibit Automatic Supervision | YES or NO | | | | | | | | | | | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Disconnect Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Release Acknowledge Timer | 2 - 120 sec | | | | | | | | | | | | | | | | | | | | |
| Guard Timer | 200 - 1000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Incoming Start Type | IMMED, WINK or DELAY | | | | | | | | | | | | | | | | | | | | |
| Debounce Timer | 20 - 150 ms (10 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Wink Timer | 150 - 300 ms (50 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Outgoing Start Type | IMMED, WINK, DELAY or DELAY INT | | | | | | | | | | | | | | | | | | | | |
| Digit Outpulsing Ratio | 60/40, 30/20 or 66/33 | | | | | | | | | | | | | | | | | | | | |
| Outpulse Delay Timer | 100 - 2000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Timer | 200 - 700 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Type | LOOP FLASH or RING GROUND | | | | | | | | | | | | | | | | | | | | |
| Flash Over Trunk | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Interdigit Timer | 300 - 800 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Wait For Delay Timer | 300 - 5000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Remote End is a Satellite with OPS Lines | YES or NO | | | | | | | | | | | | | | | | | | | | |

Customer Data Entry

T1 LS/GS / T1 CO DISA Trunks
"Select Option" Subform of Form 13

Sheet ___ of ___

| T1 LS/GS TRUNK and T1 CO DISA OPTIONS | | TRUNK CIRCUIT DESCRIPTOR NUMBER (1 - 25) | | | | | | | | | | | | | | | | | | | |
|--|----------------------------|--|----|----|----|----|----|----|----|----|----|--|--|--|--|--|--|--|--|--|--|
| | | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 | | | | | | | | | | |
| No Seize Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| No Release Alarm | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Toll Office | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Is this a CO | YES or NO | | | | | | | | | | | | | | | | | | | | |
| DTMF | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Save Busy-Out Status | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Loop Start or Ground Start | T1LS or T1GS | | | | | | | | | | | | | | | | | | | | |
| Calling Party Disconnect Timer | 1 - 12 min | | | | | | | | | | | | | | | | | | | | |
| Disconnect Timer | 100 - 9900 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Guard Timer | 0 - 3000 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Ring Cycle Timer | 6 - 10 sec | | | | | | | | | | | | | | | | | | | | |
| Ringing Expected | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Ringing Debounce Timer | 5 - 12 sec | | | | | | | | | | | | | | | | | | | | |
| Seize Timer | 10 - 60 sec (10 sec inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Timer | 200 - 700 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |
| Flash Type | LOOP FLASH or RING GROUND | | | | | | | | | | | | | | | | | | | | |
| Flash Over Trunk | YES or NO | | | | | | | | | | | | | | | | | | | | |
| Interdigit Timer | 300 - 800 ms (100 ms inc) | | | | | | | | | | | | | | | | | | | | |

FORM 16 - TRUNK GROUPS

Sheet ____ of ____

| | | | | | | | | | |
|---|--|--|--|--|--------------------------|--|--|--|--|
| Trunk Group's Function: | | | | | | | | | |
| TRUNK NUMBERS | | | | | | | | | |
| TRUNK GROUP NUMBER (1 - 50): _____ | | | | | TRUNK GROUP NAME: | | | | |
| HUNTING (Terminal or Circular): | | | | | SMDR (YES or NO): | | | | |
| | | | | | | | | | |
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|---|--|--|--|--|--------------------------|--|--|--|--|
| Trunk Group's Function: | | | | | | | | | |
| TRUNK NUMBERS | | | | | | | | | |
| TRUNK GROUP NUMBER (1 - 50): _____ | | | | | TRUNK GROUP NAME: | | | | |
| HUNTING (Terminal or Circular): | | | | | SMDR (YES or NO): | | | | |
| | | | | | | | | | |
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|---|--|--|--|--|--------------------------|--|--|--|--|
| Trunk Group's Function: | | | | | | | | | |
| TRUNK NUMBERS | | | | | | | | | |
| TRUNK GROUP NUMBER (1 - 50): _____ | | | | | TRUNK GROUP NAME: | | | | |
| HUNTING (Terminal or Circular): | | | | | SMDR (YES or NO): | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
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Customer Data Entry

FORM 17 - HUNT GROUPS

Sheet of

| | | | | | | | | | |
|--|--|--|--|---------------------|--|--|--------------------|--|--|
| Hunt Group's Function: | | | | | | | | | |
| OPTIONS | | | | | | | | | |
| EXTENSION NUMBERS | | | | | | | | | |
| HUNT GROUP NUM (1 - 100): _____ | | | | ACCESS CODE: | | | GROUP TYPE: | | |
| HUNTING (Terminal or Circular): | | | | | HUNT GROUP NAME: | | | | |
| Overflow (1): | | | | | Msg Length (2) (mm:ss): | | | | |
| Default Destination (3): | | | | | Dialing Over Recording (3) (Y/N): | | | | |
| Wait For Resources (3) (mm:ss): | | | | | Prefix Digits (3): | | | | |
| DTRX (4) (Y/N): | | | | | Default Modem Group (4) (Y/N): | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| (1) Does not apply to GRP TYPE "RECORDING" or "AUTO-ATT" | | | | | (2) Applies only to GROUP TYPE "RECORDING" or "AUTO-ATT" | | | | |
| (3) Applies only to GROUP TYPE "AUTO-ATT" | | | | | (4) Applies only to GROUP TYPE "MODEM" | | | | |

| | | | | | | | | | |
|--|--|--|--|---------------------|--|--|--------------------|--|--|
| Hunt Group's Function: | | | | | | | | | |
| OPTIONS | | | | | | | | | |
| EXTENSION NUMBERS | | | | | | | | | |
| HUNT GROUP NUM (1 - 100): _____ | | | | ACCESS CODE: | | | GROUP TYPE: | | |
| HUNTING (Terminal or Circular): | | | | | HUNT GROUP NAME: | | | | |
| Overflow (1): | | | | | Msg Length (2) (mm:ss): | | | | |
| Default Destination (3): | | | | | Dialing Over Recording (3) (Y/N): | | | | |
| Wait For Resources (3) (mm:ss): | | | | | Prefix Digits (3): | | | | |
| DTRX (4) (Y/N): | | | | | Default Modem Group (4) (Y/N): | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| (1) Does not apply to GROUP TYPE "RECORDING" or "AUTO-ATT" | | | | | (2) Applies only to GROUP TYPE "RECORDING" or "AUTO-ATT" | | | | |
| (3) Applies only to GROUP TYPE "AUTO-ATT" | | | | | (4) Applies only to GROUP TYPE "MODEM" | | | | |

FORM 18 - MISCELLANEOUS SYSTEM PORTS

| ENTRY | DESCRIPTION | BAY | SLT | CCT | SCT | DIR | PAGER | EXT # |
|-------|----------------|-----|-----|-----|-----|-----|-------|-------|
| 1 | Music On Hold | | | | | | | |
| 2 | Pager 1 | | | | | | | |
| 3 | Pager 2 | | | | | | | |
| 4 | Pager 3 | | | | | | | |
| 5 | Pager 4 | | | | | | | |
| 6 | Pager 5 | | | | | | | |
| 7 | Pager 6 | | | | | | | |
| 8 | Pager 7 | | | | | | | |
| 9 | Pager 8 | | | | | | | |
| 10 | Pager 9 | | | | | | | |
| 11 | Minor Alarm | | | | | | | |
| 12 | Major Alarm | | | | | | | |
| 13 | Critical Alarm | | | | | | | |
| 14 | Night Bell 1 | | | | | | | |
| 15 | Night Bell 2 | | | | | | | |
| 16 | Night Bell 3 | | | | | | | |
| 17 | Night Bell 4 | | | | | | | |
| 18 | Night Bell 5 | | | | | | | |
| 19 | Night Bell 6 | | | | | | | |
| 20 | Night Bell 7 | | | | | | | |
| 21 | Night Bell 8 | | | | | | | |
| 22 | Night Bell 9 | | | | | | | |
| 23 | Night Bell 10 | | | | | | | |
| 24 | Night Bell 11 | | | | | | | |
| 25 | Night Bell 12 | | | | | | | |
| 26 | Night Bell 13 | | | | | | | |
| 27 | Night Bell 14 | | | | | | | |
| 28 | Night Bell 15 | | | | | | | |
| 29 | Night Bell 16 | | | | | | | |
| 30 | Night Bell 17 | | | | | | | |
| 31 | Night Bell 18 | | | | | | | |
| 32 | Night Bell 19 | | | | | | | |
| 33 | Night Bell 20 | | | | | | | |
| 34 | Night Bell 21 | | | | | | | |
| 35 | Night Bell 22 | | | | | | | |
| 36 | Night Bell 23 | | | | | | | |
| 37 | Night Bell 24 | | | | | | | |
| 38 | Night Bell 25 | | | | | | | |

Customer Data Entry

FORM 19 - CALL REROUTING TABLE

Sheet ___ of ___

| TENANT NUMBER (1 - 25): | TENANT NAME: | | |
|---|--------------|-------|-------|
| TYPE OF CALL | DAY | N1 | N2 |
| Station Dial 0 Routing | | | |
| Priority Dial 0 Routing | | | |
| DID Recall Point on Busy | | | |
| DID Recall Point on No Answer | | | |
| DID Routing for Calls into this Tenant | | | |
| DID Illegal # Intercept for this Tenant | | | |
| DID Vacant Number Routing for this Tenant | | | |
| DID Attendant Access Night Points | ----- | | |
| Non-Dial-In Trunk Alternate Recall Points | | | |
| Dial-In Tie Recall Points on Busy | | | |
| Dial-In Tie Recall Points on No Answer | | | |
| Dial-In Tie Routing for Calls into this Tenant | | | |
| Dial-In Tie Illegal # Intercept for this Tenant | | | |
| Dial-In Tie Vacant Number Routing for this Tenant | | | |
| Dial-In Tie Attendant Access Night Points | ----- | | |
| DND Intercept Routing for this Tenant | | | |
| Automatic Wake-up Routing for this Tenant | | | |
| UCD/Attendant Recording for this Tenant | | | |
| UCD On Hold Time-out for this Tenant | | | |
| DISA Day Service Routing for this Tenant | | ----- | ----- |
| Station Vacant Number Routing for this Tenant | | | |
| CO Line Rerouting Points on No Answer | | | |
| Station Illegal Number Routing for this Tenant | | | |

FORM 20 - ARS: Class of Restriction Groups

Sheet of

| | | | | |
|--|--|--|--|--|
| COR GROUP NUMBER (1 - 50): _____ | | | | |
| COR GROUP MEMBERS (Enter the COR Number of the denied devices below) | | | | |
| COMMENTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| | | | | |
|--|--|--|--|--|
| COR GROUP NUMBER (1 - 50): _____ | | | | |
| COR GROUP MEMBERS (Enter the COR Number of the denied devices below) | | | | |
| COMMENTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |
| | | | | |

| | | | | |
|--|--|--|--|--|
| COR GROUP NUMBER (1 - 50): _____ | | | | |
| COR GROUP MEMBERS (Enter the COR Number of the denied devices below) | | | | |
| COMMENTS: | | | | |
| | | | | |
| | | | | |
| | | | | |
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| | | | | |
| | | | | |

Customer Data Entry



FORM 21 - ARS: DAY ZONE DEFINITION

| DAY ZONE | MON. | TUES. | WED. | THU. | FRI. | SAT. | SUN. |
|-----------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|
| 01 | | | | | | | |
| 02 | | | | | | | |
| 03 | | | | | | | |

FORM 22 - ARS: MODIFIED DIGIT TABLE

Sheet ____ of ____

| ENTRY NUM (1 - 100) | QTY TO DELETE | DIGITS TO BE INSERTED | COMMENTS |
|------------------------|---------------|-----------------------|----------|
| ___ 1 | | | |
| ___ 2 | | | |
| ___ 3 | | | |
| ___ 4 | | | |
| ___ 5 | | | |
| ___ 6 | | | |
| ___ 7 | | | |
| ___ 8 | | | |
| ___ 9 | | | |
| ___ 0 | | | |
| ___ 1 | | | |
| ___ 2 | | | |
| ___ 3 | | | |
| ___ 4 | | | |
| ___ 5 | | | |
| ___ 6 | | | |
| ___ 7 | | | |
| ___ 8 | | | |
| ___ 9 | | | |
| ___ 0 | | | |
| ___ 1 | | | |
| ___ 2 | | | |
| ___ 3 | | | |
| ___ 4 | | | |
| ___ 5 | | | |
| ___ 6 | | | |
| ___ 7 | | | |
| ___ 8 | | | |
| ___ 9 | | | |
| ___ 0 | | | |

Customer Data Entry



FORM 23- ARS: ROUTE DEFINITION

Sheet ___ of ___

| ROUTE NUM (1 - 200) | TRUNK GROUP (1 - 50) | COR GROUP (1 - 50) | MOD DIGIT ENTRY (1 - 100) | COMMENTS |
|------------------------|-------------------------|-----------------------|------------------------------|----------|
| ___ 1 | | | | |
| ___ 2 | | | | |
| ___ 3 | | | | |
| ___ 4 | | | | |
| ___ 5 | | | | |
| ___ 6 | | | | |
| ___ 7 | | | | |
| ___ 8 | | | | |
| ___ 9 | | | | |
| ___ 0 | | | | |
| ___ 1 | | | | |
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| ___ 5 | | | | |
| ___ 6 | | | | |
| ___ 7 | | | | |
| ___ 8 | | | | |
| ___ 9 | | | | |
| ___ 0 | | | | |



FORM 24- ARS: ROUTE LIST

Sheet ___ of ___

| LIST NUM (1 - 100) | FIRST | SECOND | WT | THIRD | WT | FOURTH | WT | FIFTH | WT | SIXTH | WT |
|-----------------------|-------|--------|----|-------|----|--------|----|-------|----|-------|----|
| __ 1 | | | | | | | | | | | |
| __ 2 | | | | | | | | | | | |
| __ 3 | | | | | | | | | | | |
| __ 4 | | | | | | | | | | | |
| __ 5 | | | | | | | | | | | |
| __ 6 | | | | | | | | | | | |
| __ 7 | | | | | | | | | | | |
| __ 8 | | | | | | | | | | | |
| __ 9 | | | | | | | | | | | |
| __ 0 | | | | | | | | | | | |
| __ 1 | | | | | | | | | | | |
| __ 2 | | | | | | | | | | | |
| __ 3 | | | | | | | | | | | |
| __ 4 | | | | | | | | | | | |
| __ 5 | | | | | | | | | | | |
| __ 6 | | | | | | | | | | | |
| __ 7 | | | | | | | | | | | |
| __ 8 | | | | | | | | | | | |
| __ 9 | | | | | | | | | | | |
| __ 0 | | | | | | | | | | | |
| __ 1 | | | | | | | | | | | |
| __ 2 | | | | | | | | | | | |
| __ 3 | | | | | | | | | | | |
| __ 4 | | | | | | | | | | | |
| __ 5 | | | | | | | | | | | |
| __ 6 | | | | | | | | | | | |
| __ 7 | | | | | | | | | | | |
| __ 8 | | | | | | | | | | | |
| __ 9 | | | | | | | | | | | |
| __ 0 | | | | | | | | | | | |

Customer Data Entry

FORM 25 - ARS: ROUTE PLANS

Sheet ___ of ___

| ROUTE PLAN (1 - 50): _____ Route Plan Function: _____ | | | | | | |
|---|------------|------------|------------|------------|------------|------------|
| TIME | DAY ZONE 1 | | DAY ZONE 2 | | DAY ZONE 3 | |
| ZONE | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST |
| 01 | | | | | | |
| 02 | | | | | | |
| 03 | | | | | | |
| 04 | | | | | | |
| 05 | | | | | | |
| 06 | | | | | | |

| ROUTE PLAN (1 - 50): _____ Route Plan Function: _____ | | | | | | |
|---|------------|------------|------------|------------|------------|------------|
| TIME | DAY ZONE 1 | | DAY ZONE 2 | | DAY ZONE 3 | |
| ZONE | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST |
| 01 | | | | | | |
| 02 | | | | | | |
| 03 | | | | | | |
| 04 | | | | | | |
| 05 | | | | | | |
| 06 | | | | | | |

| ROUTE PLAN (1 - 50): _____ Route Plan Function: _____ | | | | | | |
|---|------------|------------|------------|------------|------------|------------|
| TIME | DAY ZONE 1 | | DAY ZONE 2 | | DAY ZONE 3 | |
| ZONE | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST | START HOUR | ROUTE LIST |
| 01 | | | | | | |
| 02 | | | | | | |
| 03 | | | | | | |
| 04 | | | | | | |
| 05 | | | | | | |
| 06 | | | | | | |

FORM 27 - ARS: MAXIMUM DIALED DIGITS

| COR | MAXIMUM NUMBER OF DIALED DIGITS |
|-----|---------------------------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | |
| 24 | |
| 25 | |

Customer Data Entry

FORM 28 - FORM ACCESS RESTRICTION DEFN

| FORM NAME | INST | MAINT1 | MAINT2 | SUPER | ATT |
|---|------|--------|--------|-------|-----|
| FORM 1 = SYSTEM CONFIGURATION | R/W | | | | |
| FORM 2 = FEATURE ACCESS CODES | R/W | | | | |
| FORM 3 = CLASS OF SERVICE DEFINE | R/W | | | | |
| FORM 4 = SYSTEM OPTIONS / TIMERS | R/W | | | | |
| FORM 5 = TENANT INTERCONNECTION | R/W | | | | |
| FORM 6 = TENANT NIGHT SWITCHING | R/W | | | | |
| FORM 7 = CONSOLE ASSIGNMENT | R/W | | | | |
| FORM 8 = ATTENDANT LDN ASSIGNMENT | R/W | | | | |
| FORM 9 = STATION / SUPERSET TELEPHONES | R/W | | | | |
| FORM 10 = PICKUP GROUP | R/W | | | | |
| FORM 11 = DATA CIRCUIT DESCRIPTOR | R/W | | | | |
| FORM 12 = DATA ASSIGNMENT | R/W | | | | |
| FORM 13 = TRUNK CRICUIT DESCRIPTOR | R/W | | | | |
| FORM 14 = NON-DIAL-IN TRUNKS | R/W | | | | |
| FORM 15 = DIAL-IN TRUNKS | R/W | | | | |
| FORM 16 = TRUNK GROUPS | R/W | | | | |
| FORM 17 = HUNT GROUPS | R/W | | | | |
| FORM 18 = MISCELLANEOUS SYSTEM PORTS | R/W | | | | |
| FORM 19 = CALL REROUTING TABLE | R/W | | | | |
| FORM 20 = ARS: COR GROUP DEFINITION | R/W | | | | |
| FORM 21 = ARS: DAY ZONE DEFINITION | R/W | | | | |
| FORM 22 = ARS: MODIFIED DIGITS TABLE | R/W | | | | |
| FORM 23 = ARS: ROUTE DEFINITION | R/W | | | | |
| FORM 24 = ARS: ROUTE LIST | R/W | | | | |
| FORM 25 = ARS: ROUTE PLAN | R/W | | | | |
| FORM 26 = ARS: DIGITS STRINGS | R/W | | | | |
| FORM 27 = ARS: MAXIMUM DIALED DIGITS | R/W | | | | |
| FORM 28 = FORM ACCESS RESTRICTION | R/W | | | | |
| FORM 29 = DTE PROFILE | R/W | | | | |
| FORM 30 = DEVICE INTERCONNECTION TABLE | R/W | | | | |
| FORM 31 = SYSTEM ABBREVIATED DIAL ENTRY | R/W | | | | |
| FORM 32 = CDE DATA PRINT | R/W | | | | |
| FORM 33 = ACCOUNT CODE ENTRY | R/W | | | | |
| FORM 34 = DIRECTED I/O | R/W | | | | |
| FORM 35 = GLOBAL FIND ACCESS CODE | R/W | | | | |
| FORM 36 = MODEM ASSIGNMENT | R/W | | | | |
| FORM 37 = GUEST RM SUPERSET KEYS TEMPLATE | R/W | | | | |
| FORM 38 = ACD KEYS TEMPLATE | R/W | | | | |
| FORM 39 = ACD AGENT GROUPS | R/W | | | | |
| FORM 40 = ACD SUPERVISORS | R/W | | | | |
| FORM 41 = ACD PATHS | R/W | | | | |
| FORM 42 = T1 LINK DESCRIPTORS | R/W | | | | |
| FORM 43 = T1 LINK ASSIGNMENTS | R/W | | | | |
| FORM 44 = T1 NETWORK SYNCHRONIZATION | R/W | | | | |
| FORM 45 = KEY SYSTEM TELEPHONES | R/W | | | | |
| FORM 46 = KEY SYSTEM TOLL CONTROL | R/W | | | | |



FORM 29 - DTE PROFILE

| PROFILE NUMBER | NUMBER OF DATA SETS ASSIGNED * | COMMENTS |
|---|--------------------------------|----------|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| *This field is automatically updated by the system based on entries in Form 12. | | |

Customer Data Entry

DTE Profile Options
"SELECT OPTION" Subform of Form 29

Sheet ____ of ____

| DTE OPTIONS | DTE PROFILE NUMBER (1 - 25) | | | | | | | | | |
|--|-----------------------------|----|----|----|----|----|----|----|----|----|
| | _1 | _2 | _3 | _4 | _5 | _6 | _7 | _8 | _9 | _0 |
| Terminal Type VIDEO TERM or TELEPRINTER | | | | | | | | | | |
| Language ENGLISH or FRENCH | | | | | | | | | | |
| DTRX Echoplex ENABLED or DISABLED | | | | | | | | | | |
| Editing ENABLED or DISABLED | | | | | | | | | | |
| Editing Character Delete 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| Editing Line Display 0 -127, Decimal value of ASCII code | | | | | | | | | | |
| Inject <LF> after <CR> ALWAYS, NEVER, FROM DTE, or FROM SYSTEM | | | | | | | | | | |
| Number of Pads after <CR> 0 - 7 | | | | | | | | | | |
| Number of Pads after <LF> 0 - 7 | | | | | | | | | | |
| DTRX Inactivity Timer 1 - 60 seconds | | | | | | | | | | |

FORM 30 - DEVICE INTERCONNECTION TABLE

| DEVICE TYPE | | 01 | 02 | 03 | 04 | 05 | 06 | 07 | ... | 25 |
|-------------------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|
| Station / Set | 01 | | | | | | | | | |
| Console | 02 | | | | | | | | | |
| Loop Start Trunk | 03 | | | | | | | | | |
| Ground Start Trunk | 04 | | | | | | | | | |
| DID/Tie Trunk | 05 | | | | | | | | | |
| E&M Trunk (2 or 4 Wire) | 06 | | | | | | | | | |
| RESERVED | 07 | | | | | | | | | |
| RESERVED | ... | | | | | | | | | |
| RESERVED | 25 | | | | | | | | | |
| Page 1 of 1 | | | | | | | | | | |

Customer Data Entry



FORM 37 - GUEST ROOM SUPERSET KEYS TEMPLATE

| TEMPLATE 1 | | | |
|------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |

| TEMPLATE 2 | | | |
|------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |

| FORM 37 - GUEST ROOM SUPERSET KEYS TEMPLATE (continued) | | | |
|---|------|-------------------|---------|
| TEMPLATE 3 | | | |
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |

Customer Data Entry



FORM 38 - ACD KEYS TEMPLATES

| AGENT TEMPLATE 1 | | | |
|-------------------------|-------------|--------------------------|----------------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| AGENT TEMPLATE 2 | | | |
|-------------------------|-------------|--------------------------|----------------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| AGENT TEMPLATE 3 | | | |
|------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| SUPERVISOR TEMPLATE 1 | | | |
|-----------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

Customer Data Entry

| SUPERVISOR TEMPLATE 2 | | | |
|-----------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| SUPERVISOR TEMPLATE 3 | | | |
|-----------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| SENIOR SUPERVISOR TEMPLATE 1 | | | |
|------------------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

| SENIOR SUPERVISOR TEMPLATE 2 | | | |
|------------------------------|------|-------------------|---------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

Customer Data Entry

| SENIOR SUPERVISOR TEMPLATE 3 | | | |
|-------------------------------------|-------------|--------------------------|----------------|
| KEY | TYPE | SPEED CALL NUMBER | PRIVATE |
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| 11 | | | |
| 12 | | | |
| 13 | | | |
| 14 | | | |
| 15 | | | |

ACD Agent Group Options
"SELECT OPTIONS" Subform of Form 39

Sheet ____ of ____

| | | |
|--|---------------------------------------|---------------|
| ACD Group Number (1 - 50): _____ ACD Group Name: _____ | | |
| OPTIONS | | STATUS |
| Afterwork Timer | (mm:ss) 00:00 - 15:00 (default 00:00) | |
| Overflow Timer | (mm:ss) 00:00 - 54:00 (default 09:00) | |
| First Status Threshold | (mm:ss) 00:00 - 54:00 (default 03:00) | |
| Second Status Threshold | (mm:ss) 00:00 - 54:00 (default 06:00) | |

| | | |
|--|---------------------------------------|---------------|
| ACD Group Number (1 - 50): _____ ACD Group Name: _____ | | |
| OPTIONS | | STATUS |
| Afterwork Timer | (mm:ss) 00:00 - 15:00 (default 00:00) | |
| Overflow Timer | (mm:ss) 00:00 - 54:00 (default 09:00) | |
| First Status Threshold | (mm:ss) 00:00 - 54:00 (default 03:00) | |
| Second Status Threshold | (mm:ss) 00:00 - 54:00 (default 06:00) | |

| | | |
|--|---------------------------------------|---------------|
| ACD Group Number (1 - 50): _____ ACD Group Name: _____ | | |
| OPTIONS | | STATUS |
| Afterwork Timer | (mm:ss) 00:00 - 15:00 (default 00:00) | |
| Overflow Timer | (mm:ss) 00:00 - 54:00 (default 09:00) | |
| First Status Threshold | (mm:ss) 00:00 - 54:00 (default 03:00) | |
| Second Status Threshold | (mm:ss) 00:00 - 54:00 (default 06:00) | |

| | | |
|--|---------------------------------------|---------------|
| ACD Group Number (1 - 50): _____ ACD Group Name: _____ | | |
| OPTIONS | | STATUS |
| Afterwork Timer | (mm:ss) 00:00 - 15:00 (default 00:00) | |
| Overflow Timer | (mm:ss) 00:00 - 54:00 (default 09:00) | |
| First Status Threshold | (mm:ss) 00:00 - 54:00 (default 03:00) | |
| Second Status Threshold | (mm:ss) 00:00 - 54:00 (default 06:00) | |

FORM 41 - ACD PATH

Sheet ____ of ____

| ACD Path Number (1 - 99): _____ ACD Path Name: _____ | | |
|--|--|--------|
| OPTIONS | | STATUS |
| Access Code for this ACD Path | | |
| Primary ACD Agent Group | | |
| Delay for Ringback | (mm:ss) 00:01 - 54:00 (default 00:03) | |
| Recording 1: Start Time | (mm:ss) 00:00 - 54:00 | |
| Recording 1: Access Code | | |
| Recording 1: Music Source Following | | |
| Recording 2: Start Time | (mm:ss) 00:00 - 54:00 | |
| Recording 2: Access Code | | |
| Recording 2: Music Source Following | | |
| Recording 3: Start Time | (mm:ss) 00:00 - 54:00 | |
| Recording 3: Access Code | | |
| Recording 3: Music Source Following | | |
| Recording 4: Start Time | (mm:ss) 00:00 - 54:00 | |
| Recording 4: Access Code | | |
| Recording 4: Music Source Following | | |
| Overflow 1 Agent Group | | |
| Overflow 2 Agent Group | | |
| Overflow 3 Agent Group | | |
| Interflow Enable | YES or NO (default = NO) | |
| Interflow Timeout | (mm:ss) 00:01 - 54:00 (default = 54:00) | |
| Interflow Point Access Code | (default = DROP CALL) | |
| Allow Overflow to Interflow Point before Timeout | (default = NO) | |
| Priority | 1 - 99 (default = 99, the lowest priority) | |
| Service Time | (mm:ss) 00:01 - 54:00 (default = 03:00) | |
| Immediately Interflow when no Agents Logged In | (default = NO) | |
| Tenant | 1 - 25 (default = blank) | |

Customer Data Entry



FORM 42 - T1 LINK DESCRIPTORS

| DESCRIPTOR | LINK TYPE | NUM OF LINKS ASSIGNED * | COMMENTS |
|------------|-----------|-------------------------|----------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |

*This field is automatically updated by the system based on entries in Form 43.

T1 LINK DESCRIPTOR OPTIONS
"SELECT OPTION" Subform of Form 42

| OPTIONS | T1 LINK DESCRIPTOR NUMBER | | | | | | | | | |
|--|---------------------------|---|---|---|---|---|---|---|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Alarm Debounce Timer 300 - 3200 ms (default = 2500) | | | | | | | | | | |
| B8ZS Zero Code Suppression YES or NO (default = NO) | | | | | | | | | | |
| Slip Rate - Maintenance Limit (0 - 9000)/24 hrs (default = 255) | | | | | | | | | | |
| Slip Rate - Service Limit (0 - 9000)/24 hrs (default = 7000) | | | | | | | | | | |
| Slip Rate - Network Sync Limit (0 - 9000)/24 hrs (default = 7) | | | | | | | | | | |
| BER - Maintenance Limit (10** -n, n= 3, 4, 5, 6)/hr (default = 4) | | | | | | | | | | |
| BER - Service Limit (10** -n, n= 3, 4, 5, 6)/hr (default = 3) | | | | | | | | | | |
| Framing Losses - Maintenance Limit (0 - 9000)/24 hrs (default = 255) | | | | | | | | | | |
| Framing Losses - Service Limit (0 - 9000)/24 hrs (default = 9000) | | | | | | | | | | |
| RTS Timer - Service Limit Exceeded 1 - 225 min (default = 30) | | | | | | | | | | |
| RTS Timer - Net Slip Limit Exceeded 1 - 225 min (default = 30) | | | | | | | | | | |
| RTS Timer - After Alarm 0 - 300 sec (default = 10) | | | | | | | | | | |

Customer Data Entry

FORM 44 - T1 NETWORK SYNCHRONIZATION

| DESCRIPTION | BAY | SLOT | COMMENTS |
|----------------------|-----|------|----------|
| First Clock Source | | | |
| Second Clock Source | | | |
| Third Clock Source | | | |
| Fourth Clock Source | | | |
| Fifth Clock Source | | | |
| Sixth Clock Source | | | |
| Seventh Clock Source | | | |
| Eighth Clock Source | | | |

Customer Data Entry

KEY SYSTEM - TELEPHONE LINES
"EXPAND SET" Subform of Form 45

Sheet ___ of ___

| Bay/Slit/Cct: _____ | | Set Type: _____ | | | | Extension Number: _____ | | |
|---------------------|----------|-----------------|-------|-----|-----|-------------------------|---------|-------|
| KEY * | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK ACC | LABEL |
| 01 | Intercom | In/Out | Immed | No | No | | | |
| 02 | | | | | | | | |
| 03 | | | | | | | | |
| 04 | | | | | | | | |
| 05 | | | | | | | | |
| 06 | | | | | | | | |
| 07 | | | | | | | | |
| 08 | | | | | | | | |
| 09 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |

*The SUPERSET 410 telephone has 6 Line keys. The SUPERSET 420 and SUPERSET 430 have 12 Line keys.

Customer Data Entry

| Bay/Slit/Cct: _____ | | Set Type: _____ | | | | Extension Number: _____ | | |
|---------------------|----------|-----------------|-------|-----|-----|-------------------------|---------|-------|
| KEY * | TYPE | DIR | RING | SEC | DSS | EXT NUM | TRK ACC | LABEL |
| 01 | Intercom | In/Out | Immed | No | No | | | |
| 02 | | | | | | | | |
| 03 | | | | | | | | |
| 04 | | | | | | | | |
| 05 | | | | | | | | |
| 06 | | | | | | | | |
| 07 | | | | | | | | |
| 08 | | | | | | | | |
| 09 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |

*The SUPERSET 410 telephone has 6 Line keys. The SUPERSET 420 and SUPERSET 430 have 12 Line keys.

KEY SYSTEM - SUPERSET PKM LINES
"EXPAND PKM" Subform of Form 45

Sheet ____ of ____

| PKM/KEY | TYPE | DIRECTION | RING | SEC | DSS | EXT NUM | TRK ACC | LABEL |
|---------|------|-----------|------|-----|-----|---------|---------|-------|
| 01 | | | | | | | | |
| 02 | | | | | | | | |
| 03 | | | | | | | | |
| 04 | | | | | | | | |
| 05 | | | | | | | | |
| 06 | | | | | | | | |
| 07 | | | | | | | | |
| 08 | | | | | | | | |
| 09 | | | | | | | | |
| 10 | | | | | | | | |
| 11 | | | | | | | | |
| 12 | | | | | | | | |
| 13 | | | | | | | | |
| 14 | | | | | | | | |
| 15 | | | | | | | | |
| 16 | | | | | | | | |
| 17 | | | | | | | | |
| 18 | | | | | | | | |
| 19 | | | | | | | | |
| 20 | | | | | | | | |
| 21 | | | | | | | | |
| 22 | | | | | | | | |
| 23 | | | | | | | | |
| 24 | | | | | | | | |
| 25 | | | | | | | | |
| 26 | | | | | | | | |
| 27 | | | | | | | | |
| 28 | | | | | | | | |
| 29 | | | | | | | | |
| 30 | | | | | | | | |
| 31 | | | | | | | | |
| 32 | | | | | | | | |

NOTES

9109-098-350-NA Issue 1
March 1997

SX-200[®] ML PABX

Troubleshooting

NOTICE

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FOR EMERGENCY TROUBLESHOOTING

GO TO Table 2-1.

THE FOLLOWING POINTS SHOULD BE CAREFULLY NOTED AND THE INSTRUCTIONS HEREIN STRICTLY OBSERVED :

- Handle circuit cards by the edges only, and ensure that an anti-static strap is used. Card damage may otherwise result.
- Before replacing a card, remove the original card, check for bent or damaged connectors, inspect the backplane, and reseat the original card.
- If a problem has been eliminated through the replacement of a card, temporarily re-insert the original card to verify that the fault is located therein.
- Always provide the maximum amount of relevant data on the card repair tag accompanying a faulty card (see Appendix F) - never return a card without a repair tag.
- Return faulty cards, etc. to MITEL for repair.
- Ensure that a system fault record is always up-to-date, and kept on site.

Training Requirements

Only those who have successfully completed a MITEL installation and maintenance training course for the *SX-200* LIGHT PABX and the *SX-200* ML PABX should install or service an *SX-200* ML PABX.

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1 Introduction

Before troubleshooting is attempted, maintenance personnel should become very familiar with the PABX maintenance system. A complete description of the maintenance system is provided in the *General Maintenance Information Practice*. Further maintenance-related information may be found in the documents listed below:

| Table 1-1 Maintenance Related Practices |
|---|
| 9109-098-100-NA General Description |
| 9109-098-105-NA Features Description |
| 9109-098-180-NA Engineering Information |
| 9109-098-200-NA Installation Information |
| 9109-098-210-NA Customer Data Entry |
| 9109-098-351-NA RS-232 Maintenance Terminal |
| 9109-098-353-NA General Maintenance Information |
| 9109-098-355-NA Field-Replaceable Units |

How to Use this Document

- 1.1 If the PABX is not functioning, refer to the Emergency Troubleshooting Procedures in Table 2-1, page 2-1. If there is a problem or problems with a specific part, or parts of the system, consult the table of contents for the applicable entry.

Reason for Issue

- 1.2 This document is intended to accompany release LIGHTWARE™ 16 ML software.

2 Troubleshooting - General

Emergency Procedures

- 2.1 When any switching machine is totally inoperative, the prime requirement is the restoration of service to the system or the part that has been affected. Table 2-1 shows how to achieve this in the shortest possible time. Once service has been restored, the other procedures (see Table of Contents) may be used to determine the cause of the failure.

| Table 2-1 Emergency Troubleshooting Procedures | | |
|--|--|--|
| Step | Action | Description / Follow-Up |
| 1. | At the control cabinet, check if the green <i>ACTIVE</i> indicator on the Main Control Card II front panel is flashing. | Yes: • Go to step 7. No: • Go to step 2. |
| 2. | Press the RESET pushbutton on the front panel of the Main Control Card II. | • If the Main Control Card II numeric displays are blank, go to step 3; otherwise go to step 9. |
| 3. | Check if the <i>POWER ON</i> indicator on the Bay Power Supply is on. | Yes: • Go to step 4. No: • Go to step 7. |
| 4. | Turn the Cabinet power supply off, reseal the Main Control Card II and Bay Control Card, and turn the power on again. Any indication on numeric display? | Yes: • Go to step 9. No: • Go to step 5. |
| 5. | Check power rails and continuity on the backplane. | • Verify that the required voltage signals actually are present at the Main Control Card II connector. • Once verified, go to step 6. |
| 6. | Power down the cabinet, remove the Main Control Card II, and check if System ID module is securely installed. | Yes: • Possible System ID problem - replace MainControl Card II. No: • Install System ID module properly and go back to step 2. |
| 7. | Ensure Bay Power Supply is firmly seated into the backplane. Is power cord firmly connected to the rear of the BPS? Check for loose power cable connections in the Cabinet. | No: • Plug in securely; go back to step 2. Yes: • If no wiring problems are found, refer to the Bay Power Supply procedures. |

Table 2-1 Emergency Troubleshooting Procedures (continued)

| Step | Action | Description / Follow-Up |
|------|---|--|
| 8. | Attempt a station-to-station call - is Call Processing functioning? | Yes: • Stop. Continue to monitor system. No: • Press the RESET push-button on the Main Control Card II front panel, and go to step 9. |
| 9. | Check for error codes on the Main Control Card II numeric display. | • Refer to Table 2-2. |

Main Control Card II Power-Up Error Codes

Table 2-2 shows the Main Control Card II numeric display error codes which may appear during start-up. Also shown are the most likely causes of the error condition.

Table 2-2 Main Control Card II Error Code Summary

| Error Code | Likely Cause(s) |
|------------|--|
| (blank) | <ul style="list-style-type: none"> • Faulty power system - refer to that procedure. • Faulty Main Control Card II. |
| 0 | • Faulty Main Control Card II. |
| E. 8 | • Faulty System ID module. |
| - | • Nothing - indicates successful software download. This display may be immediately changed to display post-boot-up codes (see note 1). |

- Note:**
1. A normal running system may show other codes (card diagnostics or errors). However, during start-up, only the codes in this table are possible. Any other code shown during start-up indicates a faulty Main Control Card II.
 2. Codes possible AFTER start-up include card diagnostics codes (last card location tested - top number indicates bay number, bottom number indicates card slot number). Maintenance logs give results of test, i.e., pass or fail with cause).

Troubleshooting Methodology

General

2.2 Troubleshooting a malfunction in any complex electronic system is accomplished in a series of logical steps. This Section assumes the following basic steps in the troubleshooting of a malfunction:

- GATHERING of information
- CLARIFICATION of the problem
- CONFIRMATION of the problem
- ISOLATION of the problem
- CORRECTION and DOCUMENTATION

When investigating a problem, the troubleshooter should continually verify each step in the isolation process so as to ensure that the system and the symptoms of the malfunction are clearly understood. This will ensure that the malfunction is accurately categorized so that appropriate diagnostics, where applicable, may be invoked.

Information Gathering and Problem Clarification

Chart 2-1 provides a list of the information which may be necessary in order to adequately categorize a fault. All relevant information should be gathered and entered into a site fault record. If the fault has resulted in total or partial shutdown of the system, much of this data will be unobtainable or irrelevant. In such cases, reference should be made to the EMERGENCY TROUBLESHOOTING PROCEDURES.

| Chart 2-1 Information Gathering and Clarification | | |
|--|---|--|
| Step | Action | Description Follow-up |
| 1. | Talk to station users. | Obtain the following information: <ul style="list-style-type: none"> - frequency of occurrence - intermittent or continuous nature - time period during which the fault occurs - circumstances common to all occurrences. |
| 2. | Check Maintenance Alarm indications. | <ul style="list-style-type: none"> - Check maintenance log for fault/ alarm reports (see Note 1). - Check system LED and numeric display indicators for error codes. |
| 3. | Collect data concerning environmental conditions. | <ul style="list-style-type: none"> - Check if the system is located close to a heat source or a source of power radiation (see Note 2). - Note the temperature and humidity conditions and compare with specified operating parameters. - Check the susceptibility of the area with respect to static electricity generation. - The following can seriously affect the performance of the system: <ul style="list-style-type: none"> - power fluctuations - lightning storms - excessively high humidity - excessively high temperature - dust - rf interference. |
| 4. | Verify system programming. | <ul style="list-style-type: none"> - Check the existing programming to ensure that the correct options and features have been enabled (see Note 3). - Verify the Class Of Service assignments, trunk descriptors, and feature access codes. |
| Page 1 of 2 | | |

Troubleshooting

| Chart 2-1 Information Gathering and Clarification (continued) | | |
|---|--|--|
| Step | Action | Description Follow-up |
| 5. | Make special checks for new installations, additions or modifications. | <ul style="list-style-type: none"> - Check that the procedures specified in the <i>Installation Information</i> Practice have been properly implemented. - Verify that any changes have been made in accordance with the appropriate practices, and to the prescribed standards. - Check for possible conflicts if features have been added or deleted, or if other programming changes have been made. |
| 6. | Make random miscellaneous checks. | <ul style="list-style-type: none"> - Ensure all circuit cards are properly seated. - Verify that the system fans are running. - Check the main distribution field for loose or damaged wiring, improperly seated connectors, or other signs of trouble. |
| 7. | Check for minor alarm indications - these assist in isolating and categorizing faults. | <ul style="list-style-type: none"> - Record relevant data and note the affected area of the system. |

- Note:**
1. Refer to the *RS-232 Maintenance Terminal* Practice, for details on procedures.
 2. Refer to the *Engineering Information* Practice, for the specified operating parameters.
 3. Refer to the *Features Description* Practice, and the *Customer Data Entry* Practice.

Problem Confirmation

Many faults, particularly intermittent faults, “disappear” before the troubleshooter is able to make a positive trace. Wherever possible, attempts should be made to force the problem to recur, such that the effects may be observed and hence the cause determined. The information gathered up to this point may be used to set up conditions relating as closely as possible to those under which the fault originally manifested itself.

Problem Isolation

The aids listed in Table 2-3 are useful in isolating fault conditions.

| Table 2-3 Troubleshooting Aids | |
|--------------------------------|---|
| Troubleshooting Aid | Description and Use |
| Maintenance Log | <ul style="list-style-type: none"> - Provides a record of maintenance activities and causes of alarms (the primary source of troubleshooting information). |
| Maintenance Terminal | <ul style="list-style-type: none"> - Primary access to the maintenance log. - Provides ability to query alarm status, along with a variety of status reports. - Allows testing of individual functional units, using directed diagnostics. |

| Table 2-3 Troubleshooting Aids (continued) | |
|---|---|
| Troubleshooting Aid | Description and Use |
| Circuit Card Numeric Displays | - Allow system power-up testing and operation to be monitored. |
| Status LEDs (on peripheral cards) | - Used to determine if circuit is in use, idle, or not functioning. |
| Page 2 of 2 | |

Correction and Documentation

Once a problem is isolated, the table of contents of this document should be consulted, and the appropriate procedure referenced. Many procedures contain instructions requiring control circuit cards to be reset, removed, powered down or replaced; in these circumstances it should be noted that these actions will cause a partial or total loss of service. If possible, these procedures should be performed during periods of little or no traffic.

All repairs or adjustments to the system should be recorded into a log book which is kept permanently at the site. Faulty equipment should be returned in the same packaging as the replacement part (FRU). For further information on FRU items, refer to the *Field-Replaceable Units Practice*.

3 Peripheral Equipment Troubleshooting Procedures

Peripheral Interface Circuit Cards

ONS / OPS / Station Line Cards

- 3.1 This section covers the ONS Line Card (PN 9109-010) and the OPS Line Card (PN 9109-040). Table 3-1 outlines the most likely items to cause malfunction. For ONS Line Card problems involving Voice Mail, see Voice Mail - ONS Port.

| Step | Possible Malfunction Source |
|------|--|
| 1. | Faulty connections between the telephone and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty CDE programming; likely forms: <ul style="list-style-type: none">• COS Define• Stations / SUPERSET™ Telephones• Device Interconnection Table• System Configuration |
| 4. | Faulty telephone set. |
| 5. | Faulty line card. |
| 6. | Faulty backplane cable connections. |
| 7. | Problem with DSP receivers or DTMF Receiver modules (not enough for peak traffic load). |

Note: Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS - see the *RS-232 Maintenance Terminal Practice*.

COV Line Cards

This section covers the COV Line Card (PN 9109-020). Table 3-2 outlines the most likely items to cause malfunction. For COV Line Card problems involving Voice Mail, see COV Port - Voice Mail in Chapter 5.

| Table 3-2 COV Line Card Troubleshooting Summary | |
|---|--|
| Step | Possible Malfunction Source |
| 1. | Faulty connections between the <i>SUPERSET</i> telephone and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the <i>SX-200</i> ML system. |
| 3. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / <i>SUPERSET</i> Telephones • Device Interconnection Table • System Configuration. |
| 4. | Faulty <i>SUPERSET</i> telephone set. |
| 5. | Faulty line card. |
| 6. | Faulty backplane cable connections. |
| 7. | Problem with DTMF Receivers (not enough for peak traffic load). |

Note: Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS SS3_SS4 - see the *RS-232 Maintenance Commands Practice*.

Digital Line Card

General

Intermittent problems can be caused by improper bridge taps, or incorrect loop lengths. The following table lists the maximum loop lengths in meters with 24 or 26 AWG twisted pair wiring.

| Table 3-3 Digital Line Card Loop Lengths | | |
|--|---------------------|-------------------|
| Peripheral Device | Maximum Loop Length | |
| | Without Bridge Tap | With Bridge Tap * |
| SUPERSET 401+™ | 1000m | not permitted |
| SUPERSET 410™ | 1000m | not permitted |
| SUPERSET 420™ | 1000m | 1000m |
| SUPERSET 430™ | 1000m | 1000m |
| Dataset 1103 | 2000m | 1000m |

| Peripheral Device | Maximum Loop Length | |
|----------------------------|---------------------|-------------------|
| | Without Bridge Tap | With Bridge Tap * |
| Dataset 2103 | 2000m | 1000m |
| MILINK™ Data Module | 2000m | 1000m |
| SUPERCONSOLE 1000™ console | 1000m | 1000m |
| SUPERSET 7000™ console | 1000m | not permitted |

Page 2 of 2

Note: Peripheral devices can not use bridge taps if they are connected to Digital Line Cards with PN 9109-012-001-NA or PN 9109-012-001-NA. Digital Line Cards with PN 9109-012-000-SA may have bridge taps.

SHOW ERRORS DATASET Command

The SHOW ERRORS DATASET command can be a useful tool in the troubleshooting of both the Digital Line Card and the Dataset. The following table lists the possible causes of the error types.

| Error Type | Call State | Possible Cause | | | | |
|---------------|------------------|----------------|---------|---------|-----------|---------|
| | | Dataset | Cabling | DX Chip | Line Card | DTE/DCE |
| CRCERR | any | yes | yes | yes | yes | no |
| RESETS | any | yes | yes | yes | yes | yes |
| LINK FAIL | Call setup/ Talk | yes | yes | yes | yes | no |
| LINK ABORT | Call setup/ Talk | yes | yes | yes | yes | yes |
| PARITY | any | yes | no | no | no | yes |
| OVERFLOW | Talking | no | no | no | no | yes |
| OVERRUN | Talking | no | no | no | no | yes |
| FRAMING | Talking | no | no | no | no | yes |
| NOSYNC | any | yes | yes | no | yes | no |

Additional Troubleshooting

Digital Line Cards are used for many applications. For additional troubleshooting information, refer to procedures for the specific application; i.e.:

- *SUPERSET 401+* Telephones
- *SUPERSET 410* Telephones

- SUPERSET 420 Telephones
- SUPERSET 430 Telephones
- SUPERSET 7000 console
- DATASET 1103
- DATASET 2103
- MILINK Data Module
- Programmable Key Module

Trunk Cards - General

The procedures detailed below cover the isolation and correction of faults with the various trunk cards. Supplementary procedures are provided for specific trunk types where required. Table 3-5 summarizes troubleshooting for trunk cards.

| Table 3-5 Trunk Card Troubleshooting Summary | |
|---|--|
| Step | Possible Malfunction Source |
| 1. | Faulty connections between the external trunk equipment and the cross-connect field. See Note 3. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Trunk Circuit Descriptors • Non-Dial In Trunks • Dial In Trunks • Trunk Groups • Device Interconnection Table • System Configuration. |
| 4. | Faulty external trunk equipment (see Note 4). |
| 5. | Incorrect jumper settings (LS/GS Trunk card only) - see Figure 3-1. |
| 6. | Incorrect switch settings (E&M Trunk Module). |
| 7. | Faulty Universal Card (E&M Trunk Module only). |
| 8. | Faulty LS/GS or DID Trunk Card (see Note 3). |
| 9. | Faulty backplane cable connections. |
| 10. | Problem with DTMF Receivers (not enough for peak traffic load, see Note 2). |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS - see the *RS-232 Maintenance Terminal Practice*.
 2. Refer to the *Engineering Information Practice*, for details on CO Busy Hour and receiver provisioning.

3. If periodic 'opens' in loop current are experienced during call progression through a central office, and disconnect timing has been set for a short interval, loop disconnects may cause the trunk to drop. In such cases, the timing should be increased one step at a time, until the calls are no longer dropped.
4. When the system detects a trunk protocol failure, it removes the affected trunk circuit from service. Trunk protocol failures may indicate fault(s) with the trunk circuit, in which case the card should be tested and replaced. However, they may also indicate that the external trunk is faulty. In this case, the affected trunk circuit must stay out-of-service until the external equipment is repaired.

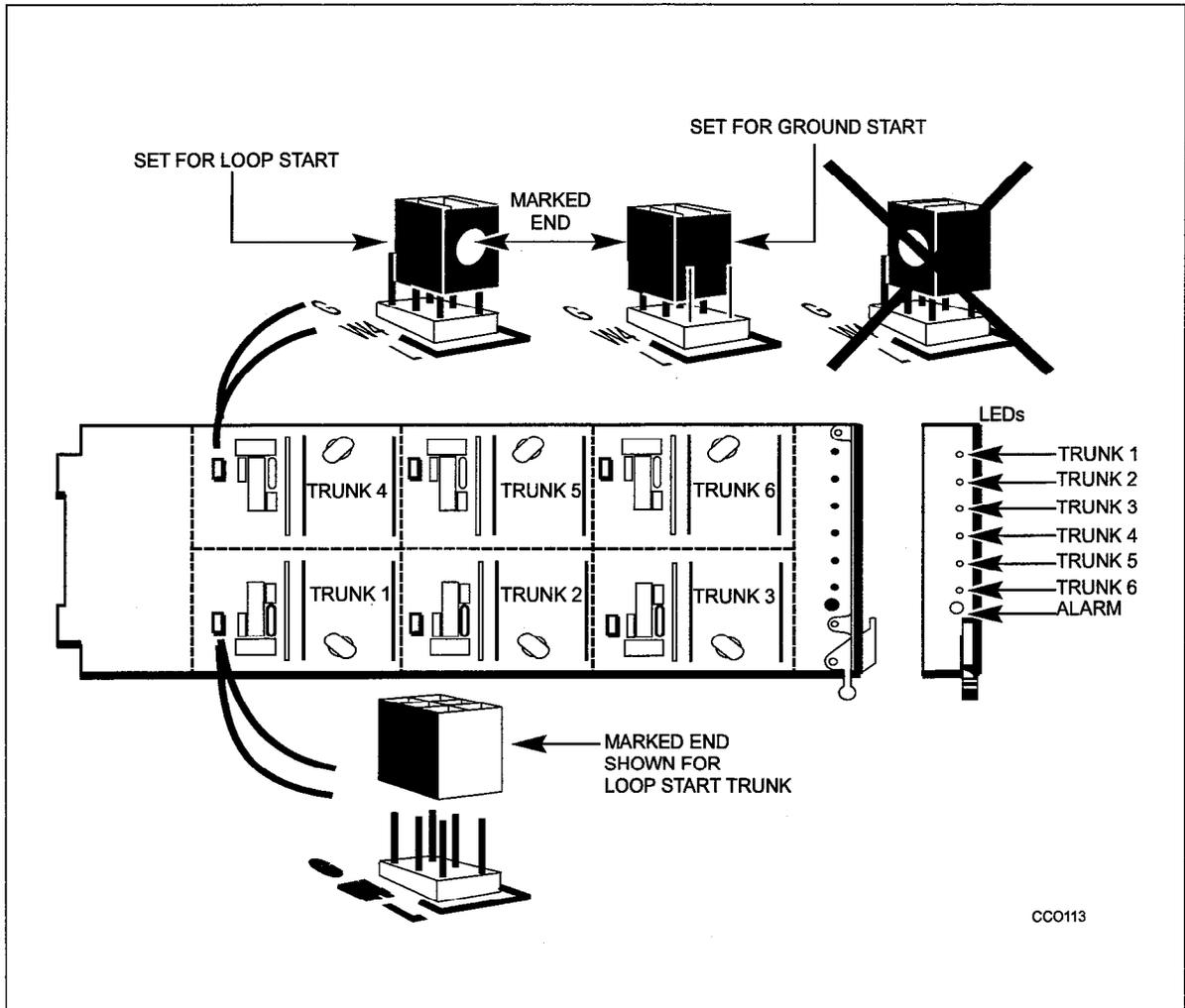


Figure 3-1 LS/GS Trunk Jumper Locations

Table 3-6 Trunk Voltage and Loop Current Readings

| Circuit | Idle | Seized |
|----------------------|--|---|
| E & M (Type 1) | Tip to gnd = 0 V Ring to gnd = 0 V Tip to Ring = 0 V E lead = -48 V M lead = 0 V E to M lead = 48 V I loop = 0mA | Tip to gnd = 0 V Ring to gnd = 0 V Tip to Ring = 0 V E lead = 0 V M lead = -48 V E to M lead = -48 V I loop = 0mA |
| LS/GS (Loop Start) | Tip to gnd = 0 V Ring to gnd = -48 V Tip to Ring = -48 V I loop = 0mA | Tip to gnd = -14 V to -22 V Ring to gnd = -34 V to -26 V Tip to Ring = -4 V to -20 V I loop = 10mA to 100mA |
| LS/GS (Ground Start) | Tip to gnd = -48 V Ring to gnd = -48 V Tip to Ring = 0 V I loop = 0mA | Tip to gnd = -14 V to -22 V Ring to gnd = -34 V to -26 V Tip to Ring = -4 V to -20 V I loop = 10mA to 100mA |
| DID | Tip to gnd = -2 V Ring to gnd = -48 V Tip to Ring = -46 V I loop = 0mA | Tip to gnd = -33 V to -44 V Ring to gnd = -17 V to -6 V Tip to Ring = 16 V to 38 V I loop = 12mA to 30mA |
| Loop/Tie | Tip to gnd = -2 V Ring to gnd = -48 V Tip to Ring = -46 V I loop = 0mA | Tip to gnd = -17 V to -6 V Ring to gnd = -33 V to -44 V Tip to Ring = -16 V to -38 V I loop = 12mA to 30mA |

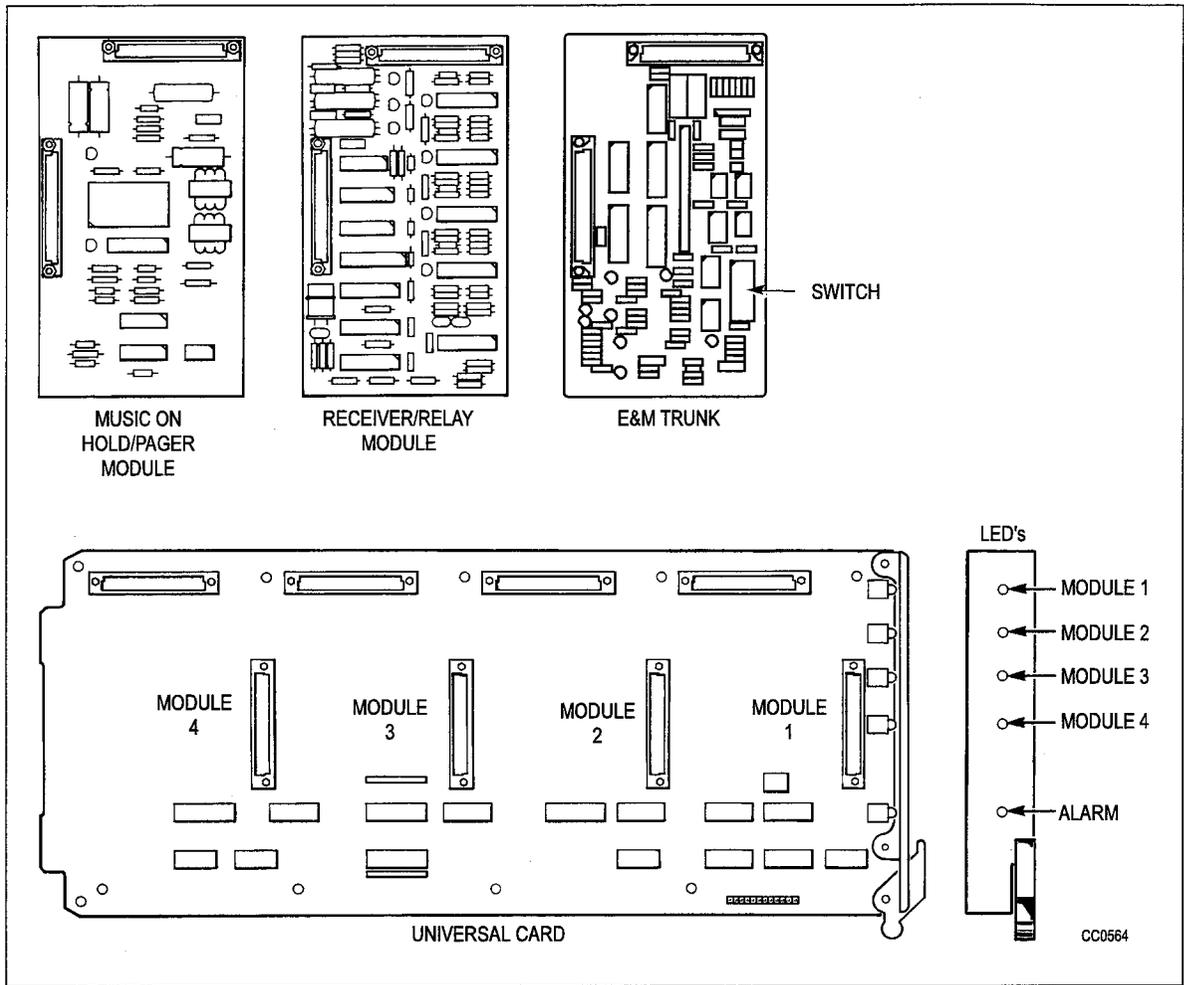


Figure 3-2 E&M Trunk Module With Universal Card

Supplemental E&M Trunk Card Troubleshooting Procedures

| Table 3-7 Supplemental E&M Trunk Troubleshooting Procedures | | |
|---|--|---|
| Step | Action | Description / Follow-Up |
| 1. | Perform General Trunk procedures in Table 3-5. | <ul style="list-style-type: none"> Go to step 2. |
| 2. | Disconnect the affected circuits from the cross-connect field. | <ul style="list-style-type: none"> Go to step 3. |
| 3. | IDLE STATE TEST - connect voltmeter between -48V and the M lead. Reading should be -48V (see Figure 3-3). | <ul style="list-style-type: none"> If not -48 V, replace E&M card, or E&M module and/or Universal Card. Otherwise, go to step 4. |
| 4. | INCOMING TEST - seize the trunk incoming - connect butt-set to E lead and ground. Circuit indicator should light when butt-set goes off-hook (see Figure 3-3). | <ul style="list-style-type: none"> If not, replace card/module; if fault persists, possible control problem - go to step 11. Otherwise go to step 5. |
| 5. | Check if incoming wink is programmed. | Yes: • Go to step 6. No: • Go to step 7. |
| 6. | Connect voltmeter to M lead and ground. Flash of -48V should be seen when butt-set goes off-hook (see Figure 3-3). | <ul style="list-style-type: none"> If not, replace card/module; if fault persists, possible control problem - go to step 11. Otherwise go to step 7. |
| 7. | Connect voltmeter to M lead and ground. Complete a call to an extension - when call is completed, steady -48V should be seen (see Figure 3-3). | <ul style="list-style-type: none"> If not, replace card/module; if fault persists, possible control problem - go to step 11. Otherwise go to step 8. |
| 8. | OUTGOING TEST - repeat step 3. | <ul style="list-style-type: none"> Go to step 9. |
| 9. | Connect voltmeter to ground and the M lead. | <ul style="list-style-type: none"> Go to step 10. |
| 10. | Connect butt-set to the E lead and ground, and dial the access code for a trunk group. The reading should be a steady -48 V (see Figure 3-3). | <ul style="list-style-type: none"> If not, replace card/module; if fault persists, possible control problem - go to step 11. Otherwise card is functioning. |
| 11. | Possible control problem - refer to Supplementary Peripheral Equipment Procedures. | |

Supplemental DID / Loop-Tie Trunk Troubleshooting Procedures

| Table 3-8 Supplemental DID / Loop-Tie Trunk Troubleshooting Procedures | | |
|--|--|---|
| Step | Action | Description / Follow-Up |
| 1. | Perform General Trunk procedures in Table 3-5. | <ul style="list-style-type: none"> Go to step 2. |

Table 3-8 Supplemental DID / Loop-Tie Trunk Troubleshooting Procedures (continued)

| Step | Action | Description / Follow-Up |
|------|---|---|
| 2. | Disconnect the affected circuits from the cross-connect field. | <ul style="list-style-type: none"> • Go to step 3. |
| 3. | Connect the butt-set across the Tip and Ring of the trunk circuit - the circuit indicator should light when the butt-set goes off-hook (see Figure 3-4). | <ul style="list-style-type: none"> • If not, replace card; if fault persists, possible control problem - go to step 9. • Otherwise go to step 4. |
| 4. | Check if circuit is a DID trunk. | Yes: • Go to step 5. No: • Go to step 6. |
| 5. | Use butt-set to simulate incoming digits - connection should be made to an extension/attendant, etc., depending upon call routing. The trunk circuit indicator should wink following digits pulsed. | <ul style="list-style-type: none"> • If not, ensure extension/attendant console, etc. is functioning properly - replace card; if fault persists, possible control problem - go to step 9. • Otherwise go to step 7. |
| 6. | TIE TRUNK - dialing, or going off-hook from the butt-set should connect to an extension/attendant, etc., depending upon call routing. | <ul style="list-style-type: none"> • If not, ensure extension/attendant console, etc. is functioning properly - replace card; if fault persists, possible control problem - go to step 9. • Otherwise go to step 7. |
| 7. | Connect voltmeter across the Tip and Ring of the trunk circuit (see Figure 3-4). | <ul style="list-style-type: none"> • To check wink start or answer back supervision, go to step 8. |
| 8. | Check the results during a simulated incoming call from the butt-set. | <ul style="list-style-type: none"> • When seized, meter should read -18 to -20 V. • For a wink start, the meter should read a 180 ms positive flash, and back to -18 to -20 V. • For answer back supervision, deflection to +18 to +20 V should be seen. • If these readings are not seen, retry. If this persists, replace the suspect card; if fault still persists, possible control problem - go to step 9. |
| 9. | Replace card with a known working card. | <ul style="list-style-type: none"> • If problem persists, reinstall the original card, and go to step 10. |
| 10. | Refer to Peripheral Equipment Procedures. | |

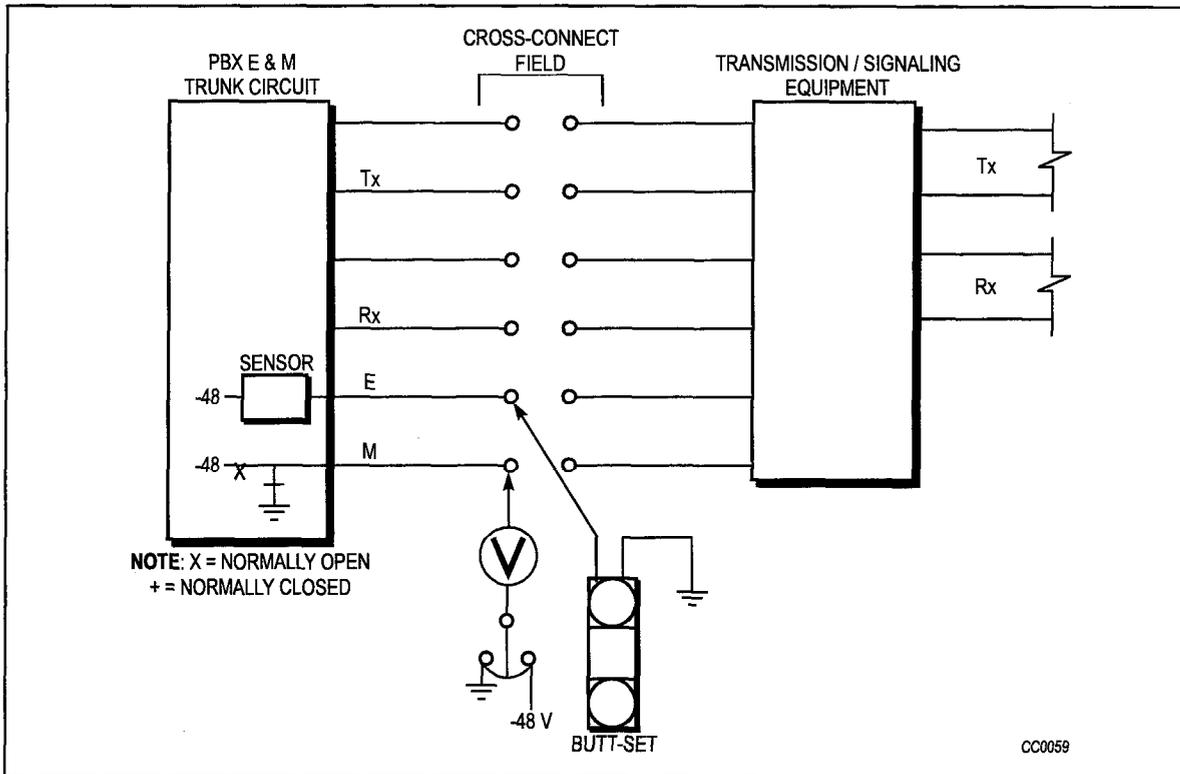


Figure 3-3 E&M Type 1 Trunk Testing

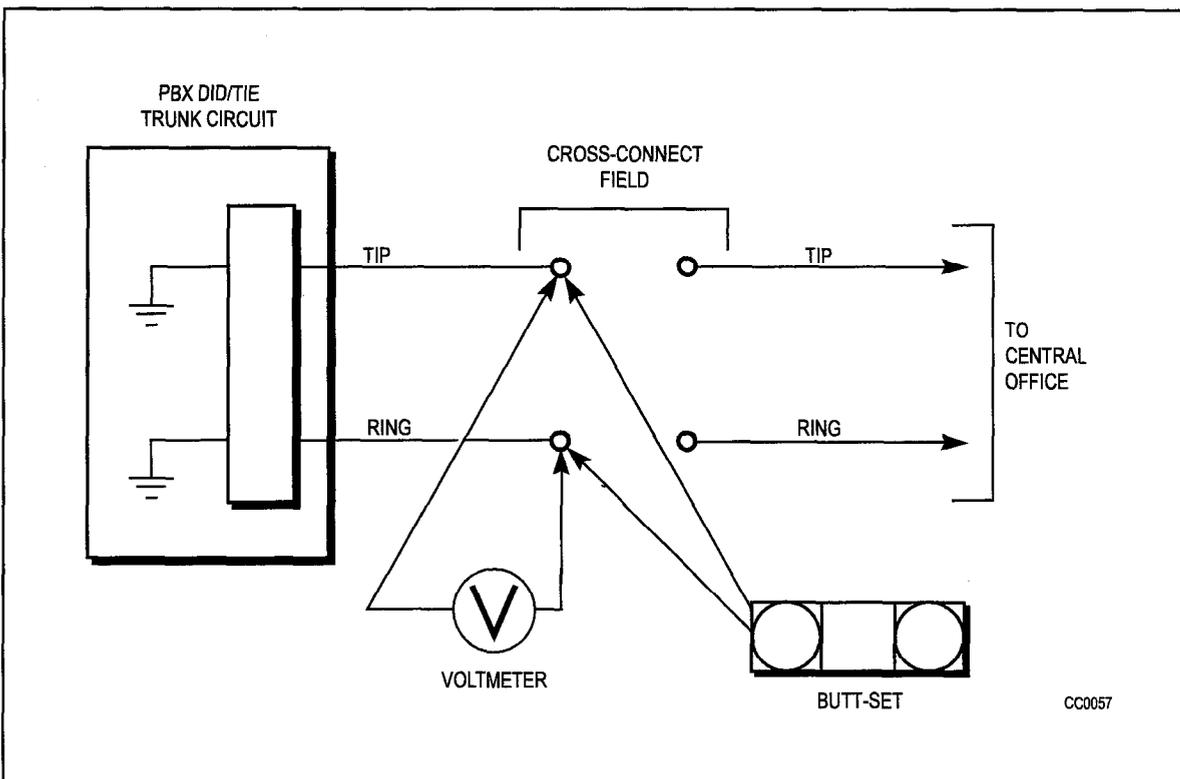


Figure 3-4 Loop Trunk Testing

T1 Trunk

The T1 Trunk Card provides an interface between the system and external digital trunk facilities. Each card contains one 24 channel interface. The T1 Trunk Card must be installed in a high power card slot.

Table 3-9 T1 Trunk Card Troubleshooting Summary

| Step | Possible Malfunction Source |
|------|---|
| 1. | Faulty external equipment or far end. |
| 2. | T1 card not installed in proper slot. Note: with two T1 Trunk Cards in a bay, they must be in slots 5 and 6 and require a dual T1 adapter. |
| 3. | Faulty connections between the T1 Channel Service Unit and the cabinet end of the T1 Adapter Cable Assembly. |
| 4. | Faulty connection between the T1 Adapter Cable Assembly and the T1 Adapter Card. |
| 5. | Faulty connection between the T1 Adapter Card and the shelf backplane. |
| 6. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • T1 Link Descriptor • T1 Link Assignment • T1 Network Sync • COS Define • Trunk Circuit Descriptors • Non-Dial In Trunks • Dial In Trunks • Trunk Groups • Device Interconnection Table • System Configuration. |
| 7. | Faulty T1 Channel Service Unit (see Note 2). |
| 8. | Incorrect switch settings on T1 Trunk Card (see Note 3). |
| 9. | Faulty T1 Trunk Card (see Note 2). |
| 10. | Faulty T1 Clock on Main Control Card II. |
| 11. | Faulty Main Control Card II. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS T1_TRUNK - see the *RS-232 Maintenance Terminal Practice*.
 2. When the system detects a trunk protocol failure, it removes the affected trunk circuit/channel from service. Trunk protocol failures may indicate fault(s) with the trunk circuit/channel, in which case the card should be tested and replaced. However, they may also indicate that the external trunk is faulty. In this case, the affected trunk circuit/channel must stay out-of-service until the external equipment is repaired.
 3. The switch settings are for cable length (not loop length) between the T1 card and the Channel Service Unit. The correct settings are:
 - 0 to 149 ft: set S1 CLOSED; S2-S8 OPEN.
 - 150 to 449 ft; set S2, S3, S4 CLOSED; S1, S5-S8 OPEN.

450 to 655 ft; set S5, S6, S7 CLOSED; S1-S4, S8 OPEN.
 These switch settings all assume 22 gauge wire.

Universal Card

3.2 The Universal Card is used for several applications. Refer to procedures for the specific application; i.e.:

- DTMF Receivers / Relays
- Music-on-Hold
- Loudspeaker / Pager
- E&M Trunks (see Trunk Cards - General).

DTMF Receivers / Relay

The DTMF Receiver module is installed on the Universal Card. The module can be used as a DTMF receiver (4 circuits) and/or a relay (2 circuits) - see the *Engineering Information Practice* for further information. The following table outlines the most likely causes of DTMF failure.

| Table 3-10 DTMF Receiver / Relay Troubleshooting Summary | |
|---|---|
| Step | Possible Malfunction Source |
| 1. | Insufficient receiver circuits to handle peak traffic load (see Note 2). |
| 2. | Faulty connection between the cross-connect field and the system or the cross-connect field and the external equipment (applies to the relays only - for Night Bell control or external System Alarm indication). See Note 4. |
| 3. | Faulty external equipment (applies to the relays only - for Night Bell control or external System Alarm indication). See Note 4. |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • System Configuration • Miscellaneous System Ports • Call Rerouting Table. |
| 5. | Faulty or improperly installed DTMF Receiver module. |
| 6. | Faulty Universal Card. |
| 7. | Faulty Universal Card modules (see Note 3). |
| 8. | Faulty PCM cable connections between Bay Controller and Main Controller. |
| 9. | Faulty switching matrices - refer to 'Supplementary Peripheral Equipment Procedures'. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS - see the *RS-232 Maintenance Terminal Practice*.
 2. Refer to the *Engineering Information Practice*, for details on receiver provisioning.
 3. Receiver / relay module malfunction could be caused by the failure of other module(s) on the Universal Card.

4. A simple test for a relay circuit is: (a) disconnect the relay from external equipment at the cross-connect field; (b) connect ohmmeter across relay leads - an open circuit should be read when the relay is open. If not, there is a problem with the module.

Music-on-Hold (MOH)

The Music-on-Hold / Pager module interfaces the system to an external music source for MOH. The module is installed on the Universal Card. See the *Engineering Information Practice* for further information. The following table outlines the most likely causes of MOH failure.

| Table 3-11 Music-on-Hold Troubleshooting Summary | |
|---|---|
| Step | Possible Malfunction Source |
| 1. | Faulty music source. |
| 2. | Faulty connection between the music source and the cross-connect field. |
| 3. | Faulty connection between the cross-connect field and the system. |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • System Configuration • Miscellaneous System Ports • COS Define • Call Rerouting Table. |
| 5. | Faulty or improperly installed MOH / Pager module. |
| 6. | Faulty Universal Card. |
| 7. | Faulty Universal Card modules (see Note 2). |
| 8. | Faulty PCM cable connections between Bay Controller and Main Controller (if applicable). |
| 9. | Faulty switching matrices - refer to 'Supplementary Peripheral Equipment Procedures'. |

Note: 1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS - see the *RS-232 Maintenance Terminal Practice*.

2. MOH / Pager module malfunction could be caused by the failure of other module(s) on the Universal card.

Pager

The Music-on-Hold / Pager module interfaces the system to an external paging amplifier. The module is installed on the Universal Card. See the *Engineering Information Practice* for further information. The following table outlines the most likely causes of paging failure.

Table 3-12 Pager Troubleshooting Summary

| Step | Possible Malfunction Source |
|------|---|
| 1. | Faulty paging equipment. |
| 2. | Faulty connection between the paging equipment and the cross-connect field. |
| 3. | Faulty connection between the cross-connect field and the system. |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • System Configuration • Miscellaneous System Ports • COS Define • Call Rerouting Table. |
| 5. | Faulty or improperly installed MOH / Pager module. |
| 6. | Faulty Universal Card. |
| 7. | Faulty Universal Card modules (see Note 2). |
| 8. | Faulty PCM cable connections between Bay Controller and Main Controller (if applicable). |
| 9. | Faulty switching matrices - refer to 'Supplementary Peripheral Equipment Procedures'. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS - see the *RS-232 Maintenance Terminal Practice*.
 2. MOH / Pager module malfunction could be caused by the failure of other module(s) on the Universal Card.

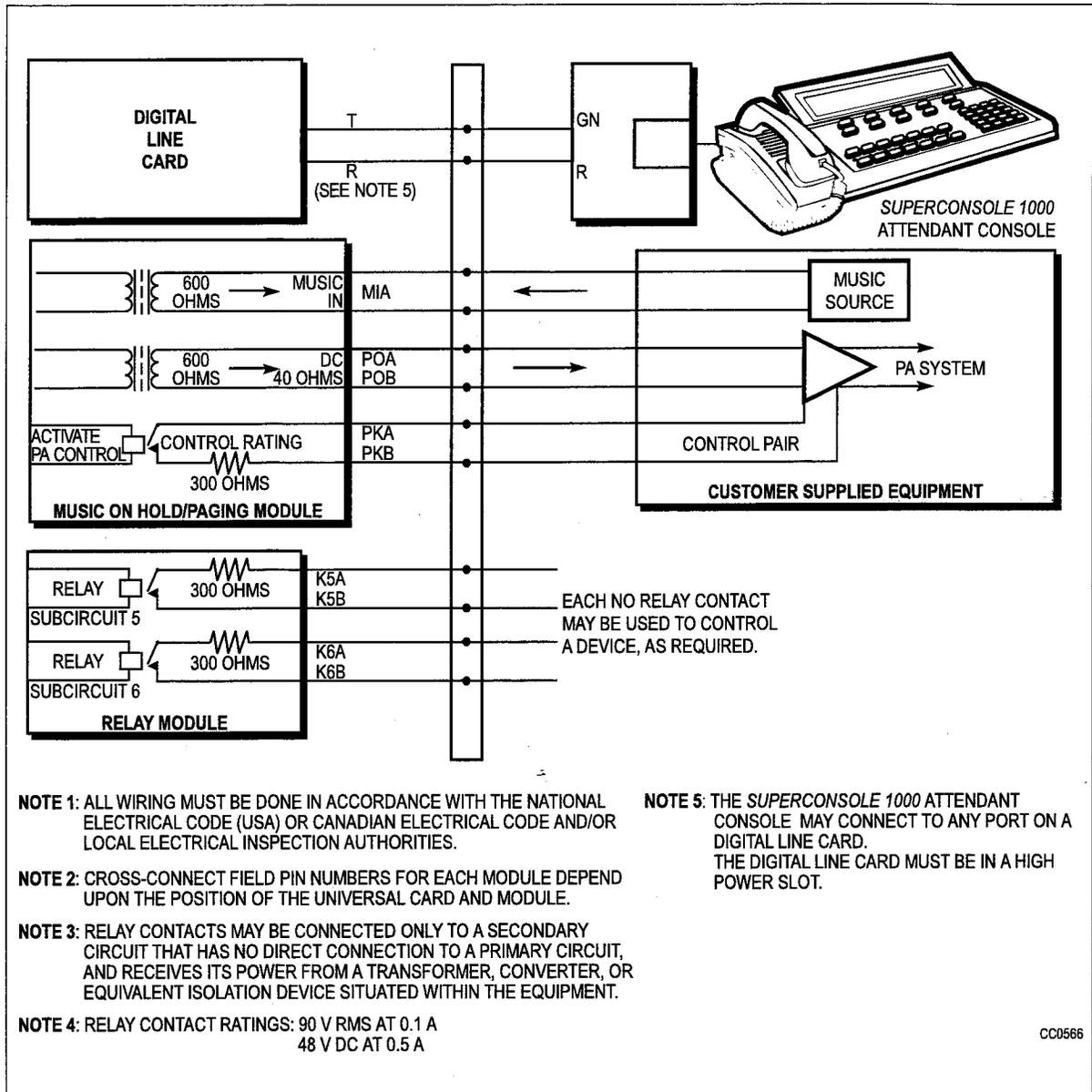


Figure 3-5 Music, Paging, Relay and Console Connections

Special Sets

Attendant Console - *SUPERCONSOLE 1000*

This procedure applies to the *SUPERCONSOLE 1000* only. Table 3-13 outlines the most likely items to cause *SUPERCONSOLE 1000* malfunction.

Table 3-13 SUPERCONSOLE 1000 Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|---|
| 1. | No connection between the <i>SUPERCONSOLE 1000</i> attendant console and a Digital Line Card circuit. |
| 2. | Faulty connections between the console and the cross-connect field (see Figure 3-5). |
| 3. | Faulty connections between the cross-connect field and the system. See Note 2. |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Console Assignment • Console LDN Assignments • Data Assignment • Data Circuit Descriptor • Tenant Forms 05, 06 • Device Interconnection Table • System Configuration. |
| 5. | Console requires reset (disconnect, reconnect line cord). See Table 3-14. |
| 6. | Digital Line Card requires re-initialization. Reseat card. |
| 7. | Faulty console, handset and cord assembly, or headset assembly. |
| 8. | Faulty Digital Line Card. |
| 9. | Faulty backplane cable connections. |
| 10. | Bay Control Card requires reload (if applicable) - power down bay, reseat BCC, power up bay. |
| 11. | Main Control Card requires reload - press <i>RESET</i> button. |
| 12. | Faulty switching matrices - refer to 'Supplementary Peripheral Equipment Procedures'. |

Note: 1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS CONSOLE - see the *RS-232 Maintenance Terminal Practice*.

2. Loop resistance should not exceed 200 ohms. Voltage across Tip and Ring should be between 40 and 48 volts dc.

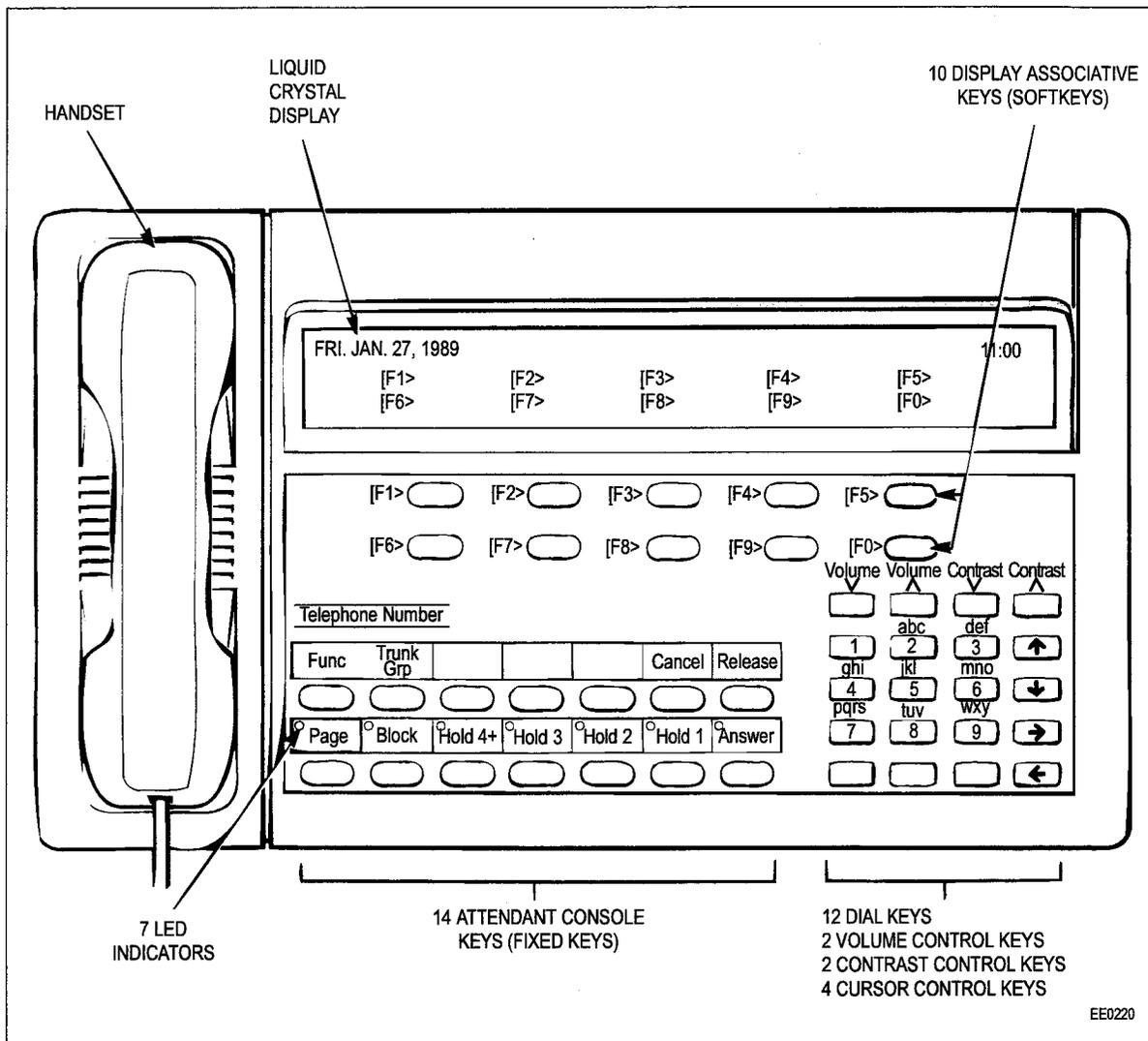


Figure 3-6 Attendant Console

Troubleshooting

Table 3-14 Attendant Console Error Indications

| Indication | Meaning |
|--|---|
| <i>HOLD 1</i> indicator flashing (after reset) | Console fault - replace console. |
| <i>HOLD 2</i> indicator flashing (after reset) | Console fault - replace console. |
| <i>HOLD 3</i> indicator flashing (after reset) | Console fault - replace console. |
| All indicators on always (after reset) | Console fault - replace console. |
| message: CONSOLE HARDWARE PROBLEM 123456789 ERROR CODE 1 | Console fault - replace console. |
| message: WAITING FOR SYNCHRONIZATION 123456789 PLEASE WAIT | <ul style="list-style-type: none"> • Wiring problem. • Problem with programming. • Problem with Digital Line Card (<i>SUPERCONSOLE 1000</i>). • Problem with console. |
| message: WAITING FOR COMMUNICATION 123456789 PLEASE WAIT | <ul style="list-style-type: none"> • Problem with programming. • Problem with console. |

SUPERSET 401+, and SUPERSET 410 Telephones

The following table outlines, in descending order, the most likely items to cause malfunction.

| Item | Possible Malfunction Source |
|-------------|---|
| 1. | Faulty connections between the set and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / SUPERSET Telephones • Device Interconnection Table • System Configuration. |
| 4. | Set requires reset - disconnect, reconnect line cord. |
| 5. | Faulty SUPERSET telephone set or handset/cord assembly. |
| 6. | Digital Line Card requires re-initialization (reseat card). |
| 7. | Bay Control Card / Main Control Card II requires reset (power down system or press <i>RESET</i> on MCC II). |
| 8. | Faulty or wrong Digital Line Card. |
| 9. | Faulty backplane cable connections. |
| 10. | Problem with DTMF Receivers (not enough for peak traffic load). |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DIGITAL_SETS - see the *RS-232 Maintenance Terminal Practice*.
 2. A synchronization or communication error with the telephone is indicated by the rapid flashing of the Message Lamp.
 3. Loop length limit is: 3300 ft/1000 m with 24 or 26 AWG wire (twisted pair - with or without bridge taps).
 4. Refer to the *Peripheral Devices Practice*, and the *Features Description Practice*, for details of features and options.

SUPERSET 420 and SUPERSET 430 Telephones

Table 3-16 outlines in descending order, the most likely items to cause malfunction.

| Item | Possible Malfunction Source |
|-------------|--|
| 1. | Faulty connections between the set and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |

Page 1 of 2

Table 3-16 SUPERSET 420 and SUPERSET 430 Telephone Troubleshooting Procedures (continued)

| Item | Possible Malfunction Source |
|------|--|
| 3. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / <i>SUPERSET</i> Telephones • Device Interconnection Table • System Configuration. |
| 4. | Set requires reset - disconnect, reconnect line cord. |
| 5. | Faulty <i>SUPERSET</i> telephone set or handset/cord assembly. |
| 6. | Digital Line Card requires re-initialization (reseat card). |
| 7. | Bay Control Card / Main Control Card II requires reset (power down system or press <i>RESET</i> on MCC II). |
| 8. | Faulty Digital Line Card. |
| 9. | Faulty backplane cable connections. |
| 10. | Problem with DTMF Receivers (not enough for peak traffic load). |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DIGITAL_SETS - see the *RS-232 Maintenance Terminal Practice*.
 2. The set's LCD display will indicate synchronization problems, "NO SYNCHRONIZATION", and communication problems, "NO COMMUNICATION".
 3. Loop length limit is: 3300 ft/1000 m with 24 or 26 AWG wire (twisted pair - with or without bridge taps).
 4. Refer to the *Peripheral Devices Practice*, and the *Features Description Practice*, for details of features and options.

DATASET 1103 / DATASET 2103 (DTE Mode)

The following table outlines the most likely items to cause malfunction. Note that this table applies to stand-alone DATASET 1103 and DATASET 2103 units interfaced to DTE devices. For applications involving modems (DCE devices), refer to "DATASET 1100 / DATASET 2100 - DCE Mode".

Table 3-17 DATASET 1103 / DATASET 2103 - DTE Mode Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|--|
| 1. | Faulty connections between the data station and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty connections between the DATASET and the connecting device(s) (terminal, telephone). |

Table 3-17 DATASET 1103 / DATASET 2103 - DTE Mode Troubleshooting Procedures (continued)

| Step | Possible Malfunction Source |
|------|---|
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / <i>SUPERSET</i> Telephones • Data Circuit Descriptor • Data Assignment • DTE Profile • Device Interconnection Table • System Configuration. |
| 5. | Incorrect DATASET 2103 switch settings - see Table 3-18 through Table 3-23. |
| 6. | Faulty far end (if applicable). |
| 7. | Faulty external equipment (terminal, telephone set). |
| 8. | DATASET requires reset - disconnect, reconnect power cord. See Table 3-24 / Table 3-25. |
| 9. | Bay Control Card / Main Control Card II requires reset (power down system or press <i>RESET</i> on MCC II). |
| 10. | Faulty DATASET unit, or power cord assembly (or no AC power). |
| 11. | Digital Line Card requires re-initialization (reseat card). |
| 12. | Faulty Digital Line Card. |
| 13. | Faulty backplane cable connections. |

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- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DATASETS - see the *RS-232 Maintenance Commands Practice*.
 2. See Table 3-25 for proper device indicator states.
 3. Loop length limit is: 3300 ft with 24 or 26 AWG wire (twisted pair - with no bridge taps).

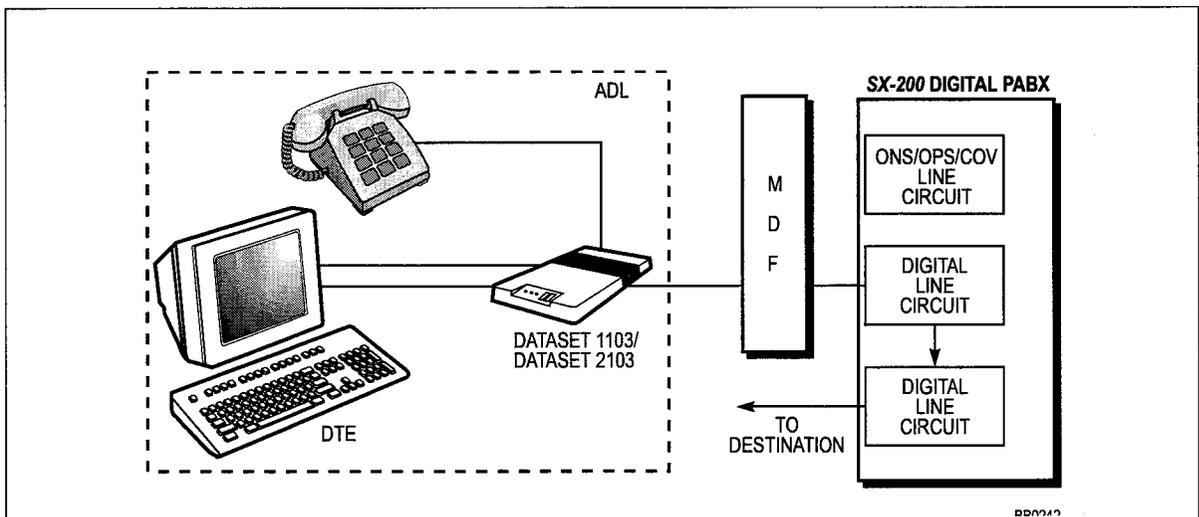


Figure 3-7 DATASET 1103/2103 Stand-alone DTE Configuration (ADL)

| Table 3-18 DATASET 2100 Switch Settings (Mode Selection) | | |
|--|------------|---|
| Switch No. | Position | Meaning |
| 1 | Down Up | Set - PBX operation Hunt - Back to back mode |
| 2 | Up Down | Synchronous Operation Asynchronous Operation |

Note: The DATASET should be in the SET mode when connected to the system.

| Table 3-19 DATASET 2100 Switch Settings (Asynchronous Flow Control) | | |
|---|------------|------|
| Asynchronous Flow Control Type | Switch No. | |
| | 3 | 4 |
| Flow control disabled | Down | Down |
| XON/XOFF flow control | Down | Up |
| CTS flow control | Up | Down |
| Flow control disabled | Up | Up |

| Table 3-20 DATASET 2100 Switch Settings (Async Speed) | | | | |
|---|------------|------|------|------|
| Asynchronous Speed | Switch No. | | | |
| | 5 | 6 | 7 | 8 |
| Autobaud | Down | Down | Down | Down |
| 110 | Up | Down | Down | Down |
| 150 | Down | Up | Down | Down |
| 200 | Up | Up | Down | Down |
| 300 | Down | Down | Up | Down |
| 600 | Up | Down | Up | Down |
| 1200 | Down | Up | Up | Down |
| 2400 | Up | Up | Up | Down |
| 4800 | Down | Down | Down | Up |
| 9600 | Up | Down | Down | Up |
| 19200 | Down | Up | Down | Up |

| Table 3-21 DATASET 2100 Switch Settings (Sync Operating Mode Selection) | | |
|--|------------|-------------------------------|
| Switch No. | Position | Meaning |
| 5 | Down Up | Transparent mode X.31 mode |

| Table 3-22 DATASET 2100 Switch Settings (Synchronous Clock Source) | | |
|---|------------|------|
| Asynchronous Clock Source | Switch No. | |
| | 3 | 4 |
| Internal clock | Down | Down |
| System clock | Down | Up |
| Tx external clock | Up | Down |
| Tx and Rx external clock | Up | Up |

| Table 3-23 D3TASET 2100 Switch Settings (Sync Speed) | | | |
|--|------------|------|------|
| Synchronous Speed | Switch No. | | |
| | 6 | 7 | 8 |
| 1200 | Down | Down | Down |
| 2400 | Up | Down | Down |
| 4800 | Down | Up | Down |
| 9600 | Up | Up | Down |
| 19200 | x | x | Up |

Note: "x" indicates up or down is acceptable.

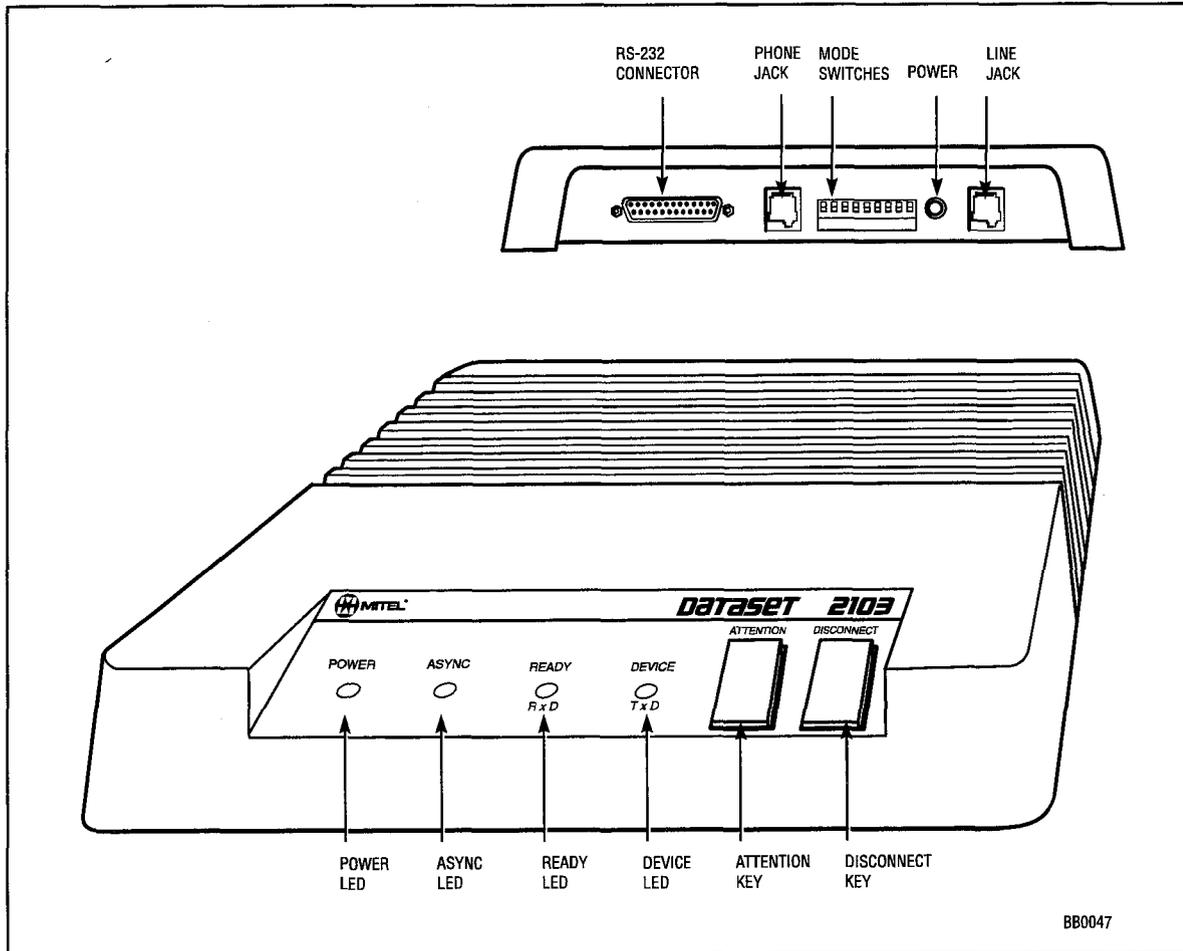


Figure 3-8 DATASET 2103 Indicators and Connectors

Table 3-24 DATASET 2103 LED Indicators

| Indicator | Meaning |
|-----------|---|
| DEVICE | <p>ON - Indicates that the attached device is connected to the Dataset, and is supplying DSR or DTR on pin 21 of the RS-232 connector.</p> <p>FLASHING - Indicates that the Dataset is transmitting data</p> <p>OFF - Indicates that the device is not supplying DTR or DSR, or is not connected.</p> |
| READY | <p>ON - Indicates that the Dataset is involved in an active call.</p> <p>FLASHING - Indicates that the Dataset is receiving data.</p> <p>OFF - Indicates that the Dataset (and the line card) are in the idle state.</p> |
| ASYNC | <p>ON - Indicates that the Dataset is operating in asynchronous mode.</p> <p>OFF - Indicates that the Dataset is operating in synchronous mode.</p> <p>FLASHING - Indicates that the Dataset is in an illegal connection with a DATASET 2100 in sync mode, or that the Dataset is in sync with something other than a DATASET 1100 or DATASET 2100.</p> |

Table 3-24 DATASET 2103 LED Indicators (continued)

| Indicator | Meaning |
|-----------|--|
| POWER | <p>ON - Indicates that the Dataset has power, and is in sync with the corresponding Digital Line card.</p> <p>FLASHING - Indicates that the Dataset has power, but is not in sync with the corresponding Digital Line card.</p> <p>OFF - Indicates that the Dataset is not receiving power from the 9 Vac plug-in transformer.</p> |

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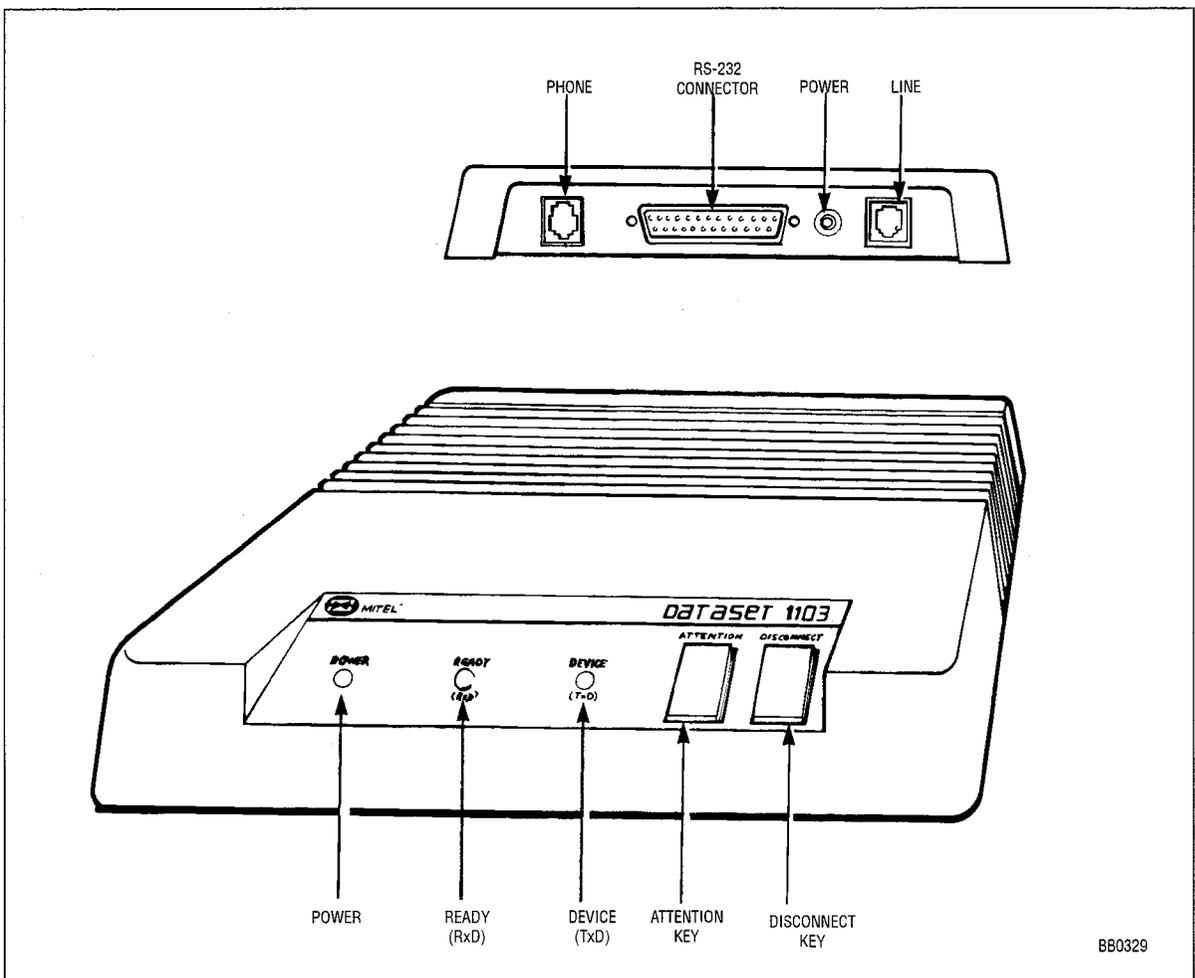
Note: See Figure 3-8.**Figure 3-9 DATASET 1103 Indicators and Connectors**

Table 3-25 DATASET 1103 Indicators

| Indicator | Meaning |
|-----------|---|
| DEVICE | ON - Indicates that the attached device is connected to the Dataset unit, and is supplying DSR or DTR on pin 21 of the RS-232 connector. FLASHING - Indicates that the Dataset is transmitting data. OFF - Indicates that the device is not supplying DTR or DSR, or is not connected. |
| READY | ON - Indicates that the Dataset is involved in an active call. FLASHING - Indicates that the Dataset is receiving data. OFF - Indicates that the Dataset (and the line card) are in the idle state. |
| POWER | ON - Indicates that the Dataset has power, and is in sync with the corresponding Digital Line Card. FLASHING - Indicates that the Dataset has power, but is not in sync with the corresponding Digital Line Card. OFF - Indicates that the Dataset is not receiving power from the 9 Vac plug-in transformer. |

Note: See Figure 3-9.

DATASET 1103 / 2103 (DCE Mode)

The following table outlines the most likely items to cause malfunction. Note that this table applies to stand-alone DATASET 1103 and DATASET 2103 units interfaced to DCE devices. For applications involving DTE devices, refer to "DATASET 1103 / DATASET 2103 - DTE Mode".

Table 3-26 DATASET 1103 / DATASET 2103 - DCE Mode Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|--|
| 1. | Faulty connections between the data station and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty connections between the DATASET and the connecting device(s) (modem). |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / SUPERSET Telephones • Data Circuit Descriptor • Data Assignment • DTE Profile • Modem Assignment • Device Interconnection Table • System Configuration. |
| 5. | Incorrect DATASET 2103 switch settings - see Table 3-18 through Table 3-23. |
| 6. | Faulty far end (if applicable). |

Table 3-26 DATASET 1103 / DATASET 2103 - DCE Mode Troubleshooting Procedures (continued)

| Step | Possible Malfunction Source |
|------|---|
| 7. | Incorrect modem switch settings or modem software set-up characteristics (if applicable). |
| 8. | Modem requires reset - refer to manufacturer's instructions. |
| 9. | Faulty external equipment (modem). |
| 10. | DATASET requires reset - disconnect, reconnect power cord. See Table 3-24 / Table 3-25. |
| 11. | Bay Control Card / Main Control Card II requires reset (power down system or press <i>RESET</i> on MCC II). |
| 12. | Faulty DATASET unit or power cord assembly (or no AC power). |
| 13. | Digital Line Card requires re-initialization (reseat card). |
| 14. | Faulty Digital Line Card. |
| 15. | Faulty backplane cable connections. |

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- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DATASETS - see the *RS-232 Maintenance Terminal Practice*.
 2. See Table 3-25 for proper device indicator states.
 3. Loop length limit is: 3300 ft with 24 or 26 AWG wire (twisted pair - with no bridge taps).

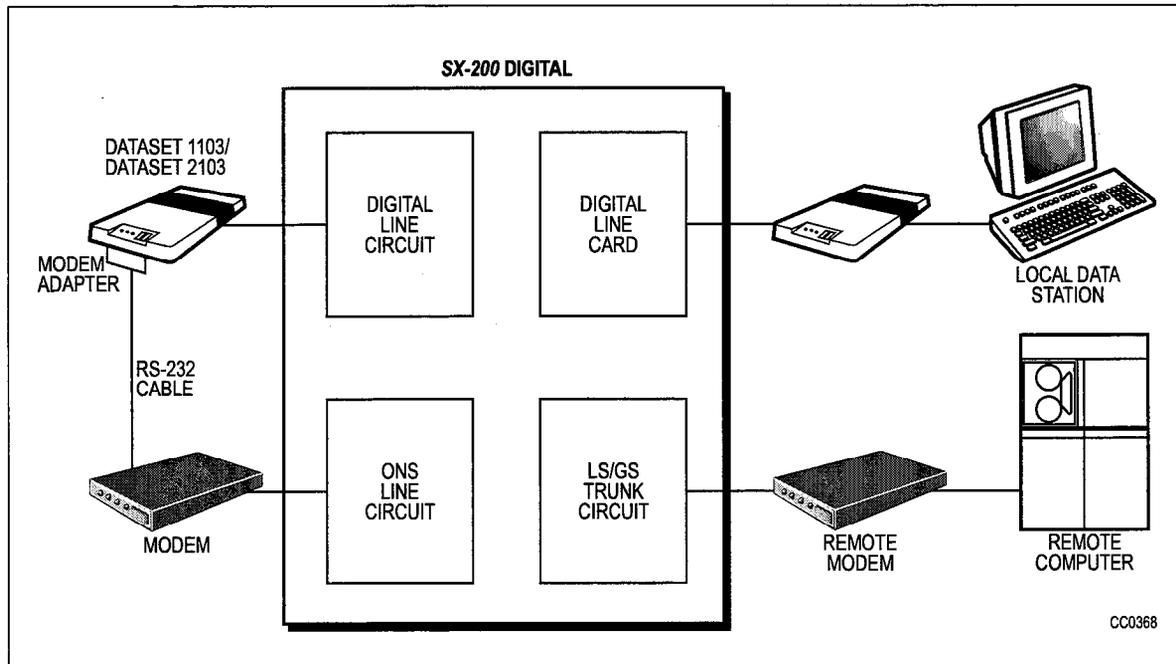


Figure 3-10 DATASET 1103 / DATASET 2103 Modem Configuration

MILINK Data Module

Table 3-27 outlines in descending order, the most likely items to cause malfunction.

| Table 3-27 MILINK Data Module Troubleshooting Procedures | |
|---|---|
| Item | Possible Malfunction Source |
| 1. | Faulty connections between the data module and the cross-connect field. |
| 2. | Faulty connections between the cross-connect field and the system. |
| 3. | Faulty connections between the data module and the connecting device (terminal, telephone set). |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations / <i>SUPERSET</i> Telephones • Data Circuit Descriptor • Data Assignment • DTE Profile • Device Interconnection Table • System Configuration. |
| 5. | Faulty far end. |
| 6. | Faulty external equipment (terminal or the <i>SUPERSET 410</i> , <i>SUPERSET 420</i> or <i>SUPERSET 430</i> telephone). |
| 7. | DATASET requires reset - disconnect, reconnect power cord. See Table 3-28. |
| 8. | Digital Line Card requires re-initialization (reseat card). |
| 9. | Bay Control Card / Main Control Card II requires reset (power down system or press <i>RESET</i> on MCC II). |
| 10. | Faulty DATASET unit, or power cord assembly (or no ac power). |
| 11. | Faulty Digital Line Card. |
| 12. | Faulty backplane cable connections. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DATASETS - see the *RS-232 Maintenance Commands Practice*.
 2. To ensure the most thorough testing, the "Dataset Auditing" and "Attached Device Loopback" entries in the Dataset Circuit Descriptor Assignment form must be enabled (see the *Customer Data Entry Practice*, for further details).

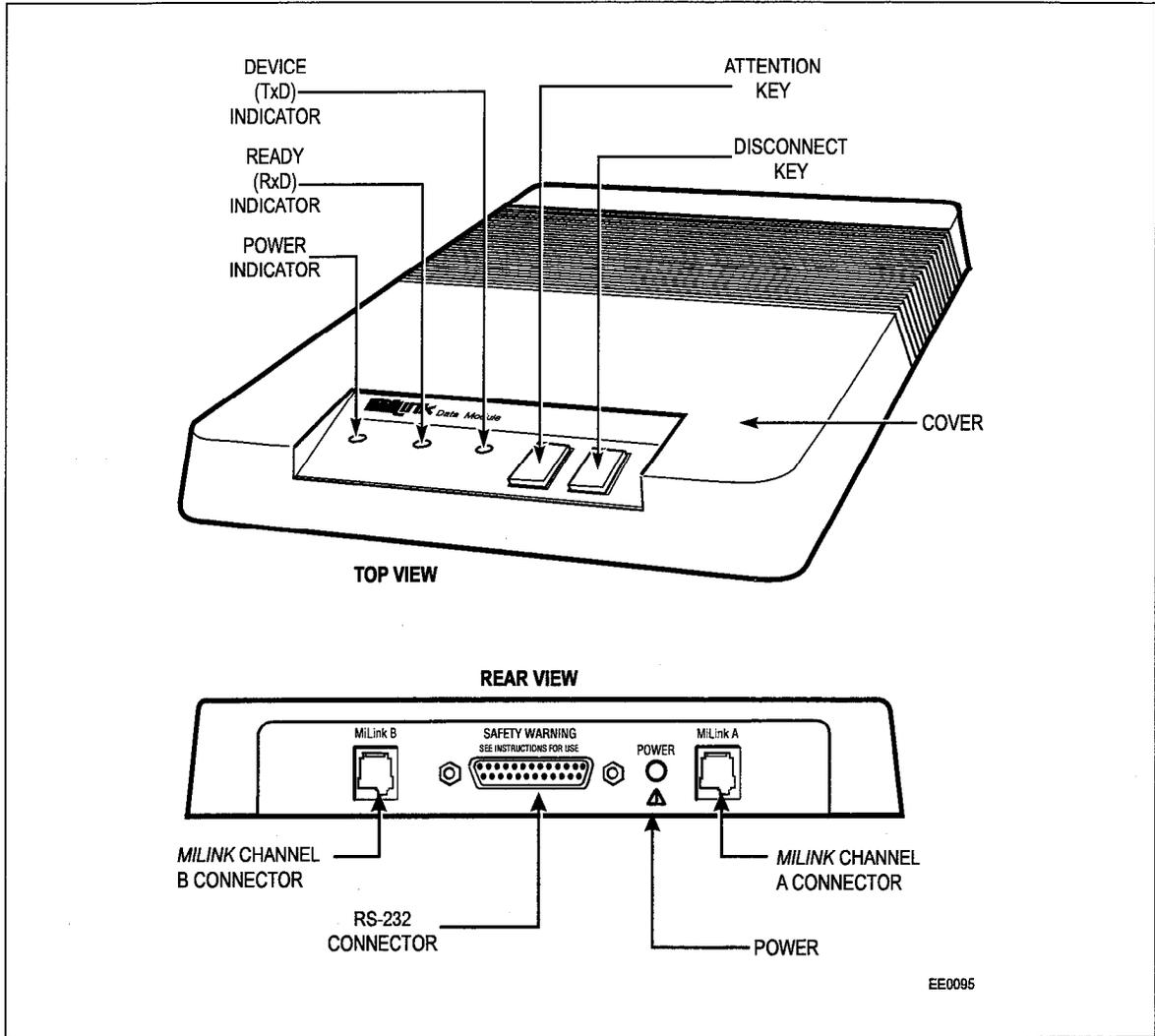


Figure 3-11 MILINK Data Module, Indicators and Connectors

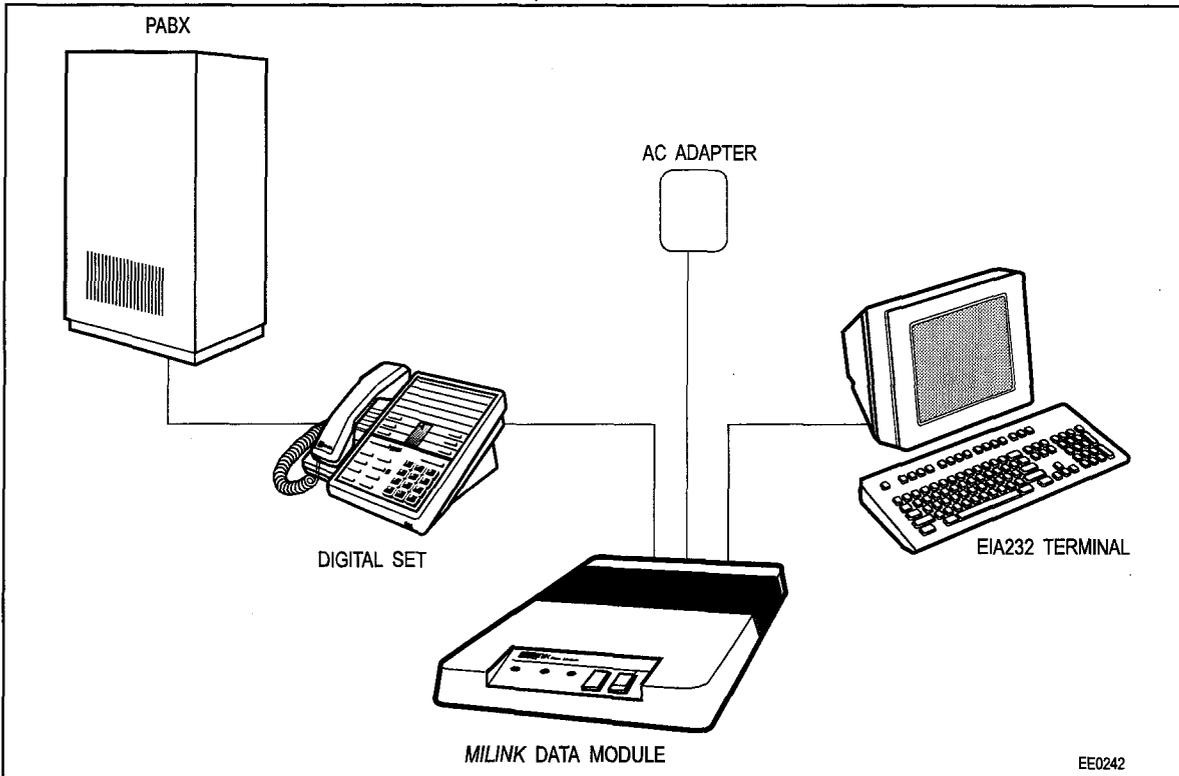


Figure 3-12 MILINK Data Module Configuration

Table 3-28 MILINK Data Module LEDs

| Indicator | Meaning |
|--------------|---|
| DEVICE (TxD) | ON - Indicates that the attached device is connected to the data module, and is supplying DSR or DTR on pin 21 of the RS-232 connector. |
| | OFF - Indicates that the device is not supplying DTR or DSR, or is not connected. |
| | FLASHING - Indicates that the data module is transmitting data. |
| READY (RxD) | ON - Indicates that the data module is involved in an active call. |
| | OFF - Indicates that the data module (and the line card) are in the idle state. |
| | FLASHING - Indicates that the data module is receiving data. |
| POWER | ON - Indicates that the data module has power, and is in sync with the line circuit. |
| | OFF - Indicates that the data module is not receiving power. |
| | FLASHING - Indicates that the data module has power, but is not in sync with the line circuit. |

4 Subsystem Troubleshooting Procedures

Main Control Card II

4.1 The following paragraphs outline troubleshooting for the Main Control Card II.

Configuration

The Main Control Card II consists of the following:

- Main Control Card II
- System ID module
- Flash Memory card
- T1 Clock.

Main Control Card II Power-Up Tests

The Main Control Card II power-up tests are run automatically upon operation of the *RESET* pushbutton located on the Main Control Card II front panel. The test results are indicated in code form on the Main Control Card II's numeric displays.

First-Step Checks

Prior to replacing cards as directed by the Main Control Card II troubleshooting procedures, carry out the following checks:

- Reseat the suspect card.
- Check for bent pins at the backplane or module connector, as applicable.
- Power off and power on.

If the above does not clear the fault, replace the card.

Power-Up Sequence

The Main Control Card II diagnostic power-up sequence is described in the *General Maintenance Information Practice*.

Troubleshooting Procedures

Troubleshooting procedures for the Main Control Card II are covered under "Emergency Troubleshooting Procedures" (Table 2-1). Table 4-1 outlines the most likely causes of Main Control failure. Figure 4-1 shows an *SX-200* ML PABX.

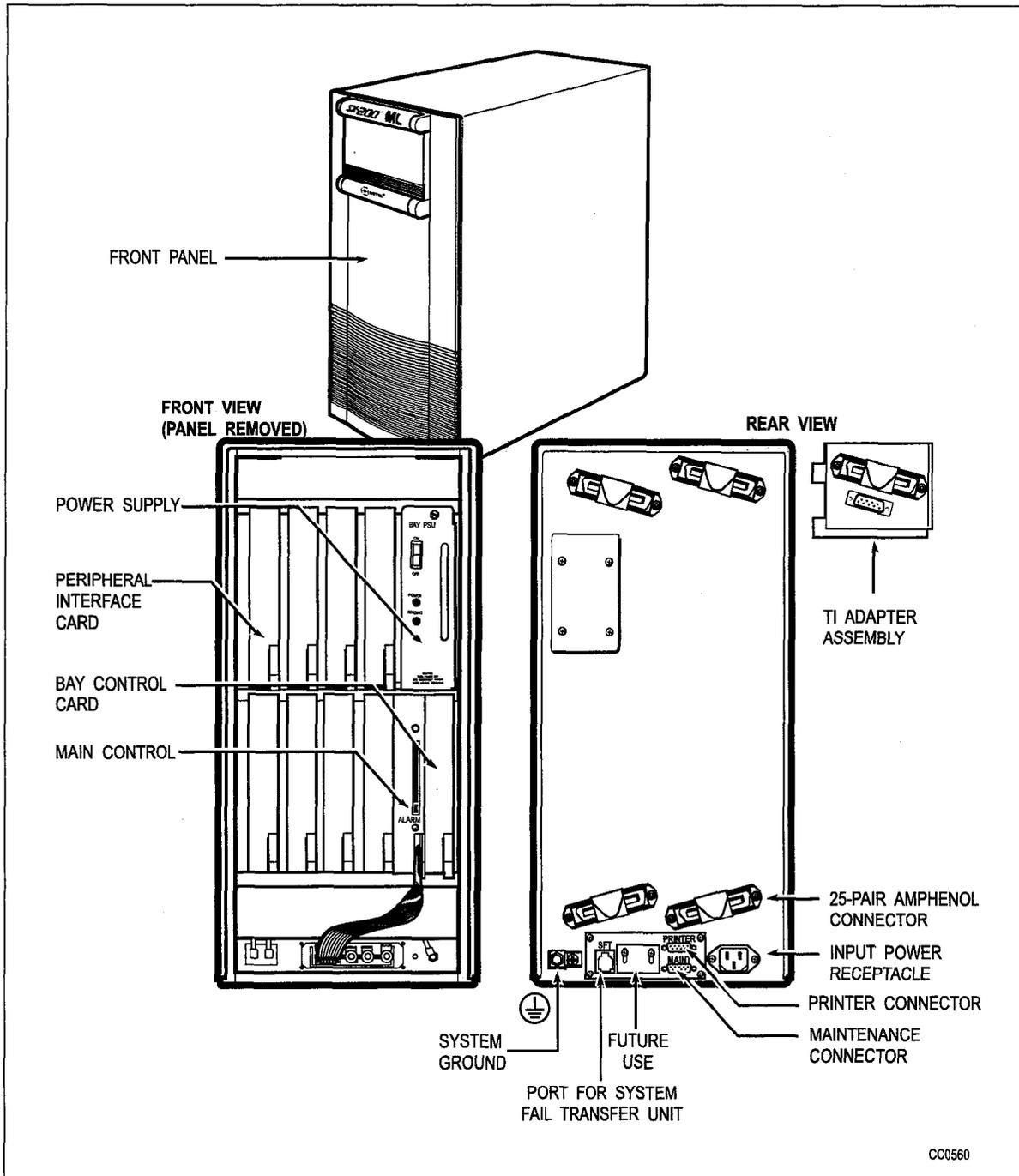


Figure 4-1 SX-200 ML Cabinet

Table 4-1 Main Control Troubleshooting Summary

| Step | Possible Malfunction Source for <i>SX-200</i> ML Systems |
|------|--|
| 1. | Main Control Card II requires a reset - press <i>RESET</i> pushbutton on the Main Control Card II front panel. |
| 2. | Failure of initialization / power up tests - check for error codes on the Main Control Card II numeric displays - see Table 2-2. |
| 3. | Faulty Bay Power Supply - refer to that procedure. |
| 4. | Faulty Main Control Card II. |
| 5. | Faulty backplane cable connections. |

Note: Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS - see the *RS-232 Maintenance Terminal Practice*.

Digital Bay Control Subsystem

- 4.2 The following paragraphs detail the troubleshooting procedures for the Digital Bay Control subsystem.

Configuration

The Digital Bay Control subsystem consists of one card - the Bay Control Card (Part No. 9109-017-001).

Bay Control Power-Up Tests

The Bay Control Card power-up tests are run automatically upon power-up of the associated bay, or a reset of the Main Control Card II. Failure of any of the power-up tests will result in the flashing of the Bay Control Card ALARM LED soon after initialization.

First-Step Checks

Prior to replacing cards as directed by the Digital Bay Control subsystem troubleshooting procedures, carry out the following checks:

- At the maintenance terminal, SHOW ERRORS and check the DX channel links; also check for HDLC errors. Refer to the *RS-232 Maintenance Terminal Practice*, and the *General Maintenance Information Practice*.
- Reseat the suspect card and modules as appropriate.
- Check for bent pins at the backplane or module connector, as applicable.

If the above does not clear the fault, replace the modules and card.

Power-Up Sequence

The Bay Control Card power-up sequence is described in the *General Maintenance Information Practice*. Table 4-2 summarizes the troubleshooting procedures for the Bay Control Card.

Troubleshooting Procedures

The following table outlines the most likely causes of Bay Control failure.

| Table 4-2 Digital Bay Control Troubleshooting Summary | |
|--|--|
| Step | Possible Malfunction Source for the SX-200 ML System |
| 1. | Bay Control Card requires a reset - power down bay, reseal card, and power up bay. |
| 2. | Note the indicators on the Bay Control Card (see Table 4-3). |
| 3. | Incorrect Bay Control Card switch settings - read Note 2. See Figure 4-2. |
| 4. | Faulty Bay Power Supply unit - refer to that procedure. |
| 5. | Faulty Bay Control Card. |
| 6. | Faulty Main Control Card II. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS - see the *RS-232 Maintenance Terminal Practice*.
 2. All of the switches (SW1-1, SW1-2, SW2-1, SW2-2) should be in the closed position.

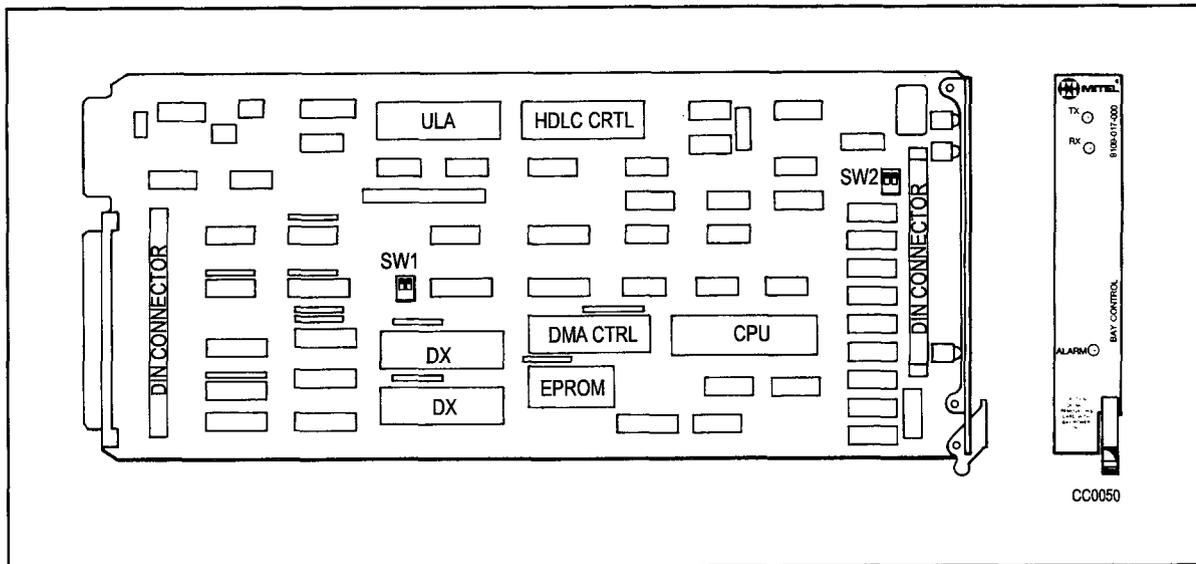


Figure 4-2 Bay Control Card Device Locations

| Table 4-3 Bay Control Card Status LEDs | | | |
|--|----------------|-----------|---|
| TX LED | RX LED | ALARM LED | Meaning |
| on | on | on | Bay Control Card is either waiting for, or has lost communication with the Main Control Card II. If this state persists for more than a few seconds, there is no communication. |
| flashing | flashing | on | Bay Control Card is being downloaded by the Main Control Card II. |
| off / flashing | off / flashing | off | Bay Control Card is up and running and communicating to the Main Control Card II. |
| - | - | flashing | There is a failure on the Bay Control Card. |

Power Subsystem

4.3 The SX-200 ML PABX power subsystem consists of one Bay Power Supply. The uninterruptible power supply (UPS) is optional, and is user-supplied. Table 4-4 outlines the required Bay Power Supply voltages.

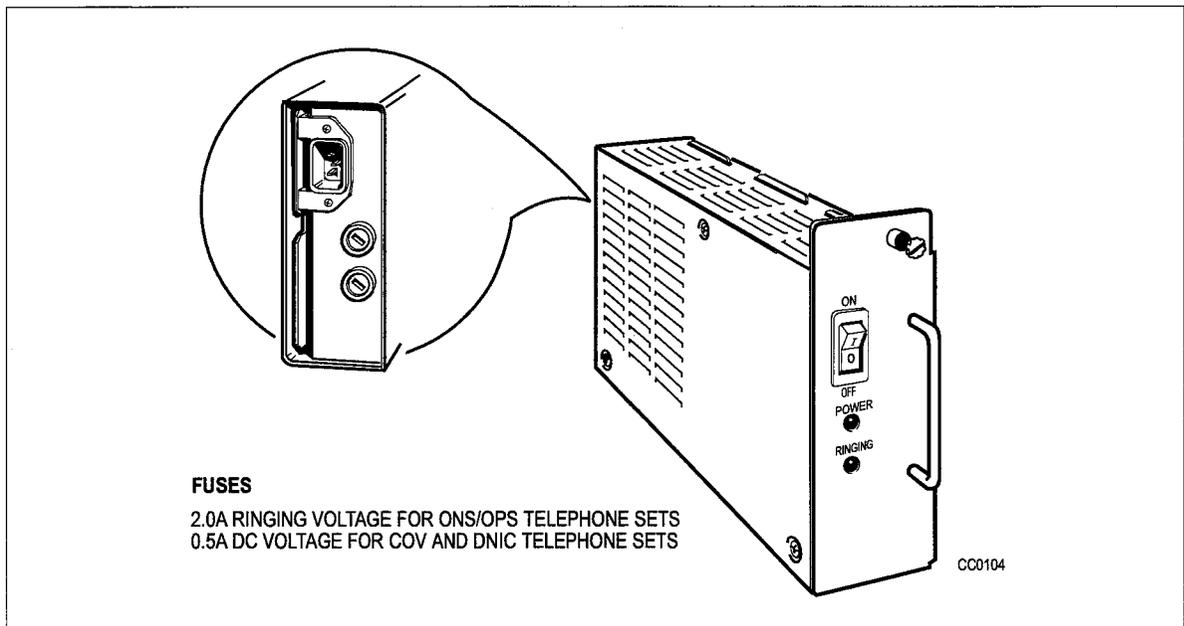


Figure 4-3 Bay Power Supply and Fuse Locations

| Table 4-4 Bay Power Supply Test Point Voltages | | |
|---|----------------|----------------|
| Voltage | Minimum | Maximum |
| + 5 Vdc | + 5.07 | + 5.23 |
| + 12 Vdc | + 10.8 | + 13.2 |
| - 12 Vdc | - 13.2 | - 10.8 |
| - 5 Vdc | - 5.5 | - 4.5 |
| - 28 Vdc | - 30.8 | - 23.8 |
| -48 Vdc | - 53.76 | - 40.8 |
| 90 Vac | 63.0 | 99.0 |

Uninterruptible Power Supply (UPS)

Any UPS may be used with the PABX, provided that it meets the requirements specified in the *Engineering Information Practice*. Since these are available from a number of suppliers, no troubleshooting procedures for the UPS are provided in this document. Reference should be made to the appropriate manual provided by the manufacturer of the UPS for any self-diagnostic capabilities.

5 Miscellaneous Troubleshooting Procedures

Maintenance Terminal

- 5.1 The device used as a maintenance terminal must satisfy the following:
- compatibility with RS-232C type interface protocol
 - 80 columns
 - compatibility with ANSI X3.64-1977 special character set for special graphics.

These procedures deal with the interface only. Reference should be made to the appropriate manual provided by the manufacturer of the terminal for any problems with the terminal itself. The following table outlines the most likely items to cause malfunction.

| Table 5-1 Maintenance Terminal Troubleshooting Procedures | |
|--|--|
| Step | Possible Malfunction Source |
| 1. | Keyboard locked - reset terminal. |
| 2. | Blown terminal fuse (if applicable). |
| 3. | Inconsistent communication parameters between terminal and port; default values are: <ul style="list-style-type: none"> • 8 data bits • 1 stop bit • no parity • ASCII character set • Xon/Xoff flow control. |
| 4. | Terminal in LOCAL mode - put into ON LINE mode - see manufacturer's instructions. |
| 5. | Terminal requires reset (or X-ON, or CONTROL-S - see manufacturer's instructions). |
| 6. | Faulty connection between the terminal and its power source. |
| 7. | Faulty terminal. |
| 8. | Main Control requires reload - press <i>RESET</i> on the Main Control Card II front panel. |
| 9. | Faulty Main Control Card II. |
| 10. | Faulty interface between rear panel and MCC II. |
| 11. | A terminal is already logged into the CDE or maintenance application at another location). |
| 12. | Power up and power down Bay Power Supply. |

- Note:**
1. Refer to the *RS-232 Maintenance Terminal Practice*, for details on setting communication parameters.
 2. The system does not have a maintenance panel. The maintenance port is accessed at the rear of the cabinet.
 3. To connect the terminal's 25 pin RS232 connector to the system's 9 pin mini D connector requires the use of a 9 pin to 25 pin RS232 adapter. This is a standard off-the-shelf part found in most computer supply stores.

System Printers

5.2 System printers must satisfy the following:

1. Compatibility with RS-232C type interface protocol (and support pins 2, 3, 4, 5 and 7).
2. Width of 80 columns.

Printers can be installed with the *SX-200 ML PABX* in different configurations:

1. Connected to the Cabinet's 9 pin PRINTER port.
2. Connected to the *SUPERCONSOLE 1000* console port.
3. Connected to the *MILINK* module.

Cabinet Printer Port

These procedures deal with the interface only. Reference should be made to the appropriate manual provided by the manufacturer of the printer for any problems with the printer itself. The following table outlines the most likely items to cause malfunction.

| Table 5-2 Cabinet Printer Port Troubleshooting Procedures | |
|--|---|
| Step | Possible Malfunction Source |
| 1. | Blown printer fuse (if applicable). |
| 2. | Inconsistent communication parameters between printer and port; PABX default values are: <ul style="list-style-type: none"> • 8 data bits • 1 stop bit • no parity • ASCII character set • Xon/Xoff flow control • 1200 baud (baud setting may be adjusted in Maintenance from 300 to 9600 baud). |
| 3. | Faulty connection between the printer and its power source. |
| 4. | Faulty CDE programming; likely form: Directed I/O. |
| 5. | Faulty connection between the printer's communication port and the Cabinet printer port. |
| 6. | Printer in LOCAL mode - put into ON LINE mode - see manufacturer's instructions. |
| 7. | Printer requires reset (or X-ON, or CONTROL-Q). |

Table 5-2 Cabinet Printer Port Troubleshooting Procedures (continued)

| Step | Possible Malfunction Source |
|-------------|--|
| 8. | Faulty printer. |
| 9. | Main Control requires reload - press <i>RESET</i> on the Main Control Card II front panel. |
| 10. | Faulty Main Control Card II. |
| 11. | Faulty interface between rear panel and MCC II. |
| Page 2 of 2 | |

Note: 1. Useful maintenance commands: LOGS PRINT, SUSPEND_PRTR, RESUME PRTR, SHOW DEVICE, SET SPEED, TEST DEVICE_TYPE MORE_KEYS PRINTER_PLID / PORT - see the *RS-232 Maintenance Terminal Practice*.

2. To connect the printer's 25 pin RS232 connector to the system's 9 pin mini D connector (see) requires the use of a 9 pin to 25 pin RS232 adapter. This is a standard off-the-shelf part found in most computer supply stores.

***SUPERCONSOLE 1000* Printer Port**

These procedures deal with the interface only. Reference should be made to the appropriate manual provided by the manufacturer of the printer for any problems with the printer itself. The following table outlines the most likely items to cause malfunction.

Table 5-3 *SUPERCONSOLE 1000* Printer Port Troubleshooting Procedures

| Step | Possible Malfunction Source |
|-------------|--|
| 1. | Blown printer fuse (if applicable). |
| 2. | Inconsistent communication parameters (both the <i>SUPERCONSOLE 1000</i> printer port and the printer should have exactly the same parameters. NOTE: 2400 is the maximum baud rate for this port). |
| 3. | Faulty connection between the printer and its power source. |
| 4. | Faulty connection between the printer's communication port and the <i>SUPERCONSOLE 1000</i> port. |
| 5. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • Directed IO • Console Assignment • Data Circuit Descriptor • Data Assignment • COS Define • System Configuration. |
| 6. | Printer in LOCAL mode - put into ON LINE mode - see manufacturer's instructions. |
| Page 1 of 2 | |

Table 5-3 SUPERCONSOLE 1000 Printer Port Troubleshooting Procedures (continued)

| Step | Possible Malfunction Source |
|------|---|
| 7. | Printer requires reset (or X-ON, or CONTROL-Q if applicable - see manufacturer's instructions). |
| 8. | Faulty printer. |
| 9. | Suspect <i>SUPERCONSOLE 1000</i> unit - refer to that procedure. |
| 10. | Reset console or reseal Digital Line Card. |

Page 2 of 2

Note: Useful maintenance commands: LOGS PRINT, SUSPEND_PRTR, RESUME PRTR, SHOW DEVICE, SET SPEED, TEST DEVICE_TYPE MORE_KEYS PRINTER_PLID / PORT - see the *RS-232 Maintenance Terminal Practice*.

System Fail Transfer

5.3 Note that these procedures are intended to deal with failure of the SFT system, not the activation of it.

A System Fail Transfer connector (an RJ11 modular jack) is located on the backplane. This connector is used to interface SFT equipment provided by external suppliers.

Table 5-4 System Fail Transfer Connector Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|---|
| 1. | External SFT equipment's bypass switch set incorrectly; refer to manufacturer's instructions for external SFT unit. |
| 2. | Faulty SFT connections - refer to manufacturer's instructions for external SFT unit. |
| 3. | Faulty connections between the MCC II and the system's SFT connector assembly - see Table 5-5. |
| 4. | Faulty connections between the SFT connector and external SFT unit. |
| 5. | Faulty connections at the cross-connect field - refer to manufacturer's instructions for external SFT unit. |
| 6. | Faulty external SFT unit. |
| 7. | Faulty power system - refer to Power Subsystem Troubleshooting procedure (if the -48 volt supply is not working). |

Note: Relay contact is open during normal system operation. It is closed to indicate SFT.

Table 5-5 System Fail Transfer (SFT) Connector Pin-Outs

| Pin No. | Wire Color | Signal | Comment |
|---------|------------|----------------------|--|
| 2 | Yellow | -48 | Voltage source for the external SFT transfer equipment. Note, this is limited to 250 mA. |
| 3 | Green | -48 return (GND) | Ground reference (return) for the external SFT transfer equipment |
| 4 | Red | SFT Relay (A) | First side of "normally closed" SFT control relay |
| 5 | Black | SFT Relay return (B) | Second side of "normally closed" SFT control relay |

Recorded Announcement Devices (RADs)

- 5.4 Reference should be made to the appropriate manual provided by the manufacturer of the RAD unit for any problems with the RAD unit itself. The following table outlines the most likely items to cause RAD malfunction.

Table 5-6 RAD Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|--|
| 1. | Faulty RAD. (See Note 2.) |
| 2. | Faulty connection between the RAD and the cross-connect field. |
| 3. | Faulty connection between the cross-connect field and the system. |
| 4. | Faulty CDE programming; likely forms: (See Note 3.) <ul style="list-style-type: none"> • COS Define • Hunt Groups • Station/<i>SUPERSET</i> Telephones • System Configuration. |
| 5. | Faulty ONS port. |
| 6. | Check items listed in Table 5-7. |
| 7. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, SHOW DEVICE, TEST DEVICE_TYPE ONS, SHOW STATUS SWID SW_HUNT_GRP <swid> CP_DWA (check stagger and o_msglen), TRAFFIC_MEAS READ (check hunt group busy peg) - see the *RS-232 Maintenance Terminal Practice*.
 2. Refer to the manufacturer's instructions to repair and troubleshoot a RAD unit. For cassette type units, tape wearout or dirty heads / dirty tape / dirty capstan are the most common failures.
 3. Avoid using discriminating ringing in the RAD COS; some operate only with standard ringing.

Table 5-7 Supplementary RAD Troubleshooting Procedures

| Problem | Possible Cause(s) |
|--|--|
| No recordings at all. | RADs are in busy-out or DND status - use SHOW STATUS command on the corresponding ONS circuit. |
| RAD message is cut off. | Check that the Message Length Timer in the Hunt Groups CDE form is long enough. |
| RADs go into DND state. | Check if Failure To Hang Up Timer (COS 404) is long enough for proper RAD clear down. |
| No message heard, but RAD rings and answers. | Check that the Message Length Timer in the Hunt Groups CDE form is long enough. |

Note: For further information, refer to the *Features Description Practice*, "RAD Support".

Night Bell Equipment

5.5 Night Bells are connected in 2 basic configurations:

Direct Connect Method: Night bells can be connected directly if the total current requirement does not exceed the relay contact ratings (see Figure 5-1).

Auxiliary Relay Method: Night bells must be connected through an auxiliary relay if the total current requirement exceeds the relay contact ratings (see Figure 5-2).

The DTMF Receiver / Relay module is installed on the Universal Card; it can be used as a night bell relay (2 circuits) - see the *Engineering Information Practice* for further information. Table 5-8 outline the most likely causes of night bell failure.

Table 5-8 Night Bell Troubleshooting Procedures

| Step | Possible Malfunction Source |
|------|---|
| 1. | Faulty night bell device. |
| 2. | Faulty external relay (auxiliary relay configuration only). |
| 3. | Faulty external relay connections (see Note 2). |
| 4. | Faulty connection between the night bell device and the cross-connect field. |
| 5. | Faulty connection between the cross-connect field and the system. |
| 6. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • System Configuration • Miscellaneous System Ports • Call Rerouting Table. |
| 7. | Faulty or improperly installed DTMF Receiver module on Universal Card. |
| 8. | Faulty Universal Card. |
| 9. | Faulty Universal Card modules (see Note 3). |

| Table 5-8 Night Bell Troubleshooting Procedures (continued) | |
|--|--|
| Step | Possible Malfunction Source |
| 10. | Faulty backplane cable connections between Bay Controller and Main Controller (672 port systems only). |
| 11. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |
| Page 2 of 2 | |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS - see the *RS-232 Maintenance Commands Practice*.
 2. Refer to the *Installation Information Practice*, for details on the installation of night bells using an auxiliary relay.
 3. Receiver / relay module malfunction could be caused by the failure of other module(s) on the Universal Card.
 4. A simple test for a relay circuit is: (a) disconnect the relay from external equipment at the MDF; (b) connect ohmmeter across relay leads - an open circuit should be read. If not, there is a problem with the module.

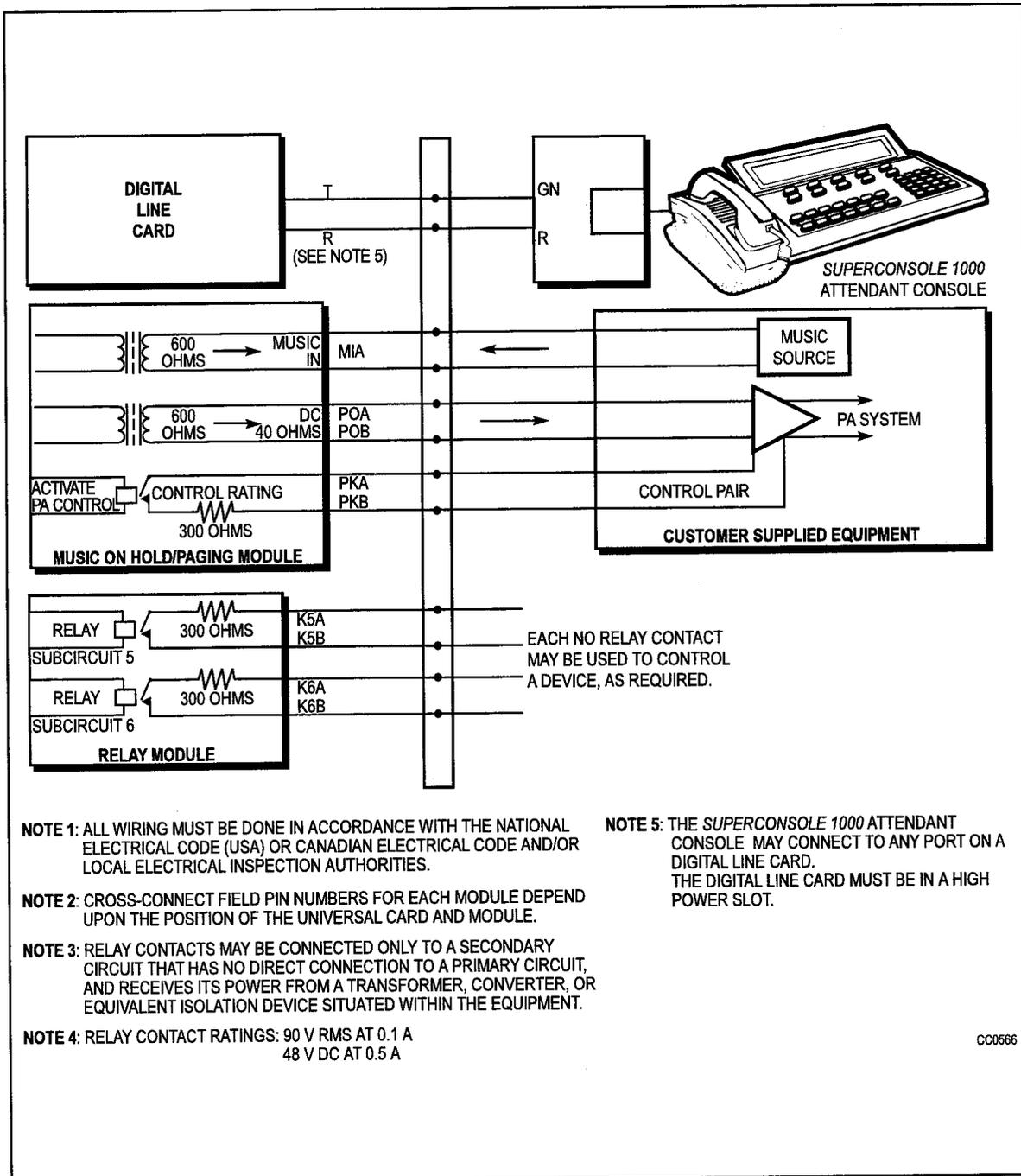


Figure 5-1 Music, Paging, Relay and Console Connections

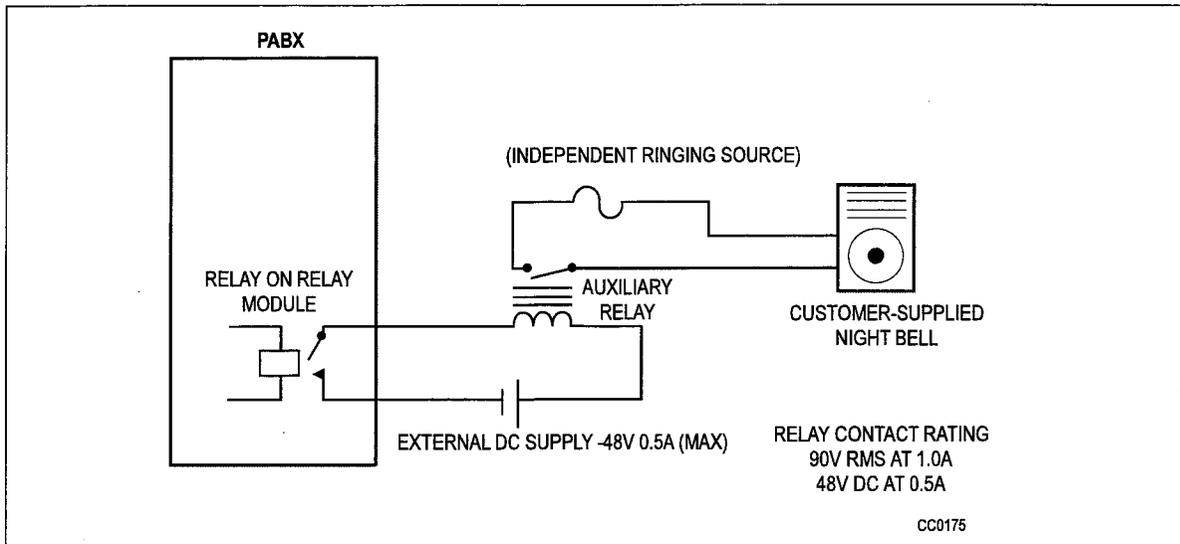


Figure 5-2 Night Bell Auxiliary Relay Configuration

Music-on-Hold/Pager Unit Troubleshooting

This section covers the Music-on-Hold/Pager Unit (PN 9401-000-010-NA). Table 5-9 outlines the most likely causes of malfunction.

Table 5-9 Music-on-Hold/Pager Unit Troubleshooting Summary

| Step | Possible Malfunction Source |
|------|--|
| 1. | Faulty connections between the <i>SX-200 ML</i> and the unit. Make sure that the status LED is either ON steadily (initialization complete) or winking (paging amplifier being used). Refer to the <i>Installation Information</i> practice (PN 9109-098-200-NA) for connector pin outs. |
| 2. | Problems with programming. Refer to the <i>Customer Data Entry</i> Practice. The forms to look at are: <ul style="list-style-type: none"> • Form 1 System Configuration. • Form 9 Stations/<i>SUPERSET</i> Telephones. • Form 18 Miscellaneous System Ports. • Form 3 COS Define. • Form 19 Call Rerouting Table. |
| 3. | <i>SX-200 ML</i> requires a reset, unplug its power cord and plug it back in. |
| 4. | Faulty external equipment or connections which can include: <ul style="list-style-type: none"> • External relays. • Night Bells and ringing voltage sources. • External Music Source. • External paging amplifier. |
| 5. | Faulty Music-On-Hold/Pager unit. |
| 6. | Faulty DNIC module on <i>SX-200 ML</i> . |
| 7. | Faulty Control module on <i>SX-200 ML</i> . |
| 8. | Other faulty <i>SX-200 ML</i> component. |

Hotel/Motel

5.6 The Hotel / Motel features can be accessed by 2 major interfaces - the attendant console, or the front desk interface. Some features can be accessed via *SUPERSET* telephones as well. Note that this section covers only the Hotel/Motel feature. The Property Management System (PMS) Interface feature is covered in paragraph 5.7.

See the *Hotel/Motel Feature Package Description Practice* for further information on Hotel/Motel features. The following table outlines the most likely causes of Hotel/Motel feature failure.

| Table 5-10 Hotel/Motel Troubleshooting Procedures | |
|--|--|
| Step | Possible Malfunction Source |
| 1. | Faulty front desk terminal device. |
| 2. | Blown terminal fuse (if applicable). |
| 3. | Faulty communication parameters - terminal and Dataset must have the same parameters. |
| 4. | Faulty connection between the terminal and its power source. |
| 5. | Faulty connection between the terminal's communication port and the Dataset port. |
| 6. | Faulty connection between the Dataset and the cross-connect field. |
| 7. | Faulty connection between the cross-connect field and the system. |
| 8. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • System Configuration • COS Define • all Dataset and/or console forms - refer to the appropriate procedure. |
| 9. | Suspect Dataset - refer to DATASET 1103/2103 - DTE MODE. |
| 10. | Suspect Digital Line Card - refer to DATASET 1103/2103 - DTE MODE. |
| 11. | Suspect console - refer to the appropriate procedure. |
| 12. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS - see the *RS-232 Maintenance Commands Practice*.
 2. Loop length limit for devices connected to Digital Line Card circuits is: 3300 ft with 26 AWG wire (with no bridge taps).

Property Management System Interface

5.7 The following table outlines the most likely items to cause PMS malfunction.

| Table 5-11 PMS Troubleshooting Procedures | |
|--|--|
| Step | Possible Malfunction Source |
| 1. | Faulty PMS interface system. |
| 2. | Faulty connection between the external equipment devices (if applicable) - see Figure 5-3. |
| 3. | Faulty connection between the PMS Interface system and the Dataset port. |
| 4. | Faulty connection between the Dataset and the cross-connect field. |
| 5. | Faulty connection between the cross-connect field and the system. |
| 6. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • Hotel Options Assignment • COS Define • Data Circuit Descriptors • Data Assignment • Console Assignment • System Configuration. |
| 7. | Dataset / Digital Line Card requires reset - refer to DATASET 1103/2103 - DTE MODE. |
| 8. | Faulty Dataset / Digital Line Card. |
| 9. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |

Note: Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS DATASETS - see the *RS-232 Maintenance Terminal Practice*.

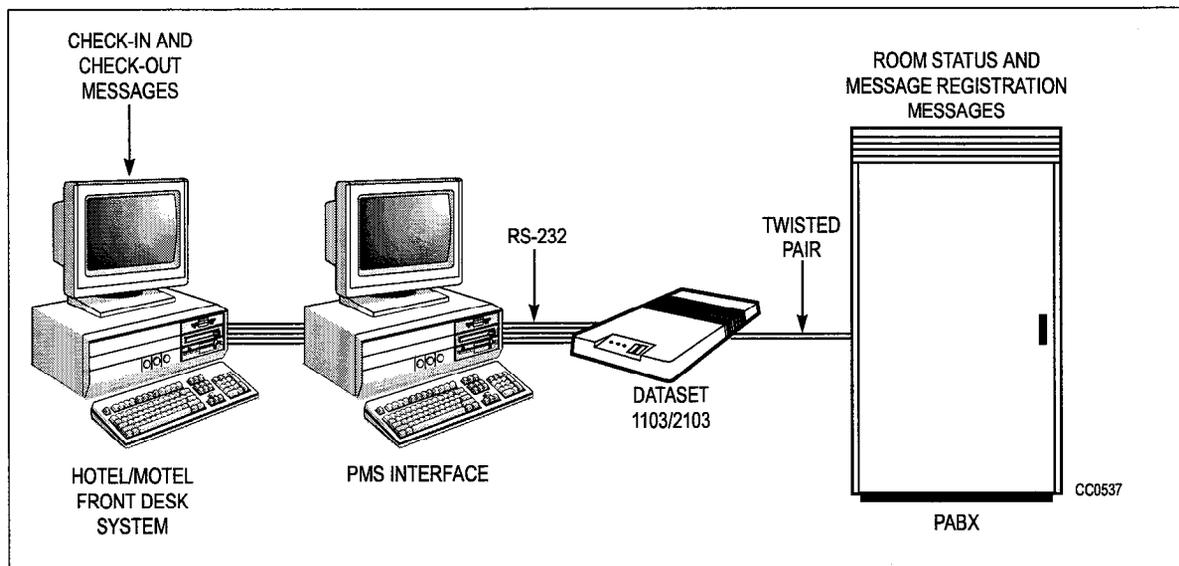


Figure 5-3 PMS Configuration (Typical)

Voice Mail Interface

COV Port Voice Mail

5.8 The following table outlines the most likely items to cause COV Voice Mail malfunction.

| Table 5-12 COV Voice Mail Troubleshooting Procedures | |
|---|---|
| Step | Possible Malfunction Source |
| 1. | Faulty external equipment (Voice-mail system) - see Note 2. |
| 2. | Faulty connection between the Voice-mail device and the cross-connect field. |
| 3. | Faulty connection between the cross-connect field and the system. |
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations/<i>SUPERSET</i> Telephones • Hunt Groups • System Configuration. |
| 5. | COV Card requires reset (reseat card). |
| 6. | Faulty COV Card. |
| 7. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |

- Note:**
1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS, SHOW ERRORS SS3_SS4 - see the *RS-232 Maintenance Terminal Practice*.
 2. For further information, refer to 9150-953-003-NA, VX Voice Processor Installation and Repair Manual VX-200/VX-400/VX-800 Systems.
 3. Loop resistance on the COV circuit should not exceed 200 ohms. Voltage across Tip and Ring should be between 40 and 48 V dc.

ONS Port Voice Mail

The following table outlines the most likely items to cause ONS Voice Mail malfunction.

| Table 5-13 ONS Voice Mail Troubleshooting Procedures | |
|---|--|
| Step | Possible Malfunction Source |
| 1. | Faulty external equipment (Voice-mail system) - see manufacturer's instructions. |
| 2. | Faulty connection between the Voice-mail device and the cross-connect field. |
| 3. | Faulty connection between the cross-connect field and the system. |
| Page 1 of 2 | |

Table 5-13 ONS Voice Mail Troubleshooting Procedures (continued)

| Step | Possible Malfunction Source |
|------|--|
| 4. | Faulty CDE programming; likely forms: <ul style="list-style-type: none"> • COS Define • Stations/<i>SUPERSET</i> Telephones • Hunt Groups • System Abbreviated Dial Entry • Feature Access Codes • System Configuration. |
| 5. | Faulty ONS Card. |
| 6. | Faulty peripheral switch or circuit switch - refer to 'Supplementary Peripheral Equipment Procedures'. |

Page 2 of 2

Note: 1. Useful maintenance commands: SHOW STATUS, TEST, SHOW ALARMS - see the *RS-232 Maintenance Terminal Practice*.

2. Loop length limit is 1400' ft with 26 AWG wire (with no bridge taps).

6 Software Troubleshooting Procedures

These procedures are intended for the sole purpose of troubleshooting problems with programming and setup of applications. Fully functional hardware is assumed in all cases.

Key System Features

| Table 6-1 Key System Troubleshooting | |
|--|--|
| Problem | Possible Cause/Solution |
| KEY SYSTEM PAGING | |
| You dial the Key System - Direct Paging feature access code and get reorder tone and the NO ACCESS message, or rerouted to the illegal number intercept. | <ul style="list-style-type: none"> Verify that the set is programmed as a key system set (Form 45). |
| GROUP PAGE | |
| After dialing the access code or pressing the Feature key you dial the # sign (end of dial character). You then get NO ACCESS and reorder tone, or are rerouted to the illegal number intercept. | <ul style="list-style-type: none"> Verify that a page group has been assigned. |
| After dialing the access code or pressing the Feature key you dial the # sign (end of dial character). You then get 1234 BUSY and busy tone. | <p>Possibly due to one of the following:</p> <ul style="list-style-type: none"> There is currently a group page in progress for your page group There are no members totally idle (idle or hfi) An all zone page is in progress No channels (system resource) available <p>Try the group page later.</p> |
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Table 6-1 Key System Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|---|
| DIRECTED PAGE | |
| After dialing the access code or pressing the Feature key you dial a destination. You then get NO ACCESS and reorder tone (or are rerouted to the illegal number intercept point). | <ul style="list-style-type: none"> • Verify that the destination is a valid Key System set extension number. • Check if the set is restricted from accessing the destination through tenanting - dial the destination directly and see whether you get NO ACCESS again. If so, this is NOT a problem with paging but rather the set is barred from ever calling this destination. |
| After dialing the access code or pressing the Feature key you dial a destination. You then get xxxx BUSY and busy tone at this point. | <ul style="list-style-type: none"> • The destination is not idle or hands free idle. • The set's INTERCOM line is in use by another set. • No channels (system resource) available. |
| GROUP PAGE MEET ME ANSWER | |
| Dial the Group Page - Meet Me Answer access code and you get reorder tone and NO ACCESS on the display, or you get rerouted to the illegal number intercept. | <ul style="list-style-type: none"> • Verify that the set is programmed as a key system set (Form 45) • Verify that the set has a page group assigned. |
| You get NO PAGE ACTIVE on a display set and reorder tone. | <ul style="list-style-type: none"> • The last page for the group was done more than 15 minutes ago (timed out). • The last telephone to page is no longer programmed in the data base. • The last telephone to page is no longer programmed in Form 45 (now programmed in Form 9). • There has not been a group page for the group since the last system reset. |
| STORE PERSONAL SPEED CALL | |
| You dial the access code and get NO ACCESS and REORDER tone. | <ul style="list-style-type: none"> • The set is not programmed as a key system set (Form 45). |
| You dial the access code followed by an index number and get NO ACCESS and REORDER tone, or you get rerouted to the illegal number intercept. | <ul style="list-style-type: none"> • The index number dialed was not between 1 and 5. |
| You dial the access code followed by an index number and get INVALID # and REORDER tone. | <ul style="list-style-type: none"> • The index number was dialed after the interdigit timer expired. |
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Table 6-1 Key System Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|---|--|
| You dial the access code followed by a VALID index and then digits and you get INVALID # and reorder tone. | <ul style="list-style-type: none"> • The index number was dialed after the interdigit timer expired. • Invalid number combination dialed: <ul style="list-style-type: none"> - * must be followed by 3, 5 or * - *3 must be followed by 01 to 14 - *5 must not be followed by further digits. |
| RETRIEVE PERSONAL SPEED CALL | |
| You dial the access code and get NO ACCESS and REORDER tone. | <ul style="list-style-type: none"> • Verify that the set is programmed as a key system set (Form 45). |
| You dial the access code followed by an index number and get NO ACCESS and REORDER tone, or you get rerouted to the illegal number intercept. | <ul style="list-style-type: none"> • The index number dialed was not between 1 and 5. |
| You dial the access code, followed by a valid index number, and get INVALID # and reorder tone. | <ul style="list-style-type: none"> • The interdigit timer expired. • Verify that the digits stored translate to a valid destination. • The speedcall number translation looped too many (more than 4) times within speedcall translation. (The speedcall translated into another speedcall which in turn translated into another speedcall, etc - and this occurred more than 4 times). |
| CO LINE KEY | |
| You get NO ACCESS and REORDER tone when the CO line key is pressed. | <ul style="list-style-type: none"> • The CO trunk associated with the key is not a member of a trunk group. • The set has hotel/motel feature enabled and the user is disallowed to make external calls. |
| You get INVALID # and REORDER tone after dialing a digit or several digits on the CO line. | <ul style="list-style-type: none"> • The user is restricted to dial this specific number based on the user's COR (check the COR restriction on the dialed number in Forms 20 and 46). • The user is required to dial account code prior to dialing. • The user is restricted from dialing this specific number on this CO Line (check digit string entries in Form 46). |
| You get NO ACCESS and REORDER tone after dialing a few digits. | <ul style="list-style-type: none"> • The user has exceeded the maximum number of digits that can be dialed based on the user's COR (check Form 27). |
| Press a CO line key and the key selection is ignored. | <ul style="list-style-type: none"> • The user is barred from making calls on the CO line based on the Device/Tenant Interconnection table (check Forms 5 and 30). |
| Page 3 of 4 | |

Table 6-1 Key System Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|--|
| LINE PREFERENCE | |
| You get SELECT A LINE after going offhook. | <ul style="list-style-type: none"> • The line preference is MANUAL. You are forced to select a line to originate calls. • The line preference is a CO Line Group Key and the Intercom Line is not available to make the call. • The line preference is not manual but the line is in use. |
| DIRECT CO LINE SELECT | |
| You get NO ACCESS and REORDER tone after dialing the Direct CO Line Select access code. | <ul style="list-style-type: none"> • Must use a key system telephone to access this feature. • The COS option "Key System - Direct CO Access" is disabled. |
| You get INVALID # and REORDER tone after dialing the Direct CO Line Select access code and a trunk number. | <ul style="list-style-type: none"> • The trunk number dialed is not a CO trunk. • The trunk number dialed is a DTS or Private trunk. • The trunk number dialed is not a programmed trunk. • The trunk number dialed is out of range (valid range is 1 - 200). • The feature was accessed via speedcall, and the speedcall digit string contained a trunk number of greater than 3 digits in length. |
| PROGRAM FEATURE KEY | |
| You get REORDER tone on a non-display set after the Program Feature Key access code is dialed. | <ul style="list-style-type: none"> • Another user is currently accessing the subform of Form 9 or Form 45 of this set. • The feature has been accessed via speed call, and the speedcall digit string contains more digits than expected (the speedcall string cannot have any digits following the Program Feature Key access code). |
| You get REORDER tone after you dialed the Program Feature Key access code and a line key is pressed. | <ul style="list-style-type: none"> • The line key selected is not a speedcall, DSS or feature key. |
| You get REORDER tone was heard after a a 2-digit feature code was dialed. | <ul style="list-style-type: none"> • The feature selected is already programmed on another key (check CDE). • User did not have proper COS for the selected Feature Key. • The feature code is out of range. |
| On a display set, the CHANGE or CLEAR softkey is not shown. | <ul style="list-style-type: none"> • Another user is currently accessing the sub-form of Form 9 or Form 45 of this set. |
| The feature you want to program does not appear on a display set. | <ul style="list-style-type: none"> • User does not have proper COS option enabled for the selected Feature Key. • The feature is already programmed on another key. |
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Hotel/Motel Feature Package

- 6.1 It is assumed that the system has been properly set up to allow data calls using the DTRX facility. Please note that in most cases if a System or COS option is enabled or disabled in CDE while the front desk terminal is displaying the applicable field, the terminal will not be updated until the display is re-drawn. This can be accomplished by typing control-r or control-w while in the screen or by exiting from the screen and re-entering the screen.

| Table 6-2 Hotel/Motel Troubleshooting | |
|---|--|
| Problem | Possible Cause/Solution |
| Entering MONITOR HM results in "Facility Not Available" message being displayed. | <ul style="list-style-type: none"> • Enable System option 33 "Room Status". |
| On entry to House Statistics screen ALL data fields are displayed as dashes ("-"). | <ul style="list-style-type: none"> • COS option 244 "Room Status Applies" must be enabled in all COS' that have guest room phones. After enabling, press the REFRESH softkey. |
| No guest rooms can be found search or Audits mode. | <ul style="list-style-type: none"> • COS option 244 "Room Status Applies" must be enabled in all COS' that have guest room phones. After enabling, press the REFRESH softkey. |
| Data displayed on House Statistics screen is wrong: too few guest rooms | <ul style="list-style-type: none"> • Some guest room phones are not programmed (Form 9) or are in a COS that does not have "Room Status Applies" enabled. |
| Pressing the YES softkey at the "Save changes to guest room before quitting?" prompt does not save the changes. | <ul style="list-style-type: none"> • Names will not be stored for vacant guest rooms - check the occupancy setting. |
| Data displayed on House Statistics screen is wrong: too many guest rooms | <ul style="list-style-type: none"> • Non - guest room phones are in a COS that has "Room Status Applies" enabled. |
| "Wake up Set" text field on House Stats screen is not displayed. | <ul style="list-style-type: none"> • Enable System option 11 "Automatic Wake-up" and redraw the screen. |
| "Call Blocking" text field on House Stats screen is not displayed. | <ul style="list-style-type: none"> • Enable System option 9 "Attendant Call Block" and redraw the screen. |
| MSG REG AUDIT softkey not provided. | <ul style="list-style-type: none"> • Enable System option 24 "Message Register Audit". |
| ROOMSTATUS AUDIT softkey not provided. | <ul style="list-style-type: none"> • Enable System option 27 "Room Status Audit". |
| WAKE UP AUDIT softkey not provided. | <ul style="list-style-type: none"> • Enable System option 13 "Automatic wake up print". |
| Unable to find any rooms of a particular TYPE in room search mode (or audit mode). | <ul style="list-style-type: none"> • The COS associated with the guest room phone(s) in question does not have "Room Status Applies" enabled. |
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Table 6-2 Hotel/Motel Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|--|
| Room Type field is displayed as a number instead of a NAME. | <ul style="list-style-type: none"> • COS for room type shown does not have name field programmed. |
| SET MESSAGE softkey is not displayed in Room Updates Form for non-display set room phones. | <ul style="list-style-type: none"> • COS for the guest room phone does not have COS option 231 or 232 (mes. waiting - BELL OR LAMP) enabled. |
| The SET MESSAGE softkey is not displayed for any guest room telephones. | <ul style="list-style-type: none"> • DIAL 0 routing in Form 19 MUST be set to a console or console LDN for all settings (DAY, N1, N2). |
| Room has a message but it can't be cleared by the front desk. | <ul style="list-style-type: none"> • Message is not from a console or console LDN (i.e., set to set message). |
| WAKEUP TIME text is not displayed in Room Updates form. | <ul style="list-style-type: none"> • Enable System option 11. |
| MESSAGE REGISTER text is not displayed in Room Updates form. | <ul style="list-style-type: none"> • Enable COS option 703 in guest room class of service. |
| DO NOT DISTURB text not displayed in Room Updates form. | <ul style="list-style-type: none"> • Enable COS option 220 in guest room class of service. |
| No ENTER key is provided after a name has been programmed in Room Updates form. | <ul style="list-style-type: none"> • Change the room occupancy to something other than vacant. |
| Unable to find guest names. | <ul style="list-style-type: none"> • Search string must be the starting letters of the last name of a guest room. |
| Non - guest names found when searching by name. | <ul style="list-style-type: none"> • Non guest room phones are in a COS with "Room Status Applies" enabled. |
| Unable to access Room Updates form. | <ul style="list-style-type: none"> • Logged in using the CDE attendant level password. Must logout and log back in using the CDE supervisor password. |
| Attendant level password allows access to Room Updates form. | <ul style="list-style-type: none"> • The CDE attendant and Supervisor passwords are identical. Change passwords in CDE Form 28 so they are different. |

Sub-Attendant (Enhanced Function)

6.2 This procedure deals with the Sub-attendant - Enhanced Function feature. It does not apply to the Sub-attendant - Basic Function feature.

| Table 6-3 Enhanced Function Sub-attendant Troubleshooting | |
|--|--|
| Problem | Possible Cause/Solution |
| PROGRAMMING: GENERAL | |
| The SUB-ATT softkey does nothing when pressed. | <ul style="list-style-type: none"> The maximum number of enhanced-function sub-attendants has already been programmed. |
| PROGRAMMING: LINE KEYS | |
| The LDN softkey does not appear in the expand set form. | <ul style="list-style-type: none"> There are already the maximum number of LDN keys (3) on the set. The LDN key is not programmable on a <i>PKM</i> Module associated with a sub-attendant station. |
| Cannot alter LDN key information. | <ul style="list-style-type: none"> An LDN may not be altered when it is engaged in an active call. |
| The RECALL softkey does not appear in the expand set form. | <ul style="list-style-type: none"> There are already the maximum number of RECALL keys (1) possible on the set. The RECALL key is not programmable on a <i>PKM</i> Module associated with a sub-attendant station. |
| The HOLD softkey does not appear in the expand set form. | <ul style="list-style-type: none"> There are already the maximum number of HOLD keys (3) possible on the set. The HOLD key is not programmable on a <i>PKM</i> Module associated with a sub-attendant station. |
| USING LDN KEYS | |
| Set is ringing with an LDN key LCD flashing and I can't answer the line. | <ul style="list-style-type: none"> Check that the caller can connect to the sub-attendant where the LDN is programmed. Sub-attendants and consoles which share LDNs must be in the same tenant group. Check that the prime line is free, since the LDN can only be answered if the set prime is available. |
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Table 6-3 Enhanced Function Sub-attendant Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|---|---|
| Calls to the LDN are not answered. | <ul style="list-style-type: none"> • Check that the calls are being noticed at the sub-attendant set. The RING option may be set to no ring for the appearance and so new calls may not be noticed. Instruct the sub-attendant on the Call Waiting indicator on the display or how to use the DISPLAY function on the set to see how many calls are waiting on the particular LDN or RECALL key. • Ensure that the proper LDN key is actually being called. Check the OTHER field in MAINT show status for the caller and make sure that it is referencing the correct LDN. • LDN appearances programmed as NO RING or as DELAY RING are considered lower priority calls before the delay ring timer has expired. Therefore, other calls to the set on ringing lines (other LDN appearances, RECALLs, calls to the prime line, etc.) will be answered first. |
| USING RECALL KEY | |
| Recalls go unanswered at the sub-attendant set. | <ul style="list-style-type: none"> • Check that other recall features are not taking priority over the recall to the sub-attendant set. • Check that a RECALL key is programmed at the set. If not, recalls will attempt to ring the sub-attendant prime line which must be idle at the time. If it is not idle, the calls will attempt to recall again in a short time. |
| Recall display is not there - only a normal display is shown. | <ul style="list-style-type: none"> • A recall feature which uses CDE Form 19 Rerouting has taken precedence - the call is routed to the sub-attendant in that manner rather than using the default recall handling. These calls will appear at a key other than the RECALL key. |
| The RING AGAIN prompt is not present. | <ul style="list-style-type: none"> • The prompt is only valid if the party that was answered can be put on consultation hold (i.e. they don't have a consultation hold, the party can be flashed on, etc.). The TRANS/CONF prompt is present on the Sub-attendant display if this is possible. |
| STATIONS SOFTKEY | |
| No features are available when the Stations softkey is pressed and an extension number is dialed. | <ul style="list-style-type: none"> • Ensure that the extension number is valid (the back arrow prompt will be showing still if the number is invalid). • Ensure that the appropriate COS options are enabled in the Sub-attendant's COS (it is not necessary in the extension's COS). |
| TIME/DATE SOFTKEY | |
| The softkeys for these features do not appear. | <ul style="list-style-type: none"> • Check that COS option 122 (Attendant Setup Time/Date) is enabled. |

| Table 6-3 Enhanced Function Sub-attendant Troubleshooting (continued) | |
|---|--|
| Problem | Possible Cause/Solution |
| PAGED HOLD ACCESS | |
| Paged Hold Access display doesn't show up when the Sub-attendant selects the pager. | <ul style="list-style-type: none"> • Check that the Sub-attendant has a caller on hold in a hold position. • Check that feature access code 16 (Hold Pickup Access - Attendant Hold Slots) is enabled. |
| C/W INDICATOR | |
| The Calls Waiting indicator shows calls waiting, but no LDNs or RECALL keys have calls on them. | <ul style="list-style-type: none"> • A night bell may be ringing. |
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Automatic Call Distribution (ACD)

6.3 Table 6-4 describes troubleshooting procedures for an ACD system.

| Table 6-4 ACD Troubleshooting | |
|--------------------------------------|---|
| Problem | Possible Cause/Solution |
| CALLING A PATH | |
| Caller gets reorder tone. | <ul style="list-style-type: none"> • Check that the correct access code is dialed. • Verify that the caller is not interflowing immediately to DROP CALL (the path called has Overflow to Interflow enabled, Interflow enabled, DROP CALL as the interflow point and there are no agents available to take the call within the overflow time). • If a DISA or CO trunk is calling, the trunk is loop start and the trunk's COS may have the option "Loop Start Trunk to ACD Connect" disabled. |
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Table 6-4 ACD Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|---|
| Interflow produces reorder tone. | <ul style="list-style-type: none"> • If the programmed interflow point is DROP CALL, and the caller is a display set, the display will indicate that the path has hung up on the caller. • If the programmed interflow point is a speedcall, keep in mind that the interflow is handled in the same way as a call forward to a speedcall. First, check that the speedcall number is a valid destination and that the caller can connect to that destination. If the caller is a display set, the display will indicate an invalid number or connection in this case. Next, verify that a receiver is available - one is needed to complete the speedcall. If there are no receivers immediately available at the time of the interflow, the ACD caller is dropped. The only indication of this will be a receiver unavailable peg in the traffic measurement report. The call will still show up in the ACD statistics as an interflow. |
| Trunk won't originate to a path. | <ul style="list-style-type: none"> • Check the party state of the trunk using SHOW STATUS. If it is not able to originate at all due to resource shortage, the state will be IDLE. In this case, check traffic measurement for <i>junctor/channel usage (most likely a junctor shortage problem in an analog bay)</i>. If the trunk is denied access to the routing point, or it is not programmed, the state will be ERROR. In this case, check the routing point in CDE Form 14 for the current night/day service. If correct, and it is an ACD path, and the trunk is loop start, check if the trunk's COS has the option "Loop Start Trunk to ACD Connect" enabled. |
| Caller runs right though the path and drops. | <ul style="list-style-type: none"> • Check if interflow is enabled and if overflow to interflow is enabled. If there is a shortage of agents, the system may be predictively overflowing to the interflow point. |
| Caller gets wrong agents. | <ul style="list-style-type: none"> • Check routing in Form 14 for CO trunks. • Check that the correct path is actually being dialed. • Check to see if the agents are picking up other agent's calls using the CALL PICKUP feature. |
| ACD RECORDINGS | |
| Can't get recordings. | <ul style="list-style-type: none"> • Check path programming. • Check RADs in RAD group using MAINT SHOW STATUS or the console STATIONS softkey. If all are in the DND state, check the programming on the RAD group and in the COS of the RADs (see section on recording malfunction) to see if timers are not setup properly. • Call RAD group directly and check that a RAD answers and gives the correct message. |

| Table 6-4 ACD Troubleshooting (continued) | |
|--|---|
| Problem | Possible Cause/Solution |
| Can't get first recording, but can get second recording. | <ul style="list-style-type: none"> The time for the second recording is occurring while waiting for the first recording, and the first recording is being abandoned. Make more recordings available in first group and increase the start time for the second recording (and subsequent recordings). |
| Silence between recordings. | <ul style="list-style-type: none"> System music is not programmed. System music not connected properly. System music does not have enough gain. |
| ALTERNATE MUSIC SOURCE | |
| Alternate music source not heard. | <ul style="list-style-type: none"> Check path (see previous - <i>Calling a Path</i>). Check the party state of the alternate music source - via SHOW STATUS. If state is ALTMUS, the port is plugged in and ready. Check the connections on the port. If the party state is not ALTMUS, the system has not seen the port go offhook, or the port was offhook when programmed as an alternate music source. It must be programmed first and then make the transition from IDLE to ALTMUS. Simply unplug and plug back in the alternate music source and it should go to ALTMUS state. If the alternate music source is functioning, check the recordings. Music will not be applied, unless a caller has been given a RAD to listen to first. |
| ACD POSITIONS | |
| An ACD position cannot log in. | <ul style="list-style-type: none"> A valid login feature access code and position id code must be used (check CDE). The display will indicate an invalid number dialed (all of the other errors will cause the display to indicate an invalid feature access attempt). The position must not already be logged in. Try dialing the position code - do you complete a call to the position? The <i>SUPERSET</i> telephone cannot have a party on consultation hold when the login is attempted. The number of agents logged in must not exceed the maximum number. Check the number of agents logged in using the ACD MONITORS feature. The position must have an ACD template enabled in its COS. Can the position log in at another telephone where another position of the same type was able to log in? To log in, the set must not having any appearances of its prime line anywhere in the system. To confirm this, do a review on the <i>SUPERSET</i> in Form 9. The <i>SUPERSET</i> telephone must not have a <i>PKM</i> Module associated with it. Check the ASSOC field in Form 09 for the circuit. |
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Troubleshooting

Table 6-4 ACD Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|--|
| An ACD position cannot log out. | <ul style="list-style-type: none"> • Check that the agent is not on an ACD call when this is attempted. This includes ACD calls on consultation hold and held on a line at the SUPERSET telephone. |
| Agents going make busy state. | <ul style="list-style-type: none"> • If the SUPERSET is connected to a circuit in an analog bay, check traffic measurement report for junctor shortage problems. As well, check if the SUPERSET users in the same bay report the message "NO DIAL TONE" or "SYSTEM BUSY" on their display. This indicates a receiver or junctor shortage problem. • Check set errors via SHOW ERRORS DEVICE-TYPE xxx command. • The set will be put into make busy if the set is disconnected, or loses communication with the system. • Check call forward no answer time in the COS of the set - this controls the automatic call failure timing. Increase the time if necessary. |
| ACD positions are unexpectedly logged out. | <ul style="list-style-type: none"> • If a telephone is unplugged, and replaced with a different type of telephone while an ACD position is logged in at that position, the ACD position is automatically logged out by the system. • Could be caused by a system reset - check for this. |
| Forwarding does not work after position logs in. | <ul style="list-style-type: none"> • Problems with forwarding to a speedcall key may arise with ACD position sets. • Forwarding to a speedcall key works by reference to the speedcall key number and not to the digits in the speedcall key. If a position logs at a set that has forwarding to a speedcall key, the forwarding on the set is not altered - the reference to the old speedcall key number remains. If the speedcall key is replaced by an ACD feature key because of the login, the forwarding will be to a key key which is now a feature key - this is illegal. When someone calls the set and the forwarding takes place, the forwarding will fail and the caller will get reorder tone. A similar problem will occur even if the speedcall key is not replaced by a feature key - it will be replaced by a blank speedcall key and so the forwarding will fail because there are no digits to dial. |

Automatic Attendant Overflow (AAO)

6.4 Table 6-5 describes troubleshooting procedures for an AAO system.

| Table 6-5 Auto Attendant Overflow Troubleshooting | |
|---|--|
| Problem | Possible Cause/Solution |
| Calls come in to a console/LDN but get the wrong message. | <ul style="list-style-type: none"> • Ensure that the RAD group (see CDE Form 19) for the tenant group of the called party is the correct one, and that the called party is in the correct day/night service. • Ensure that the RADs programmed for the RAD group in Form 17 are giving the correct message. Dial them directly to verify this. |
| Calls come in to a console but do not get the recorded message. | <ul style="list-style-type: none"> • Ensure that caller has COS option 705 Automatic Overflow from Attendant enabled. • Ensure that Day, Night1 and Night2 answer points are programmed in Form 19. • Ensure that RADs are usable (i.e. not all DND, and have a message recorded). This can be done by calling the RAD group directly, or by calling them individually. • Ensure that time to start recording is small enough. If it is set too high, the caller may be answered by the console before hearing the message. • Ensure that the call is not being dropped (due to the final Ring timer) prior to hearing a message (i.e., the final Ring timer may be set too low). |
| The caller is cut off in the middle of a recording. | <ul style="list-style-type: none"> • Ensure that the message length timer for the RAD group is long enough for the RAD message. • Ensure that the call is not being dropped due to the final Ring timer, which runs while listening to the recording. It should be at least the time to the recording plus the time to hear the recording. |
| Ringback followed by silence. | <ul style="list-style-type: none"> • Call may have been dropped, due to the final ringback timer. • Check via MAINTENANCE SHOW STATUS, the OTHER field for the caller, to see if it actually gets connected up to the recording. • There may not be a properly recorded message on the RAD (the recording may be silence). Call the RAD directly to verify this. |

Automated Attendant

6.5 Table 6-6 describes troubleshooting procedures for an Automated Attendant system.

| Table 6-6 Automated Attendant Troubleshooting | |
|---|--|
| Problem | Possible Cause/Solution |
| Call is never answered by RAD. The call always routes to the default destination. | <ul style="list-style-type: none"> • Ensure that RAD is functioning (not all DND or busied-out). Use MAINTENANCE or the attendant console to check the DND status of the device. (Use SHOW STATUS command.) • Ensure that the RAD message length is not too short. If the message length for the RAD group is very short, the RAD may not even get a chance to play its message. • Check traffic measurement for skip pegs for the group. This will indicate a shortage of RADs or receivers. • Check the wait-for-resources time for the group. It may be too short, resulting in there being not enough recordings for the number of callers (given the length of time that the recording plays). The time must be at least as long as the turn around time for the RADs in the group, since this is the longest time that a waiting caller will have to wait if there are receivers available. Competition for receiver resources will increase this wait time. |
| Call is dropped when caller dials no digits. | <ul style="list-style-type: none"> • Ensure that there is a default destination for the group. |
| Recording does not end when digits are dialed. | <ul style="list-style-type: none"> • Ensure that the option "Dialing Over Recording" is ENABLED for that auto-attendant group. • In the case of an attendant calling, the console must have TONES ON in order to perform end-to-end signaling and dial over the auto-attendant recording. |
| Caller gets the wrong message. | <ul style="list-style-type: none"> • Ensure that message was recorded correctly. • Ensure that RAD is programmed in the correct group (use the EXT NUM softkey in CDE Form 17 to find the RAD). • Ensure that RAD is plugged in at correct extension by dialing the RAD extension number directly. |
| Dialing is slow and SUPERSET telephone displays SYSTEM BUSY. | <ul style="list-style-type: none"> • There may not be enough non-auto-attendant receivers allocated. Check traffic measurement for receiver attempt pegs and adjust the receiver count for non-auto-attendant features in the system options form if necessary. |

Call Forwarding

6.6 Table 6-7 outlines the procedure for troubleshooting Call Forwarding.

| Table 6-7 Call Forwarding Troubleshooting | |
|---|--|
| Problem | Possible Cause/Solution |
| No access to call forwarding. | <ul style="list-style-type: none"> • If an attendant, ensure that COS option 123 - Attendant Call Forward Setup And Cancel is enabled. • If an extension user, ensure that at least one of the following COS options is enabled: <ul style="list-style-type: none"> - 206 - Call Forward - Busy - 207 - Call Forward - Don't Answer - 209 - Call Forward - Follow Me |
| No access to split (internal / external) call forwarding. | <ul style="list-style-type: none"> • Ensure that COS option 260 Internal/External Split Call Forwarding is enabled. |
| Reorder tone and/or INVALID error message. | <ul style="list-style-type: none"> • Ensure that the forwarding destination you are entering is valid. The forwarding destination must be (directly or translate into) one of the following: <ul style="list-style-type: none"> - an industry standard telephone - a <i>SUPERSET</i> telephone - an attendant console - a hunt group (not data or modem) - a night bell - an ACD path - a dial 0 access code - an LDN • The extension must be allowed (i.e., device interconnection) to connect to the forwarding destination. • The forwarding destination must not have COS option 234 - Never A Forwardee enabled. • The forwarding destination cannot be the same as your extension number (i.e. you can't forward to yourself). • If entering a personal abbreviated dial access code as a forwarding destination, the forwarding extension must be programmed as a key system set. |

Table 6-7 Call Forwarding Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|---|
| <p>Reorder tone and/or INVALID error message. (cont'd)</p> | <ul style="list-style-type: none"> • If entering a personal or system abbreviated dial access code as a forwarding destination, the forwarding extension must have the following COS option settings: <ul style="list-style-type: none"> - 245 - Abbreviated Dialing Access - enabled - 208 - Call Forwarding - External - enabled - 200 - Account Code, Forced Entry - External Calls - disabled. • If entering a personal speedcall button as a forwarding destination, the forwarding extension must have the following COS option settings : <ul style="list-style-type: none"> - 208 - Call Forwarding - External - enabled - 200 - Account Code, Forced Entry - External Calls - disabled. • Programming call forwarding while a system copy database operation is in progress is not permitted. • If programming "I'm Here" forwarding, the from party must be a industry standard telephone or a <i>SUPERSET</i> telephone, and cannot be a member of any type of voice mail hunt group. • If programming forwarding using dialed forwarding access codes, verify the following: <ul style="list-style-type: none"> - the extension is permitted access to the feature, - For feature access codes 03, 04 and 05, the access code is entered, followed by one of: 1 (always), 2 (busy), 3 (no answer) or 4 (busy/no answer). |
| <p>Calls are not being forwarded properly.</p> | <ul style="list-style-type: none"> • If a display set user, use the appropriate softkeys to examine the current forwarding settings. The forwarding may have been changed by the attendant console or a sub-attendant. • If the forwarding was set using a personal speedcall button, ensure that the contents of the button still translate into a valid forwarding destination. Ensure using Form 9/ Form 45 that the key is still in fact programmed as a speedcall key. • Ensure that the COS options permit Call Forwarding. Check specifically COS options 200, 206, 207, 208, 209, 245, and 260. Consult the <i>Features Description</i> practice for proper settings. • Ensure that the forwarding destination is idle and has COS option 234 - Never A Forwardee disabled. • Ensure that the forwarding destination has not been deprogrammed. |

Table 6-7 Call Forwarding Troubleshooting (continued)

| Problem | Possible Cause/Solution |
|--|--|
| Calls are not being forwarded properly. (cont'd) | <ul style="list-style-type: none"> • Note that calls will not be forwarded if: <ul style="list-style-type: none"> - it is the attendant or a <i>SUPERSET</i> telephone that is overriding/intruding - it already has been forwarded via any type of speedcall - it already has been forwarded twice without being answered or rerouted. • If a logical line appears on the extension and on another extension, calls to the first extension on the logical line will not be forwarded. • If the last programmed call forwarding with COS option 260 (Internal/External Split Call Forwarding) enabled and subsequently the option was disabled, calls will be forwarded according to the external forwarding settings. • Any changes in device interconnection rules may prohibit calls from being forwarded. Ensure that the calling party can indeed connect to the forwarding destination. • Trunk calls to the extension will not be forwarded if calls are forwarded using any type of speedcall, with System option 21 (Incoming To Outgoing Call Forward) disabled. • Calls will not be forwarded if the forwarding destination is the same as the calling party (i.e., calling party cannot be forwarded to itself). • Cannot forward a caller to a busy hunt group if the caller does not have the capability of camping on to the hunt group. • Cannot forward calls from the attendant console if the forwarding destination is a Dial 0 Access Code. • If forwarded via a speedcall of any type, the system may be encountering difficulty acquiring the necessary resources to complete the forwarding. Ensure that there are ample available receivers and/or outgoing trunks to allow this type of forwarding. |

SUPERSET Telephones

Table 6-8 SUPERSET Telephone Troubleshooting

| Problem | Possible Cause/Solution |
|--|--|
| <p>Audio always come out of the handset, even when onhook.</p> | <ul style="list-style-type: none"> • Check that COS option 612 - Headset Operation is not enabled in the set COS, the ACD position COS or the COS of a verified account code that the user dialed. This is usually the source of the problem. • Ensure that the call is not being answered handsfree when COS option 612 - Headset Operation is enabled in the set's COS. The call will go to the handset even if the call is answered using the speaker key or a line key. • Run the loopback test to ensure that the hookswitch is working correctly. |

7 Maintenance Log Messages

General

7.1 This part contains the complete set of information messages which are recorded in the maintenance log when a significant event occurs. Each message is self-explanatory, identifying the event and providing details about it. Information on options available to maintenance personnel is included under the Action Required heading.

There are three types of log reports:

1. **Fault Report** - a report generated when the maintenance system or Call Processing detects a fault, or an abnormal condition.
2. **Reset Report** - a report generated when a bay or the system is reset.
3. **Alarm Report** - a report generated when a change in any of the alarm levels occurs.

This part is divided into three sections which correspond to the three types of log messages. The Fault Reports section is arranged using the Alarm Code, an index number specific to the type of fault indicated. The Reset and Alarm Report sections are arranged in a logical manner.

Information on access to the maintenance log, and the use of other maintenance tools may be found in the *RS-232 Maintenance Terminal Practice*. Information on overall maintenance philosophy and specific diagnostic tests may be found in the *General Maintenance Information Practice*.

Table 7-1 Fault Reports

| Alarm Code | Message | Action Required |
|------------|--|---|
| 06 | ONS card failed at 02 01 01 00 ext 2101 inject codec test Alarm Code = 06 COV card failed at 01 05 01 00 ext 1501 inject codec test Alarm Code = 06 LS/GS trnk card failed at 02 02 01 00 inject codec test Alarm Code = 06 E&M module failed at 02 02 01 00 inject codec test Alarm Code = 06 DTMF RX module failed at 02 02 01 00 inject codec test Alarm Code = 06 | Do a directed test on the specified circuit to verify the problem. If the problem persists, refer to the Fault Isolation part of this Practice. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|------------|---|--|
| 07 | ONS card failed at 02 01 01 00 ext 2101 Dgl L/B codec test Alarm Code = 07 COV card failed at 01 05 01 00 ext 1501 Dgl L/B codec test Alarm Code = 07 LS/GS trnk card failed at 02 02 01 00 Dgl L/B codec test Alarm Code = 07 E&M module failed at 02 02 01 00 Dgl L/B codec test Alarm Code = 07 DTMF RX module failed at 02 02 01 00 Dgl L/B codec test Alarm Code = 07 | Do a directed test on the specified circuit to verify the problem. If the problem persists, refer to the Fault Isolation part of this Practice for this card or module. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 08 | ONS card failed at 02 01 01 00 ext 2101 Ang L/B codec test Alarm Code = 08 COV card failed at 01 05 01 00 ext 1501 Ang L/B codec test Alarm Code = 08 LS/GS trnk card failed at 02 02 01 00 Ang L/B codec test Alarm Code = 08 E&M module failed at 02 02 01 00 Ang L/B codec test Alarm Code = 08 DTMF RX module failed at 02 02 01 00 Ang L/B codec test Alarm Code = 08 | Do a directed test on the specified circuit to verify the problem. If the problem persists, the fault is isolated to the specified circuit. Refer to the appropriate part of this Practice. Replace as required. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 09 | ONS card failed at 02 01 01 00 ext 2101 Message lamp test Alarm Code = 09 | The specified station has been unplugged, or lamp bulb needs to be replaced. |
| 10 | ONS card failed at 02 01 01 00 ext 222 Hook test Alarm Code = 10 | Do a directed test on the specified circuit to verify the problem. If the problem persists, refer to the ONS Line Card part of this Practice. Replace as required. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 11 | ONS card failed at 02 01 01 00 ext 2101 Adc reference test Alarm Code = 11 LS/GS trnk card failed at 02 02 01 00 Adc reference test Alarm Code = 11 | Do a directed test on the specified circuit to verify problem. If the problem persists, refer to the Fault Isolation part of this Practice. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 12 | Card read test Alarm code = 12 | |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|------------|---|---|
| 13 | LS/GS trnk card failed at 02 02 01 00 Hybrid loopback test Alarm Code =13 | Do a directed test on the specified circuit to verify the problem. If the problem persists, the fault is isolated to the specified circuit. Refer to the appropriate part of this Practice. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 14 | DIG line card failed at 01 08 01 01 ext 111 DNIC output L/B test Alarm Code =14 | DNIC chip failed at circuit 01. Problem with DIGITAL Line Card. |
| 15 | DIG line card failed at 01 08 01 01 ext 111 DNIC input L/B test Alarm code =15 | DNIC chip failed at circuit 07. Problem with DIGITAL Line Card. |
| 16 | DIG line card failed at 01 08 01 01 ext 111 dn set c/s test Alarm Code = 16 | Replace the specified digital <i>SUPERSET</i> telephone. |
| 17 | DIG line card failed at 01 08 01 01 ext 122 dn set bphone test AlarmCode = 17 | Replace the specified digital <i>SUPERSET</i> telephone. |
| 18 | DIG line card failed at 01 08 01 01 ext 122 dn set t'ducer test Alarm Code=18 | Replace the specified digital <i>SUPERSET</i> telephone. |
| 19 | DIG line card failed at 01 08 01 02 ext 222 dataset L/B test Alarm Code = 19 | Replace the specified dataset. |
| 20 | DTMF RX module failed at 02 02 01 00 DTMF receiver test Alarm Code = 20 | Do a directed test on the specified circuit to verify the problem. If the problem persists, the fault is isolated to the specified DTMF Receiver. Refer to the DTMF Receiver part of this Practice. Otherwise, investigate further, using the MONITOR DIAGNOSTICS and SHOW STATUS commands. |
| 21 | PRINTER failed at 00 00 02 00 Printer test Alarm Code = 21 | Do a directed test on the printer to verify this. Check if printer is off-line or disconnected. Refer to printer troubleshooting procedures. |
| 34 | Link 07 Channel 19 Failed isol to mcc PCM loopback test Alarm Code = 34 | Failure on DX module. Replace Main Control Card II. |
| 36 | DIG line card passed at 01 08 01 01 ext 111 Alarm Code = 36 | Information only. Previous problem corrected. |
| 40 | ONS card failed at 03 01 01 00 Analog 8804 test Alarm Code = 40 | Card fault - replace card. |
| 41 | ONS card failed at 03 01 01 00 Analog 8804 test Alarm Code = 41 | Card fault - replace card. |
| 42 | ONS card failed at 03 01 01 00 No path to junct ## Alarm Code = 42 | Card fault - replace card. |
| 43 | DIG line card failed at 01 08 01 01 ext 111 dn set earpiece test Alarm Code = 43 | Refer to Digital set troubleshooting procedures. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|------------|---|--|
| 44 | DIG line card failed at 02 02 01 00 ext 111 dn set speaker test Alarm Code = 44 | Refer to Digital set troubleshooting procedures. |
| 45 | DIG line card failed at 02 02 01 00 ext 111 dn set microphe test Alarm Code = 45 | Refer to Digital set troubleshooting procedures. |
| 46 | DIG line card failed at 02 02 01 00 ext 211 dn set mouthpce test Alarm Code = 46 | Refer to Digital set troubleshooting procedures. |
| 47 | T1 trunk card failed at 01 06 01 00 Trk 19 t1 channel L/B test Alarm Code =47 | Refer to T1 Trunk troubleshooting procedures. |
| 48 | DIG line card failed at 05 01 01 Modem answer test Alarm Code = 48 | The modem at this location is not able to answer a call. Refer to applicable Dataset Troubleshooting procedure. |
| 49 | DIG line card failed at 05 01 01 Modem originate test Alarm Code = 49 | The modem at this location is not able to originate a call. Refer to applicable Dataset Troubleshooting procedure. |
| 52 | ONS card failed at 03 01 01 00 Analog 8804 test Alarm Code = 52 | Card fault - replace card. |
| 53 | ONS card failed at 03 01 01 00 No path to junct # # Alarm Code = 53 | Card fault - replace card. |
| 57 | Link 07 Channel 19 failed Junctor l/back test Alarm Code = 57 | Do a directed test on the specified link to verify the problem. Refer to the <i>Engineering Information Practice</i> for link assignments. Investigate further, using the MONITOR DIAGNOSTICS command. |
| 101 | ONS card failed at 02 01 01 00 ext 2101 OFF hook too long Alarm Code = 101 COV card failed at 01 05 01 00 ext 1501 OFF hook too long Alarm Code = 101 | Information only. |
| 102 | ONS card failed at 02 01 01 00 ext 2101 Card removed Alarm Code = 102 COV card failed at 01 05 01 00 ext 1501 Card removed Alarm Code = 102 DIG line card failed at 03 01 01 01 Card removed Alarm Code = 102 LS/GS trnk card failed at 02 02 01 00 Tk 9 Card removed Alarm Code = 102 CO trunk card failed at 02 02 01 00 Tk 09 Card removed Alarm Code = 102 | Verify card has been removed. If alarm is raised due to this, either replace/re-install the card, or deprogram it via CDE. Refer to the <i>Customer Data Entry Practice</i> for details. |

| Table 7-1 Fault Reports (continued) | | |
|--|--|------------------------|
| Alarm Code | Message | Action Required |
| 102 (cont'd) | <p>E&M trunk card failed at 02 02 01 00 Tk9 Card removed Alarm Code = 102</p> <p>DID trunk card failed at 02 02 01 00 Tk9 Card removed Alarm Code = 102</p> <p>UNIVERSAL card failed at 02 03 01 00 Card removed Alarm Code = 102</p> <p>T1 trunk card failed at 02 06 00 00 Card removed Alarm Code = 102</p> | |
| 103 | <p>ONS card passed at 02 01 01 00 ext 2101 Card installed Alarm Code = 103</p> <p>COV card passed at 01 05 01 00 ext 32 Card installed Alarm Code = 103</p> <p>DIG line card passed at 03 01 01 01 Card installed Alarm Code = 103</p> <p>LS/GS trnk card passed at 02 02 01 00 Tk 9 Card installed Alarm Code = 103</p> <p>CO trunk card passed at 02 02 01 00 Tk08 Card installed Alarm Code = 103</p> <p>E&M trunk card passed at 02 02 01 00 Tk8 Card installed Alarm Code = 103</p> <p>DID trunk card passed at 02 02 01 00 Tk 8 Card installed Alarm Code = 103</p> <p>UNIVERSAL card passed at 02 03 01 00 Card installed Alarm Code = 103</p> <p>T1 trunk card passed at 02 06 00 00 Card installed Alarm Code = 103</p> | Information only. |
| | | Page 5 of 15 |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|------------|--|---|
| 104 | ONS card failed at 02 01 01 00 ext 2101 Wrong card in slotAlarm Code = 104 COV card failed at 01 05 01 00 ext 1501 Wrong card in slotAlarm Code = 104 LS/GS trk card failed at 02 02 01 00 Tk 08 Wrong card in slotAlarm Code = 104 CO trunk card failed at 02 02 01 00 Tk 8 Wrong card in slotAlarm Code = 104 E&M trunk card failed at 02 02 01 00 Tk 8 Wrong card in slotAlarm Code = 104 DID trunk card failed at 02 02 01 00 Tk 09 Wrong card in slotAlarm Code = 104 UNIVERSAL card failed at 02 03 01 00 Wrong card in slotAlarm Code = 104 | The specified card type is not programmed for the specified card slot. Use the SHOW CONFIG command to observe the correct configuration. Either insert the correct card type, or reprogram the card slot (see the <i>Customer Data Entry Practice</i>). |
| 105 | COV card failed at 01 05 01 00 ext 1501 Superset unplugged Alarm Code = 105 | The specified extension has been unplugged. If this is not the case, check wiring. |
| 106 | Database failed at 00 00 04 00 Serious ram shortage Alarm Code = 106 | This is a warning. Stop CDE programming activity. Wait for a low traffic period, and reset the system. If this persists, search for an Alarm Code 108 message. Watch for further occurrences. |
| 107 | Database failed at 00 00 03 00 Serious CMOS shortage Alarm Code = 107 | This is a warning. Stop CDE activity. Wait for a low-traffic period, perform a COPY DATABASE, and reset the system using the new database. If this persists, search for an Alarm Code 109 message. Watch for further occurrences. |
| 108 | RAM failed at 00 00 04 00 No Ram space left Alarm Code = 108 | No further CDE programming will be possible. There is no RAM space available. Wait for a period of low traffic, and reset the system. If further programming is required, other devices, account code numbers, ARS strings, or speed call numbers will have to be deprogrammed. |
| 110 | ONS card failed at 02 01 01 00 ext 120 Msg reg overflow Alarm Code = 110 COV card failed at 01 05 01 00 ext 1501 Msg reg overflow Alarm Code = 110 | The message registration counter for the specified extension has overflowed. The overflow threshold is 50,000. Ensure that the counters are periodically reset at the Attendant Console. |

| Table 7-1 Fault Reports (continued) | | |
|-------------------------------------|---|---|
| Alarm Code | Message | Action Required |
| 111 | <p>LS/GS trnk card failed at 02 02 01 00 Trk 1 Can't seize trunk AlarmCode=111</p> <p>CO trunk card failed at 02 02 01 00 Trk 01 Can't seize trunk Alarm Code = 111</p> <p>E&M trunk card failed at 02 02 01 00 Tk2 Can't seize trunk Alarm Code = 111</p> <p>DID trunk card failed at 02 02 01 00 Tk7 Can't seize trunk Alarm Code = 111</p> | Verify the wiring from the trunk circuit to the public network. Correct as required. Refer to the <i>Installation Information Practice</i> . If this is not the problem, suspect failure or bad wiring at the Central Office. |
| 112 | <p>LS/GS trnk card failed at 02 02 01 00 Trk 1 Can't release trunk Alarm Code = 112</p> <p>CO trunk card failed at 02 02 01 00 Trk 1 Can't release trunk Alarm Code = 112</p> <p>E&M trunk card failed at 02 02 01 00 Tk7 Can't release trunk Alarm Code = 112</p> <p>DID trunk card failed at 02 02 01 00 Trk 7 Can't release trunk Alarm Code = 112</p> | No release signal was received from the Central Office. Verify wiring. Refer to the <i>Installation Information Practice</i> for details. |
| 113 | <p>UNIVERSAL card failed at 02 03 01 00 Exceeds power rating Alarm Code = 113</p> | The total power rating of the modules installed on the specified Universal Card exceeds the maximum permitted total power rating. Refer to the <i>Installation Information Practice</i> for details. |
| 114 | <p>PRINTER failed at 00 00 02 00 SMDR printer down Alarm Code = 114</p> | The printer used for SMDR printing is off-line or not working. Check printer. Refer to printer troubleshooting procedures. |
| 117 | <p>RAM failed at 00 00 05 00 CMOS checksum failed Alarm Code = 117</p> | This is not a serious problem if it occurs once. However, if it is persistent, refer problem to MITEL Field Service. |
| 118 | <p>COV card failed at 01 05 01 00 ext 1501 Card in low pwr slot Alarm Code = 118</p> <p>UNIVERSAL card failed at 02 03 01 00 Card in low pwr slot Alarm Code = 118</p> <p>DID card failed at 01 05 01 00 Card in low pwr slot Alarm Code = 118</p> <p>OPS card failed at 02 03 01 00 ext 1502 Card in low pwr slot Alarm Code = 118</p> | The specified card is a high-power card installed in a low power slot. Use SHOW CONFIG command to obtain information on the card slot. Re-install/reprogram the card for a high-power slot. |
| 121 | <p>PFT sense failed at 00 00 08 00 Bay has cut through Alarm Code = 121</p> <p>BAY failed at 03 00 00 00 Bay has cut through Alarm Code = 121</p> | The bay has gone into Power Fail Transfer mode. Use SHOW ALARMS command and examine logs further to find the actual cause of the cut through. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|------------|---|--|
| 122 | PFT sense passed at 00 00 08 00 Bay has cut back Alarm Code = 122 PFT sense passed at 03 00 00 00 Bay has cut back Alarm Code = 122 | The bay has been cut back to normal operation. Verify that appropriate action was taken to rectify the event which caused the cut through. |
| 123 | ONS card failed at 02 01 01 00 ext 123 Recording dev failed Alarm Code = 123 ONS card failed at 02 01 01 00 ext 2101 Recording device failed - false origination Alarm Code = 123 ONS card failed at 02 01 01 00 ext 2101 Recording device failed to hang up-lok Alarm Code = 123 ONS card failed at 02 01 01 00 ext 2101 Recording device failed to hang up - sus Alarm Code = 123 ONS card failed at 02 01 01 00 ext 2101 Recording device failed to answer Alarm Code = 123 ONS card failed at 02 01 01 00 ext 2101 Recording device failed - nil error Alarm Code = 123 | GENERAL: The recording device attached to the specified port has malfunctioned. Check wiring. Refer to the instructions provided by the manufacturer of the recording device. RAD failed to hang up - locked out. RAD failed to hang up - suspect state. |
| 124 | PRINTER failed at 00 00 02 00 Wakeup printer downAlarmCode=124 | The printer used for Hotel/Motel wakeup printing is off-line or not working. Check printer. Refer to Printer troubleshooting procedures. |
| 125 | ONS card failed at 02 01 01 00 ext 210 Wakeup not answered AlarmCode=125 COV card failed at 01 05 01 00 ext 111 Wakeup not answered Alarm Code=125 | Information only. |
| 126 | Any line card failed at 02 01 01 00 ext123 Plid Restored Alarm Code = 126 | Record this and watch for further occurrences. If system performance is degraded substantially, contact MITEL Field Service. |
| 128 | DTMF RX module failed at 02 02 01 00 Receiver locked out Alarm Code =128 | Reseat the affected Universal Card. |

| Table 7-1 Fault Reports (continued) | | |
|-------------------------------------|---|---|
| Alarm Code | Message | Action Required |
| 129 | <p>** anything ** failed at 00 00 00 00 Group_Link_Test not a proper member Alarm Code = 129</p> <p>** anything ** failed at 00 00 00 00 Group_Link_Test Invalid Group Link Alarm Code = 129</p> <p>** anything ** failed at 00 00 00 00 Group_Link_Test many members in Group Alarm Code = 129</p> <p>** anything ** failed at 00 00 00 00 Group_Link_Test nil error Alarm Code = 129</p> | Record this and watch for further occurrences. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If system performance is degraded substantially, contact MITEL Field Service. |
| 130 | <p>** anything ** failed at 00 00 00 00 Plid to Swid failed Alarm Code = 130</p> | Record this and watch for further occurrences. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If system performance is degraded substantially, contact MITEL Field Service. |
| 131 | <p>RAM failed at 00 00 04 00 CMOS VS Ram Failed Alarm Code=131</p> | Record this and watch for further occurrences. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If system performance is degraded substantially, contact MITEL Field Service. |
| 132 | <p>** anything** failed at 00 00 00 00 Key DB corrupt. Set has no prime key.</p> <p>** anything ** failed at 00 00 00 00 Key DB corrupt. Key data not for set.</p> <p>** anything **failed at 00 00 00 00 Key DB corrupt. Invalid key number.</p> <p>** anything **failed at 00 00 00 00 Key DB corrupt. Prime is not key 1.</p> <p>** anything **failed at 00 00 00 00 Key DB corrupt. Prime is not immediate ring.</p> <p>** anything **failed at 00 00 00 00 Key DB corrupt. Prime not in and out.</p> <p>** anything** failed at 00 00 00 00 Key DB corrupt. Line WA index wrong.</p> <p>** anything** failed at 00 00 00 00 Key DB corrupt. Line owner swid wrong.</p> <p>** anything** failed at 00 00 00 00 Key DB corrupt. Nil error.</p> | A CDE audit has failed. If this persists, attempt a COPY DATABASE as soon as possible. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If this still persists; contact MITEL Field Service. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|-----------------|---|--|
| 132 (cont'd) | <p>Key_DB_test failed at 00 00 00 00 ICM is not key 1</p> <p>Key_DB_test failed at 00 00 00 00 ICM not immed ring</p> <p>Key_DB_test failed at 00 00 00 00 ICM not in and out</p> <p>Key_DB_test failed at 00 00 00 00 Trk DTS and CO</p> <p>Key_DB_test failed at 00 00 00 00 Trk Private and CO</p> | <p>Key 1 is not programmed as an INTERCOM key - key 1 must be an INTERCOM key.</p> <p>The INTERCOM key is not programmed as IMMEDIATE RING - must be so.</p> <p>The DIRECTION for the INTERCOM key is not programmed as In/Out - must be so.</p> <p>A trunk has been programmed as a DTS key on a PBX SUPERSET telephone and a CO Line on a Key System SUPERSET telephone - this is not permitted.</p> <p>A trunk has been programmed as a PRIVATE key on a PBX SUPERSET telephone and a CO Line on a Key System SUPERSET telephone - this is not permitted.</p> |
| 133 | <p>** anything ** failed at 00 00 00 00 Trunk Number Corrupt.</p> | <p>A CDE audit has failed. If this persists, attempt a COPY DATABASE as soon as possible. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If this still persists; contact MITEL Field Service.</p> |
| 134 | <p>** anything ** failed at 00 00 00 00 Access Code Tbl Bad.</p> | <p>A CDE audit has failed. If this persists, attempt a COPY DATABASE as soon as possible. Perform a Verify Database operation and check for further occurrences of this Alarm Code. If this still persists; contact MITEL Field Service.</p> |
| 135 | <p>UPS sense failed at 00 00 09 00 UPS not available Alarm Code = 135</p> | <p>The Uninterruptible Power Supply is not operating. Check the relevant wiring (see the <i>Installation Information Practice</i>). Refer to the UPS part of this Practice.</p> |
| 136 | <p>UPS sense passed at 00 00 09 00 UPS available Alarm Code = 136</p> | <p>Information only.</p> |
| 137 | <p>UPS sense failed at 00 00 09 00 ac voltage failure Alarm Code = 137</p> | <p>The line ac voltage has failed. Ensure UPS is functioning.</p> |
| 138 | <p>UPS sense failed at 00 00 09 00 Battery/charger Alarm Code = 138</p> | <p>Either the battery is failing, or the battery charger is not functioning. Examine battery, charger, and wiring. Also refer to the instructions provided by the manufacturer of the UPS.</p> |
| 139 | <p>UPS sense failed at 00 00 09 00 AC/battery/charger Alarm Code = 139</p> | <p>There is no line ac voltage. Also, the battery is failing, or the charger is/was not functioning properly. Examine battery, charger and wiring. Also, refer to the instructions provided by the manufacturer of the UPS.</p> |

| Table 7-1 Fault Reports (continued) | | |
|--|--|---|
| Alarm Code | Message | Action Required |
| 141 | Nil device failed at 00 00 00 00 PMS is down Alarm Code = 141 | The PMS system failed to respond to 20 consecutive queries from the PABX. Refer to PMS procedures. |
| 142 | Nil device failed at 00 00 00 00 PMS is up Alarm Code = 142 | After failing to respond, the PMS system has now responded to a PABX enquiry. |
| 143 | Nil device failed at 00 00 00 00 PMS buffer is full Alarm Code = 143 | The system attempted to send a message to the PMS message buffer; buffer was full. If persistent, refer to PMS procedures. |
| 144 | Nil device failed at 00 00 00 00 No STX from PMS Alarm Code = 144 | PMS has sent the PBX an invalid START-OF-TEXT message. Refer to PMS procedures. |
| 145 | Nil device failed at 00 00 00 00 No ETX from PMS Alarm Code = 145 | PMS has sent the PBX an invalid END-OF-TEXT message. Refer to PMS procedures. |
| 146 | Nil device failed at 00 00 00 00 Bad PMS function Alarm Code = 146 | PMS has sent the PBX an invalid function message. Refer to PMS procedures. |
| 147 | Nil device failed at 00 00 00 00 Bad PMS status Alarm Code = 147 | PMS has sent the PBX an invalid status message. Refer to PMS procedures. |
| 148 | Nil device failed at 00 00 00 00 Bad PMS room number AlarmCode=148 | PMS has sent the PBX an invalid room number message. Refer to PMS procedures. |
| 149 | Nil device failed at 00 00 00 00 Cannot send PMS msg AlarmCode=149 | If the PMS refuses to accept a transaction from the PBX after five tries, the PBX will generate this log. |
| 150 | LS/GS trk card failed at 01 05 01 00 trk 001 Trunk no dial tone Alarm Code = 150 | This trunk was seized and after 10 seconds dial tone was not detected. The trunk has been busied out. |
| 151 | Link 07 Channel 19 Busied out Alarm Code = 151 | Device busied out by maintenance personnel. |
| 151 | ONS card failed at 01 01 01 00 ext 1101 Busied out Alarm Code = 151 | Device busied out by maintenance personnel. |
| 152 | ONS card passed at 01 01 01 00 ext 1101 Returned to service Alarm Code = 152 | Device returned to service by maintenance personnel. |
| 152 | Link 07 Channel 19 Returned to service Alarm Code = 152 | Device returned to service by maintenance personnel. |
| 155 | T1 trunk card passed at 01 06 01 00 Trk 019 has exceeded the maintenance slip threshold | The link has exceeded the specified threshold - this is a warning - watch for further occurrences. If persistent, refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card passed at 01 06 01 00 Trk 019 is now below the maintenance slip threshold | Link was running with errors, is now running at an acceptable error rate. Information only. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|-----------------|---|---|
| 155 (cont'd) | T1 trunk card at 01 06 01 00 Trk 019 has exceeded the service slip threshold | The link has exceeded the specified threshold. A yellow alarm has been sent to the far end, and the link has been removed from service, and a new sync source selected. The RTS - Service Limit timer has been started. Refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card at 01 06 01 00 Trk 019 has exceeded the maint loss frame threshold | The link has exceeded the specified threshold - this is a warning - watch for further occurrences. If persistent, refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card at 01 06 01 00 Trk 019 is now below the maint loss frame threshold | Link was running with errors, is now running at an acceptable error rate. Information only. |
| | T1 trunk card at 01 06 01 00 Trk 019 has exceeded the service loss frame threshold | The link has exceeded the specified threshold. A yellow alarm has been sent to the far end, and the link has been removed from service, and a new sync source selected. The RTS - Service Limit timer has been started. Refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card at 01 06 01 00 Trk 019 has exceeded the maintenance ber threshold | The link has exceeded the specified threshold - this is a warning - watch for further occurrences. If persistent, refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card at 01 06 01 00 Trk 019 is now below the maintenance ber threshold | Link was running with errors, is now running at an acceptable error rate. Information only. |
| | T1 trunk card at 01 06 01 00 Trk 019 removed from service and transmitting yellow alarm | Refer to T1 Trunk troubleshooting procedures. |
| | T1 trunk card at 01 06 01 00 Trk 019 is returned to service | The link yellow alarm has been cleared. Possibly the RTS service limit timer has expired, and the link is within an acceptable threshold allowing it to be returned to service. The link may now be used as the network sync source. Information only. |
| | T1 trunk card at 01 06 01 00 Trk 019 is receiving a yellow alarm | The link has received a yellow alarm condition from the far end, and has been removed from service. If this is the network sync source, a new source has been selected. Problem with either the local Channel Service Unit, or at the far end. |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|-----------------|--|--|
| 155 (cont'd) | <p>T1 trunk card at 01 06 01 00 Trk 019 is in red alarm condition due to loss of sync</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is in red alarm condition due to loss of power</p> <p>T1 trunk card at 01 06 01 00 Trk 019 exceeded sync slip thresh as current sync source</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is now below the net sync slip threshold</p> <p>T1 trunk card at 01 06 01 00 Trk 019 alarm condition is now cleared</p> <p>T1 trunk card at 01 06 01 00 Trk 019 System in freerun mode no sync source available</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is current sync source and is in auto mode</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is current sync source and is in manual mode</p> <p>T1 trunk card at 01 06 01 00 Trk 019 The system's previous sync source was freerun mode</p> <p>T1 trunk card at 01 06 01 00 Trk 019 was previous sync source in manual mode</p> | <p>There is no synchronization detected on the link; it has been removed from service. If this is the network sync source, a new source has been selected. Problem with either the local Channel Service Unit, or at the far end.</p> <p>No power on the link; it has been removed from service. If this is the network sync source, a new source has been selected. Problem with either the local Channel Service Unit, or at the far end.</p> <p>The link is the current network sync source - a new sync source has been selected. Refer to T1 troubleshooting procedures. If this message persists, may be necessary to make changes to the network synchronization source list.</p> <p>The RTS net slip timer has expired, and the link is within an acceptable threshold allowing it to be returned to service. The link may now be used as the network sync source. Information only.</p> <p>A red or yellow alarm has been cleared, and the RTS after alarm timer has expired. The link has returned to service. Information only.</p> <p>There is no network synchronization source that can be used (the source list has been exhausted) - the system is therefore in freerun mode. Refer to the T1 Trunk troubleshooting procedures. May be necessary to make changes to the network synchronization source list.</p> <p>The link is the new sync source, and the system is in auto mode. Information only.</p> <p>The link is the new sync source, and the system is in manual mode. Information only.</p> <p>There was a change in the network sync source. The system was previously in freerun mode. Information only.</p> <p>There was a change in the network sync source. The link was the old sync source, and the system was in manual mode. Information only.</p> |
| Page 13 of 15 | | |

Table 7-1 Fault Reports (continued)

| Alarm Code | Message | Action Required |
|-----------------|--|---|
| 155 (cont'd) | <p>T1 trunk card at 01 06 01 00 Trk 019 was previous sync source in auto mode</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is reporting unstable link (phase error)</p> <p>T1 trunk card at 01 06 01 00 Trk 019 is reporting unstable link (no phase error)</p> <p>T1 trunk card at 01 06 01 00 Trk 019 sync source manual timer has expired</p> <p>T1 trunk card at 01 06 01 00 Trk 019 No T1 clock module, running in freerun mode</p> <p>T1 Trunk card at 01 06 01 00 Trk 019 has 24th cct programmed. Wrong bay type reported.</p> <p>T1 trunk card at 01 06 01 00 Trk 019 created log for unknown reason</p> | <p>There was a change in the network sync source. The link was the old sync source, and the system was in auto mode. Information only.</p> <p>The link is reporting phase errors. If this is the network sync source, a new source has been selected. Problem with either the local Channel Service Unit, or at the far end.</p> <p>The link is no longer reporting phase errors. It is now available for use as the network sync source. Information only.</p> <p>The network sync source manual timer has expired and the system is changing from manual to auto or freerun mode. A network sync source is picked from the network synchronization source list. Information only.</p> <p>Links for network sync have been specified, but there is no T1 clock module in the system. The system is running in freerun mode as a result. Refer to Main Control Card II procedures.</p> <p>Delete programming for the 24th circuit from CDE Form 14 (Non-Dial-In Trunks) or Form 15 (Dial-In Trunks). Power down the bay and then power it up again to generate another bay status report.</p> <p>Non problem. If persistent, contact MITEL Field Service.</p> |
| 156 | DIG line card failed at 05 01 01 PST checksum failed Alarm Code =156 | Checksum of dataset firmware failed, replace set. Device will be busied out. |
| 157 | DIG line card failed at 05 01 01 PST RAM failed Alarm Code = 157 | RAM in dataset failed (external or 6803). Replace set. Device will be busied out. |
| 158 | DIG line card failed at 05 01 01 PST UART I/b failed Alarm Code =158 | UART loopback power up test failed; replace set. Device will be busied out. |
| 159 | DIG line card failed at 05 01 01 PST DNIC I/b failed Alarm Code =159 | DNIC loopback power up self test failed; replace set. Device will be busied out. |
| 160 | DIG line card failed at 05 01 01 PSC HDLC failed Alarm Code = 160 | HDLC controller failed in power up test; replace set. Device will be busied out. |
| 161 | DIG line card failed at 01 02 11 02 ext 123 Firmware trap Alarm Code = 161 | Firmware trap occurred in set; check power supply. The device will not be busied out. |

| Table 7-1 Fault Reports (continued) | | |
|--|--|---|
| Alarm Code | Message | Action Required |
| 162 | DIG line card failed at 01 02 11 02 ext 123 Flood of EIA input Alarm Code = 162 | Call Processing received more than 125 EIA input reports within 2 minutes while in the idle state; the data device was busied out. When the device is replaced, the data device will be unbusied. Check the equipment attached to the data device for a faulty EIA output. |
| 163 | DIG line card failed at 01 02 11 02 ext 123 Flood of ASCII input Alarm Code = 163 | A flood of ASCII characters (100 more than the maximum input) was received, and the data device was busied out. If the device is replaced the data device will be unbusied. Check the equipment attached to the data device for flooding of ASCII characters (such as a large file being dumped to the DTRX process). |
| 164 | NIL PLID failed at 00 00 00 00 Bad PMS Name Alarm Code = 164 | The name field received from the PMS system is improperly formatted, or is inconsistent with the name operator. Refer to PMS procedures. |
| 165 | NIL PLID failed at 00 00 00 00 Bad PMS Time Alarm Code = 165 | The time field received from the PMS system is improperly formatted. Refer to PMS procedures. |
| 166 | NIL PLID failed at 00 00 00 00 PMS requires console Alarm Code= 166 | Dial 0 routing for the PMS is not a console LDN or a console prime number. Problem either with PMS database or local PABX programming. |
| 170 | DIG line card failed at 05 01 01 Firmware trap Alarm Code = 170 | Firmware trap occurred in set; check power supply. The device will not be busied out. |
| 171 | DIG line card failed at 05 01 01 Flood of EIA input Alarm Code = 171 | Call Processing received more than 125 EIA input reports within 2 minutes while in the idle state; the data device was busied out. When the device is replaced, the data device will be unbusied. Check the equipment attached to the data device for a faulty EIA output. |
| 172 | DIG line card failed at 05 01 01 Flood of ASCII input Alarm Code = 172 | A flood of ASCII characters (100 more than the maximum input) was received, and the data device was busied out. If the device is replaced the data device will be unbusied. Check the equipment attached to the data device for flooding of ASCII characters (such as a large file being dumped to the DTRX process). |

| Table 7-2 Alarm Log Reports | |
|--|--|
| Alarm Code | Action Required |
| Tot alarm went from No Alarm to MAJOR see Alarm Reasons in Table 7-3 | Use SHOW ALARMS command for more detailed information. Also see the applicable entry in Table 7-3. |
| Tot alarm went from MINOR to MAJOR see Alarm Reasons in Table 7-3 | Use SHOW ALARMS command for more detailed information. Also see the applicable entry in Table 7-3. |
| Tot alarm went from MAJOR to CRITICAL see Alarm Reasons in Table 7-3 | Use SHOW ALARMS command for more detailed information. Also see the applicable entry in Table 7-3. |
| Tot alarm went from MAJOR to MINOR see Alarm Reasons in Table 7-3 | This is an improvement in service. Information only. |
| Tot alarm went from MINOR to No Alarm see Alarm Reasons in Table 7-3 | This is an improvement in service. Information only. |

| Table 7-3 Alarm Reset Reasons | |
|---|--|
| Alarm Level Change Reason | Action Required |
| Alarm level change due to Bay XX pcm Alarm level change due to Bay XX rcvrs Alarm level change due to Bay XX trunks Alarm level change due to Bay XX lines | Check the status of the specified bay (XX) via the SHOW ALARMS and SHOW STATUS commands. |
| Alarm level change due to system pcm Alarm level change due to system rcvrs Alarm level change due to system trunks Alarm level change due to system lines | Check the system status via the SHOW ALARMS and SHOW STATUS commands. |
| Due to threshold change of Bay XX pcm Due to threshold change of Bay XX rcvrs Due to threshold change of Bay XX trunks Due to threshold change of Bay XX lines | Check the status of the specified bay (XX) via the SHOW ALARMS and SHOW STATUS commands. |
| Due to threshold change of system PCM Due to threshold change of system rcvrs Due to threshold change of system trunks Due to threshold change of system lines | Check the status via the SHOW ALARMS and SHOW STATUS commands. |

Table 7-4 Main Control Reset Log Reports

| Reset Log Message | Action Required |
|--|---|
| Main Control was reset due to power up | Information only. Main Control Card II is reset at power-up. |
| Main Control was reset due to pushbutton | The RESET pushbutton on the Main Control Card II was pushed. Investigate. |
| Main Control was reset due to watch dog timer Main Control was reset due to local bay cause Main Control was reset due to msg link failure Main Control was reset due to software error Process 00 ANYTHING at address 012345 Main Control was reset due to software error Main Control was reset due to software error Process 00 has overflowed its stack Main Control was reset due to software error Exception = ANYTHING at address 012345 | In all cases, check if Main Control Card II is functioning; if not, go to Emergency Troubleshooting procedures. |

Table 7-5 Bay Reset Log Reports

| Reset Log Message | Action Required |
|--|--|
| Bay X was reset due to msg link failure Bay X reported cause: scanner/power | The main control was unable to communicate with the bay, and therefore reset the bay. Bay may have lost power; possibly faulty Scanner Card. |
| Bay number X reported cause: parity failure at address XXXXXX | Failure of on-board DRAM. If persistent, replace the Bay Control Card. |
| Bay number X reported cause: power up at address XXXXXX | Information only. Bay Control Card is reset at power-up. |
| Bay number X reported cause: reset by MCC at address XXXXXX | Bay was reset because Main Control Card II was reset. Investigate possible Main Control Card II problem. |
| Bay number X reported cause: watchdog timer at address XXXXXX | Software failure. Check if Main Control Card II is functioning; if not, go to Emergency Troubleshooting procedures. |
| Bay number X reported cause: ** anything else** at address XXXXXX | Software failure. Check if Main Control Card II is functioning; if not, go to Emergency Troubleshooting procedures. |

Table 7-6 Miscellaneous Log Reports

| Reset Log Message | Action Required |
|---|---|
| System Configuration/System ID module conflict. Change system configuration to clear error. | Check the installation of the System ID module. Check Form 4 option selection. |
| Log(s) deleted by user | A user logged in to the maintenance facility (maintenance terminal or console) deleted one or more log entries via the DELETE LOGS command. |
| Involved in recovery is 01 04 04 04 ext 1100 01 03 03 03 Trk 001 Main Control trace back at address = XXXXXX (anything) CP Process recovered from software error # XX (anything) | In all cases, this indicates a software error. Refer the problem to MITEL Field Service. |

8 Troubleshooting Aids

Call Processing Information

Table 8-1 Digital Bay to Digital Bay Call

| Step | Event |
|------|---|
| 1. | Caller in Bay 1 goes Off-Hook (the event). |
| 2. | The Bay Control Card (BCC) scans circuits on each card for events (hardware). |
| 3. | When an event occurs, the BCC assembles a message (in HDLC format) describing the event, the associated PLID, and the device which caused the event. |
| 4. | The message is then sent via a dedicated message channel to the Main Control Card II (MCC II). |
| 5. | The message is picked up by the message system and routed to the appropriate destination; in this case, the Call Processor (CP) processes messages in a first in - first out manner. |
| 6. | CP, taking the message from its message queue, then accepts the message and looks up the Device Work Area (DWA). This work area allows CP to determine the COS, COR, and other features enabled for the device which caused the event. |
| 7. | CP checks for an available receiver and channel, and connects them to the device via the DX matrix. |
| 8. | Once the Receiver is connected to the device, dial tone is sent from the Digital Signal Processor (DSP) on the MCC II. This also must be connected to the device via the DX matrix. |
| 9. | The caller then hears dial tone and begins dialing digits. |
| 10. | For ONS calls only, the Receiver decodes the first digit and passes it to the MCC II. For <i>SUPERSET</i> telephones, digits are sent to Call Processing (CP). |
| 11. | The MCC II accepts the digit and turns off dial tone from the DSP; it then waits for further digits. |
| 12. | While waiting for and receiving the digits, the MCC II checks validity of digits dialed against database and against COS/COR limits for the device. |
| 13. | Once all digits are accepted, the MCC II uses the information received to find the destination device and set up a channel to initiate the call. |
| 14. | Assuming the destination is idle, the MCC II sends the ringing message to the BCC to ring the destination. The receiver is dropped during ringback. |
| 15. | The BCC then instructs the Bay Power Supply (BPS) to send ringing voltage via the back-plane and dry contact relays on the line card to the destination. Ringing reference is supplied by the DSP and cadenced by the BCC for a specified pattern such as 1 second ON, 3 seconds OFF. <i>SUPERSET</i> telephones are sent a message to cause the set to begin warbling. |
| 16. | While the destination is being rung, ringback tone is sent to the calling party. This is supplied by the DSP from the MCC II. |
| 17. | Destination hears ringing and goes OFF-HOOK. |
| 18. | BCC detects off-hook while scanning all ports in its bay and sends the answer message to the MCC II. |

Table 8-1 Digital Bay to Digital Bay Call (continued)

| Step | Event |
|------|---|
| 19. | MCC II accepts the answer message, instructs the BCC to turn off the ringing being sent to the destination, turns off ringback tone being sent to the source, and then instructs the DX matrix to connect the source to the destination. This establishes the voice connection. |
| 20. | Conversation is carried out and completed. |
| 21. | One party hangs up. BCC detects and sends disconnect message to MCC II. MCC II puts other party in 'suspended - xxx hung up' or 'lockout - locked out' until he also hangs up. Then the MCC II returns the set to idle. |

Troubleshooting Kit

The following is a recommended list of items required in the Field Service Engineering Troubleshooting Kit:

- One of each circuit card as a spare, including modules
- Butt set
- Digital multimeter
- Moving coil multimeter
- Static strap
- Ground mat
- Assorted screwdrivers, wrenches
- Long nose pliers
- Spare fuses
- Wire strippers
- Fan filter
- Breakout Box (for Data).

Loop Current Measurement

There are two methods available to measure loop current:

- In-Line method
- Voltage conversion measurement

If it is not possible to break the loop (i.e., open the Tip or Ring lead) the second method may be used; however, it is not as accurate.

In-Line Method. The procedure for the in-line method of measuring loop current is shown in Figure 8-1 and is described as follows:

1. Open either the Tip or Ring lead of the trunk facility by removing one of the bridge clips on the MDF.

2. Insert an ammeter where the clip was.
3. Take current readings at the instant the trunk is seized, and after the call has been completed. Do this in both incoming and outgoing directions.
4. Release the trunk and repeat the measurements several times on the same Central Office at peak and low traffic hours.
5. Repeat the above steps using different Central Office trunks.

Voltage Conversion Method. This method of loop current measurement should be used only in such instances when it is not desirable to open the Tip or Ring leads. The procedure is as follows:

1. With the trunk seized, use a voltmeter to measure the voltage between the Tip and Ring of the trunk.
2. This voltage is then used to calculate the loop current (see below).
3. Release the trunk and repeat the measurement several times using the same Central Office trunk at peak and low traffic hours.
4. Repeat the above measurements using different Central Office trunks.
5. Typical equivalent resistance seen between Tip and Ring, when the trunk is seized, is approximately 250 ohms.
6. The following is a simple calculation used to obtain the loop current value:

$$\text{Loop Current} = \frac{\text{measured Tip to Ring voltage}}{250}$$

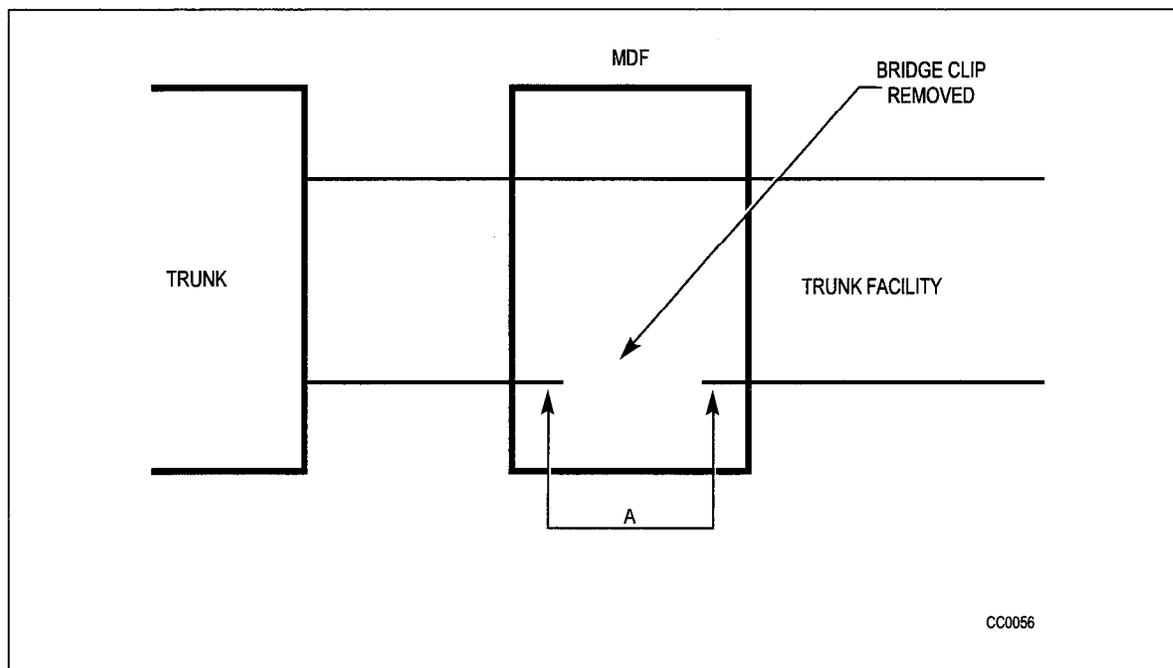


Figure 8-1 In-Line Current Measurement

Troubleshooting

Loop Start Versus Ground Start Check

The loop start versus ground start check should be performed as follows (also refer to Figure 8-2):

1. Locate the PBX trunk circuit Tip and Ring on the connecting block at the MDF.
2. Remove the bridge clips on the Tip and Ring (i.e., disconnect the PBX trunk circuit from the Central Office Tip and Ring).
3. Connect the butt set across the Central Office Tip and Ring.
4. Go off-hook with the butt set. If Central Office dial tone is returned, then the Central Office trunk is loop start.
5. If no dial tone is returned, then momentarily ground the Ring lead with a butt set off-hook across Tip and Ring. If Central Office dial tone is returned, then the Central Office is ground start.
6. If still no dial tone is returned, repeat the previous step and ground the Tip lead instead. If Central Office dial tone is returned, the Central Office trunk is ground start (however, the Tip and Ring are reversed).
7. If still no dial tone is returned in either of these cases, there is a problem (perhaps Tip and Ring opened or shorted, or there is a large ground differential between PABX ground and Central Office ground.) Check PABX ground. If PABX ground is good, then report the problem to telephone company.

Note: In most cases with ground start trunks, dial tone may be returned by grounding either Tip or Ring. If this should occur, repeat the 5th and 6th steps using the butt set in its "on-hook" or "monitor" state. Hold the ground lead on for a few seconds; CO should return dial tone as long as the ground lead is connected.

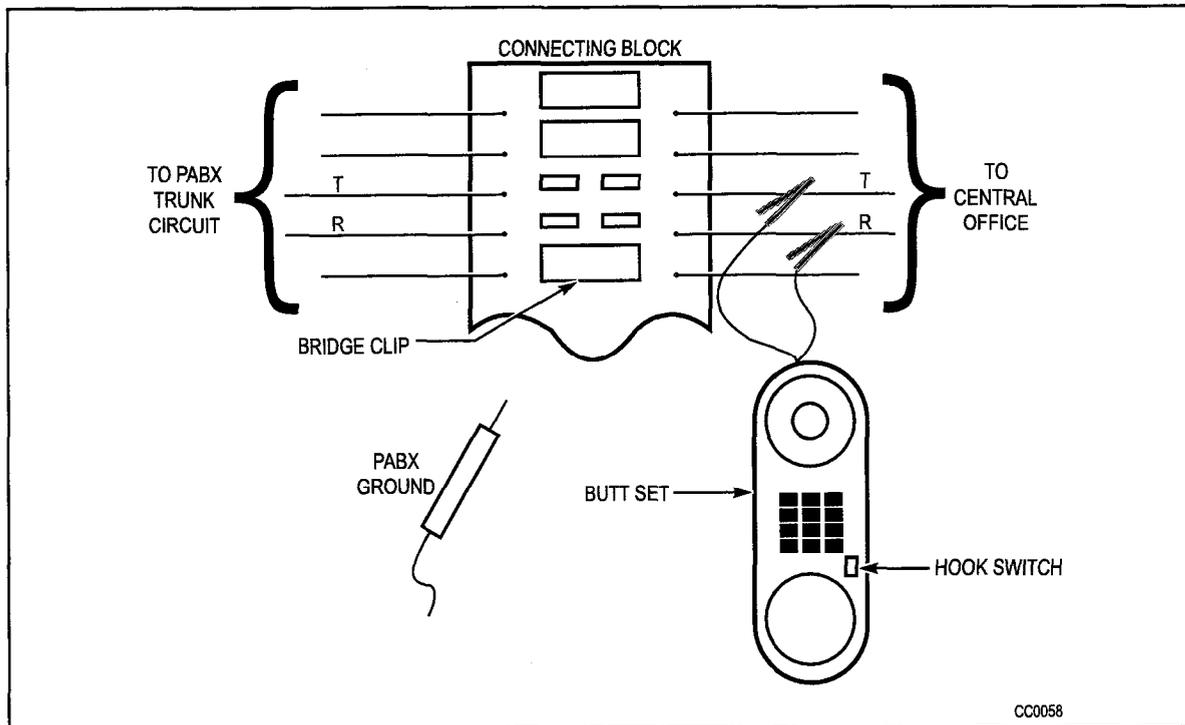


Figure 8-2 Loop Start Versus Ground Start Check

NOTES

NOTES

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SX-200® ML PABX

RS-232 Maintenance Terminal

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1 General

Introduction

- 1.1 This Practice is intended to help maintenance personnel use the extensive built-in maintenance features of the SX-200® ML PABX. Basic maintenance functions can be performed by using either a terminal, or a PC. A PC must be used to perform the Database Backup function, Database Restore function, Logs Text function, and the Logs Backup function.

The maintenance information provided by this practice includes how to:

- set up and use the RS-232 Maintenance Terminal, the prime maintenance tool on the system
- use a PC to back up the database information to a binary file by using the Database Backup function, and to restore the database information from a text file by using the Database Restore function
- use the Logs Text function to copy all maintenance log entries into a text file by using a PC. The saved text file can be viewed on the PC
- display the current Kermit parameters by using the Show Parameters function; change their default values by using the Set Parameters function
- use the Logs Backup function to copy all maintenance log entries into a text file by using a PC. The saved text file can then be viewed on the PC.

The maintenance terminal is also used for customer data entry (CDE) and Traffic Measurement. Maintenance terminal functions are also accessible from the attendant console. Because the scope of this practice is primarily maintenance-related, refer to the *Customer Data Entry (CDE) Practice*, and the *Traffic Measurement Practice* for information on these topics.

Reason for Issue

- 1.2 This practice forms part of the MITEL® Standard Practices issued to provide technical information for the SX-200 ML PABX.

How to Use this Practice

- 1.3 This practice serves two distinct functions: first, as a self-teaching guide for the users that are operating the maintenance terminal for the first time; second, as a reference manual for those reviewing specific commands. First-time users should read through this practice carefully, preferably with a maintenance terminal available, so that they can try out the various commands as they study the material. After becoming familiar with the contents of this practice, users can then refer to the table of contents to review specific features and commands.

Disclaimer

- 1.4 The following products have been manufacture discontinued by Mitel. These products are supported but not described in *SX-200 ML Practices*:
- SUPERSET 3™ and SUPERSET 4® telephone sets
 - SUPERSET 3DN™ and SUPERSET 4DN™ telephone sets
 - DATASET 1101 data cartridge
 - SUPERSET™ DSS module.
- 1.5 The following products and peripheral devices are not supported on the *SX-200 ML PABX* and are not described in *SX-200 ML Practices*:
- Modem Interconnect Panel
 - DATASET 1102 Rack-mounted Dataset
 - DATASET 2102 Rack-mounted Dataset
 - DATACABINET 9000 data cabinet
 - DATASHELF 9100 datashelf
 - ISDN Node
 - Fiber Interface Module (and associated products)
 - Peripheral Node
 - LCD Console (and Console module for Universal Card).

2 Setting Up

Terminal Type

2.1 The *SX-200* ML PABX maintenance subsystem is designed to interface with most 80-column terminals having an RS-232 type interface. The terminal may be either a video display terminal or a hard copy teleprinter. For ease of operation, a video display terminal capable of using the ANSI X3.64-1977 special character set for special graphics (that is, VT100™ compatible) is preferred. The system prompts the user to specify the terminal type at the start of the login sequence (see paragraph 2.3). To ensure compatibility with the maintenance subsystem, the terminal should be set up for the following data characteristics:

- 8 data bits
- 1 start bit
- 1 stop bit
- no parity.

The maintenance subsystem will automatically set itself to the terminal's baud rate; however, the terminal baud rate must be set to one of the following values:

- 300
- 600
- 1,200
- 2,400
- 4,800
- 9,600.

Connecting the Terminal to the System

A standard RS-232 cable is connected to the main RS-232 communication port on the terminal. The other end of the cable is connected to the 9-pin RS-232 cable connector which is located on the rear panel of the cabinet (see Figure 2-1).

- Note:**
1. Do not connect more than one maintenance terminal to the system.
 2. If the RS-232 cable for the maintenance terminal uses a standard 25-pin connector, you will need a 25-pin to 9-pin connector adaptor.

Connecting a Printer to the System

2.2 If required, a printer (or any other ASCII output device) may be connected to the system by means of a standard 25-pin or 9-pin RS-232 cable. One end of the RS-232 cable is connected to the RS-232 port on the printer, and the other end is connected to the 9-pin connector (above the maintenance terminal connector) on the rear panel of the cabinet. Set up the printer for the following data characteristics:

- 8 data bits
- 1 start bit
- 1 stop bit
- no parity
- 1200 baud.

Note: The baud rate of the printer port may be changed via a command from the maintenance terminal.

Login Procedures

2.3 With the terminal powered-up, or reset, the system is ready for the user to log in. Press the RETURN key four times within one second to cause the system to automatically determine the terminal's baud rate. The system will query the user for the terminal type as follows:

```
1 - VT100 COMPATIBLE
2 - TTY TYPE
3 - IBM PC
SELECT A TERMINAL TYPE :
```

If the terminal is capable of using special graphic characters, enter 1; if not, enter 2. The system will then query the user for the type of action or application intended; i.e., Maintenance or Customer Data Entry (CDE):

```
1 - MAINTENANCE
2 - CDE
6 - QUIT
SELECT AN APPLICATION ( OR QUIT TO START OVER ) :
```

If the maintenance system (or CDE) is being accessed by another terminal or an attendant console, the following message will be returned after the RETURN key is pressed four times:

```
MAINTENANCE or CDE in use by Console Ext 1234.
Please Try Again Later.
```

This message is displayed because only one user can access maintenance or CDE at any one time. Assuming that there are no users currently logged in, the system will return the username prompt after an application number (1 or 2) is chosen:

```
ENTER USERNAME :
```

There are five levels of system access priority available when logging-in to the maintenance terminal. Each level has its own username and corresponding command privileges. The usernames in descending order of priority are:

- INSTALLER
- MAINT1
- MAINT2
- SUPERVISOR
- ATTENDANT.

Respond to the username prompt by entering one of these usernames. The system will then query the user for a password:

ENTER PASSWORD :

The system database contains one default password for all usernames. Passwords may be changed as required (see "Setting Password" on page 4-5). The default password for all users is "1000". Observe that for security reasons the system does not echo the password back to the terminal. If the password is accepted, the system will prepare to set up the maintenance screen.

Logout Procedures

- 2.4 To ensure the security of the system, use the logout procedure whenever the maintenance terminal is to be left unattended. To log out, the user presses the QUIT softkey to get out of the maintenance application. At this point, the application prompt is returned:

Enter "6" from the Main Menu to log out; or
the system will log out when the 10-second logout timeout is reached.

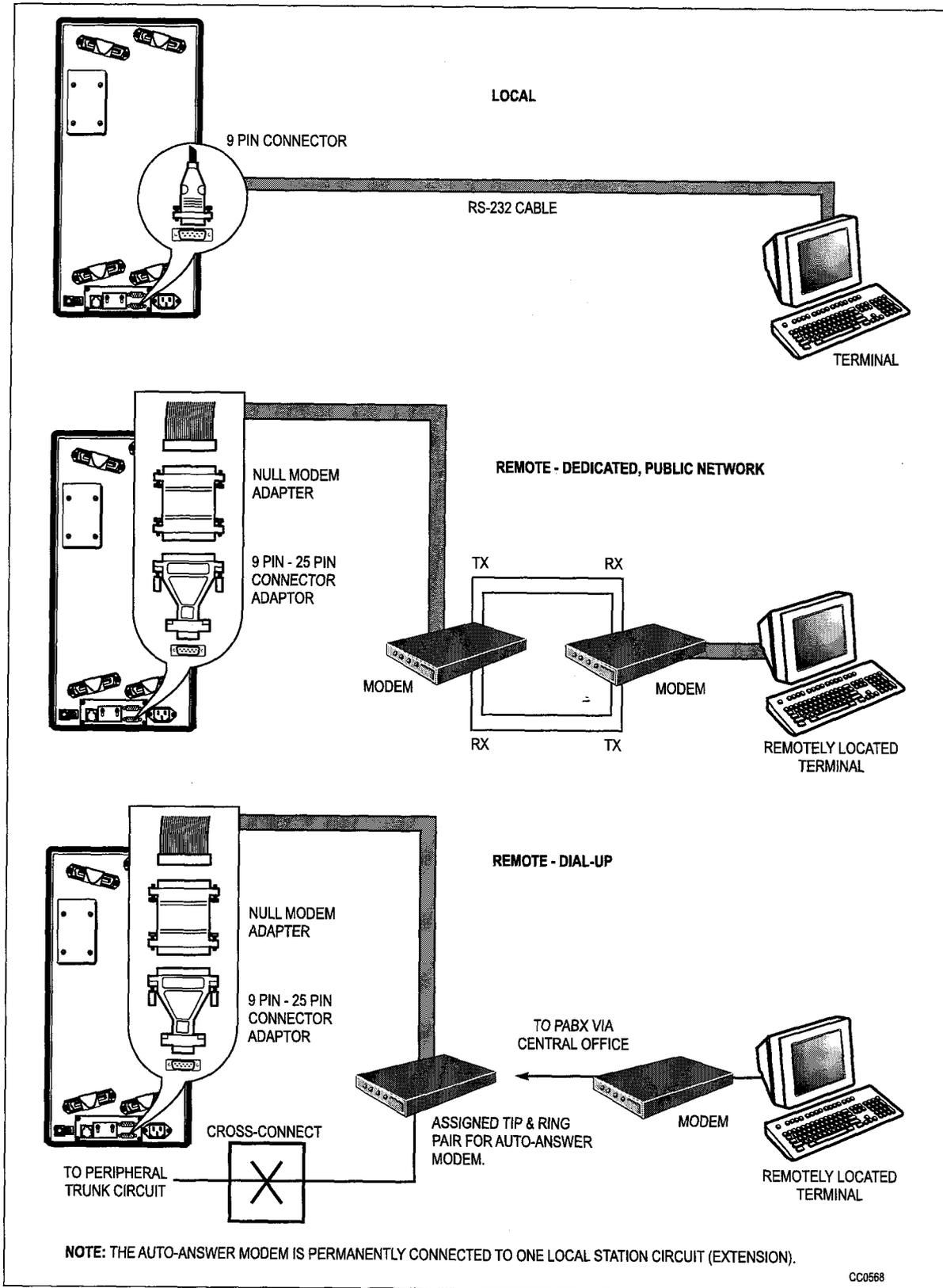


Figure 2-1 Maintenance Terminal Connections for the SX-200 ML Cabinet

3 Maintenance Command Input

Maintenance Terminal Display

- 3.1 The maintenance display screen is shown in Figure 3-1. There are five distinct and separate areas to the screen:

Status Line: - occupies a single line above the bordered area, and displays the time and date, and the system alarm status.

Header Line: -occupies the top line within the bordered area. It identifies the running software version, and its creation date. It also describes which MAINTENANCE menu is currently being displayed: one of Main Menu, System, Diagnostics, Traffic Measurement, Logs, or Reports.

Applications Area: -occupies the next 12 lines in the bordered area. Output information resulting from command input is displayed in this area.

Command Line: -occupies the line directly below the Applications Area. Commands are echoed onto this line as they are input by the user. Responses to command input (other than data; e.g., error messages) are also returned here.

Softkey Area: -changes dynamically with the MAINTENANCE mode (System, Diagnostics, Traffic Measurement, Logs, ACD Reports, or Reports) and identifies the functions of the maintenance terminal's 10 softkeys. The softkey area occupies the bottom two lines of the bordered area: the first line identifies the functions of softkeys 1 through 5; the second line identifies the functions of softkeys 6 through 10.

Softkey Presentation

- 3.2 All commands are entered using softkeys. The functions of softkeys change to suit the programming requirements of each particular application. The maintenance terminal has 10 such keys: they are the number keys (1 through 0) on the terminal keyboard. The "1" key corresponds to softkey 1 in the softkey area; similarly, all other numeric keys correspond to softkeys.

| | | | | |
|------------------------|--------|-------------------------|-------------|----------------|
| 5:01 PM 19-MAR-97 | | alarm status = NO ALARM | | |
| SX-200 ML LIGHTWARE 16 | | 1.0 | 17-MAR-1997 | Main menu |
| | | | | |
| █ | | | | |
| 1-SYSTEM | 2- | 3-DIAGNOSTICS | 4- | 5-TRAFFIC_MEAS |
| 6-QUIT | 7-LOGS | 8-ACD_REPORTS | 9-REPORTS | 0- |

Figure 3-1 Top Level Maintenance Terminal Screen Layout

Entering Commands

- 3.3 Enter commands by pressing the desired softkeys in sequence, and terminate each command sequence with softkey 0, the ENTER softkey or the conventional keyboard RETURN key. As softkeys are pressed, they are displayed on the command line. After the ENTER softkey is pressed, the command is processed by the maintenance system, and the appropriate response is returned. Press the QUIT softkey to end the current operation and return to the previous level of access.

Incorrect Command Entry

- 3.4 The user interface provides a comprehensive set of error messages to inform the user of incorrect command entry. While the softkey-oriented command input interface minimizes the chance of incorrect command entry, error messages provide concise descriptions of the input error. A summary of these error messages with descriptions is in Appendix A.

Non-VT100 Compatible Terminal Use

- 3.5 When using a terminal not compatible with a VT100 terminal, softkeys are presented as described in Figure 3-1, but without the graphic bordering. Similarly, commands are entered in exactly the same manner. Instead of a Title line, the current menu is identified by the command input prompt:
- SYS> - System level menu
 - DIAG> - Diagnostics level menu
 - TRAFF> - Traffic Measurement menu

- LOGS> - Logs level menu
- REP> - Reports level menu.

Device Number Parameters

- 3.6 Some commands require the inclusion of card/circuit location numbers (referred to as physical location identification numbers: bay number, slot number, circuit number, sub-circuit number) or extension numbers as part of the input. The user is prompted for these numbers, one at a time, on the command line of the screen:

enter Bay then press RETURN:
enter Slot then press RETURN:
enter Circuit then press RETURN:
enter Sub-circuit then press RETURN:

or

enter Ext. Number then press RETURN:

When these prompts appear, the softkeys are disabled. Enter the required numbers in the conventional manner by using the keyboard number keys and pressing the RETURN key after each entry. Note that if a 2-digit number is entered, the RETURN key is not required after each digit. When all of the required device numbers have been entered, the appropriate softkeys will again be presented.

When entering circuit location numbers, the sub-circuit qualifier is often not required, and this prompt may be answered by simply pressing the RETURN key. The only devices that require sub-circuit numbers are Digital Line Card circuits and Universal Card modules such as DTMF/Receiver Modules and Music On Hold/Pager Modules.

Wild Card Characters

- 3.7 Default wild card characters may be used to perform some command-initiated functions on a range of devices, by not specifying circuit location numbers when prompted (pressing only the RETURN key). For example, entering Bay 1, but not specifying the slot, circuit, or sub-circuit would translate to "all circuits on all cards in Bay 1". Default wild card characters do not apply to all commands; refer to the individual command descriptions.

Canceling a Command

- 3.8 The user may cancel any command at any point before pressing the ENTER softkey by pressing the CANCEL softkey. Any softkeys that were entered and echoed back onto the command line are now canceled, leaving the command line empty and ready for new command input.

Command Line Correction

- 3.9 The user may correct a current command input line before pressing the ENTER softkey, without having to cancel and enter the command over again. Press the DELETE key to delete the most recently entered softkey or device number.

4 System Level Functions

Introduction

- 4.1 The system level of operation contains commands that are not necessarily maintenance applications, but that affect maintenance in some way (for example, setting of time, date, and passwords). To access system level commands, press the SYSTEM softkey. All of the following operations are done while in the system level. Table 4-1 provides a quick reference for all operations available in system level functions, except CANCEL and ENTER. To exit the current operation without committing (saving) any changes, press the CANCEL softkey at any time. To commit changes, press the ENTER softkey when it is available.

Setting and Showing Time

- 4.2 The system time-of-day may be set and verified from the maintenance terminal although the hour format used is specified during CDE. Note that the user may set the time in either 12-hour or 24-hour format by using the PM softkey as required. To set the system time from the maintenance terminal, press the following softkeys:

SET
TIME

At this point the softkeys are disabled, and the user is prompted to enter the desired time:

enter Time HH:MM

After entering a valid time, press the ENTER softkey to implement the new time-of-day, or press the CANCEL softkey to cancel the new time.

Verify the time-of-day by pressing the following softkeys:

SHOW
TIME
ENTER

Setting and Showing Date

- 4.3 The system date may be set and verified from the maintenance terminal. To set the system date from the maintenance terminal, press the following softkeys:

SET
DATE

At this point the softkeys are disabled, and the user is prompted to press the desired date:

enter Date DD/MM/YY

After entering a valid date, the user may implement the new date by pressing the ENTER softkey, or the user may cancel the new date by pressing the CANCEL softkey.

Verify the date by pressing the following softkeys:

```
SHOW
DATE
ENTER
```

Showing Device Status

- 4.4 The maintenance user can display the current data characteristics of the maintenance terminal and printer ports. Information in the reports includes communication speed (baud rate), the parity sense (odd, even, or none) and the number of stop bits. To view the status of the maintenance terminal port, press the following softkeys:

```
SHOW
DEVICE
MAINT-PORT
ENTER
```

To view the status of the printer port, press the following softkeys:

```
SHOW
DEVICE
PRINTER-PORT
ENTER
```

Showing Number of Line Appearances

- 4.5 To show the number of line appearances programmed, press the following softkeys:

```
SHOW
LN_APP_COUNT
ENTER
```

Showing Firmware Identity

- 4.6 The firmware identity report provides the firmware identities of the installed base. The information includes card name, bay number, PROM ID, and debug capability. The PROM ID consists of two bytes. To be compatible with PROMs that do not have an identity, the PROM checksum is displayed as XXFD, where FD is the checksum.

```
SHOW
IDENTITY
ENTER
```

Table 4-1 System Level Functions

| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
|----------|------------|-------------------|------------------------|---|----------------|-----------|
| 1-SYSTEM | 1-SET | 1-DATE [dd/mm/yy] | | | | |
| | | 2-TIME [hh:mm] | | | | |
| | | 3-PASSWORD | 1-ATTENDANT | | | |
| | | | 2-SUPERVISOR | | | |
| | | | 3-MAINT2 | | | |
| | | | 4-MAINT1 | | | |
| | | | 7-INSTALLER | | | |
| | | 4-SPEED | 1-MAINT-PORT [speed] | | | |
| | | | 8-PRINTER_PORT [speed] | | | |
| | | 8-RESET_TIME | 1-AFTER_N_FLTS | | | |
| | | | 2-DAY/TIME | 1-MONDAY | 1-TIME [hh:mm] | |
| | | | | 2-TUESDAY | 1-TIME [hh:mm] | |
| | | | | 3-WEDNESDAY | 1-TIME [hh:mm] | |
| | | | | 4-THURSDAY | 1-TIME [hh:mm] | |
| | | | | 6-FRIDAY | 1-TIME [hh:mm] | |
| | | | | 7-SATURDAY | 1-TIME [hh:mm] | |
| | | | | 8-SUNDAY | 1-TIME [hh:mm] | |
| | | | | 9-DAILY | 1-TIME [hh:mm] | |
| | | | 3-IMMEDIATELY | | | |
| | | 9-ALARM_THRESH | 1-LINES | 1-SYSTEM | 8-CONFIRM | |
| | | | | 2-BAY NOTE: User must enter Bay number | 8-CONFIRM | |
| | | | 2-TRUNKS | 1-SYSTEM | 8-CONFIRM | |
| | | | | 2-BAY NOTE: User must enter Bay number | 8-CONFIRM | |
| | | | 3-RECEIVERS | 1-SYSTEM | 8-CONFIRM | |
| | | | | 2-BAY NOTE: User must enter Bay number | 8-CONFIRM | |
| | | | 4-PCM_CHANNELS | 1-SYSTEM | 8-CONFIRM | |
| | | | | 2-BAY NOTE: User must enter Bay number | 8-CONFIRM | |
| | 2-SHOW | 1-DATE | | | | |
| | | 2-TIME | | | | |
| | | 4-DEVICE | 1-MAINT-PORT | | | |
| | | | 4-DATASTN_PLID | 1-BAY/SLOT/CCT | | |
| | | | | 3-EXT-NUM | | |
| | | | 8-PRINTER_PORT | | | |
| | | 7-LN_APP_COUNT | | | | |
| | | 8-RESET-TIME | | | | |
| | | 9-IDENTITY | | | | |
| | 3-DATABASE | 1-BACKUP | | | | |
| | | 2-RESTORE | | | | |
| | | 4-SHOW_PARAM | | | | |

Table 4-1 System Level Functions (continued)

| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
|-------|----------------|-----------------|----------------|----------------|-----------|-----------|
| | | 6-TRAP_BACKUP* | | | | |
| | | 7-TRAP_RESTORE* | | | | |
| | | 8-LOGS_BACKUP | | | | |
| | | 9-SET_PARAM | 1-DEFAULT | | | |
| | | | 2-RETRIES | | | |
| | | | 3-BLOCK_CHECK | | | |
| | | | 4-RECEIVE | 1-EOL_CHAR | | |
| | | | | 2-8_BIT_CHAR | | |
| | | | | 3-CTRL_CHAR | | |
| | | | | 4-REPEAT_CHAR | | |
| | | | | 6-PAD_CHAR | | |
| | | | | 7-PACKET_SIZE | | |
| | | | | 8-RX_TIMEOUT | | |
| | | | | 9-NUM_PAD_CHAR | | |
| | 4-MONITOR | 1-SMDR | | | | |
| | | 2-DATA_SMDR | | | | |
| | | 3-DIAGNOSTICS | 1-STEP | 1-STEP | | |
| | | | | 2-SLOW_SCAN | | |
| | | | | 3-FREE_RUN | | |
| | | | 2-SLOW_SCAN | 1-STEP | | |
| | | | | 2-SLOW_SCAN | | |
| | | | 3-FREE_RUN | 1-STEP | | |
| | | | | 3-FREE_RUN | | |
| | | 7-LOGS | 1-MAINT_PORT | | | |
| | | | 2-SYS_PRINTERS | | | |
| | 5-SUSPEND_PRTR | 7-PRINTER_PLID | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT-NUM | | | |
| | | 8-PRINTER_PORT | | | | |
| | 6-QUIT | | | | | |
| | 7-RESUME_PRTR | 7-PRINTER_PLID | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT-NUM | | | |
| | | 8-PRINTER_PORT | | | | |
| | 8-RE-START | 2-RESET_SYSTEM | | | | |
| | 9-STOP | 7-LOGS | | | | |

Note: * TRAP_BACKUP and TRAP_RESTORE are diagnostic tools that only Mitel personnel use.

Setting Password

- 4.7 It is recommended, for system security, that passwords be changed regularly once the *SX-200* ML PABX has been put into service. Password changes may be made by the affected username, or any other username with a higher priority (see Login Procedures). A password may be any string of alphanumeric characters of up to 20 characters in length (any more characters are ignored).

CAUTION: Entering new passwords with alphabetic characters will inhibit login from the attendant console, because only numeric characters may be entered from the console.

To change the password, press the following softkeys:

```
SET
PASSWORD
(enter the required Username)
ENTER
```

The system then prompts the user for the old password (see Note):

Enter old password; then press RETURN/ENTER:

Enter the old password. The system prompts the user for the new password as follows:

Enter new password; then press RETURN/ENTER:

The system then prompts the user to verify the new password:

Enter new password to verify; then press RETURN/ENTER:

After the user verifies the new password, the system implements the password change; the old password is no longer valid. An incorrect entry of the old or new passwords will cause the password changing process to be aborted. Neither old nor new passwords are echoed back to the maintenance terminal display.

Note: If the Username selected is the one used when logging in, the system will prompt for the old password. When the username selected is a lower level than the login user, the system will not require verification of access priority and will prompt for the new password only.

Setting Maintenance Port Baud Rate

- To change maintenance terminal port baud rate from its value at login time, choose one of six available baud rates: 300; 600; 1,200; 2,400; 4,800; or 9,600 baud. To change the terminal baud rate, press the following softkeys:

```
SET
SPEED
MAINT-PORT
(select the softkey for the desired baud rate)
ENTER
```

Note: This operation changes the baud rate of the *SX-200* ML PABX maintenance terminal port only. The maintenance terminal baud rate must be changed separately. Refer to the manufacturer's instructions for the particular terminal being used.

At this point, the softkeys are disabled, and the system prompts the user to change the terminal speed:

Change terminal speed and press RETURN when ready

Setting System Printer Port Baud Rate

- 4.8 To change the system printer port baud rate from its default value of 1,200 baud, choose one of six available baud rates: 300; 600; 1,200; 2,400; 4,800; or 9,600 baud. To change the printer port baud rate, press the following softkeys:

```
SET
SPEED
PRINTER-PORT
(select the softkey for desired baud rate)
ENTER
```

Before pressing the ENTER softkey, you can cancel the entry by pressing the CANCEL softkey. Note that this operation changes the baud rate of the SX-200ML PABX system port only; the baud rate of the printer itself must be changed separately. Refer to the manufacturer's instructions for the particular printer being used.

Assigning Printer Ports

- 4.9 Printouts are produced at the device specified in CDE Form 34, DIRECTED IO. See the *Customer Data Entry Practice* for details. Setting speed for printer ports other than the system printer port is done in CDE Form 11, Data Circuit Descriptors.

Backing Up a Database

- 4.10 When the SX-200 ML PABX is running normally, the database information is maintained in two locations on the Main Control Card II (MCC II): in the Random Access Memory (RAM); in the non-volatile RAM. The backup database information is maintained in non-volatile RAM for only 68 hours after the power is removed from the SX-200 ML PABX system. If the PABX is shut down for more than 68 hours (for example, over a long weekend) the database information is lost.

To back up the database information, your communication package must support the Kermit protocol. The Backup function allows you to save the database information as a binary file on either a directory on your PC's hard disk, or on a diskette in the PC's disk drive. It is recommended that you backup the database:

- after the system is first installed and the database is set up
- after changes have been made to the database.

To backup the customer database, press the following softkeys:

```
DATABASE
BACKUP
ENTER
```

The system prompts the user for the file name (see Note).

Enter the file name.

ENTER

The system then prompts the user to exit to a local Kermit session. Ensure that the Kermit session is set to binary mode, because the customer database information must be saved as a binary file.

In the Kermit session, issue the Receive command.

While the backup is in progress, the top seven-segment LED on the MCC II shows "A", and the lower seven-segment LED shows a dash that is circling in a clockwise direction.

Note: It is recommended, for your convenience, that the file name be meaningful to you. It can include abbreviations for the name of a remote site, the purpose or function of the database, the version of the software, or the number of the database; for example, Mit2ML_8.db.

Restoring a Database

- 4.11 In order to restore a customer database, the Kermit protocol must be supported by your communication package. To restore a customer database that was saved by using the Database Backup function, press the following softkeys:

DATABASE
RESTORE

The system prompts the user for the file name.

Enter the file name.

ENTER.

The system then prompts the user to exit to a local Kermit session. Ensure that the Kermit session is set to binary mode, because the customer database file to be restored is a binary file.

In the Kermit session, issue the Send command.

While the database file is in the process of being restored, the top seven-segment LED on the MCC II shows "A", and the lower seven-segment LED shows a dash that is circling in a counter-clockwise direction.

Reset the system when the database has completed restoring. See "Resetting the System" on page 4-17.

After the database file is restored, the following entry will be added to the log file automatically:

Main Control was reset due to Database Restore

Backing Up Log Entries

- 4.12 To back up log entries, the Kermit protocol must be supported by your communication package. The Logs Backup function allows you to copy all maintenance log entries into a text file on either a directory on your PC's hard disk, or on a diskette in the PC's disk drive. To back up log entries, press the following softkeys:

```
DATABASE
LOGS_BACKUP
ENTER
```

The system prompts the user for the file name (see Note).

Enter the file name.

```
ENTER
```

The system then prompts the user to exit to a local Kermit session. Ensure that the Kermit session is set to text mode, because the maintenance log entries must be copied into a text file.

In the Kermit session, issue the Receive command.

While the backup is in progress, the top seven-segment LED on the MCC II shows "A", and the lower seven-segment LED shows a dash that is circling in a clockwise direction.

Note: Ensure that the file name is meaningful to you. It can include abbreviations for the name of a remote site, the purpose or function of the database, the version of the software, or the number of the database; for example, LogMit2_8.txt.

Clearing Database

- 4.13 To clear the default customer database:

Press the system Reset button.

Press the system Interrupt button when the top seven-segment LED on the MCC II shows "C" and the lower seven-segment LED is blank.

After the default customer database is cleared, the following entry will be added to the log file automatically:

```
Database initialized !
```

Showing Parameters

- 4.14 The Kermit protocol is used to establish and maintain communication between the PC during the backup, restore, or dump log entries processes. To display the current Kermit parameters, press the following softkeys:

```
DATABASE
SHOW_PARAM
```

Note: After the system is reset, the Kermit parameters return to the default values listed in Table 4-3.

Setting Parameters

- 4.15 To change the default values for the Kermit parameters that are listed in , press the following softkeys:

DATABASE
SET_PARAM
RECEIVE

Select one of the following softkeys and modify the parameter.

EOL_CHAR
8_BIT_CHAR
CTRL_CHAR
REPEAT_CHAR
PAD_CHAR
PACKET_SIZE
RX_TIMEOUT
NUM_PAD_CHAR

| Parameter | Softkey | Default Values |
|--------------------------|----------------|-----------------------|
| Packet Length | PACKET_SIZE | 5E |
| Time Out | RX_TIMEOUT | 012C |
| Number of Pad Characters | NUM_PAD_CHAR | 00 |
| Pad Characters | PAD_CHAR | 20 |
| EOL Character | EOL_CHAR | OD |
| Ctrl-Q Character | CTRL_CHAR | 23 |
| 8 Bit Character | 8_BIT_CHAR | 2626 |
| Repeat Character | REPEAT_CHAR | 7E |
| Block Check Count | --- | 01 |
| Retry Count | --- | --- |
| Start Character | START_CHAR | 1 - 31 |
| Send Delay Entry | SEND_DELAY | 1 - 9 |
| | | |

The Monitor Command

Monitor Diagnostics

- 4.16 The Monitor Diagnostics command is a “window” into the maintenance system’s diagnostic controller, the Maintenance Manager. With this command, the user may monitor the progress of the *SX-200* ML PABX diagnostics while they are being run. See Part 7 of this Practice for further information on diagnostics.

To monitor the progress of the currently running diagnostic, press the following softkeys:

MONITOR
DIAGNOSTICS

At this point, the user can press the ENTER softkey to begin the monitor process, or the CANCEL softkey to cancel the command. If the user presses the ENTER softkey, diagnostic data is displayed on the application area of the screen.

The user can alter how the monitor display is updated by using the “STEP”, “SLOW_SCAN”, and “FREE_RUN” softkeys. Selecting the “STEP” softkey at any time makes available the “STEP”, “SLOW_SCAN”, and “FREE_RUN” softkeys; as Figure 4-1 shows. When SLOW_SCAN is selected, FREE_RUN is not displayed. When FREE_RUN is selected, SLOW_SCAN is not displayed.

STEP is a manual control that enables the user to advance through the diagnostic process step-by-step and view a diagnostic state.

When SLOW_SCAN is selected, the monitor displays each diagnostic test while it is run until a command is given to stop. The Maintenance Manager decreases the speed at which the monitoring of the diagnostics occurs, and the maintenance terminal display is updated while each test is running to enable the user to view data of specific interest at a reduced monitoring speed.

When FREE_RUN is selected, the monitor runs the diagnostic tests at full speed to allow the user to progress quickly through the diagnostic tests, until the area of specific interest is encountered. The maintenance terminal display is only updated intermittently.

An example of the monitor output is shown in Figure 4-1 (for definition of terms, see Table 4-3).

12:59 PM 19-MAR-97 alarm status = NO ALARM

| | | | | | | | |
|------------------------|-------------|------------|-------------|-----------|--------------|---------|---------|
| SX-200 ML LIGHTWARE 16 | | 1.0 | 17-MAR-1997 | System | | | |
| | BKGRND | SYSTEM | PWR UP | FLT ISO | PWR RET | FLT RET | USR DIR |
| SYST : | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| BAY : | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| CARD : | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DEV : | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| DEV PLID: | 1 1 1 0 | EXT/TRNK: | - | CUR MODE: | backgrnd | | |
| CARDTYPE: | | BCKGR EN: | | MODESTAT: | idle | | |
| CARDSTAT: | | PWRUP EN: | | DIAG NAM: | force hi/low | | |
| DEV TYPE: | dsp | NUM CCTS: | | DIAGSTAT: | state 1 | | |
| DEV STAT: | | RX LK-CH: | - | DIAGRSLT: | dev n/a | | |
| TX LK-CH: | - | | | | | | |
| DIAGNOSTICS | | | | | | | |
| 1-STEP | 2-SLOW_SCAN | 3-FREE_RUN | 4- | 5-CANCEL | | | |
| 6- | 7- | 8- | 9- | 0- | | | |

Figure 4-1 Example of MONITOR DIAGNOSTICS Display

Table 4-3 is a summary of the terms used in the "Monitor Diagnostics" display:

| Table 4-3 Terms Used In Monitor Diagnostics Display | |
|---|--|
| Term | Meaning |
| SYST | The total system wide number of devices waiting to be tested on the following queues: BKGRND - Background diagnostic queue SYSTEM - System request diagnostic queue PWR UP - Power-up diagnostic queue FLT ISO - Second chance test queue PWR RET - Power-up diagnostic retry queue (CP had device) FLT RET - Second chance test retry queue (CP had device) USR DIR - User (directed diagnostic) queue |
| BAY | The number of devices in this Bay (see "DEV PLID") waiting to be tested, on the SYST queue above. |
| CARD | The number of devices on this card (see "DEV PLID") waiting to be tested, on the SYST queue above. |
| DEV | Tests pending for the device being monitored. |

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Table 4-3 Terms Used In Monitor Diagnostics Display (continued)

| Term | Meaning |
|----------|--|
| DEV PLID | The physical location identification of the circuit being monitored; a 4- to 8-digit number representing bay, slot, circuit and sub-circuit numbers. |
| CARDTYPE | <p>The type of card being monitored; one of the following:</p> <ul style="list-style-type: none"> nil - no card ons - ONS line card lsgs trk - CO trunk card universal - Universal card dlc - Digital line card superset- COV line card did trunk - DID trunk card ops - OPS line card main cntl - Main Control Card II bay cntl - Bay Control card T1 trunk - Digital Trunk card rcvr mod - DTMF Receiver module moh mod - Music On Hold module modem mod - Is_modem_mod_type emtrk mod - E&M trunk module |
| CARDSTAT | <p>The status of the card being monitored; one of the following:</p> <ul style="list-style-type: none"> instld - the correct card type is installed unplug - the card is either unplugged, or not installed wrong - an incorrect card type is installed |
| DEV TYPE | <p>The type of device being monitored; one of the following:</p> <ul style="list-style-type: none"> dsp - Digital signal processor ons - ONS line circuit ops - OPS line circuit rcvr - DTMF receiver module moh - Music On Hold module lsgs - CO trunk circuit jnctr - junctor set - COV digital set or data set dnic - Digital line circuit did - DID trunk circuit e & m - E&M trunk circuit pcm - Bay DX circuit T1 - T1 circuit dncon - DNIC based console |

Table 4-3 Terms Used In Monitor Diagnostics Display (continued)

| Term | Meaning |
|----------|--|
| DEV STAT | <p>The status of the device being monitored; one of the following:</p> <ul style="list-style-type: none"> avail - available to CP and maintenance progr - programmed in CDE but not installed unpro - not programmed in CDE suspt - suspect, failed one diagnostic test flty0 - faulty flty1 - faulty with one pass flty2 - faulty with two passes flty3 - faulty with three passes flty4 - faulty with four passes flty5 - faulty with five passes flty6 - faulty with six passes bsout - forced busy, busied-out |
| EXTTRNK | Extension number / trunk number of the device being monitored |
| BCKGR EN | Background diagnostics enable flag; either "on" or "off" |
| PWRUP EN | Power-up diagnostics enable flag; either "on" or "off" |
| NUM CCTS | Number of circuits programmed for the specified card type |
| CUR MODE | <p>The current test mode; one of the following:</p> <ul style="list-style-type: none"> system - system request diagnostics backgrnd - background diagnostics power up - power-up diagnostics pwr rtry - power-up diagnostics retry fault isol - diagnostic second-chance flt retry - diagnostic second-chance retry user - directed diagnostics |
| MODESTAT | <p>The status of the specified test mode; one of the following:</p> <ul style="list-style-type: none"> idle - idle device reqst dev - requesting device to test dev locatd - located device to test dev na - device being used by call processing res alloc - test resources allocated res na - test resources could not be allocated dg avail - determined which test to run reqst test - message to Bay to request test enter test - message to Bay to start test dg disable - diagnostics disabled dg active - testing |

Table 4-3 Terms Used In Monitor Diagnostics Display (continued)

| Term | Meaning |
|-------------|--|
| | <p>wait msg - waiting for test result</p> <p>diag done - current diagnostic done</p> <p>dg pending - other tests pending on circuit</p> <p>dgs compl - all tests done</p> <p>dg incompl - test incomplete</p> <p>dg aborted - circuit taken by CP before test completed</p> <p>audit req - requests out of sync; checking</p> |
| DIAG NAME | <p>The current diagnostic test being run; one of the following:</p> <p>force hilow - junctor test</p> <p>dig bay test - digital bay test</p> <p>digl cod l/b - codec digital loopback test</p> <p>anlg cod l/b - codec analog loopback test</p> <p>status check - console test</p> <p>inject codec - codec transmission test</p> <p>message lamp - message lamp ringer present test</p> <p>switch hook - switch hook test</p> <p>a/d convert - AD converter reference test</p> <p>read card id - card read test</p> <p>hybrid l/b - hybrid loopback test</p> <p>dtmf tones - dtmf receiver test</p> <p>printer port - printer port test</p> <p>dnic o/p l/b - dnic output loopback test</p> <p>dnic i/p l/b - dnic input loopback test</p> <p>dnic chksum - dnic set eprom checksum test</p> <p>dnic bphone - dnic set bphone test</p> <p>dnic transdu - dnic set transducer test</p> <p>dataset lb - dataset data loopback test</p> <p>earpiece tst - dnic set transducer earpiece test</p> <p>speaker test - dnic set transducer speaker test</p> <p>microph test - dnic set transducer microphone test</p> <p>mouthpce tst - dnic set transducer mouthpiece test</p> <p>DSP memory - digital signal processor memory test</p> <p>DSP tone det - digital signal processor tone detect test</p> <p>DSP tone gen - digital signal processor tone generation test</p> <p>DSP conferen - digital signal processor conference test</p> <p>PCM loopback - full pcm loopback test</p> <p>link shared? - is link shared test</p> |
| Page 4 of 5 | |

Table 4-3 Terms Used In Monitor Diagnostics Display (continued)

| Term | Meaning |
|-------------|---|
| | rd bc dx+1 - read next bay dx rd mc dx+1 - read next mcc dx rd bc dx - read bay dx tx fr bc dx - send from bay dx tx fr bcdx+1 - send from next bay dx tx fr mcdx+1 - send from next mcc dx tx fr mcdx+1 - send from next mcc dx to bay only voice set? - is there a voice set data set? - is there a data set other half? - does other half have a set dig bay test - digital bay test get jnc test - get junctor test alt dev - analog alt dev test alt dev lb - analog alt dev loopback test T1 chn LB - T1 channel loopback test pldm dm ansr - pooled modem answer mode test pldm dm orig - pooled modem origination mode test retest prim - retest primary retest secon - retest secondary junc isol_? - has junctor been isolated alt device_? - enough alternate devices suspect junc - make junctor suspect 50% junctors - enough junctors |
| DIAGSTAT | The current diagnostic state; one of the following: pass state - current test has passed isolated - fault detected, isolated unisolated - fault detected, unisolated state 1 through state 25 Note: States 1 through 25 are dependent upon the device under test; refer to the <i>General Maintenance Information Practice</i> for further details. |
| DIAGRSLT | Result of the most recent diagnostic test; one of the following: pass - test passed without errors fail - error(s) occurred inconcl - inconclusive; call processing aborted the test or the Bay failed to return a message dev na - device not available - being used by CP |
| TX LK-CH | Transmit link and channel |
| RX LK-CH | Receive link and channel |
| Page 5 of 5 | |

Monitoring Logs

The user may monitor the progress of the maintenance logs as they occur. When the monitor logs process is running, maintenance logs will be output to a device and recorded in a text file. The output device can be either the maintenance terminal or the system printer, as specified in CDE Form 34, Directed IO. If logs are monitored on the system printer port, the user can log out from the maintenance terminal without first stopping the monitor process. However, if logs are monitored on the maintenance terminal, the monitor process must first be stopped before logging out.

To monitor logs, press the following softkeys:

```
MONITOR
LOGS
MAINT-PORT
ENTER
```

To stop monitoring logs, SMDR reports, or DATA_SMDR, press the following softkeys:

```
STOP
LOGS
ENTER
```

For information on how to back up log entries, refer to in this practice. For further information on maintenance logs, refer to Part 6 of this practice, and to the *General Maintenance Information Practice*.

Monitoring SMDR

The user may monitor the progress of the system SMDR reports as they occur. Unlike the MONITOR LOGS command, monitoring of SMDR may be done only at the maintenance terminal. It is not necessary to select a print device in this case, because monitoring will be output to the maintenance terminal automatically. Spontaneous printing of SMDR data to the system printer port is not affected. To monitor SMDR reports at the maintenance terminal, press the following softkeys:

```
MONITOR
SMDR
ENTER
```

Refer to the *Station Message Detail Recording Practice* for further information on SMDR.

Monitoring DATA_SMDR

The user may monitor the progress of the system DATA_SMDR reports as they occur. Unlike the MONITOR LOGS command, monitoring of DATA_SMDR may be done only at the maintenance terminal. It is not necessary to select a print device in this case, because monitoring will be output to the maintenance terminal automatically. This does not affect the spontaneous printing of DATA_SMDR data to the system printer port. To monitor DATA_SMDR reports at the maintenance terminal, press the following soft-keys:

```
MONITOR
DATA_SMDR
ENTER
```

Refer to the *Station Message Detail Recording Practice* for further information on DATA_SMDR.

Resetting the System

- 4.17 The Re-start command allows the maintenance user to reset the system. Resetting optimizes the integrity of the system software. Resetting should be done only during a period of low or no call processing traffic because the system will be totally inoperative for a period of approximately two to three minutes. To initiate a system reset, press the following softkeys:

```
RE_START
RESET_SYSTEM
ENTER
```

Setting Reset Time

- 4.18 The maintenance user may also program the system to reset after a fault has occurred, at a predetermined time of day. This reset can be done on one day of the week or daily. To program a system reset, press the following keys:

```
SET
RESET_TIME
DAY/TIME
(press one of the seven "day" softkeys or DAILY)
TIME
(enter the hour and minutes in 24-hour format (hours must be 01- 24)
ENTER
```

Note: The system will reset only if a fault occurs.

Setting Immediate Reset

- 4.19 The maintenance user can program the system to reset after one or after 50 system software faults.

To program the system to reset immediately after a single software fault, press the following softkeys:

```
SET
RESET_TIME
IMMEDIATELY
ENTER
```

To program the system to reset after 50 such faults, press the following softkeys:

```
SET
RESET_TIME
AFTER_N_FLTS
ENTER
```

Showing Reset Time

- 4.20 The maintenance user may obtain a report indicating when and under what conditions a system reset will occur. To obtain such a report, press the following softkeys:

```
SHOW
RESET_TIME
ENTER
```

Setting Alarm Thresholds

- 4.21 Alarm thresholds may be programmed by the maintenance user to facilitate the requirements of a particular system. Table 4-4 shows the default values of the alarm thresholds. Refer to the *General Maintenance Information Practice* for further details on the alarms and alarm thresholds. To change the alarm thresholds for lines throughout the entire system, press the following softkeys:

```
SET
ALARM_THRESH
LINES
ENTER
SYSTEM
(enter the desired MINOR alarm threshold percentage, or press RETURN to leave
unchanged)
(enter the desired MAJOR alarm threshold percentage, or press RETURN to leave
unchanged)
(enter the desired CRITICAL alarm threshold percentage, or press RETURN to
leave unchanged)
ENTER
CONFIRM
```

The procedure for changing alarm thresholds for trunks, DTMF receivers and PCM channels is the same as for lines. The only difference is that the TRUNKS, RECEIVERS or PCM-CHANNELS softkeys are used in place of the LINES softkey.

Alarm thresholds may be changed on a bay basis as well. The procedure is the same as that shown above; the only difference is that the BAY softkey is used in place of the SYSTEM softkey. DTMF receiver thresholds may be changed only in digital bays.

In all cases, the alarm threshold table is shown in the applications area of the screen.

| Table 4-4 Default Alarm Thresholds | | | |
|---|------------------|-------|----------|
| ALARM CATEGORY (Peripheral Devices) | ALARM THRESHOLDS | | |
| | Minor | Major | Critical |
| Lines | 0% | 20% | 0 |
| Trunks | 0% | 20% | 0 |
| DTMF Receivers | 0% | 20% | 0 |
| PCM Channels | 0% | 20% | 0 |

5 Reports Level Functions

Introduction

- 5.1 Reports level functions allow you to display maintenance information. The following types of reports are available: configuration, alarm status, circuit status, PCM path status, and displaying and clearing of device errors. To access the report commands, press the REPORTS softkey. All of the following operations are possible while in the reports level. All operations available in diagnostics are shown in Table 5-1, except CANCEL and ENTER. Press the CANCEL softkey at any time to exit the current operation without committing (saving) any changes, or press the ENTER softkey to commit changes.

Show Configuration

- 5.2 The configuration report provides the maintenance user with information on the hardware that is currently installed in the system. The user may request a configuration report on a specific card slot, a specific extension number, or the entire system. The information provided includes:
- the physical location(s), in terms of bay number, slot number, and circuit (module) number
 - the type of card / module installed in a location
 - the type of card / module programmed for that location.

Specific Card Slot

To obtain a configuration report on a specific card slot, press the following softkeys:

```
SHOW
CONFIG
BAY/SLOT/CCT
(enter the required bay, slot, and circuit numbers; press the RETURN key after
each one)
ENTER
```

Specific Extension

To obtain a configuration report on a specific extension number, press the following softkeys:

```
SHOW
CONFIG
EXT-NUM
(enter the required extension number; then press the RETURN key)
ENTER
```

The system displays the Bay and Slot numbers at which this extension is terminated.

Entire System

To obtain a configuration report on the entire system, press the following softkeys:

- SHOW
- CONFIG
- ALL
- ENTER (or MORE or CANCEL)

In all cases, the system outputs the configuration data in the applications area of the screen. In cases where the data requires more space than is available on the screen, the user is prompted to request more data via the MORE softkey, or to cancel the output via the CANCEL softkey.

Table 5-1 Reports Level Functions

| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
|-----------|---------|-----------|--------------------|----------------|-----------------|-----------------------|
| 9-REPORTS | 2-SHOW | 1-CONFIG | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT-NUM [number] | | | |
| | | | 4-ALL | | | |
| | | 2-ALARMS | 2-DEVICE TYPE | 1-LINES | | |
| | | | | 2-TRUNKS | | |
| | | | | 3-RECEIVERS | | |
| | | | | 4-PCM-CHANNELS | | |
| | | | 4-ALL | 0-MORE | | |
| | | 3-STATUS | 1-BAY/SLOT/CCT | DEVICE STATUS | See Note | |
| | | | 2-SWID | 1-SW_STATION | See Note | |
| | | | | 2-SW_RECEIVER | See Note | |
| | | | | 3-SW_CONSOLE | See Note | |
| | | | | 4-SW_LINE | See Note | |
| | | | | 6-SW_DTMF_GEN | See Note | |
| | | | | 7-SW_SET | See Note | |
| | | | | 9-SW_DATA_STN | See Note | |
| | | | | 0-MORE_KEYS | 1-SW_CO_TRUNK | TRUNKS See Note |
| | | | | | 2-SW_DID_TRUNK | TRUNKS See Note |
| | | | | | 3-SW_TIE_TRUNK | TRUNKS See Note |
| | | | | | 4-SW_DISA_TRUNK | TRUNKS See Note |
| | | | | | 6-SW_CAP | See Note |
| | | | | | 7-SW_TRUNK_GRP | TRUNK GROUPS See Note |
| | | | | | 8-SW_HUNT_GRP | HUNT GROUPS See Note |
| | | | | | 0-MORE_KEYS | |
| | | | 3-EXT-NUM [number] | | | |
| | | | 4-ALL | 1-CP_DWA | | |
| | | | | 2-CP_DWA_MEM | | |

Table 5-1 Reports Level Functions (continued)

| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
|-------|---------|---------------|----------------|----------------|-----------|-----------|
| | | | | 3-LINK STATUS | | |
| | | | | 6-MT_DWA | | |
| | | | | 7-MT_DWA_MEM | | |
| | | | | 8-UP_1_PAGE | | |
| | | | | 9-DOWN_1_PAGE | | |
| | | 6-CHANNEL-MAP | 1-LOGICAL | 1-CHANNEL NUM | | |
| | | | 2-PHYSICAL | 1-BAY_NUM | | |
| | | | | 2-LINK_NUMBER | | |
| | | 7-ERRORS | 2-DEVICE_TYPE | 1-SS3_SS4 | | |
| | | | | 3-DIGITAL_SETS | | |
| | | | | 4-HDLC | | |
| | | | | 6-DATASETS | | |
| | | | | 7-CONSOLE | | |
| | | | | 9-T1_TRUNK | | |
| | 3-CLEAR | 7-ERRORS | 1-BAY/SLOT/CCT | | | |
| | | | 2-DEVICE_TYPE | 1-SS3_SS4 | | |
| | | | | 3-DIGITAL_SETS | | |
| | | | | 4-HDLC | | |
| | | | | 6-DATASETS | | |
| | | | | 7-CONSOLE | | |
| | | | | 9-T1_TRUNK | | |
| | | | 3-EXT-NUM | | | |
| | | | 4-ALL | 8-CONFIRM | | |
| | 6-QUIT | | | | | |

Note: The following softkeys are presented when a SWID selection is made:
 1-CP_DWA, 2-CP_DWA_MEM, 3-LINK_STATUS, 6-MT_DWA, 7-MT_DWA_MEM,
 8-UP_1_PAGE, 9-DOWN_1_PAGE. Press CP_DWA to view the device work area for the selected device.

Show Alarms Report

- 5.3 The alarms manager is a software program that monitors the performance of the system, compares it to a set of default thresholds and, if the system performance is below the specified level, causes an alarm to be raised.

There are four alarm categories:

1. Lines
2. Trunks
3. DTMF Receivers
4. PCM Channels.

There are four alarm levels:

1. NO ALARM
2. MINOR
3. MAJOR
4. CRITICAL

There are three alarm types:

1. **Bay Alarms** - these are the alarm levels of the categories specific to each separate bay in the system.
2. **System Alarms** - these are the alarm levels of the categories on a system-wide basis.
3. **Overall Alarm** - this is the overall system alarm level, derived from all bay alarms and system alarms in all categories. It is displayed at all times above the upper right corner of the enclosed area of the maintenance display.

For more information on alarms, refer to the *General Maintenance Information Practice*.

Show Alarms All

The user can obtain an alarm report on the entire system (i.e., all device types, in all bays of the system) by pressing the following softkeys:

```
SHOW  
ALARMS  
ALL  
ENTER ( or MORE or CANCEL )
```

Enter MORE to step through displays of specific device type alarms (different device types are not summed together on one display).

Show Alarm - Device Type

The user may obtain an alarm report on a specific device type (category) by pressing the following softkeys:

SHOW
 ALARMS
 DEVICE TYPE (LINES or TRUNKS or RECEIVERS or PCM-CHANNELS)
 ENTER

In all cases, the system will output the alarm status data in the applications area of the screen. In cases where the data requires more space than is available on the screen, the user is prompted to request more data via the MORE softkey, or to cancel the output via the CANCEL softkey. An example of an alarm report is shown in Figure 5-1.

| 1:21 PM 19-MAR-1997 | | | | | alarm status = NO ALARM | | |
|------------------------|-------------------------|-----------------------------|------------------------|----------------|-------------------------|-------|----------|
| SX-200 ML LIGHTWARE 16 | | 1.0 | 17-MAR-1997 | Reports | | | |
| BAY# OR SYSTEM | NUMBER OF DEVICES | TOTAL DEVICES UNAVAIL | PERCENT UNAVAILABLE | ALARM LEVEL | ALARM THRESHOLDS | | |
| | | | | | MINOR | MAJOR | CRITICAL |
| Bay# 1 | 16 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 2 | 0 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 3 | 0 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 4 | 0 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 5 | 0 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 6 | 0 | 0 | 0% | | 0% | 20% | 0 |
| Bay# 7 | 0 | 0 | 0% | | 0% | 20% | 0 |
| System | 16 | 0 | 0% | | 0% | 20% | 0 |
| Line Alarms Display | | | | | | | |
| 1- | 2- | 3- | 4- | 5-CANCEL | | | |
| 6- | 7- | 8- | 9- | 0- | | | |

Figure 5-1 Example of LINE ALARM Status Display

Table 5-2 summarizes the terms used in the alarm status report:

| Table 5-2 Terms Used In The Alarm Status Report | |
|--|---|
| Term | Meaning |
| BAY# OR SYSTEM | The range of the specified alarm category is Bay 1. |
| NUMBER OF DEVICES | Total number of devices programmed in the specified category in the specified range; e.g., a total of 13 lines in Bay 1. Category is displayed on the command line. |
| TOTAL DEVICES UNAVAIL | Total number of devices unavailable to Call Processing in the corresponding TOTAL. |
| PERCENT UNAVAILABLE | The percentage of devices unavailable to Call Processing in the corresponding TOTAL. |
| ALARM LEVEL | The current alarm level in the specified range. |
| MINOR | The Minor Alarm threshold - a percentage of the total number of devices in the specified range. |
| MAJOR | The Major Alarm threshold - a percentage of the total number of devices in the specified range. |
| CRITICAL | The Critical Alarm threshold - the actual minimum number of devices in the specified range allowed before the system will reset. |

Show Status

Equipment Status Report

5.4 The equipment status report provides the maintenance user with information on current call processing and maintenance states of any device or range of devices. The information provided includes:

- physical location(s), in terms of bay number, slot number, circuit number, and sub-circuit number
- Software Identification (SWID) of device (where applicable)
- extension or trunk number (where applicable)
- programmed type of circuit
- maintenance status of the circuit
- software status of the circuit (where applicable)
- hardware status of the circuit (where applicable)
- background diagnostics status
- power-up diagnostics status
- PCM link and channel number used (where applicable).

An example of an equipment status report is shown in Figure 5-2. The CP_DWA and CP_DWA_MEM softkeys only appear if the device has such a work area.

Status - Entire Bay

To obtain an equipment status report on an entire bay, press the following softkeys:

SHOW
STATUS
BAY/SLOT/CCT (enter the required bay number, press the RETURN key, and enter only the RETURN key for the slot, circuit, and sub-circuit prompts)
ENTER

Status - Specific Card Slot

To obtain an equipment status report on a specific card slot, press the following softkeys:

SHOW
STATUS
BAY/SLOT/CCT (enter the required bay and slot numbers, pressing the RETURN key after each one; enter only the RETURN key for the circuit and sub-circuit prompts)
ENTER

Status - Specific Circuit (or Subcircuit)

To obtain an equipment status report on a specific circuit, press the following softkeys:

SHOW
STATUS
BAY/SLOT/CCT (enter the required bay, slot and circuit numbers, pressing the RETURN key after each one; enter only the RETURN key for the sub-circuit prompt)
ENTER

Status - Specific Extension

To obtain an equipment status report on a specific extension number, press the following softkeys:

SHOW
STATUS
EXT-NUM (enter the required extension number, then press the RETURN key)
ENTER

| 3:48 PM 14-JAN-97 | | | | | | | | | | alarm status = NO ALARM | | |
|-------------------|----|----|--------------|-------------|-------|-------------|-----|-----|---------------|-------------------------|----------|--|
| BB | SS | CC | SC | SOFTWARE_ID | EX/TK | TYPE | BG | PWR | MTSTAT | SWSTAT | HWSTAT | |
| 0 | 0 | 6 | 0 | - | - | dsp | off | | avail | - | - | |
| 0 | 1 | 0 | 0 | - | - | pcm | off | | avail | busy | busy | |
| 0 | 1 | 0 | 1 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 2 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 3 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 4 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 5 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 6 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 7 | - | - | pcm | off | | avail | free | idle | |
| DEVICE STATUS | | | | | | | | | | | | |
| 1- | | | 2- | | | 3- | | | 4- | | 5-CANCEL | |
| 6-MT_DWA | | | 7-MT_DWA_MEM | | | 8-UP_1_PAGE | | | 9-DOWN_1_PAGE | | 0- | |

Figure 5-2 Example of EQUIPMENT STATUS Report

Table 5-3 summarizes the terms used in the equipment status report:

| Table 5-3 Terms Used In the Equipment Status Report | |
|--|---|
| Term | Meaning |
| BB | The bay in which the device is located |
| SS | The card slot in which the device is located |
| CC | The circuit number of the device |
| SC | The sub-circuit number of the device (where applicable) |
| SOFTWARE_ID | Type of device installed and its software identification number (SWID) |
| EX/TK | The extension or trunk number of the device (where applicable); a number up to five digits in length. |
| TYPE | The circuit type; one of the following: ons - ONS line circuit set - COV line circuit ops - OPS line circuit dnic - DNIC line circuit rcvr - DTMF Receiver module moh - Music On Hold module lsgs - CO trunk circuit T1 - T1 trunk circuit dncon - DNIC console cutvr - cutover sensor ups - UPS sensor lamp - ONS lamp test did - DID trunk e&m - E&M trunk pcm - pcm channel dsp - digital signal processor |
| BG | Background diagnostics enabled; either "on" or "off" |
| PWR | Boot diagnostics enabled; either "on" or "off" |
| MTSTAT | The current maintenance status; one of the following: avail - available to CP and maintenance progr - programmed in CDE but not installed unprog - installed but not programmed in CDE suspt - suspect - failed diagnostic test once |

Table 5-3 Terms Used In the Equipment Status Report (continued)

| Term | Meaning |
|--------|---|
| | bsout - busied-out by maintenance - failed diagnostic test at least twice, or busied-out by maintenance user flty0 faulty with no passes flty1 faulty with one pass flty2 faulty with two passes flty3 faulty with three passes flty4 faulty with four passes flty5 faulty with five passes flty6 faulty with six passes |
| SWSTAT | The current call processing (CP) software status; for lines and trunks, one of the following: altms - alternate music acdwt - ACD wait bsout - busied-out bst - receiving busy tone cwait - using Auto Attendant overflow dlgrd - using Auto Attendant kspag - directed or broadcast paging idlks - receiving broadcast page bsgks - receiving directed page onstk - using ONS Voicemail feature colre - CO line is reserved campd - camped on on dialg - dialing dnd - do not disturb error - receiving reorder tone hfi - handsfree idle hfree - handsfree ringing hfs - handsfree suspended hold - consultation hold idle - idle lockd - locked-out pagng - paging parkd - parked (held by attendant) |

Table 5-3 Terms Used In the Equipment Status Report (continued)

| Term | Meaning |
|-------------|---|
| | <p> rngbk - ringback rngng - ringing rs232 - data station is establishing RS-232 protocol stowd - stowed (hard or call hold) suspd - suspended talkg - talking tkd - trunk dial wdtrx - data station waiting for dtrx response wfjct - waiting for call resources (receiver, channel) wflin - waiting for line The current call processing (CP) software status, for receivers ; one of the following: free - ready for use by CP busy - currently in use by CP down - currently unavailable to CP </p> |
| HWSTAT | <p> The current hardware status; one of the following: idle - available to CP busy - busy down - card not present - unavailable to CP dwnld - downloading prompts to a SUPERSET 430™ telephone maint - maintenance busy - busied-out by maintenance diagnostics </p> |
| Page 3 of 3 | |

Show Status - SWID

This operation enables a user to show software status by selecting a device type. To obtain an equipment status report on a software identifier, press the following softkeys:

SHOW
 STATUS
 SWID
 (press one of the softkeys shown in Table 5-4)
 ENTER

The system outputs the equipment status data in the applications area of the screen. Where the data requires more space than is available on the screen, the user is prompted to request more data via the 8-UP_1_PAGE or 9-DOWN_1_PAGE softkeys, or to cancel the output via the CANCEL softkey.

| Table 5-4 Software Identification (SWID) Types | |
|---|---|
| Softkey | Device Types |
| SW_STATION | single line port |
| SW_CO_TRUNK | CO trunk - 6 cct LS/GS or 4-cct CO |
| SW_RECEIVER | receivers show the 32 pseudo receivers and the "real" receivers on the receiver module(s) |
| SW_DID_TRUNK | DID trunks - 6 cct digital |
| SW_CONSOLE | console |
| SW_TIE_TRUNK | TIE trunk - E&M module |
| SW_LINE | <i>SUPERSET</i> line work areas |
| SW_DISA_TRUNK | 6 cct LS/GS |
| SW_DTMF_GEN | DTMF generator |
| SW_CAP | call announce port |
| SW_SET | <i>SUPERSET</i> 401+™ / <i>SUPERSET</i> 410™ / <i>SUPERSET</i> 420™ / <i>SUPERSET</i> 430 |
| SW_TRUNK_GRP | trunk group |
| SW_DATA_STN | dataset - standalone |
| SW_HUNT_GRP | hunt group |

Device Status Reports

5.5 Device status reports display call processing information for devices (sets, stations, consoles, trunks, receivers, etc.) that are programmed into the system.

A device status report displays the call processing work area (CP_DWA) of a device. Figure 5-3 shows an example of a CP_DWA of a tie trunk.

| 3:28 PM | | 14-JAN-97 | | alarm status = NO ALARM | | | | | | | | |
|---------------|----|-----------|--------------|-------------------------|-------|-------------|-----|-----|---------------|--------|----------|--|
| BB | SS | CC | SC | SOFTWARE_ID | EX/TK | TYPE | BG | PWR | MTSTAT | SWSTAT | HWSTAT | |
| 0 | 0 | 6 | 0 | - | - | dsp | off | | avail | - | - | |
| 0 | 1 | 0 | 0 | - | - | pcm | off | | avail | busy | busy | |
| 0 | 1 | 0 | 1 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 2 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 3 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 4 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 5 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 6 | - | - | pcm | off | | avail | free | idle | |
| 0 | 1 | 0 | 7 | - | - | pcm | off | | avail | free | idle | |
| DEVICE STATUS | | | | | | | | | | | | |
| 1- | | | 2- | | | 3- | | | 4- | | 5-CANCEL | |
| 6-MT_DWA | | | 7-MT_DWA_MEM | | | 8-UP_1_PAGE | | | 9-DOWN_1_PAGE | | 0- | |

Figure 5-3 Device Status Report

To display the CP_DWA for a device, press the following softkeys:

- REPORTS
- SHOW
- STATUS
- BAY/SLOT/CIRCUIT
- (enter the PLID.... of the desired device. Note that you can also specify a device by its extension/trunk number, or by its software identification (SWID))
- CP_DWA

The device status report for the device appears on the terminal screen. Softkeys, available at the bottom of the report, allow you to display the device status reports of other devices that are connected to, or interacting with, the currently displayed device.

Note that pressing a softkey will have no effect if the softkey does not apply to the current state of the device. For example, pressing the OTHER softkey when a device is not connected (in conversation) with another device, has no effect on the display.

To display a Monitor T1 Trunk Activity report, press the following softkeys when in maintenance mode:

```

REPORTS
SHOW
STATUS
BAY/SLOT/CIRCUIT
(enter PLID.....)
LINK_STATUS (This softkey only appears if the affected circuit is a T1 circuit)
TRUNK-NUM
Enter the circuit location on the T1 Trunk Card (24 T1 circuits per T1 Trunk Card)
ENTER

```

Data from the DSTi, DSTo, CSTi, and CSTo buses of the selected trunk is presented on the screen.

To send test data, press the following softkeys:

```

TRUNK-NUM
Enter the circuit location on the T1 Trunk Card (24 T1 circuits per T1 Trunk Card)
ENTER
MORE_KEYS
Enter the test data - hex 00 to FF (Note: if 00 is entered, no test data is sent; if
nothing is entered, test data 00 is sent)
ENTER

```

To manually change the clock source while monitoring, press the following softkeys:

```

MANUAL
Enter the bay number of new source and press RETURN *
Enter the slot number of new source and press RETURN *
ENTER
* This number must be the locations of a functioning T1 Trunk Card.

```

To return to the original clock source:

```

AUTO
ENTER

```

To start a loopback test:

```

LOOPBACK
INTERNAL/EXTERNAL/CLEAR (See notes)
ENTER

```

- Note:**
1. INTERNAL LOOPBACK causes the DX to route transmit data signals back into the receive channels.
 2. EXTERNAL LOOPBACK causes the DX to route receive data signals back out to the transmit channels.
 3. CLEAR clears the loopback test that is currently in progress.
 4. If the T1 link is not in synchronization, or is transmitting a yellow alarm, or if the TX or RX pads are not set to zero, the data received is altered. Bit 0 changes because of the transmission of AB bits.

Table 5-5 provides definitions for the softkey commands that you can enter from the maintenance terminal to test the T1 link.

| Table 5-5 Softkey Definitions | |
|--------------------------------------|---|
| Softkey | Definition |
| TRUNK-NUM | Prompts for target trunk. Defaults to 01. Valid is 01-24. |
| CANCEL | Goes back to REPORTS LEVEL form. The default settings for all control signals will be set. |
| YELLOW | Toggles bit that forces the T1 module to send a yellow alarm to the far end or removes the yellow alarm condition (bipolar). |
| RETURN | Goes back to the SHOW STATUS summary form. |
| MANUAL | This softkey will allow the user to change the sync source. The user will be prompted for Bay/Slot. |
| AUTO | This softkey will restore the original synchronization mode. |
| SEND | Prompts user for data to be transmitted. Data is sent continuously down the channel currently selected. Valid input is 00-FF (hex). |
| TxPadz | Increments transmit attenuation control bits. |
| RxPad | Increments receive attenuation control bits. |
| Tx/AB_00 | Transmits A = 0 , B = 0 |
| Tx/AB_01 | Transmits A = 0 , B = 1 |
| Tx/AB_10 | Transmits A = 1 , B = 0 |
| Tx/AB_11 | Transmits A = 1 , B = 1 |
| LOOPBACK - INTERNAL | Analog loopback. Toggles the loopback relay for the card. Loops the signals back through the hardware in the card. |
| LOOPBACK - EXTERNAL | External loopback causes the DX to route receive data signals back out to the transmit channels. External loopback function sends PABX "A" "B" signaling bits, not incoming "A" "B" bits. |
| LOOPBACK_D | Digital loopback. Toggles the loopback bit for the selected channel. The DS1 channel is looped internally to replace the corresponding receive channel. |
| UPDATE | This softkey updates the values on the screen. |

The information in Table 5-6 is displayed for information only; it cannot be altered from the terminal.

| Table 5-6 Definition Of Maintenance Terminal Display | |
|---|--|
| Display | Meaning |
| DSTi | Data ST bus Input (32 channels 24 active). |
| DSTo | Data ST bus Output (32 channels 24 active). |
| CSTi | Control ST bus Input (32 channels 25 active). |
| CSTo | Control ST bus Output (32 channels 25 active). |
| SYNC | SYNC indicates whether there is synchronization to the RECEIVED DS1 link. |
| SLIP | This bit changes state once a slip condition occurs between the RECEIVED DS1 data and the ST-BUS data. |
| BPV | This bit changes state after 256 bipolar violations, other than the B8ZS code, within a sample period of 200 ms. |
| XS1 | This EXTERNAL SCAN POINT bit contains the data sampled at the XS1 pin once per frame. |
| RxYLW | RxYLW indicates that a yellow alarm is being received on the RECEIVED DS1 link. |
| XCTL | XCTL indicates whether the link is active or not (act, inact). |
| B8ZS | B8ZS bit value in control register. |
| 8KHZ | 8KHz bit value in control register. If 1, then the 8khz pin is low for received channels 1 to 15 and high for channel 16 to the S-bit. |
| TxYlw | TxYlw indicates whether a yellow alarm is being sent down the link. |
| DAC | The current value being written to the DAC. The DAC is on the T1 Clock Interface Module. Its purpose is to provide the ability to adjust the system clock. This is accomplished by writing a 12-bit word to the DAC. |
| SRCE | This field gives the current SYNC source (Bay/slot). |
| MODE | <p>This is the current mode of operation. There are three modes: AUTO (AUTO), FREERUN (FREE), or MANUAL (MANU).</p> <p>AUTO - the T1 process is adjusting the system clock to lock on to the incoming 1.544 Mhz signal. The link that the process looks at for an external source is based on the order of the links in the network synchronization form.</p> <p>FREERUN - the system clock is not being adjusted to lock on to the incoming 1.544 Mhz signal. The reason is that there is nothing programmed in the network sync form or the links all exceed the error threshold.</p> <p>MANUAL - the T1 process is forced via maintenance to look at a particular link as an external source. The system clock is adjusted to this link and locks to this source. The T1 process will automatically switch external sources after 24 hours or if the error threshold has been exceeded.</p> |
| Tx | This is the current data sample for the transmit side of the channel that is being monitored. |
| Rx | This is the current data sample for the receive side of the channel that is being monitored. |
| TxA, TxB | TxA and TxB are the transmit A and B bits used for controlling channels on the DS1 link. |
| Page 1 of 2 | |

RS-232 Maintenance

Table 5-6 Definition Of Maintenance Terminal Display (continued)

| Display | Meaning |
|----------------|--|
| TxPD | The per channel transmit attenuation control bits. |
| RxA, RxB | RxA and RxB are the receive A and B bits used for monitoring channels on the DS1 link. |
| RxPD | The per channel receive attenuation control bits. |
| LPBK | LPBK indicates whether any loopbacks have been activated: no - there are none Ext - External loopback has been activated for the card Int - Internal loopback has been activated for this card dig - digital loopback has been activated for this channel (is not seen if the card is in analog loopback). |
| Page 2 of 2 | |

Data Fault Analysis Procedures

- 5.7 Generic information and procedures for analyzing datasets and data-related problems is provided here; refer to it for troubleshooting problems before referring to specific data device troubleshooting charts.

| Table 5-7 Possible Causes Of Data-related Errors | | | | | | |
|--|-----------------------------|--------------------|-------------|-----|--------------------|---------------------|
| ERROR | CALL STATE | POSSIBLE CAUSE | | | | |
| | | DATASET | CABL ING | DX | DLC | DTE / DCE |
| CRCERR | ANY | Yes (DNIC/HDLC) | Yes | Yes | Yes (DNIC/HDLC) | No |
| RESETS | ANY | Yes | Yes | Yes | Yes | Yes |
| LINK FAILURES | CALL SETUP OR TALKING | Yes | Yes | Yes | Yes | No |
| LINK ABORTS | CALL SETUP OR TALKING | Yes | Yes | Yes | Yes | Yes |
| PARITY | ANY | Yes (UART) | No | No | No | Yes (Connectors) |
| OVERFLOW | TALKING | No | No | No | No | Yes |
| OVERRUN | TALKING | No | No | No | No | Yes |
| FRAMING | TALKING | No | No | No | No | Yes |
| NOSYNC | ANY | Yes | Yes | No | Yes | No |

CRC Error: A CRC (Cyclic Redundancy Check) error will be logged whenever the HDLC chip reports a CRC ERROR, FIFO OVERFLOW, or FRAME ABORT. They are recorded on both the B and the D channel. The probable cause is a hit on the transmission line; the protocol usually recovers gracefully. If the errors become so bad that the protocol cannot continue to run, then a link reset will occur. If the link resets, the link reset may not be successful - if the dataset is on the B-channel, it will return to the D-channel with a disconnect reason of link abort.

CRC errors happen on one end of a call if the dataset at the other end is unplugged. The connected dataset records a large number of CRC errors, followed by a link reset, and then a link abort.

Link Resets: A link reset occurs when the dataset sends a message, does not receive a response, retransmits the message more times, and still cannot get a response. At this point, the dataset will log a link reset, and then try to re-establish communication by sending SABMs (Set Asynchronous Balance Mode) to the far end. Link resets can occur on both B and D channels.

Link Aborts: A link abort occurs when the dataset, after sending a SABM 8 times, cannot get a valid response from the far end. Thus, a link abort often follows a link reset (specifically when the link reset happened because of many transmission line errors, set unplugged, or circuit switch path broken).

Link aborts can also occur just after the dataset is sent to the B-channel. The dataset will send up to 64 SABMs in an attempt to achieve communication; if it does not receive a valid response, a link abort will occur, and the dataset will return to the D channel. There will NOT be an associated link reset (because the link was never in a "normal" state).

Link Failures: There are two events which occur on the B-channel that can cause a link failure:

- If the dataset is connected on the B-channel, in "normal" mode (NOT go-ahead mode), and the dataset receives an idle "1"s pattern rather than flags for more than 0.5 second, the dataset will disconnect from the B-channel, with a B-to-D reason of link failure.
- If the dataset is connected on the B-channel in go-ahead mode, and the dataset does NOT receive a go-ahead after transmitting flags, the dataset will return to the D-channel, and report a link failure.

Overflows: Overflows occur when the device attached to the dataset sends data to the dataset faster than the dataset can send it off to the far end. Two scenarios are:

- Dataset A is at a high baud rate, dataset B is at a lower baud rate, and flow control is NOT enabled on the datasets. In this case, overflows will occur in dataset A. This should NEVER happen; software should not allow two datasets at different baud rates to communicate unless flow control is enabled.
- Dataset A and dataset B both have flow control enabled. The device attached to dataset A is transmitting a large amount of information. The device attached to dataset B flow-controls dataset B. Dataset B stores up as much data from A as it can, then tells A to stop transmitting. Dataset A sends a flow control character to the attached device, but the device ignores it and continues to transmit. Overflows occur. Overflows can happen as a result of a defective attached device, an attached device not having flow control enabled, or the dataset using different flow control characters or kind of flow control (e.g., CTS) than the device is expecting.

I/F Framing Errors: Framing errors occur because the device is set at a different baud rate from the dataset. A common cause is that the user changes the terminal baud rate during a session (or while idle, if the dataset is not programmed for autobaud operation). One possible scenario is:

- A user establishes a call at 1,200 baud.
- The user decides that is too slow.
- The user then sets his terminal baud rate to 9,600.

Framing errors occur and the user cannot communicate, because the dataset is still at 1,200 baud. The only recovery is to disconnect the call and start over.

NOSYNC Errors: NOSYNC errors occur when the dataset has lost synchronization with the *SX-200* ML PABX; loss of synchronization usually occurs when a dataset has been powered off or a data connection has been broken.

Power Up Self Test Causing the Dataset to be Busied Out: If a dataset fails its power up self test, it will be busied out. Maintenance logs will have two log entries: the busied out log and the power up self test failure reason. If a new dataset is installed that passes the power up self test, the device will be returned to service, without an installer using a maintenance command.

Error Reports

Show Errors

- 5.8 The Error Reports provide the maintenance user with an up-to-date record of all the transmission checksum errors that have occurred since the system was initialized, or since they were last cleared (see Clearing Error).

To obtain an error report, press the following softkeys:

```
SHOW
ERRORS
DEVICE_TYPE
```

At this point the following softkeys are presented for device selection:

```
DIGITAL_SETS
HDLC
CONSOLE
DATASETS
T1_TRUNK
ENTER
```

The system outputs the error data in the applications area of the screen. In cases where the data requires more space than is available on the screen, the user is prompted as follows:

- Select the MORE softkey for more data.
OR
- Select the CANCEL softkey to cancel the output.

Examples of error reports follow.

Digital Set Errors

| PLID | | EXT.# | DEVICE | NO_SYNC | RESETS | RETRANS | CHECKSUM |
|--------------------------|-------|-------|--------|----------|--------|---------|----------|
| 1 | 8 1 1 | 1801 | ss420 | 100 | 0 | 0 | 0 |
| SHOW ERRORS DIGITAL_SETS | | | | | | | |
| 1- | 2- | 3- | 4- | 5-CANCEL | | | |
| 6- | 7- | 8- | 9- | 0- | | | |

Figure 5-5 Example of Digital Set Error Report

Explanation of error types:

No Sync: A synchronization signal is sent between the digital circuit and the set. The digital circuit monitors the physical line for the presence of this signal. Synchronization is lost when a set is unplugged or when a line is very noisy (external interference or bad connection). A loss of synchronization increments the 'no sync' counter; however, maintenance reports are updated only after every 25 occurrences.

In normal operation, this counter will not exceed about 50 for the operating life of a set. A set will get about 25 occurrences each time the set is unplugged or the system is reset.

Investigate a set that gets 50 or more 'no syncs' a day:

- check tip/ring connection (remove bridge taps, proximity to noise sources, loop length)
- swap set
- swap circuit card.

Link Reset: A link reset will occur when communications between a digital set and circuit is torn down. In most cases, the reset is because a set was unplugged or the system was reset; however, it can also occur because of a protocol violation.

In most cases, a set will get only one link reset during its life. In a 24-hour period, 20 or more link resets may affect set operation and the problem should be investigated.

Retransmits: The retransmit counter increments each time a digital circuit has to resend just sent information to a set. If the set has not responded to having received the just sent information, the circuit resends.

This problem can be caused by:

- a noisy line
- bad set
- bad circuit
- software error (protocol violation).

In most cases, a set will have no retransmits in a 24-hour period; however this counter can be influenced by the amount of traffic to the set. The more messages sent to a set, the greater the possibility that a message may not make it to that set and will have to be retransmitted. Investigate more than 50 retransmits in a 24 hour period although the user will probably not observe any problem at this rate.

HDLC Link Errors

| 2:34 PM 10-JAN-97 | | | | alarm status = NO ALARM | | | |
|-------------------|--------|--------|--------|-------------------------|--------|--------|--------|
| HDLC LINK | TX_ERR | RX_ERR | OVRFLW | CRCERR | ABORTS | ODDPKT | RETRAN |
| MC to Bay 1 | 55 | 0 | 0 | 0 | 0 | 0 | 0 |
| SHOW ERRORS HDLC | | | | | | | |
| 1- | 2- | 3- | 4- | 5-CANCEL | | | |
| 6- | 7- | 8- | 9- | 0- | | | |

Figure 5-6 Example of HDLC Link Error Statistics Report

Explanation of HDLC Link Error types:

HDLC Link errors are explained following:

| ERROR | BAY TO MC | MC TO BAY | Error Rate Expected |
|--------|---|--|---------------------|
| TX_ERR | Transmitter underrun. | Transmitter underrun. | none |
| RX_ERR | Undefined error. | Undefined error. | none |
| OVRFLW | Bay HDLC receiver fifo overflowed. | Main HDLC receiver fifo overflowed. | none |
| ABORTS | Bay received HDLC ABORT sequence from main. | Main received HDLC ABORT sequence from main. | see note 1 |
| ODDPKT | Bay received packet with odd number bytes. | Main received packet with odd number bytes. | see note 2 |
| RETRAN | Bay retransmitted packet. | Main retransmitted packet. | see note 2 |

- Note:**
1. Dependent upon message traffic on a main-bay link, but should be low, less than 10.
 2. Dependent upon message traffic on a main-bay link, but should be low, generally less than 30 per 24 hours.

Console Errors

| | | | | | | | |
|---------------------|-------|---------|---------|-------------------------|---------|----------|--|
| 5:19 PM 10-JAN-97 | | | | alarm status = NO ALARM | | | |
| PLID | EXT.# | DEVICE | NO_SYNC | RESETS | RETRANS | CHECKSUM | |
| 1 8 3 1 | 1803 | CONSOLE | 25 | 0 | 0 | 0 | |
| SHOW ERRORS CONSOLE | | | | | | | |
| 1- | 2- | 3- | 4- | 5-CANCEL | | | |
| 6- | 7- | 8- | 9- | 0- | | | |

Figure 5-7 Example of Console Error Report

Explanation of error types:

No Sync: A synchronization signal is sent between a digital circuit and a console. The digital circuit monitors the physical line for the presence of this signal. Synchronization is lost when a console is unplugged or when a line is very noisy (external interference or bad connection). A loss of synchronization increments the 'no sync' counter; however, maintenance reports are updated only after 25 occurrences.

In normal operation, this counter will not exceed about 50 for the operating life of a console. A console will get about 25 occurrences each time the console is unplugged or the system is reset.

Investigate a console that gets 50 or more 'no syncs' a day.

- check tip/ring connection (remove bridge taps, proximity to noise sources, loop length)
- swap console
- swap circuit card.

Link Reset: A link reset will occur when communications between a digital console and circuit is torn down. In most cases, the reset is because a console was unplugged or the system was reset; however, it can also occur due to a protocol violation.

In most cases, a console will get only one link reset during its life. In a 24-hour period, 20 or more link resets may affect console operation; investigate the problem.

Retransmits: The retransmit counter increments each time a digital circuit has to resend just sent information to a console. If the console has not responded to having received the just sent information, the circuit resends.

This problem can be caused by:

- a noisy line
- bad console
- bad circuit
- software error (protocol violation).

In most cases, a console will have no retransmits in a 24 hour period; however this counter can be influenced by the amount of traffic to the console. The more messages sent to a console, the greater the possibility that a message may not make it to that console and will have to be retransmitted. Investigate more than 50 retransmits in a 24-hour period although the user will probably not observe any problem at this rate.

Checksum: Bad checksum in CONSOLE ROM will report error to maintenance.

DATASET Errors

| PLID | | EXT.# | FAILRS | ABORTS | CRCERR | RESETS | PARITY | OURFLW | NOSYNC |
|-----------------------------|-------|-------|--------|--------|--------|--------|--------|----------|--------|
| 1 | 8 1 2 | 18888 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| SHOW ERRORS DATASETS | | | | | | | | | |
| 1- | | 2- | | 3- | | 4- | | 5-CANCEL | |
| 6- | | 7- | | 8- | | 9- | | 0- | |

Figure 5-8 Example of DATASET Error Statistics Report**Explanation of error types:**

FAILRS: The dataset sends flags requesting communication but does not receive acknowledgment from the Digital Line Card; the HDLC on the DLC is time-shared with up to 12 datasets, and sends "go-aheads" to each dataset when it is ready to communicate; if the HDLC is busy with one dataset for too long, other datasets will not receive "go-ahead".

This error can also apply to situations which involve link layer errors such as failing to achieve link reset after 64 tries.

Check the dataset and the Digital Line Card.

ABORTS: The link is up but the command - response exchange (Set Asynchronous Balance Mode - Unnumbered Acknowledgment) does not succeed. The SABM-UA could happen between the dataset and the SX-200 ML PABX when they are programmed as DTRX, or between the two datasets.

This error can also apply to situations such as received idle HDLC link when flags were expected.

Check the dataset and the Digital Line Card.

CRCERR: number of retransmissions on the link; this value is set to zero when DNIC synchronization is lost.

The line is noisy or of poor quality.

RESETS: number of times the link initiated link reset; this value is set to zero when DNIC synchronization is lost. This number is also incremented by link aborts and link failures.

Check the dataset and the Digital Line Card.

PARITY: number of bytes received from the attached device with parity errors; this value is set to zero when DNIC synchronization is lost.

Check that the DTE device and the dataset have the same parity settings.

OVRFLW: number of buffer overflows in the following cases; overflows can be caused because the dataset cannot flow control the DTE device.

DATASET 2100 Series: (Sync mode) number of overflows of PLL buffer

DATASET 2100 Series: (Async_mode) overflows on receive information from the locally attached device.

DATASET 1100 Series: (Async_mode) overflows on receive information from the locally attached device.

Note: DATASET Error values are set to zero when DNIC synchronization is lost.

NOSYNC: This occurs when there has been loss of synchronization between the dataset and the system.

The most common cause is a disconnected dataset.

T1 Trunk Errors

| 6:07 PM 13-JAN-97 | | | | alarm status = MAJOR | | | |
|----------------------|------|-------|-------|----------------------|--------|-------|--|
| PLID | HOUR | SLIPS | FRAME | BIPOLAR | STATUS | STATE | |
| 1 5 0 0 | 0 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 1 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 2 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 3 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 4 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 5 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 6 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 7 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 8 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 9 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 10 | 0 | 0 | 0 | | | |
| 1 5 0 0 | 11 | 0 | 0 | █ 0 | | | |
| SHOW ERRORS T1_TRUNK | | | | | | | |
| 1- | | 2- | | 3- | | 4- | |
| 5-CANCEL | | | | | | | |
| 6- | | 7- | | 8- | | 9- | |
| 0-MORE | | | | | | | |

Figure 5-9 Example of T1 Trunk Error Statistics Report

Explanation of error types:

HOUR - data is accumulated hourly

SLIPS - number of data slips due to internal and external timing clocks

FRAME - number of framing errors

BIPOLAR - number of bipolar violations

STATUS - appears only for the current hour and shows current link status. Valid values are:

clear - when there is no alarm condition on the link

active - not currently used

yellow - receiving a yellow alarm

red - link is in a red alarm condition

shrt term - this link is the current sync source and is using the short term
formula to adjust the system clock

long term - this link is the current sync source and is using the long term
formula to adjust the system clock

STATE - appears for the current hour only and shows the current link state. Valid values are:

no sync - the status of the link is red because it is not in sync

no power - the status of the link is red because it has a power fault

active - there is no alarm on the link

inactive - there is an alarm condition on the link.

Clear Error Counter

For Specific Devices

5.9 To clear the Error Counter for a specific device, press the following softkeys:

CLEAR
ERRORS
DEVICE_TYPE

The following softkeys are presented for device selection:

DIGITAL_SETS
HDLC
CONSOLE
DATASETS
T1_TRUNK
ENTER

Note: T1 Trunk errors are tracked on a 24-hour basis. Every hour that the T1 Trunk operates, it generates a new report. The error count is a series of 24 one-hour reports; the error count is updated every hour; the oldest entry is deleted.

If CDE Form 42, T1 Link Descriptors, is changed or a new card is plugged in, the counter is cleared.

For Specific Circuits

To clear the Error Counter for a specific circuit, press the following softkeys:

CLEAR
ERRORS
BAY/SLOT/CCT (enter the required bay, slot, circuit and sub-circuit numbers, pressing the RETURN key after each one)
ENTER

For Specific Extensions

To clear the counter for a specific extension, press the following softkeys:

CLEAR
ERRORS
EXT-NUM
(enter the required extension number, then press the RETURN key)
ENTER

For All Devices

To clear all error counters, press the following softkeys:

CLEAR
ERRORS
ALL
ENTER
CONFIRM
ENTER

The user may verify the error counter clearing via the "SHOW ERRORS" command, which operates in the Reports Level.

Show Channel Map

5.10 The channel map report provides the maintenance user with the current status of the system's PCM links. The user may choose between either PHYSICAL or LOGICAL channels. Physical links will show what bay the link is connected to if it is used for voice connection. To obtain a channel map report, press the following softkeys:

SHOW
CHANNEL-MAP
PHYSICAL
LINK-NUMBER or BAY NUMBER
(enter the desired LINK or BAY number, then press the RETURN key)
ENTER

or

SHOW
CHANNEL-MAP
LOGICAL
CHANNEL-NUM
(enter the desired CHANNEL number, followed by the RETURN key or simply press the RETURN key to view all busy channels)
ENTER

The system outputs the channel map report in the applications area of the screen. In cases where the data requires more space than is available on the screen, the user is prompted to request more data by pressing the MORE softkey, or to cancel output by pressing the CANCEL softkey. An example of a physical channel map report is shown in Figure 5-10. Table 5-8 gives a summary of the terms used in the channel map report.

7:06 PM 11-JAN-97 alarm status = NO ALARM

| Channel # | Rx Status | Tx Status | Channel # | Rx Status | Tx Status |
|-----------|-----------|-----------|-----------|-----------|-----------|
| 0 | misc | misc | 1 | free | free |
| 2 | free | free | 3 | free | free |
| 4 | free | free | 5 | free | free |
| 6 | free | free | 7 | free | free |
| 8 | free | free | 9 | free | free |
| 10 | free | free | 11 | free | free |
| 12 | free | free | 13 | free | free |
| 14 | free | free | 15 | free | free |

Link number 2 is connected to bay 1

SHOW CHANNEL_MAP PHYSICAL BAY_NUM 01

| | | | | |
|----|----|----|----|----------|
| 1- | 2- | 3- | 4- | 5-CANCEL |
| 6- | 7- | 8- | 9- | 0-MORE |

Figure 5-10 Example of PHYSICAL CHANNEL MAP Report

Table 5-8 Terms Used In The Channel Map Report

| Term | Meaning |
|-------------|---|
| channel | - Channel number |
| Rx | - Receive channel |
| Tx | - Transmit channel |
| free | - ready for use by CP |
| cp_busy | - currently in use by CP |
| down | - currently unavailable to CP |
| mt_busy | - being tested by maintenance |
| b_syout | - busied out by maintenance |
| music | - music on hold (MOH module and DMP unit) |
| ringbk | - ringback |
| tone a | - channel connected to tone a |
| tone b | - channel connected to tone b |
| tone c | - channel connected to tone c |
| misc | - channel connected to misc tone |
| faulty | - failed test: unavailable to CP |
| os_msg | - channel used by operating system |

6 Maintenance Log Functions

Introduction

- 6.1 The maintenance log records all maintenance-related information, including anything which affects the functioning or the capacity of the system. Typical maintenance log entries would be circuits that fail diagnostics, cards that have been unplugged, and alarm level changes. The user may read, delete and print log entries, as well as set a variety of printing options. For the READ, PRINT and DELETE commands, the following qualifiers apply:

ALL - causes all log entries to be read, printed, or deleted.

NEWEST - causes the most recent user-defined number of log entries to be read, printed, or deleted.

OLDEST - causes the oldest user-defined number of log entries to be read, printed, or deleted.

For further information on the maintenance log, refer to the *General Maintenance Information Practice*, and to the *Troubleshooting Practice*. To access the logs level commands, press the LOGS softkey. All of the following operations are possible while in the logs level. Table 6-1 offers a quick reference for all log operations except CANCEL and ENTER. The user can press the CANCEL softkey at any time to exit the current operation without committing (saving) any changes, or press the ENTER softkey, when it is available, to commit changes.

Reading Log Entries

Note: Logs cannot be read and printed concurrently.

All Log Entries

To read all maintenance log entries, press the following softkeys:

READ
ALL
ENTER

Newest Log Entries

To read the newest user-defined number of maintenance log entries, press the following softkeys:

READ
NEWEST
(enter the number of log entries to be read)
ENTER

Oldest Log Entries

To read the oldest user-defined number of maintenance log entries, press the following softkeys:

READ
 OLDEST
 (enter the number of log entries to be read)
 ENTER

In all cases, the system will output the requested number of log entries into the Applications Area of the screen. In cases where the log data requires more space than is available on the screen, the user is prompted to request more log data via the MORE softkey, or to cancel the output via the CANCEL softkey. An example of reading logs is shown in Figure 6-1.

Table 6-1 Logs Level Functions

| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
|--------|----------|-------------------|-----------|-----------|-----------|-----------|
| 7-LOGS | 1-SET | 4-AUTOPRINT | 1-ON | | | |
| | | | 2-OFF | | | |
| | 2-READ | 1-NEWEST [number] | | | | |
| | | 2-OLDEST [number] | | | | |
| | | 4-ALL | | | | |
| | | 8-LOGS_TEXT* | | | | |
| | | 9-TRACE_INFO* | | | | |
| | 3-PRINT | 1-NEWEST [number] | | | | |
| | | 2-OLDEST [number] | | | | |
| | | 4-ALL | | | | |
| | | 8-LOGS_TEXT* | | | | |
| | 4-DELETE | 1-NEWEST [number] | | | | |
| | | 2-OLDEST [number] | | | | |
| | | 4-ALL | | | | |
| | | 9-TRACE_INFO* | | | | |
| | 8-STOP | | | | | |

Note: * TRACE_INFO and LOGS_TEXT are diagnostic tools that only Mitel personnel use.

| | | | | |
|------------------------|----|--|-------------|----------|
| 4:45 PM 19-MAR-97 | | alarm status = NO ALARM | | |
| SX-200 ML LIGHTWARE 16 | | 1.0 | 17-MAR-1997 | Logs |
| READ LOGS NEWEST 012 | | | | |
| 1997-JAN-10 16:23:53 | | Tot alarm went from MAJOR to No Alarm Alarm level change due to Bay 01 trunks | | |
| 1997-JAN-10 16:21:24 | | T1 trunk card failed at 01 05 00 00 Card removed Alarm Code = 102 | | |
| 1997-JAN-10 15:54:21 | | T1 trunk card at 01 05 00 00 is in red alarm condition due to loss of sync | | |
| 1997-JAN-10 15:54:21 | | Tot alarm went from No Alarm to MAJOR Alarm level change due to Bay 01 trunks | | |
| READ LOGS NEWEST 012 | | | | |
| 1- | 2- | 3- | 4- | 5-CANCEL |
| 6- | 7- | 8- | 9- | 0-MORE |

Figure 6-1 Example of LOGS READ Display

Deleting Log Entries

All Log Entries

6.2 To delete all of the maintenance log entries, press the following softkeys:

DELETE
ALL
ENTER
CONFIRM
ENTER

Newest Log Entries

To delete the newest user-defined number of maintenance log entries, press the following softkeys:

DELETE
NEWEST
(enter the number of log entries to be deleted)
ENTER

Oldest Log Entries

To delete the oldest user-defined number of maintenance log entries, press the following softkeys:

DELETE
OLDEST
(enter the number of log entries to be deleted)
ENTER

In all cases, the system will echo the command into the applications area of the screen. The user may verify that the particular log entries have been deleted by using the READ command.

Printing Logs on System Printer

Note: Logs cannot be read and printed concurrently.

All Log Entries

- 6.3 To print all of the maintenance log entries onto the printer that was defined during Customer Data Entry, press the following softkeys:

PRINT
ALL
ENTER

Newest Log Entries

To print the newest user-defined number of maintenance log entries, press the following softkeys:

PRINT
NEWEST
(enter the number of log entries to be printed)
ENTER

Oldest Log Entries

To print the oldest user-defined number of maintenance log entries, press the following softkeys:

PRINT
OLDEST
(enter the number of log entries to be printed)
ENTER

In all cases, the system echos the command into the applications area of the screen.

Setting Print Device

Log entries are produced at the device named in CDE Form 34, DIRECTED IO. See the *Customer Data Entry Practice* for details.

Setting Automatic Printing

Maintenance log entries may be printed without the need of a maintenance user to explicitly request printing using the "PRINT" command. Automatic printing eliminates the risk of losing maintenance log information because of overflow. When the maintenance log contains 75% new (unprinted) log entries, the new entries are automatically printed. Once this initial 75% is printed, logs are printed frequently thereafter (usually four at a time). When logs are deleted, the system accumulates 75% of entries, then prints them out followed by groups of four, until the logs are deleted again. The maintenance log contains a maximum of 96 log entries.

To initiate the automatic printing of logs, press the following softkeys:

```
SET
AUTOPRINT
ON
ENTER
```

The system echos the command into the applications area of the screen.

To stop automatic printing of logs, press the following softkeys:

```
STOP
ENTER
```


7 Diagnostic Functions

Introduction

- 7.1 The Diagnostics Level of operation is a conglomeration of active testing-related commands that are designed to assist the maintenance user ensure that the *SX-200* ML PABX is operating at peak performance. The available commands allow the user to enable, schedule, and initiate diagnostic testing, and to take equipment out of service and return it to service. All operations available in diagnostics, except CANCEL and ENTER, are shown in Table 7-1. The user can press the CANCEL softkey at any time to exit the current operation without committing (saving) any changes, or press the ENTER softkey to commit changes.

Four types of diagnostics are available to the maintenance user:

- **PROM-Based Diagnostics** - are run only on system initialization and are not user-controlled. Only these tests verify the Main Control Card II.
- **Power-up Diagnostics** - if enabled, run once starting at system initialization. Default is disabled.
- **Background Diagnostics** - if enabled, start running after power-up diagnostics have completed, and run continuously. Default is enabled.
- **Directed Diagnostics** - tests that are initiated by the maintenance user from the maintenance terminal, console, or butt set.

Power-up, background, and directed diagnostics are capable of testing the following devices:

- ONS line circuits
- CO trunk circuits
- DTMF receiver circuits
- Console interface
- PCM channels
- T1 trunk circuits
- E&M trunks
- COV line circuits
- DID trunks
- OPS line circuits
- DNIC line circuits
- Printer port and printer PLID (or system printer)
- Digital Signal Processor.

Note: The DEVICE TYPE softkey must be used to test enable/disable diagnostics for the analog junctors and PCM channels. Refer to the *General Maintenance Information Practice* for further information.

The user may check the status of the Power-up and Background diagnostics via the SHOW STATUS command for a specified group of devices).

The Maintenance Manager

7.2 The Maintenance Manager is a software program which manages the running of diagnostics on the *SX-200* ML PABX. Its duties include the scheduling of tests, the invoking of tests, the logging of errors, and the removal of faulty devices from service. The Maintenance Manager tests devices one at a time from one of six prioritized queues. The priority scheme of the queues is as follows, in ascending order:

- Background diagnostic queue
- Power-up diagnostic queue
- Power-up diagnostic retry queue
- Diagnostic second-chance queue
- Diagnostic second-chance retry queue
- User (directed diagnostic) queue.

For further information on diagnostics, refer to the *General Maintenance Information Practice*. To access the diagnostic level commands, press the DIAGNOSTICS softkey. All of the operations described in the following paragraphs are possible while in the Diagnostics Level.

Enable Power-up Diagnostics

For an Entire Bay

7.3 The user may enable power-up diagnostics for an entire bay by pressing the following softkeys:

```
MORE_KEYS
ENABLE-DIAG
POWER-UP
BAY/SLOT/CCT
(enter the required bay number then press the RETURN key four times)
ENTER
```

For an Entire Peripheral Card

The user may enable power-up diagnostics for an entire peripheral card by pressing the following softkeys:

```
MORE_KEYS
ENABLE-DIAG
POWER-UP
BAY/SLOT/CCT
(enter the required bay; press the RETURN key)
(enter the required card slot number; press the RETURN key three times)
ENTER
```

For a Specific Circuit

The user may enable power-up diagnostics for a specific circuit by pressing the following softkeys:

- MORE_KEYS
- ENABLE-DIAG
- POWER-UP
- BAY/SLOT/CCT
- (enter the required bay, slot, circuit, and sub-circuit numbers; pressing the RETURN key after each)
- ENTER

Table 7-1 Diagnostics Level Functions

| LEVEL | COMMAND | SUBCOMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER |
|---------------|---------------|----------------|----------------|----------------|---------------|-----------|
| 3-DIAGNOSTICS | 1-TEST | 1-BAY/SLOT/CCT | | | | |
| | | 2-DEVICE_TYPE | 1-ONS | | | |
| | | | 2-LS/GS-TRUNK | | | |
| | | | 3-RECEIVERS | | | |
| | | | 4-JUNCTOR | | | |
| | | | 7-CONSOLE | | | |
| | | | 8-DSP | | | |
| | | | 9-EM | | | |
| | | | 0-MORE_KEYS | 1-COV | | |
| | | | | 2-LINK/CHANNEL | | |
| | | | | 3-DID | | |
| | | | | 4-OPS | | |
| | | | | 6-DNIC | | |
| | | | | 7-PRINTER_PLID | | |
| | | | | 8-PRINTER_PORT | | |
| | | | | 9-T1_TRUNK | | |
| | | | | 0-MORE_KEYS | | |
| | | 3-EXT-NUM | | | | |
| | 2-CLR_FEATURE | 1-FORWARD | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT_NUM | | | |
| | | 2-DO_N_DISTURB | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT_NUM | | | |
| | | 3-CALL_BACK | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT_NUM | | | |
| | | 4-ALL | 1-BAY/SLOT/CCT | | | |
| | | | 3-EXT_NUM | | | |
| | 6-QUIT | | | | | |
| | 9-STOP_TEST | 6-PRINTERS | | | | |
| | 0-MORE_KEYS | 2-ENABLE_DIAG | 1-BACKGROUND | 1-BAY/SLOT/CCT | | |
| | | | | 2-DEVICE_TYPE | | |
| | | | | | 1-ONS | |
| | | | | | 2-LS/GS-TRUNK | |
| | | | | | 3-RECEIVERS | |
| | | | | | 4-JUNCTOR | |
| | | | | | 7-CONSOLE | |
| | | | | | 8-DSP | |

Table 7-1 Diagnostics Level Functions (continued)

| LEVEL | COMMAND | SUBCOMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER |
|---------------|-------------|----------------|----------------|----------------|---------------|----------------|
| | | | | | 9-EM | |
| | | | | | 0-MORE_KEYS | 1-COV |
| | | | | | | 2-LINK/CHANNEL |
| | | | | | | 3-DID |
| | | | | | | 4-OPS |
| | | | | | | 6-DNIC |
| | | | | | | 9-T1_TRUNK |
| | | | | | | 0-MORE_KEYS |
| | | | | 3-EXT-NUM | | |
| 3-DIAGNOSTICS | 0-MORE_KEYS | 2-ENABLE-DIAG | 2-POWER-UP | 1-BAY/SLOT/CCT | | |
| | | | | 2-DEVICE_TYPE | 1-ONS | |
| | | | | | 2-LS/GS-TRUNK | |
| | | | | | 3-RECEIVERS | |
| | | | | | 4-JUNCTOR | |
| | | | | | 7-CONSOLE | |
| | | | | | 8-DSP | |
| | | | | | 9-EM | |
| | | | | | 0-MORE_KEYS | 1-COV |
| | | | | | | 2-LINK/CHANNEL |
| | | | | | | 3-DID |
| | | | | | | 4-OPS |
| | | | | | | 6-DNIC |
| | | | | | | 9-T1_TRUNK |
| | | | | | | 0-MORE_KEYS |
| | | | | 3-EXT-NUM | | |
| | | 3-BUSY-OUT | 1-BAY/SLOT/CCT | | | |
| | | | 2-DEVICE_TYPE | 2-LINK/CHANNEL | | |
| | | | 3-EXT-NUM | | | |
| | | 6-QUIT | | | | |
| | | 7-DISABLE-DIAG | 1-BACKGROUND | 1-BAY/SLOT/CCT | | |
| | | | | 2-DEVICE_TYPE | 1-ONS | |
| | | | | | 1-LS/GS-TRUNK | |
| | | | | | 3-RECEIVERS | |
| | | | | | 4-JUNCTOR | |
| | | | | | 7-CONSOLE | |
| | | | | | 8-DSP | |
| | | | | | 9-EM | |
| | | | | | 0-MORE_KEYS | 1-COV |
| | | | | | | 2-LINK/CHANNEL |
| | | | | | | 3-DID |
| | | | | | | 4-OPS |
| | | | | | | 6-DNIC |
| | | | | | | 9-T1_TRUNK |
| | | | | | | 0-MORE_KEYS |
| | | | | 3-EXT-NUM | | |
| | | 7-DISABLE-DIAG | 2-POWER-UP | 1-BAY/SLOT/CCT | | |
| | | | | 2-DEVICE_TYPE | 1-ONS | |
| | | | | | 2-LS/GS-TRUNK | |

Table 7-1 Diagnostics Level Functions (continued)

| LEVEL | COMMAND | SUBCOMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER |
|-------|---------|--------------|----------------|----------------|-------------|----------------|
| | | | | | 3-RECEIVERS | |
| | | | | | 4-JUNCTOR | |
| | | | | | 7-CONSOLE | |
| | | | | | 8-DSP | |
| | | | | | 9-EM | |
| | | | | | 0-MORE_KEYS | 1-COV |
| | | | | | | 2-LINK/CHANNEL |
| | | | | | | 3-DID |
| | | | | | | 4-OPS |
| | | | | | | 6-DNIC |
| | | | | | | 9-T1_TRUNK |
| | | | | | | 0-MORE_KEYS |
| | | | | 3-EXT-NUM | | |
| | | 8-RET-TO-SVC | 1-BAY/SLOT/CCT | | | |
| | | | 2-DEVICE_TYPE | 2-LINK/CHANNEL | | |
| | | | | 4-JUNCTOR | | |
| | | | 3-EXT-NUM | | | |
| | | 9-DISC_TRUNK | 1-BAY/SLOT/CCT | | | |

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For a Specific Extension

To enable power-up diagnostics for a specific extension number, press the following softkeys:

MORE_KEYS
 ENABLE-DIAG
 POWER-UP
 EXT-NUM
 (enter the required extension number; then press the RETURN key)
 ENTER

For a Specific Device Type

To enable power-up diagnostics for a specific device type, press the following softkeys:

MORE_KEYS
 ENABLE-DIAG
 POWER-UP
 DEVICE TYPE
 (press one of the softkeys shown in Table 7-2 on page 7-6)
 ENTER

| Table 7-2 Device Types | |
|-------------------------------|--------------------------|
| Softkey | Meaning |
| ONS | ONS line card |
| LS/GS TRUNK | LS/GS trunk card |
| RECEIVERS | DTMF receiver module |
| CONSOLE | Attendant console |
| DSP | Digital signal processor |
| EM | E&M trunk module |
| COV | COV line card |
| DID | DID trunk card |
| OPS | OPS line card |
| DNIC | Digital line card |
| LINK/CHANNEL | PCM Channels |
| T1_TRUNK | T1 trunk card |

In all cases, the system echoes the command into the Applications Area of the screen. The user may verify that the particular power-up diagnostics have been enabled via the *SHOW STATUS* command.

Disabling Power-up Diagnostics

For an Entire Bay

To disable power-up diagnostics for an entire bay, press the following softkeys:

```
MORE_KEYS
DISABLE-DIAG
POWER-UP
BAY/SLOT/CCT
(enter the required bay number; then press the RETURN key four times)
ENTER
```

For an Entire Peripheral Card

To disable power-up diagnostics for an entire peripheral card, press the following keys:

```
MORE_KEYS
DISABLE-DIAG
POWER-UP
BAY/SLOT/CCT
(enter the required bay; press the RETURN key)
(enter the required card slot number; press the RETURN key three times)
ENTER
```

For a Specific Circuit

To disable power-up diagnostics for a specific circuit, press the following softkeys:

```
MORE_KEYS
DISABLE-DIAG
POWER-UP
BAY/SLOT/CCT
(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN
key after each)
ENTER
```

For a Specific Extension

To disable power-up diagnostics for a specific extension number, press the following softkeys:

```
MORE_KEYS
DISABLE-DIAG
POWER-UP
EXT-NUM
(enter the required extension number; then press the RETURN key)
ENTER
```

For a Specific Device Type

To disable power-up diagnostics for a specific device type, press the following softkeys:

```
MORE_KEYS
DISABLE-DIAG
POWER-UP
DEVICE TYPE
(press one of the softkeys shown in Table 7-2 on page 7-6)
ENTER
```

In all cases, the system will echo the command into the applications area of the screen. The user may verify that the particular power-up diagnostics have been disabled via the SHOW STATUS command.

Enabling Background Diagnostics

For an Entire Bay

7.4 To enable background diagnostics for an entire bay, press the following softkeys:

```
MORE_KEYS
ENABLE-DIAG
BACKGROUND
BAY/SLOT/CCT
(enter the required bay number; then press the RETURN key four times)
ENTER
```

For an Entire Peripheral Card

To enable background diagnostics for an entire peripheral card, press the following keys:

MORE_KEYS
ENABLE-DIAG
BACKGROUND
BAY/SLOT/CCT

(enter the required bay; press the RETURN key; enter the required card slot number; press the RETURN key three times)

ENTER

For a Specific Circuit

To enable background diagnostics for a specific circuit, press the following softkeys:

MORE_KEYS
ENABLE-DIAG
BACKGROUND
BAY/SLOT/CCT

(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN key after each)

ENTER

For a Specific Extension

To enable background diagnostics for a specific extension number, press the following softkeys:

MORE_KEYS
ENABLE-DIAG
BACKGROUND
EXT-NUM

(enter the required extension number; then press the RETURN key)

ENTER

For a Specific Device Type

To enable background diagnostics for a specific device type, press the following softkeys:

MORE_KEYS
ENABLE-DIAG
BACKGROUND
DEVICE TYPE

(press one of the softkeys shown in Table 7-2 on page 7-6)

ENTER

In all cases, the system will echo the command into the applications area of the screen. The user may verify that the particular background diagnostics have been enabled via the SHOW STATUS command.

Disabling Background Diagnostics

For an Entire Bay

7.5 To disable background diagnostics for an entire bay, press the following softkeys:

MORE_KEYS
DISABLE-DIAG
BACKGROUND
BAY/SLOT/CCT
(enter the required bay number; then press the RETURN key four times)
ENTER

For an Entire Peripheral Card

To disable background diagnostics for an entire peripheral card, press the following keys:

MORE_KEYS
DISABLE-DIAG
BACKGROUND
BAY/SLOT/CCT
(enter the required bay; press the RETURN key; enter the required card slot number; press the RETURN key three times)
ENTER

For a Specific Circuit

To disable background diagnostics for a specific circuit, press the following softkeys:

MORE_KEYS
DISABLE-DIAG
BACKGROUND
BAY/SLOT/CCT
(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN key after each)
ENTER

For a Specific Extension

To disable background diagnostics for a specific extension number, press the following softkeys:

MORE_KEYS
DISABLE-DIAG
BACKGROUND
EXT-NUM
(enter the required extension number; then press the RETURN key)
ENTER

For a Specific Device Type

To disable background diagnostics for a specific device type, press the following softkeys:

```
MORE_KEYS  
DISABLE-DIAG  
BACKGROUND  
DEVICE TYPE  
(press one of the softkeys shown in Table 7-2 on page 7-6)  
ENTER
```

In all cases, the system will echo the command into the applications area of the screen. The user may verify that the particular background diagnostics have been disabled via the **SHOW STATUS** command.

Directing Tests

- 7.6 Directed diagnostics consist of exactly the same tests as the power-up and background diagnostics, but are initiated by the user from the maintenance terminal, and have priority over power-up and background diagnostics. Directed tests also differ from power-up and background tests in that they return immediate responses to the user via the maintenance terminal.

On a Specific Circuit

To run a directed test on a specific circuit, press the following softkeys:

```
TEST  
BAY/SLOT/CCT  
(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN  
key after each)  
ENTER
```

On a Specific Extension

To run a directed test on a specific extension number, press the following softkeys:

```
TEST  
EXT-NUM  
(enter the required extension number; then press the RETURN key)  
ENTER
```

On a Specific Device Type

To run a directed test on a specific device type, press the following softkeys:

```
TEST
DEVICE TYPE (see note)
(press one of the softkeys shown in Table 7-2 on page 7-6)
ENTER
```

Note: Testing can be performed on system printer. Selection of DEVICE TYPE will be followed by entering one of the softkeys in Table 7-2 on page 7-6 and two printer related softkeys; PRINTER PLID and PRINTER PORT.

In all cases, the system will output the test results in the applications area of the screen.

To stop a directed test, press the following softkey:

```
STOP_TEST
ENTER
```

Range Testing

It is possible for the maintenance user to test a range of devices by using wild card characters. To test an entire bay, press the following softkeys:

```
TEST
BAY/SLOT/CCT
(enter the required bay number)
(answer the slot, circuit and sub-circuit prompts by pressing the RETURN key)
ENTER
```

To test an entire card, specify the bay and the slot, but answer the circuit and sub-circuit prompts by pressing only the RETURN key.

Busying Out Equipment

7.7 Peripheral circuits may be placed in a state such that they are accessible only through maintenance. While in this state, the device will appear busy when requested by call processing. The following circuit types can be busied out in this manner:

- ONS lines
- LS/GS Trunks
- E&M Trunks
- T1 Trunks
- DID Trunks
- COV line circuits
- DNIC Lines
- Receivers
- Link/Channel
- Printer PLID
- Printer Port.

Specific Circuits

To busy out a specific circuit, press the following softkeys:

```
MORE_KEYS
BUSY-OUT
BAY/SLOT/CCT
(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN
key after each)
ENTER
```

Specific Extensions

To busy out a specific extension number, press the following softkeys:

```
MORE_KEYS
BUSY-OUT
EXT-NUM
(enter the required extension number; then press the RETURN key)
ENTER
```

Specific Link/Channels

To busy out a specific Link/Channel, press the following softkeys:

```
MORE_KEYS
BUSY_OUT
DEVICE_TYPE
LINK/CHANNEL
(enter the required link number and channel number and press the RETURN key
after each)
ENTER
```

Note: On System Reset as replacement of a card, any circuit that had been busied out, will remain busied out. The exception is DTMF receiver modules, which reboot or power up to the idle state.

Returning Busy Equipment to Service

Specific Circuits

7.8 To return a specific circuit to service, press the following softkeys:

MORE_KEYS
RET-TO-SVC
BAY/SLOT/CCT
(enter the required bay, slot, circuit and sub-circuit numbers; pressing the RETURN key after each)
ENTER

Specific Extensions

To return a specific extension number to service, press the following softkeys:

MORE_KEYS
RET-TO-SVC
EXT-NUM
(enter the required extension number; then press the RETURN key)
ENTER

Specific Link/Channels

To return a specific Link/Channel to service, press the following softkeys:

MORE_KEYS
RET-TO-SVC
DEVICE_TYPE
LINK/CHANNEL
(enter the required link number and channel number pressing the RETURN key after each)
ENTER

Disconnect Trunk

To force release a locked-up trunk, press the following softkeys:

MORE_KEYS
DISC_TRUNK
BAY/SLOT/CCT
(enter the required bay, slot, and circuit numbers; pressing the RETURN key after each)
ENTER

Clear Extension Features - From Remote Terminal

The maintenance terminal can be used to clear CALL FORWARDING, DO NOT DISTURB, and CALL BACK features that are active on an extension. Clear allows all features on a card in a *SX-200* ML PABX to be de-programmed from a remote maintenance terminal without requiring a local Attendant console. Only *SUPERSET* telephones and industry standard sets may be cleared from the maintenance terminal.

The extension to be cleared may be identified either by extension number or by Bay/Slot/Circuit; standard error messages are returned if invalid values are entered. If the identification or extension number entered is not that of an extension, the following message is displayed: Device type must be a *SUPERSET* telephone or industry standard telephone set.

Enter this application from the maintenance diagnostic menu, as follows:

PRESS SOFTKEY 2 CLR-FEATURE

The screen displays 4 softkey prompts:

1-FORWARD
2-DO-N-DISTURB
3-CALL-BACK
4-ALL

Select the feature (or ALL features) to be cleared, by pressing the softkey.

The screen displays 2 softkey prompts:

1-BAY/SLOT/CCT
3-EXT-NUM

Enter bay, slot, circuit, and sub-circuit numbers (sub-circuit is not used, but is part of standard prompt format) or enter the extension number, when prompted. When you have entered all the information, the screen displays the 0-ENTER softkey prompt and all the entered parameters.

Press 0-ENTER to clear the specified telephone set.

Note: Softkey 5-CANCEL is also available with these prompts.

8 Other Maintenance Terminal Applications

Customer Data Entry (CDE)

8.1 The RS-232 maintenance terminal is also the main device used for the programming of customer data. At the start of the login procedure, the user is queried to start either a maintenance session or a CDE session (see "Login Procedures" on page 2-2). Only a VT100 compatible terminal may be used for CDE. For further information on CDE, refer to the *Customer Data Entry Practice*.

Traffic Measurement

8.2 Traffic measurement is a separate level in maintenance. All of the information in Part 3 (Command Input) of this practice applies to Traffic Measurement as well. Refer to Practice 9109-098-450-NA, Traffic Measurement, for command descriptions and further information. Table 8-1 contains the operations available in traffic measurement functions, except CANCEL and ENTER. The user can press the CANCEL softkey at any time to exit the current operation without committing (saving) any changes, or press the ENTER softkey, when it is available, to commit changes.

| Table 8-1 Traffic Measurement Functions | | | | | | |
|---|-------------------------|------------------------|------------|-----------|-----------|-----------|
| LEVEL | COMMAND | PARAMETER | QUALIFIER | QUALIFIER | QUALIFIER | QUALIFIER |
| 5-TRAFFIC_MEAS | 1-SET | 1-UNITS | 1-CCS | | | |
| | | | 2-ERLANGS | | | |
| | | 2-PERIOD [number] | | | | |
| | | 3-DURATION [number] | | | | |
| | 4-AUTOPRINT | 1-ON | | | | |
| | | 2-OFF | | | | |
| | 7-START_TIME [hh:mm] | 1-PM | | | | |
| | | 8-CONDENSED | 1-ON | | | |
| | 2-SHOW | 3-STATUS | | | | |
| | | | | | | |
| | | 3-PRINT | | | | |
| | | 4-READ | | | | |
| | | 6-QUIT | | | | |
| | | 9-STOP | 1-TRAFFRPT | | | |
| | | 3-PRINT | | | | |

Appendix A

Maintenance Terminal Error Messages

Table A-1 lists status and error messages which may appear at the Maintenance Terminal during a maintenance session:

| Table A-1 Maintenance Terminal Error Messages | |
|---|--|
| Message | Meaning |
| ACD reports already in progress. STOP first. | In traffic measurement, parameters cannot be changed without stopping the data collection procedure first. |
| A specific value cannot follow the default value 'XX'. | If the user has entered a default value for the BAY/SLOT/CIRCUIT prompt, a specific value cannot follow. |
| An invalid or incorrect password was entered. | Displayed in SET PASSWORD when the old password does not match the one stored in the system, or when the new passwords contain invalid characters (characters other than ['A'..'Z', 'a'..'z', 0..9]). |
| Card not installed. | No card is installed at the specified location. Use SHOW CONFIG command to check the state of the card. |
| Change terminal speed and press RETURN when ready. | An instruction message rather than an error message; appears when changing the speed of the maintenance port while on the maintenance terminal. |
| Circuit "XX" does not exist on this card OR card not programmed. | Use SHOW CONFIG command to verify installed cards. |
| Clearing of T1 Trunk errors is not permitted. | The user attempted to clear T1 errors; this is not permitted. |
| Data value % outside of valid range (0-255). | Enter new value within range of 0 - 255. |
| Database Corrupt in: templates. | The verification of the database has failed. The template section may be corrupted. |
| Note: If more than one section is corrupted, one of these may be displayed instead: | <ul style="list-style-type: none"> - Database Corrupt in: templates and static section. - Database Corrupt in: templates and b-tree. - Database Corrupt in: static section and b-tree. - Database Corrupt in: templates, static section, and b-tree. |
| Device is currently in use. | Wait until device is idle (device is locked up). |
| Device not programmed. | An attempt was made to RET-TO-SVC or BUSY-OUT a device by specifying a PLID which is not programmed. |
| Invalid data station specified. | The user has tried to SHOW DEVICE DATASTN_PLID and specifies a PLID which is not a data station. |
| Page 1 of 4 | |

Table A-1 Maintenance Terminal Error Messages (continued)

| Message | Meaning |
|---|--|
| Invalid day for the month specified. Date not set. | Valid month entries are dependent upon the Roman calendar. For example, an attempt may have been made to set the date to February 30. |
| Invalid parameter "XX". TIME (or DATE) not set. | Time may be set to 00:00-23:59, date may be set to 01-31 for days, 01-12 for months, 00-99 for years. Valid month entries are dependent upon the Roman calendar. |
| Invalid qualifier. | The qualifier specified is invalid for this device type. |
| Logical channel specified is not in use. | The user has tried to SHOW CHANNEL-MAP LOGICAL CHANNEL NUM ### which is idle. This function shows only those channels which are in use. |
| MONITOR LOGS already in use. | A second attempt was made to monitor logs. Monitor logs was already in progress. |
| Must specify at least a bay number in Bay/Slot/Cct. | When entering bay number for junctor diagnostics, a specific value must be used. |
| Must specify at least a link number. | The user has tried to BUSY-OUT or RET-TO-SVC a pcm channel and uses a wild card for the link parameter. |
| NO CONSOLE programmed. | Program a console first. |
| No Data Sets programmed. | Program a data set first. |
| No Digital Sets programmed. | Program a digital telephone set first. |
| No errors found within specified range. | The user attempted to SHOW ERRORS and the devices specified (DIGITAL_SETS, HDLC, DATASETS, CONSOLE, T1_TRUNK) have no errors. Note: This function always gives the T1 Trunk error form, even though there are no errors. |
| No loopbacks are presently set. | An analog loopback test has been started after clear loopbacks (internal or external). |
| No programmed devices within specified range. | There are no programmed devices within the specified range. Use SHOW CONFIG command to check range. |
| No wild cards allowed for this function. | The user has specified wild cards in a PLID parameter when trying to BUSY-OUT or RET-TO-SVC. |
| PRINTER_PLID is invalid as a printer device. | The user has tried to SUSPEND_PRTR or RESUME_PRTR. The specified PLID is not a printer PLID. |
| Stop of print pending or no print currently in progress. | There was no PRINT process running when STOP PRINT was entered. |
| System busy, please try again later. | Copy database is inhibited for several minutes after a system reset; maximum time is approximately eight minutes. |
| The access code "XXX" does not exist. | The specified extension number does not exist. Use SHOW STATUS command to check the status code. |
| The Bay/Slot/Circuit - XXXXXX used is inappropriate. | The user attempted to clear errors through Bay/Slot/Circuit of an inappropriate device. |
| The extension number "XXXX" is not a SUPERSET telephone, CONSOLE, or DATASET. | The user has specified an extension number when he tries to CLEAR ERRORS. Errors are only compiled for these types of devices. |

| Table A-1 Maintenance Terminal Error Messages (continued) | |
|--|---|
| Message | Meaning |
| The hour value "XX" is out of range. Start time not set. | Used in traffic measurement for invalid values in the SET START TIME command. |
| The link "X" cannot be tested. | The user has tried to test or enable diagnostics on a pcm link which is not used as a telephony link. Links 0, 1, 14 and 15 are not available for testing. |
| The minor threshold may not be greater than the major threshold. | Assign a higher value to the major threshold or else assign a lower threshold to the minor threshold - SET Alarm threshold. |
| The minute value "XX" is not a multiple of ten. Start time not set. | Used in ACD Report traffic measurement for an invalid minute value in the SET START TIME command. |
| The minute value "XX" is out of range. Start time not set. | Used in traffic measurement for invalid values in the SET START TIME command. |
| The value "XX" is outside the valid range for SUBCIRCUIT. | The specified sub-circuit number is invalid for this particular device type. Use SHOW STATUS command to verify card type and number of programmed circuits. |
| There are no logs currently in the database | There are no logs in the database to READ or PRINT. |
| This function is not available for this device. | The feature requested is not available for this device. |
| This function is not available for this console. | The feature requested is not available for this console. |
| This function is not available for this device. | The user has tried to BUSY-OUT or RET-TO-SVC the console. |
| This function is not available on the console. | The user has tried to perform a command which is not available when logged into maintenance from the console. |
| TIMEOUT PERIOD EXPIRED. Press Return to login. | After being prompted for the username, the user has ten seconds to begin entering characters. |
| Traffic measurement already in progress. STOP first. | In traffic measurement, the following parameters cannot be changed while traffic measurement is collecting data: PERIOD, DURATION, and START TIME. |
| Trunk value "XX" outside of valid trunk range (1-24). | The user requested to monitor the LINK_STATUS of a trunk which was outside the valid range of 24 circuits for the T1_Trunk card. |
| Unable to print. Maintenance print already in progress. | There can be only one PRINT or READ occurring at one time. If required, enter STOP PRINT command to initiate a second PRINT. |
| Universal Card. Module "X" in Bay Slot Module is out of range (1-4). | The user has chosen a Universal Card, but the module number is out of range (not between 1 and 4). |
| Universal Card. Sub_circuit "X" does not exist on module. | The user has chosen a Universal Card; the module number is valid and exists but the sub-circuit number specified does not. |
| Unrecognized qualifier %s. All others ignored. | The qualifier in "Test" command is unrecognized. |
| Value cannot be greater than 100. | Assign a new value that is less than 100 for alarm threshold. |

Table A-1 Maintenance Terminal Error Messages (continued)

| Message | Meaning |
|---|--|
| Warning. Invalid qualifier found. %s will be ignored. | The qualifier specified during set time will be ignored. |
| Warning. Sub_circuit field ignored for this card. | Sub-circuit parameter was entered, but was not required. For information only. |
| Wrong bay type for specified device. | An incompatible bay number is given for the device selected (i.e., Bay 0 is selected for receivers). |

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NOTES

NOTES

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SX-200[®] ML PABX

General Maintenance Information

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1 General

Introduction

- 1.1 This practice describes the maintenance philosophy, features, and facilities of the SX-200® ML Private Automatic Branch Exchange (PABX). Diagnostic tests, maintenance aids, local and remote terminals, and other available tools assist maintenance users to ensure a continued high standard of efficiency and performance. Further details concerning maintenance may be found in the practices listed in Table 1-1.

| Table 1-1 SX-200 ML PABX Practices | |
|------------------------------------|-----------------------------|
| 9109-098-100-NA | General Description |
| 9109-098-105-NA | Features Description |
| 9109-098-180-NA | Engineering Information |
| 9109-098-350-NA | Troubleshooting |
| 9109-098-351-NA | RS-232 Maintenance Terminal |

Reason for Issue

- 1.2 This practice forms part of the MITEL® Standard Practices issued to provide technical information for the SX-200 ML PABX.

Disclaimer

- 1.3 The following products have been manufacture-discontinued by Mitel. These products are supported but not described in SX-200 ML Practices:
- SUPERSET 3™ and SUPERSET 4™ telephone sets
 - SUPERSET 3DN™ and SUPERSET 4DN™ telephone sets
 - DATASET 1101 data cartridge
 - SUPERSET™ DSS module.
- 1.4 The following products and peripheral devices are not supported on the SX-200 ML PABX and are not described in SX-200 ML Practices:
- Modem Interconnect Panel
 - DATASET 1102 Rack-mounted Dataset
 - DATASET 2102 Rack-mounted Dataset
 - DATACABINET 9000 data cabinet
 - DATASHELF 9100 datashelf
 - ISDN Node.
 - Fiber Interface Module (and associated products)
 - Peripheral Node
 - LCD Console (and Console module for Universal Card).

2 Maintenance Tools

The Maintenance Terminal

- 2.1 The RS-232 ASCII Maintenance Terminal is the primary maintenance tool for the SX-200 ML PABX. There can be only one maintenance session active at any time. The maintenance terminal connects by means of a standard 9-pin RS-232 cable.

One end of the cable is plugged into the main RS-232 communication port of the terminal; the other end is plugged into the Maintenance Connector port on the cabinet backplane. Refer to Figure 2-1.

A wide range of commands is available at the maintenance terminal to help the user locate and replace faulty equipment. For further information, refer to the *RS-232 Maintenance Terminal Practice*.

Note: The maintenance terminal user must "LOGOUT" after every session.

The attendant console can be used as an alternate maintenance workstation. All commands available at the maintenance terminal are available at the attendant console.

A PC can be used as a maintenance terminal to back up a customer database to the PC storage medium by using the Database Restore function.

Maintenance Port

The maintenance port provides a connection to the system for an RS-232 ASCII terminal for maintenance or programming purposes. The terminal is connected to the system through the Maintenance Connector port either directly, or indirectly through a modem and a null modem adapter. The Maintenance Connector port is located on the rear panel of the SX-200 ML cabinet (see Figure 2-1); refer to the *RS-232 Maintenance Terminal Practice* for further information.

System Maintenance Log

- 2.2 The system maintenance log is a text file-based record of all maintenance-related information. Any event which potentially affects the functioning of the system is entered into this log. Typical maintenance log entries include circuits that fail diagnostics, cards that have been unplugged, and alarm levels that change. The user may read, delete, and print log entries, as well as set a variety of printing options. For additional information on maintenance log functions see Section 6.

Three types of log reports are generated:

- **Fault report** - Call Processing or the maintenance system has detected an error or an abnormal condition.
- **Reset report** - A bay or the Main Control Card II has reset.
- **Alarm Level Change report** - The overall system alarm level has changed.

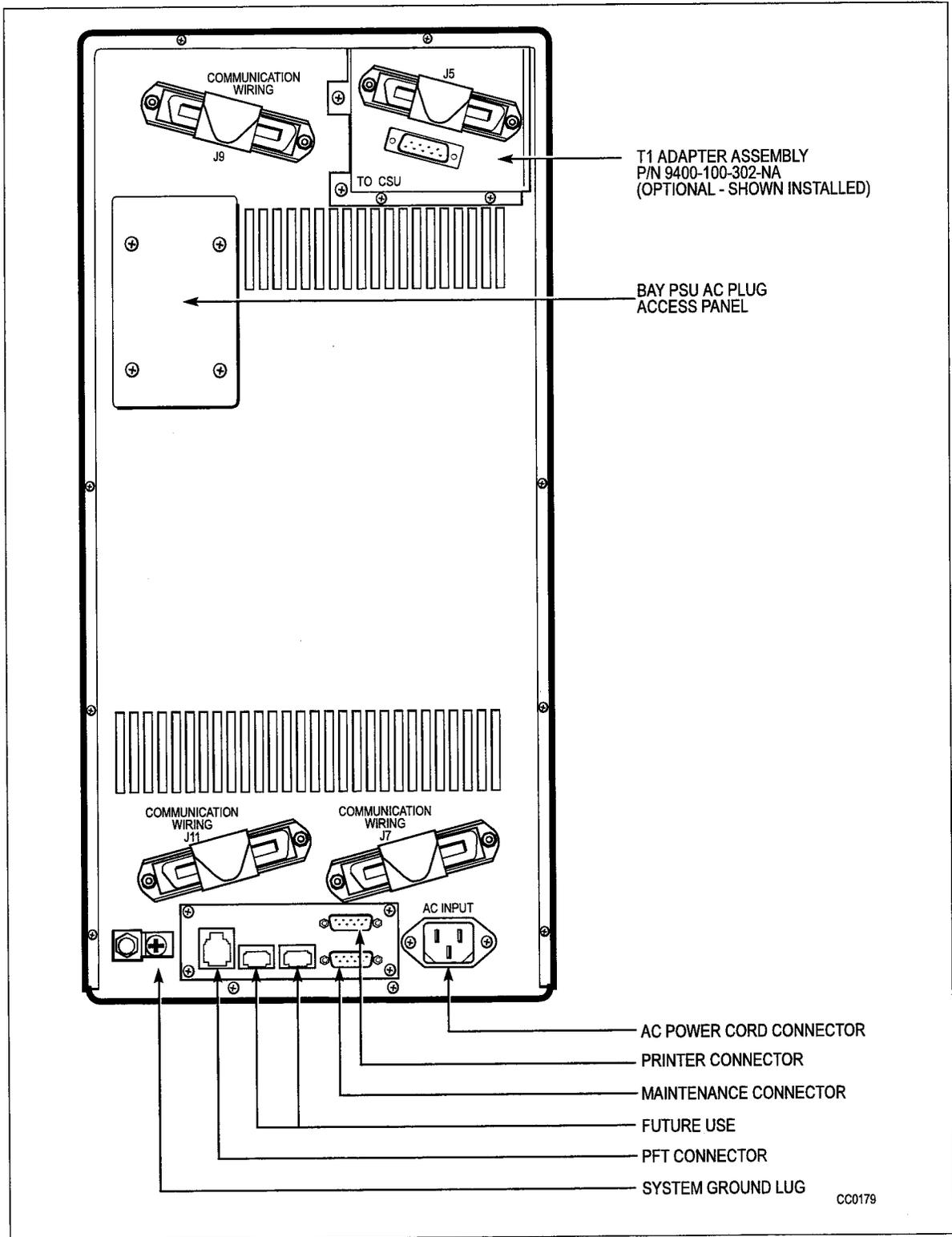


Figure 2-1 Rear Panel of the SX-200 ML Cabinet

3 Alarms

General

- 3.1 Alarms allow the *SX-200* ML PABX to determine its own functional state. The Alarm Manager software program monitors the performance of all peripheral devices in the system, and compiles up-to-date statistics on anomalies. The alarm level is determined by the actual or potential effect on service that the anomalies cause.

Alarm Levels

- 3.2 There are four distinct levels of alarm defined for the maintenance system. These levels provide maintenance personnel with up-to-date information on the severity of existing anomalies. The four alarm levels are:
- **NO ALARM** - indicates that the system is functioning properly.
 - **MINOR** - indicates that there are problems affecting the system in small proportion.
 - **MAJOR** - indicates that there are problems causing a serious degradation of service.
 - **CRITICAL** - indicates that there has been a very serious loss of call processing capability. It invokes an automatic system fail transfer (SFT) and resets the system.

Alarm Categories

- 3.3 Four basic alarm categories relate to peripheral equipment. All problems affecting system performance will fall into one or more of these categories. Failure of other system components will indirectly cause failure of peripheral equipment. The categories are:
- Lines
 - Trunks
 - DTMF Receivers
 - PCM Channels.

Alarm Types

- 3.4 Because the *SX-200 ML PABX* is modular in design, the Alarm Manager keeps alarm statistics in three categories:
- **Bay Alarms** - alarm levels of the categories specific to the one bay in the system.
 - **System Alarms** - alarm levels of the categories on a system-wide basis.
 - **Overall Alarm** - overall system alarm level, derived from all bay alarms and system alarms in all categories. This is the alarm that is displayed on the upper right corner of the console.

Alarm Thresholds

- 3.5 For each alarm category, the thresholds represent the alarm level trip points; that is, the precise divisions between the alarm levels. The thresholds are simple percentages, indicating availability: the number of working devices is compared to the number of programmed devices. The Critical Alarm threshold is not a percentage, but is a precise numerical value. When the number of available devices falls below this number, a critical alarm is raised. The thresholds are programmable (refer to the *RS-232 Maintenance Terminal Practice*).

Alarm Totals

- 3.6 The Alarm Manager keeps a record of the total numbers of the various devices that should be available to Call Processing, as well as the actual number that are available. Alarm totals are maintained for each of the alarm categories in each bay, as well as for the entire system. These totals are compared to the alarm thresholds, to determine the level of alarm that is raised.

4 The Maintenance Manager

General

4.1 The Maintenance Manager is the central maintenance software program in the *SX-200* ML PABX system software. Its responsibility includes receiving requests to run diagnostic tests, managing test schedules (queues), and initializing diagnostic tests.

Diagnostic Test Queues

4.2 Diagnostic tests are grouped into three different categories: power-up, background, and directed. The test schedules (queues) are prioritized along the same categories. Table 4-1 describes the queues in ascending order of priority. When the Maintenance Manager schedules a device for a particular type of diagnostic test, it places the device in the appropriate diagnostic test queue. When the maintenance person disables a diagnostic test type through the maintenance interface, the corresponding test requests are removed from the associated test queue. The priority scheme is designed to ensure that testing requested by the maintenance person through the maintenance terminal is handled immediately.

| Table 4-1 Diagnostic Test Queues | | |
|----------------------------------|----------|---|
| Diagnostic Test Queue | Priority | Description |
| Background Queue | 6 | This queue has the lowest priority; any device with background diagnostics enabled will normally be tested once during each pass through the system. Note: Background Diagnostics can be manually disabled. |
| Power-up Queue | 5 | If a device has power-up diagnostics enabled, and is both programmed and installed, it will be put on this queue. Note: Power-up Diagnostics must be manually enabled. |
| Power-up Retry Queue | 4 | If a device could not be tested when on the Power-up Queue, it is placed on this higher priority queue to be tested as soon as possible. |
| Fault Isolation Queue | 3 | If a previously healthy device fails a test, it will be flagged "SUSPECT" and tested again from this queue. If it fails here, it is removed from service. |
| Fault Isolation Retry Queue | 2 | If a device could not be tested when on the Fault Isolation queue, it is placed on this higher priority queue to be tested as soon as possible. |
| Directed Test (User) Queue | 1 | This is the highest priority test queue. Devices in this queue are tested immediately; results are reported to initiating user port. |

Testing

- 4.3 The Maintenance Manager controls the entire test sequence on any device under test. The general test sequence for any peripheral device is:
1. The Maintenance Manager locates a device with pending diagnostic test requests on the highest priority test queue.
 2. The device is requested from call processing for testing. If the device is idle, the request is granted.
 3. Any resources required to perform tests on the device are allocated.
 4. The series of tests for the particular device is invoked.
 5. When testing has been completed, the status of the device is updated.
 6. Changes to device status are logged into the maintenance log and the alarm levels are updated.
 7. Resources required for testing are released.
 8. The device is then returned to call processing providing it has passed all tests. If any tests failed, the device will be re-tested. Failure of retest removes the device from service.

When the Maintenance Manager has control of a device for testing purposes, it must follow a set of guidelines designed to make diagnostic testing both transparent to system users and efficient. These guidelines include:

- (a) If call processing requires a device while it is being tested, the Maintenance Manager immediately aborts the test and releases the device.
- (b) When a device fails a diagnostic test, it is tested a second time to verify the fault. If it fails again, it is removed from service.
- (c) When a device fails diagnostic tests, and is subsequently removed from service, it remains out of service until it passes seven successive diagnostic tests.
- (d) If a device scheduled for power-up or fault-isolation diagnostic testing cannot be tested, it is rescheduled for testing on a higher priority test queue, and retried at 5-minute intervals.
- (e) Each device may have background and/or power-up diagnostics selectively disabled by the maintenance person through the maintenance interface.

Fault Recovery

- 4.4 Once a device fails diagnostic testing, it is removed from active service; it can no longer be used by call processing. The three different circumstances through which the device can be returned to active service are:
1. The most common method should be through the troubleshooting procedures outlined in the *Troubleshooting Practice*, which entails repair or replacement of the affected device. When re-installed, the device is automatically tested, and if it passes, it is returned to service.

2. The maintenance person has the option of returning a faulty device to service, if desired, through the maintenance interface (terminal, console, or test line); see the *RS-232 Maintenance Terminal Practice*.
3. When a device fails diagnostic testing and is subsequently removed from service, the Maintenance Manager continues testing it. If a device passes seven consecutive tests after being removed from service, it is returned to service.

The Maintenance Database

4.5 All cards that are programmed through Customer Data Entry (CDE) have associated with them an up-to-date status record located in system DRAM memory. These areas are the Maintenance Device Work Areas (DWA) and help the system to determine the state of every device in the system at any point in time. Table 4-2 describes the information stored in the device work areas.

| Table 4-2 The Maintenance Device Work Area | |
|---|--|
| DWA Entry | Description |
| Physical Location | The physical location (bay, slot, circuit, subcircuit) of the device. |
| Card Type | The type of card programmed in the specified location; i.e., ONS Line Card, DTMF Receiver Module, etc. |
| Card Status | The status of the card; one of: |
| | instld - the correct card type is installed |
| | unplug - the card is programmed, but is either unplugged or not installed |
| | wrong - an incorrect card type is installed. |
| Test Request Pending Counter | On each of the six test queues, the number of outstanding requests for diagnostics tests for the card. |
| Test Request Pending Flag | For each circuit on the card, and for each test queue, this flag indicates outstanding test requests. |
| Circuit Status | The status of the circuit, one of: |
| | avail - available to CP and maintenance |
| | progr - programmed in CDE but not installed |
| | unprog - installed but not programmed in CDE |
| | suspt - suspect - failed diagnostic test once |
| | flty0 - faulty |
| | flty1 - faulty with one pass |
| | flty2 - faulty with two passes |
| | flty3 - faulty with three passes |
| | flty4 - faulty with four passes |
| | flty5 - faulty with five passes |
| | flty6 - faulty with six passes |
| | bsout - forced busy, busied-out |

Table 4-2 The Maintenance Device Work Area (continued)

| DWA Entry | Description |
|-------------------|---|
| Power-up Enable | For each circuit on the card, indicates whether power-up diagnostics are enabled. |
| Background Enable | For each circuit on the card, indicates whether background diagnostics are enabled. |

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Maintenance Device Work Area

4.6 When a card is first programmed, a maintenance device work area is assigned for it. This work area can be accessed by two softkeys: MT_DWA and MT_DWA_MEM.

MT_DWA - gives an English format of the status of the diagnostics of the maintenance work area

MT_DWA_MEM - is a hexadecimal memory dump of the contents of the maintenance device work area

Figure 4-1 shows a typical display of a Maintenance Device Work Area. Definitions of the terms used in the screen display follow Figure 4-1.

| | | | | | | | | | | | | |
|----------------------|-----|--------|-----------------|-----------|-----|-----|-----|-----|-----|-----|-------------------------|--|
| 10:04 AM 23-APR-90 | | | | | | | | | | | alarm status = NO ALARM | |
| CARD DATA | DEV | STATUS | BGR | PWR | BGR | SYS | PUP | FIS | PRT | FRT | USR | |
| DEV PLID: 1 1 5 0 | 1 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CARD TYPE: ONS | 2 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CARDSTAT: INSTLD | 3 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| NUM CCTS: 12 | 4 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | 5 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| DEV SWID: MT CARD 19 | 6 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| DWA ADD: 1336C0 | 7 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| CMOS ADD: 0E49 01A6 | 8 | AVAIL | ON | OFF | 1 | 0 | 0 | 0 | 0 | 0 | 0 | |
| | | | CARD REQ: | | 12 | 0 | 0 | 0 | 0 | 0 | 0 | |
| MTCE WORK AREA | | | | | | | | | | | | |
| 1- | 2- | 3- | 4- | 5- CANCEL | | | | | | | | |
| 6- | 7- | 8- | 9- MORE_DEVICES | 0- RETURN | | | | | | | | |

Figure 4-1 Maintenance Device Work Area

| | |
|----------|---|
| DEV PLID | bay / slot / circuit / subcircuit |
| CARDTYPE | type of card |
| CARDSTAT | status of the card |
| NUM CCTS | number of circuits on the card |
| DEV SWID | software identity of the device |
| DWA ADD | device work area address |
| CMOS ADD | device CMOS address |
| | |
| DEV | device identification |
| STATUS | device status |
| BGR | background diagnostics on / off |
| PWR | power up diagnostics on / off |
| BGR | number of background tests pending |
| SYS | number of system tests pending |
| PUP | number of power up tests pending |
| FIS | number of fault isolation tests pending |
| PRT | number of power up diagnostic retries |
| FRT | number of fault diagnostic retries |
| USR | number of user specified diagnostic retries |
| CARD REQ | number of requests for this card |

5 Diagnostic Tests

General

- 5.1 For each physical device in the *SX-200* ML PABX there is a special set of diagnostic tests specifically designed to test the device as thoroughly as possible. If faults are detected, broader ranges of tests may be run in an attempt to isolate the fault to the board level, and to ensure that isolated faults are not merely side effects of other problems.

Diagnostics are divided into four different functional groups to facilitate the different characteristics of the various devices in the system. For example, a line circuit may be tested at any time, whereas the system RAM or the CPU may not, because the system software requires them at all times. Table 5-1 describes the four types of diagnostic tests. Table 5-2 shows which devices are tested by each of the four types of diagnostics.

| Diagnostic Type | Description |
|---|--|
| PROM-Based | These are the only tests that thoroughly verify the Main Control Card II and the Bay Control Card. They can be initiated only by resetting the system. |
| Power-up | If enabled (by default they are disabled), they run once, either at system initialization or installation of a card. These tests can be enabled from the maintenance terminal or the console. |
| Background | If enabled (by default they are disabled), they start running after power-up diagnostics have completed, and run continuously. These tests can be disabled from the maintenance terminal or the console. |
| Directed | These are tests initiated by the maintenance user from the maintenance terminal, console, or test line. |
| Note: Power-up, Background, and Directed diagnostics are actually the same set of tests; the difference lies only in the manner in which they are invoked. | |

Table 5-2 Diagnostic Coverage

| Device Type | Power-up | Background | Directed |
|--|----------|------------|----------|
| PROM | - | - | - |
| ONS Line (digital) | yes | yes | yes |
| COV Line (digital) | yes | yes | yes |
| OPS Line (digital) | yes | yes | yes |
| LS/GS Trunk (digital) | yes | yes | yes |
| DID Trunk (digital) | yes | yes | yes |
| E&M Trunk Module (digital) | yes | yes | yes |
| Digital Line Card (DNIC) | yes | yes | yes |
| DTMF Receiver Module | yes | yes | yes |
| Music-on-Hold /Paging Module (cannot be tested, because the device is always busy) | | | |
| System Printer | n/a | n/a | yes |
| Main Control Card II | yes | n/a | n/a |
| Digital Signal Processor (DSP) | yes | yes | yes |
| Bay Control Card | yes | n/a | n/a |
| T1 Trunk | yes | yes | yes |
| PCM Channels | yes | yes | yes |
| Datasets | yes | yes | yes |
| <i>SUPERSET</i> 400 Series Telephone Sets | yes | yes | yes |

Main Control Card II Tests

- 5.2 Because of the nature of the Main Control Card II, there is no need to test it in the on-line environment. Therefore, most testing is performed only on initialization (that is, on power-up and reset). These tests reside in the Main Control Card II's onboard EPROM, and test virtually all of the card's main functional blocks. If any of the tests should fail, a unique error code will be displayed on the dual 7-segment display status indicators located on the front panel of the card. These codes are shown in Table 7-1.

Bay Control Card Tests

- 5.3 Like the Main Control Card II, the Bay Control Card is not on-line. Therefore, most testing is performed only on initialization (power up and reset). The tests reside in the Bay Control Card's on-board EPROM, and test most of the card's functional blocks. If any of the tests should fail, the alarm LED on the card's front panel will flash.

Peripheral Device Tests

- 5.4 There is a unique sequence of tests specifically designed for each type of peripheral device in the system. These test sequences include device-specific tests and common tests. The test sequences are described in Table 5-3 through Table 5-14. The actual tests are described in the following paragraphs. Refer to the *Engineering Information Practice* for information on peripheral circuit hardware.

AC CODEC loopback test: This test verifies the CODEC encode, decode, and filter functions as well as the PCM paths from the DX Matrix. Because this test will always follow the dc CODEC test, failure of this test will isolate the fault.

AC hybrid loopback test: This test is similar to the ac CODEC loopback test, but carries the test further, to the hybrid. Again, if this test fails, the fault is isolated to the device under test.

ACDC loopback test: This is the digital CODEC loopback test, used to determine if the PCM path and the digital signal processor are functioning from the Main Control DX module to the bay. After the dc CODEC test is performed, this test is called without involving the CODEC so the only difference between the two tests is the connection in the DX chip. Failure of this test will not isolate the fault to the CODEC under test.

Check ADC ref voltage: This test verifies the operation of the Analog-to-Digital converter by checking the level on the PCM Encoder/Decoder (CODEC) reference source. All digital lines and trunks, with the exception the Digital Line Card, undergo this test.

Check for a data set: This function checks for a DNIC data set connected to the device under test. This software test, providing information about the device, is an aid when deciding what hardware tests are to be done.

Check for a voice set: This function checks for a DNIC voice set connected to the device under test. This software test, providing information about the device, is an aid when deciding what hardware tests are to be done.

Check whether other half has a set: This function checks for a DNIC voice/data set connected to the other half of the circuit of the device under test. This software test, providing information about the device, is an aid when deciding what hardware tests are to be done.

Conference test: A three-party conference is attempted. The test passes when the attempt is successful; otherwise, a failure of the device is indicated.

Console status: This test verifies the operation of the console. It consists of a status message being sent from the console to the Maintenance Manager. If the test fails, the fault cannot be isolated to the console.

Dataset loopback: This routine performs a dataset data loopback by forming a loopback path from the dataset UART transmitter back to the UART receiver. Once the path is formed, a block of data is sent to the dataset, and the set should send the block back. The test passes if the data received is the same as the data sent. This loopback test is done over the D Channel.

DC CODEC test: This test verifies the operation of the PCM paths from the DX Matrix to the CODEC on the peripheral card and back again. It also verifies the integrity of a tone transmitted from the Main Control Card's digital signal processor (DSP) along these paths. If the test fails, it is not possible for the system to isolate the fault completely.

Digital bay type test: Used to decide which set of diagnostics to run. If this routine returns a pass, digital bay diagnostics are run.

DNIC set bphone: This test sends bphone_test_request messages to a DNIC voice set. The set verifies the BPHONE chip interface by ensuring that it can read and write to/from some of the internal chip registers; then the set replies with a pass/fail message. Failure of the test will isolate the fault to the set itself.

DNIC set eprom checksum: This test sends eprom_checksum_request messages to a DNIC voice/data set. The set performs a checksum test and replies with a pass or fail message. Failure of the test will isolate the fault to the set itself.

DNIC set transducer earpiece: This test sends a transducer_register_contents message to a Digital *SUPERSET* telephone. The set replies with the contents of the transducer control register. The contents are compared with the expected contents for the earpiece field in the call processing work area, and a pass or fail is determined. Failure of the test will isolate the fault to the set.

DNIC set transducer microphone: This test sends a transducer_register_contents message to a Digital *SUPERSET* telephone. The set replies with the contents of the transducer control register. The contents are compared with the expected contents for the microphone field in the call processing work area, and a pass or fail is determined. Failure of the test will isolate the fault to the set itself.

DNIC set transducer mouthpiece: This test sends a transducer_register_contents message to a Digital *SUPERSET* telephone. The set replies with the contents of the transducer control register. The contents are compared with the expected contents for the mouthpiece field in the call processing work area, and a pass or fail is determined. Failure of the test will isolate the fault to the set.

DNIC set transducer speaker: This test sends a transducer_register_contents message to a Digital *SUPERSET* telephone. The set replies with the contents of the transducer control register. The contents are compared with the expected contents for the speaker field in the call processing work area, and a pass or fail is determined. Failure of the test will isolate the fault to the set.

Receiver test: In this test, the digital signal processor sends digit tones to the receivers and verifies that the receiver correctly detects the digits.

Switch hook test: This test verifies the ability of a line card to detect an off-hook for the device under test.

Test DNIC input: This test is used to loop the data internally at DNIC input. Failure of the test will isolate the fault to the card, but will not isolate the fault to the particular DNIC chip on the card.

Test DNIC output: This test is used to loop the data internally at DNIC output. Failure of this test will isolate the fault to the particular DNIC chip under test on the card.

Tone detection test: This test generates a test tone of 440 Hz, and loops it back to the digital signal processor. The energy level of the tone must fall in a particular range to pass this test. Failure of the test indicates a faulty device.

Tone generation test: This test collects two consecutive samples from the digital signal processor for a test tone of 440 Hz. The validity of the two samples is checked to determine a pass or fail. Failure of the test indicates a faulty device.

Test T1 channel: This test is used to loop back one T1 trunk channel and check whether everything is OK. Failure of the test will isolate the fault to this particular channel.

| Table 5-3 OPS Line Card Initialization | | | |
|--|-----------------------------|------------------------------|-----------------------------|
| Diagnostic State | Test Name | Circuit State If Test Passes | Circuit State If Test Fails |
| State 1 | adc reference test | state 2 | device failure unisolated |
| State 2 | digital CODEC test | state 3 | device failure unisolated |
| State 3 | digital CODEC loopback test | state 4 | device failure unisolated |
| State 4 | analog CODEC loopback test | state 5 | device failure isolated |
| State 5 | hookswitch test | passed | device failure isolated |
| State 6 | message lamp test | passed | device failure isolated |

| Table 5-4 ONS Circuit Lamp Test Initialization | | | |
|--|-------------------|------------------------------|-----------------------------|
| Diagnostic State | Test Name | Circuit State If Test Passes | Circuit State If Test Fails |
| State 1 | message lamp test | device passed | device failure isolated |

Table 5-5 CO Trunk Card Initialization

| Diagnostic State | Test Name | Circuit State If Test Passes | Circuit State If Test Fails |
|-------------------------|------------------------------|-------------------------------------|------------------------------------|
| State 1 | digital bay test | state 2 | state 10 |
| State 2 | adc reference test | state 3 | device failure unisolated |
| State 3 | digital CODEC test | state 4 | device failure unisolated |
| State 4 | digital CODEC loopback test | state 5 | device failure isolated |
| State 5 | analog CODEC loopback test | state 6 | device failure isolated |
| State 6 | hybrid loopback test | device passed | device failure isolated |
| State 9 | get junctor test | state 10 | state 22 |
| State 10 | junctor dc CODEC test | state 11 | state 13 |
| State 11 | junctor ac CODEC test | state 12 | state 13 |
| State 12 | junctor test | state 14 | state 13 |
| State 13 | make junctor suspect | state 9 | state 9 |
| State 14 | analog DSP test | state 9 | state 15 |
| State 15 | retest primary | state 15 | state 16 |
| State 16 | retest secondary | state 16 | state 17 |
| State 17 | has junctor been isolated | state 18 | device failure isolated |
| State 18 | analog alternate device test | state 19 | state 20 |
| State 19 | analog alt dev loopback test | device failure isolated | state 18 |
| State 20 | enough alt devices | state 21 | device failure isolated |
| State 21 | make junctor suspect | device passed | device passed |
| State 22 | enough junctors | device passed | device passed |

Table 5-6 DID Trunk Card Initialization

| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
|-------------------------|-----------------------------|-------------------------------------|------------------------------------|
| State 1 | adc reference test | state 2 | device failure unisolated |
| State 2 | digital CODEC test | state 3 | device failure unisolated |
| State 3 | digital CODEC loopback test | state 4 | device failure isolated |
| State 4 | analog CODEC loopback test | device passed | device failure isolated |

Table 5-7 Receiver Module Initialization

| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
|-------------------------|-----------------------------|-------------------------------------|------------------------------------|
| State 1 | digital CODEC test | state 2 | device failure unisolated |
| State 2 | digital CODEC loopback test | state 3 | device failure unisolated |
| State 3 | analog CODEC loopback test | state 4 | device failure isolated |
| State 4 | dtmf receiver test | device passed | device failure isolated |

Table 5-8 Console Circuit Initialization

| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
|-------------------------|-----------------------|-------------------------------------|------------------------------------|
| State 1 | console test | device passed | device failure unisolated |
| State 2 | console dc CODEC test | state 3 | device failure unisolated |
| State 3 | console ac CODEC test | device passed | device failure isolated |

| Table 5-9 COV Card Initialization | | | |
|--|---------------------------------------|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 1 | digital bay test | state 2 | state 10 |
| State 10 | junctor dc CODEC test | state 11 | state 13 |
| State 11 | junctor ac CODEC test | state 12 | state 13 |
| State 12 | junctor test | state 14 | state 13 |
| State 13 | make junctor suspect | state 9 | state 9 |
| State 14 | analog DSP test | state 9 | state 15 |
| State 15 | retest primary | state 15 | state 16 |
| State 16 | retest secondary | state 16 | state 17 |
| State 17 | has junctor been isolated | state 18 | device failure isolated |
| State 18 | analog alternate device test | state 19 | state 20 |
| State 19 | analog alternate device loopback test | device failure isolated | state 18 |
| State 20 | enough alternate devices | state 21 | device failure isolated |
| State 21 | make junctor suspect | device passed | device passed |

| Table 5-10 E&M Trunk Module Initialization | | | |
|---|-----------------------------|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 1 | digital CODEC test | state 2 | device failure unisolated |
| State 2 | digital CODEC loopback test | state 3 | device failure unisolated |
| State 3 | analog CODEC loopback test | device passed | device failure isolated |

| Table 5-11 DID Card Initialization | | | |
|---|-----------------------|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 1 | digital bay test | state 2 | state 10 |
| State 10 | junctor dc CODEC test | state 11 | state 13 |

Table 5-11 DID Card Initialization (continued)

| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
|------------------|---------------------------------------|------------------------------|-----------------------------|
| State 11 | junctor ac CODEC test | state 12 | state 13 |
| State 12 | junctor test | state 14 | state 13 |
| State 13 | make junctor suspect | state 9 | state 9 |
| State 14 | analog DSP test | state 9 | state 15 |
| State 15 | retest primary | state 15 | state 16 |
| State 16 | retest secondary | state 16 | state 17 |
| State 17 | has junctor been isolated | state 18 | device failure isolated |
| State 18 | analog alternate device test | state 19 | state 20 |
| State 19 | analog alternate device loopback test | device failure isolated | state 18 |
| State 20 | enough alternate devices | state 21 | device failure isolated |
| State 21 | make junctor suspect | device passed | device passed |

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Table 5-12 Digital Line Card Initialization

| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
|------------------|--------------------------------------|------------------------------|-----------------------------|
| State 1 | does other half have a set? | state 2 | state 11 |
| State 2 | is there a voice set? | state 3 | state 6 |
| State 3 | digital set EPROM checksum test | state 4 | device failure isolated |
| State 4 | digital set Bphone test | state 5 | device failure isolated |
| State 5 | digital set transducer earpiece test | state 12 | device failure isolated |
| State 6 | is there a data set? | state 7 | device failure isolated |
| State 7 | digital set EPROM checksum test | state 10 | device failure isolated |
| State 8 | does other half have a set? | device passed | state 9 |

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| Table 5-12 Digital Line Card Initialization (continued) | | | |
|--|--|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 9 | DNIC output loopback test | device passed | device failure isolated |
| State 10 | dataset data loopback test | device passed | device failure isolated |
| State 11 | DNIC input loopback test | state 2 | device failure isolated |
| State 12 | digital set transducer speaker test | state 13 | device failure isolated |
| State 13 | digital set transducer microphone test | state 14 | device failure isolated |
| State 14 | digital set transducer mouthpiece test | device passed | device failure isolated |
| State 1 | does other half have a set? | state 2 | state 11 |
| State 2 | is there a voice set? | state 3 | state 6 |
| State 3 | digital set EPROM checksum test | state 4 | device failure isolated |
| Note: States 1, 2, 6, and 8 are software tests, used to find which device (data/voice) is connected. These states are helpful when planning which tests to execute. | | | |
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| Table 5-13 SUPERCONSOLE 1000 Initialization | | | |
|--|---------------------------------|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 1 | digital set EPROM checksum test | state 4 | device failure unisolated |
| State 2 | digital set Bphone test | state 5 | device failure unisolated |

| Table 5-14 T1 Trunk Card | | | |
|---------------------------------|--------------------------|-------------------------------------|------------------------------------|
| Diagnostic State | Test Name | Circuit State if Test Passes | Circuit State if Test Fails |
| State 1 | T1 channel loopback test | device passed | device failure isolated |

6 Test Line

General

- 6.1 The test line interface is designed to provide the maintenance person with a portable, inexpensive, and readily available tool for diagnosing system failures and for performing maintenance functions. The test line interface provides a powerful subset of the maintenance functionality available through the maintenance terminal. In addition, the maintenance person can place calls without having a permanently wired extension on the premises.

The connection to the default test line (the physical location identification is Bay 1, Slot 1, Circuit 1) must be made at the MDF. In addition, Bay 1, Slot 1 must contain an ONS card.

Programming

- 6.2 Before the test line package may be used, an access code must first be programmed through Customer Data Entry (CDE); refer to Form 02 (Feature Access Codes) in the *Customer Data Entry Practice*. Once in this form, assign an access code to Feature Number 18 (Maintenance Function - Test Line); this access code must not conflict with existing access codes or with the system numbering plan.

Test Line Access

- 6.3 To access the test line, first connect a telephone to the test line, then lift the handset, wait for dial tone, and enter the following digits:
- The test line access code as specified in CDE
 - One of the valid test line command codes (see Table 6-1)
 - If required, enter the circuit location number.

Note: When CDE or maintenance is accessed via the maintenance terminal or Attendant Console, the test line cannot be accessed. In these cases, the maintenance person will receive busy tone upon dialing the test line access code. Also, after accessing the test line, if no action is taken for 90 seconds, the test line session will be automatically terminated.

Test Line Maintenance Commands

- 6.4 Not all maintenance commands can be accessed from the test line. However, the maintenance commands available to the test line permit the maintenance person to perform most maintenance functions.

Commands are entered on the test line by dialing command codes using the DTMF keypad or the rotary dial of the set being used. These command codes are listed in Table 6-1. A description of each command follows Table 6-1.

| Table 6-1 Test Line Command Codes | | |
|--|--------------|-----------------------------------|
| Numeric | Alpha | Command Codes Description |
| 22 | BC | Busy Out Channel (Remove Channel) |
| 25 | BJ | Busy Out Junctor |
| 26 | BO | Busy Out device |
| 35 | DL | Dump Logs |
| 38 | DT | Direct Trunk select |
| 72 | RC | Return Channel |
| 73 | SD | Stop Dump Logs |
| 77 | RS | Return Device to Service |
| 78 | ST | Stop Test Printers |
| 82 | TC | Test Channel |
| 83 | TD | Test Device |
| 872 | TPB | Test Printer Bay_Slot_Circuit |
| 873 | TPE | Test Printer Extension_Number |
| 877 | TPP | Test Printer Port |

Busy Out Channel Command (BC)

Allows the maintenance person to busy out any channel on the system.

1. Enter the test line access code
2. Enter the Busy Out Channel code (22)
3. Enter the Link/Channel number.

PA on the status indicator and a single beep tone indicates the successful operation. FA and reorder tone indicates failure. See Table 6-2.

Busy Out Command (BO)

Allows the maintenance person to busy out any peripheral device in the system except consoles and the test line circuit.

1. Enter the test line access code
2. Enter the Busy Out device code (26)
3. Enter the physical location number of the device.

If the device was in use (busy) at the time of access, the status indicators will read "PA" and the trunk will be busied as soon as it reaches the idle state. If the operation succeeds, the status indicators will read "PA" and a single beep tone will be heard. If the operation fails, the status indicators will read "FA" and reorder tone will be heard. See Table 6-2.

Dump Logs Command (DL)

Allows the maintenance person to print the system maintenance log on to the system printer.

1. Enter the test line access code
2. Enter the Dump Logs code (35).

“PA” on the status indicators and a single beep tone indicate that the system has started sending the logs to the printer. “FA” and reorder tone indicate failure. See Table 6-2.

Direct Trunk Select Command (DT)

Allows the maintenance person to directly select any trunk in the system from the test line.

1. Enter the test line access code
2. Enter the direct trunk select code (38)
3. Enter the physical location number of the required trunk.

If the trunk is not busy and is in working order, the status indicators will revert to whatever was present before the testline was accessed, and dial tone will be heard. The trunk is then ready for use. If the trunk is in use (busy) at the time of access, it is not selected; if the trunk is not functional, the status indicators will read “FA”.

Return Channel Command (RC)

Allows the maintenance person to return to service any channel on the system.

1. Enter the test line access code
2. Enter the Return Channel code (72)
3. Enter the Link/Channel number.

“PA” on the status indicator and a single beep tone indicate the successful operation of the channel being returned to service. “FA” and reorder tone indicate failure. See Table 6-2.

Stop Dump Logs Command (SD)

Allows the maintenance person to stop print (dump) the system maintenance log on to the system printer.

1. Enter the test line access code
2. Enter the Stop Dump Logs code (73).

“PA” on the status indicator and a single beep tone indicate that the system has stopped sending the logs to the printer. “FA” and reorder tone indicate failure. See Table 6-2.

Return Device To Service Command (RS)

Allows the maintenance person to return to service any peripheral device that was previously removed from service via maintenance.

1. Enter the Test Line Access code
2. Enter the Return Device to Service code (77)
3. Enter the physical location number of the device.

“PA” on the status indicators and a single beep tone will indicate that the device was returned to service. “FA” and reorder tone indicate failure. See Table 6-2.

Stop Test Printers Command (ST)

Allows the maintenance person to stop testing the printers on the system.

1. Enter the Test Line Access code
2. Enter the Stop Test Printers code (78).

“PA” on the status indicator and a single beep tone indicate that the system has stopped testing the printers. “FA” and reorder tone indicate failure. See Table 6-2.

Test Channel Command (TC)

Allows the maintenance person to test any channel on the system.

1. Enter the Test Line Access code
2. Enter the Test Channel code (82)
3. Enter the Link/Channel number.

“PA” on the status indicator and a single beep tone indicate that the test passed. “FA” and reorder tone indicate that the test failed. See Table 6-2.

Test Device Command (TD)

Allows the maintenance person to test any peripheral circuit in the digital bays.

1. Enter the Test Line Access code
2. Enter the Test Device code (83)
3. Enter the physical location number of the device.

“PA” on the status indicators and a single beep tone indicate that the test passed. “FA” and reorder tone indicate that the test failed.

Test Printer Bay_Slot_Circuit Command (TPB)

Allows the maintenance person to test any printer on the system, other than the system printer using the physical location number of the printer port.

1. Enter the Test Line Access code
2. Enter the Test Printer Bay_Slot_Circuit code (872)
3. Enter the physical location number of the printer port.

“PA” on the status indicators and a single beep tone indicates that the system has started sending test data to the printer, which should then print two full pages of all the printable characters. “FA” and reorder tone indicates that the test failed. See Table 6-2.

Test Printer Extension_Number Command (TPE)

Allows the maintenance person to test any printer on the system (except the system printer) using the extension number of the printer port.

1. Enter the Test Line Access code
2. Enter the Test Printer Extension_number code (873)
3. Enter the extension number of the printer port.

“PA” on the status indicators and a single beep tone indicates that the system has started sending test data to the printer, which should then print two full pages of all the printable characters. “FA” and reorder tone indicate that the test failed. See Table 6-2.

Test Printer Port Command (TPP)

Allows the maintenance person to test the system printer.

1. Enter the Test Line Access code
2. Enter the Test Printer Port code (877).

“PA” on the status indicators and a single beep tone indicate that the system has started sending test data to the printer, which should then print two full pages of all the printable characters. “FA” and reorder tone indicate that the test failed. See Table 6-2.

Test Line Indicator LEDs

- 6.5 The status of the test line software is indicated by the dual seven-segment display status indicators on the Main Control Card II. When the maintenance person enters the test line access code on the test line set, the LEDs go blank, indicating that the system is waiting for command input. After the maintenance person enters a command sequence, the LEDs will display the results of the action performed. Refer to Table 6-2 for an explanation of the various test line status codes that may appear on the MCC II.

| Status Code | Meaning |
|-------------|--|
| PA | The attempted operation was successful (pass). |
| FA | The attempted operation was unsuccessful (fail). See Note. |
| (blank) | System is waiting for command input. |
| II | Test was inconclusive. |
| E5 | Invalid command or device location entered; only those commands in Table 6-1 on Page 6-2 are acceptable. |
| bb | Device was busy. Try again later. |
| 7E | An invalid physical location number was entered. Enter bay number (e.g., 01), slot number (e.g., 04), and circuit number (e.g., 06). |
| FF | Unknown error. Attempt operation again - ensure correct use of command codes (see Table 6-1). |
| 1E | Error in acquiring the software ID of the test line. Attempt operation again - ensure correct use of command codes (see Table 6-1). If necessary, use maintenance terminal or console. |
| 2E | Possible software error. Attempt operation again - ensure correct use of command codes (see Table 6-1). Use maintenance terminal or console if necessary. |

Note: Failure of any of the test line command sequences will necessitate the use of the more sophisticated maintenance tools available from the maintenance terminal or console. Refer to the *RS-232 Maintenance Terminal Practice*.

Test Line Tones

- 6.6 The test line software uses some of the existing system-generated tones as audible status indicators. Approximately ten seconds after the maintenance person enters the test line access code on the test line set, a short ring burst, followed by dial tone is heard, indicating that the system is waiting for command input. After the maintenance person enters a command sequence, the returned tone will indicate the result of the action performed. See Table 6-3 for a description of the tones.

| Tone Type | Meaning |
|-------------------------------------|---|
| Dial tone | System is waiting for command input. |
| Camp-on tone (single beep) | The attempted operation was successful (Pass). |
| Reorder tone | The attempted operation was unsuccessful (Fail) see Note. |
| Trunk camp-on tone (double beep) | Test was inconclusive. |
| Ringback tone (single beep or ring) | Initial maintenance access. |
| Busy Tone | Device was busy. Try again later. |

Note: Failure of any of the test line command sequences will necessitate the use of the more sophisticated maintenance tools available from the maintenance terminal or console. Refer to the *RS-232 Maintenance Terminal Practice*.

Specifying Equipment

- 6.7 Many of the test line command sequences require the maintenance person to specify a circuit as part of the command input. Circuits are specified using their physical location numbers (bay, slot, circuit, subcircuit).

For example, a receiver circuit at location Bay 1, Slot 3, Circuit 3, Subcircuit 4 would be specified as "01 03 03 04". A line circuit at location Bay 1, Slot 1, Circuit 6 would be specified as "01 01 06 00". Note that circuits with no subcircuit number (that is, lines and trunks) must be specified with "00" as the subcircuit.

Channels are specified by using the required Link and Channel number. The link number is a two-digit number. Note that Link 0, 1, 14, or 15 cannot be tested. The Channel number is a two-digit number from 00 to 31. Channel 30 on Link 9 is specified as "09 30".

Normal Extension Calls

- 6.8 The test line has access to normal extension facilities and is subject to Class Of Service (COS) and Class Of Restriction (COR) restrictions. It is not necessary to enter the test line access code or a special command code to make normal extension calls.

7 Maintenance Controls and Indicators

General

- 7.1 The following paragraphs describe the maintenance controls and indicators found on the components of the *SX-200* ML PABX. Most of the indicators are software-controlled, and provide maintenance personnel with information on the current status of the system.

Main Control Card II

- 7.2 There are two variants of the Main Control Card II (MCC II): one with a Stratum 4 clock, the other with a Stratum 3 clock. The MCC II contains status LEDs, two seven-segment display LED indicators, two push buttons, and a slot for a flash memory card. These controls and indicators are labelled clearly on the MCC II front panel (See Figure 7-1). The functions of the controls and indicators are described in the following paragraphs.

System Reset Button (RESET): When this manual system reset button is pressed, the system will cease all activity, run all initialization tests, and reload the software.

CAUTION: Never press the system reset button while the *SX-200* ML PABX is handling traffic, because all calls will immediately be dropped, and the system will switch to System Fail Transfer mode.

System Interrupt Button (INTER): When this manual system interrupt button is pressed, the system will clear the Random Access Memory on the PC, cease all activity, run all initialization tests, and reload the software. The system interrupt button can be pressed only when the following conditions are met:

- The system is within the first ten seconds of the reboot procedure.
- The top seven-segment LED shows "C", and the lower seven-segment LED is blank.

Flash Memory Card: The flash memory card containing the system software is inserted into the slot on the MCC II card, only while power is OFF.

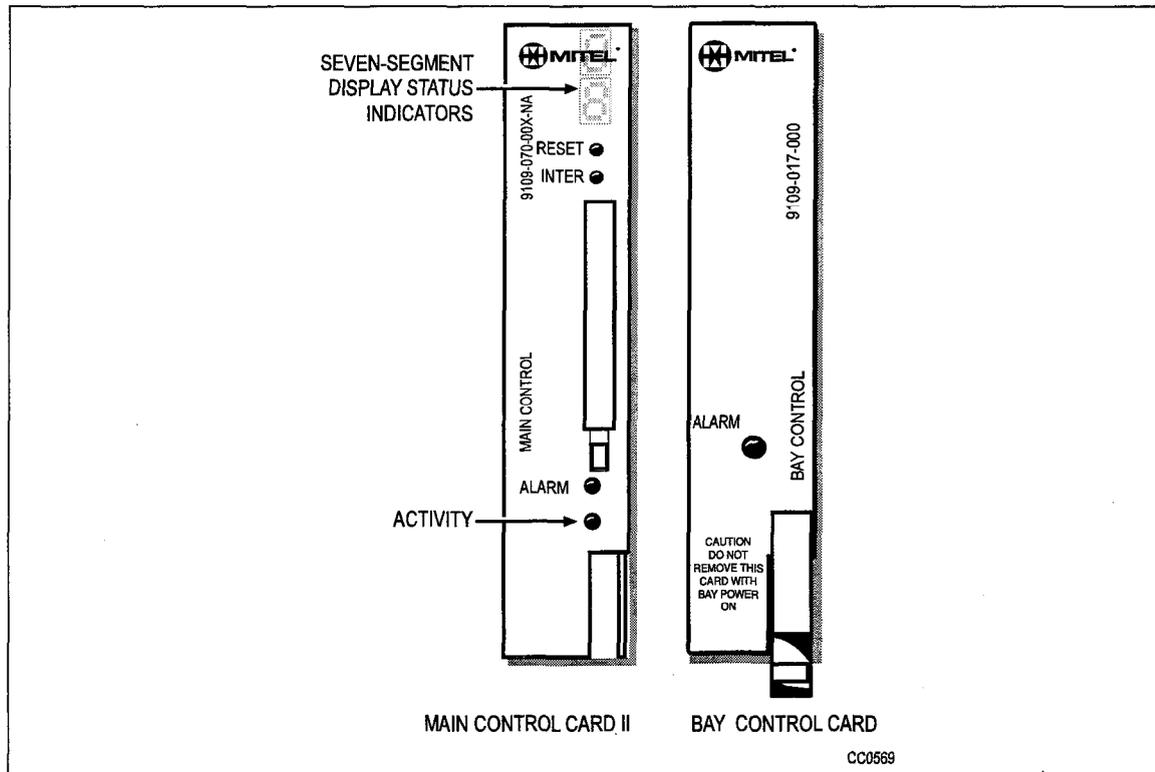


Figure 7-1 Control Card Front Panels

Seven-Segment Display Status Indicators. The MCC II status indicators consist of two seven-segment display LEDs that are arranged vertically. The top display LED is more significant than the lower display LED.

The function of the MCC II status indicators depends upon the software currently being executed. At system initialization, status indicators indicate the status of the MCC II tests (see Table 7-1). During normal operation when no applications are using the status indicators, a pair of horizontal dashes are displayed.

When certain functions are being performed by the system, the status indicators display the appropriate codes. These functions and codes are listed in Table 7-1.

When the maintenance person is accessing the test line facility, the status indicators are dedicated solely to this function. Refer to Part 6 of this practice for further details on the test line.

When the system detects an error, the status indicators show the physical location of the most recent card to have a problem entered into the maintenance log. The card's bay number (top display LED) and slot number (bottom display LED) will be displayed. The status indicator displays do not clear until the user reads or prints the logs of a problem area from within maintenance. After the logs are read or printed, the display is cleared of all the previous problem areas.

| Table 7-1 Main Control Card II Codes | | |
|---|------------------------|--|
| Codes | System Function | Action |
| Top LED: E . Lower LED: 8 | MOSS Verification | The Mitel Options password, selected options, or system id does not match, or is corrupted. Verify the options and the system id; then, enter the password again. |
| Top LED: A Lower LED: - circles clockwise | Database Upload | Indicates that a customer database backup is in progress, or that a log text file is being saved to the user's PC storage medium. |
| Top LED: A Lower LED: - circles counter-clockwise | Database Restore | Indicates that a customer database restore from the user's PC storage medium to the system is in progress. |
| Top LED: C Lower LED: - | Database Verification | During a system reboot or power up, the system is clearing the default customer database in the random access memory to allow the user to reset the system by pressing the system reset button; see <i>System Interrupt Button</i> in this section for the conditions. |
| Top LED: F Lower LED: - circles counter-clockwise | Flash Memory Access | Indicates that the system software on the flash memory card is being accessed. |
| Top LED: H Lower LED: - circles clockwise | Software Decompression | Indicates that the system software is in the process of decompressing. |
| Top LED: - Lower LED: - | Normal Operation | Indicates normal system operation when no applications are using the status indicators. |

Activity LED. This green LED serves as an indication of the health of the system. A steady 1-second pulse cycle indicates that the system is up and running. If the LED remains constantly on or off, it indicates that the system is not running. In this case consult the *Troubleshooting Practice*.

Alarm Status LED. This red LED is located above the Activity LED. The alarm status LED indicates the overall system alarm level. Refer to Part 3 of this practice for further information on alarms. The four alarm levels are:

- **NO ALARM** - indicates that the system is functioning properly (alarm LED is off).
- **MINOR** - indicates that there are problems affecting the system in small proportion (alarm LED will flash with a period of 100 ms on, and 900 ms off).
- **MAJOR** - indicates that there are problems causing a serious degradation of service (alarm LED will flash with a period of one second on, and one second off).
- **CRITICAL** - indicates that there has been a very serious loss of call processing capability; an automatic system fail transfer (SFT) is invoked and the system is reset (alarm LED is on solid).

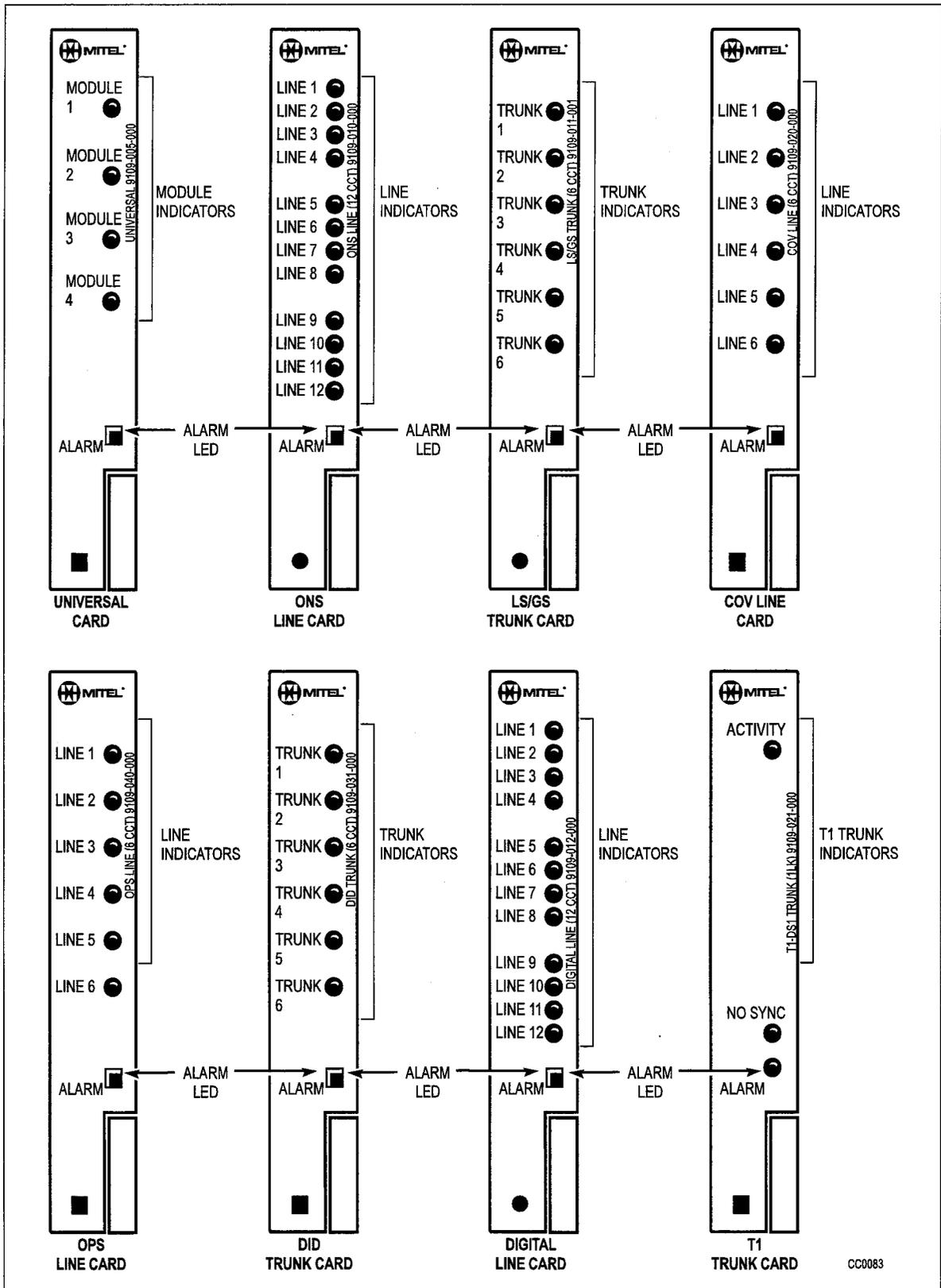
Bay Control Card

7.3 The Bay Control Card has three status LEDs labelled Tx, Rx and ALARM. The Tx and Rx LEDs indicate communication (transmit and receive) with the Main Control Card II. The ALARM LED has two functions. A flashing ALARM LED indicates a failure on the Bay Control Card. A permanently lit ALARM LED indicates that the Bay Control Card is waiting for, or has lost, communication with the Main Control Card II. See Table 7-2 for a summary of the Bay Control Card status LED states.

| Tx LED | Rx LED | Alarm LED | Meaning |
|----------|----------|-----------|---|
| on | on | on | Bay Control Card is either waiting for, or has lost communication with the Main Control Card II. If this state persists for more than a few seconds, there is no communication. |
| flashing | flashing | on | Bay Control Card is being downloaded by the Main Control Card II. |
| flashing | flashing | off | Bay Control Card is running and communicating with the Main Control Card II. |
| off | off | off | This is the normal operating condition of the Bay Control Card when the SX-200 ML PABX is idle and diagnostics are off. |
| - | - | flashing | There is a failure on the Bay Control Card. |

Peripheral Circuit Cards

7.4 **Digital Cards.** On a digital card, each circuit has one associated LED which indicates the busy (on) or idle (off) status of the circuit. When a digital circuit is removed from service by the maintenance system, the associated LED will flash with a period of 0.5 second on and 0.5 second off. Each digital peripheral card has an alarm LED located at the bottom of the card's front panel. If any circuit on the card has a known fault or if a card is installed in an unprogrammed or incorrect card slot, the alarm LED will flash with a period of 0.5 second on and 0.5 second off (See Figure 7-2).



CC0083

Figure 7-2 Typical Peripheral Card Front Panels

Attendant Console

7.5 The attendant console function LEDs (see Figure 7-3) are used as maintenance indicators during the console initialization sequence. Table 7-3 and Table 7-4 describe the console maintenance indicators.

| Table 7-3 Attendant Console Maintenance Led Indicators | |
|--|---|
| Test Name | Test Fail Indication |
| Console RAM Test | HOLD 1 LED flashes. |
| Console EPROM Test | HOLD 2 LED flashes. |
| Console IRQ Test | HOLD 3 LED flashes. |
| Console LED Test | Any of the console LEDs fail to go on, and stay on for 2 seconds. |

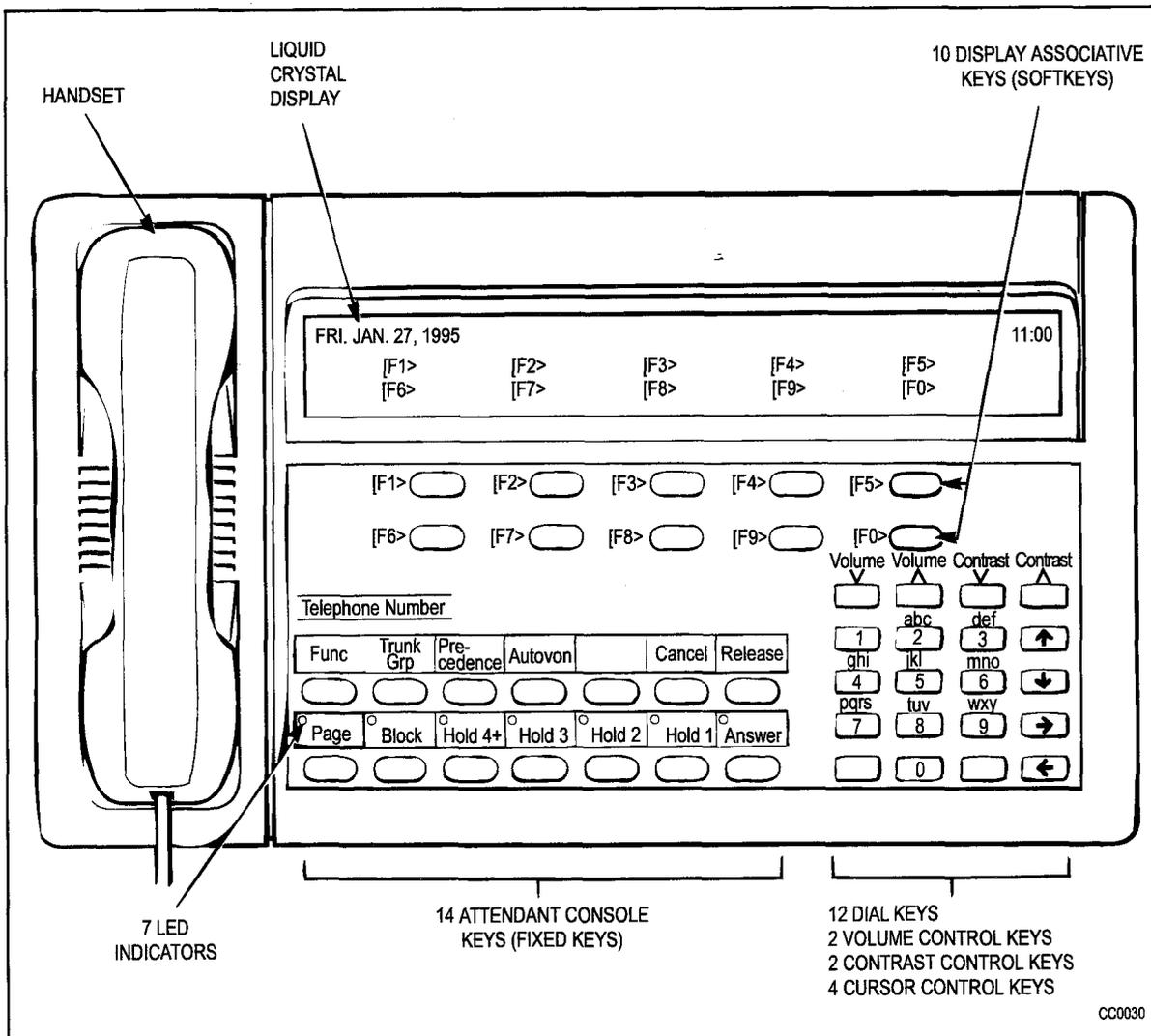


Figure 7-3 Attendant Console Keyboard

| Message | Meaning |
|---|--|
| CONSOLE HARDWARE FAILURE 123456789 ERROR CODE 1 PLEASE NOTE DETAILS ON REPAIR TAG | Console power-up tests failed. |
| WAITING FOR SYNCHRONIZATION 123456789 PLEASE WAIT | Power is available, but there is no synchronization to the line. |
| WAITING FOR COMMUNICATION 123456789 PLEASE WAIT | Console is synchronized, but no messages are being received from the system. |

Note: In all cases, refer to the *Troubleshooting Practice*.

Power Supply

- 7.6 **Bay Power Supply.** The one bay of the SX-200 ML PABX requires one Bay Power Supply (see Figure 7-4). There are two LED indicators located on the front panel of the Bay Power Supply; the top LED is the power ON indicator, and the bottom LED is the ring generator indicator. The ring generator indicator will flash on only when ringing signal is applied.

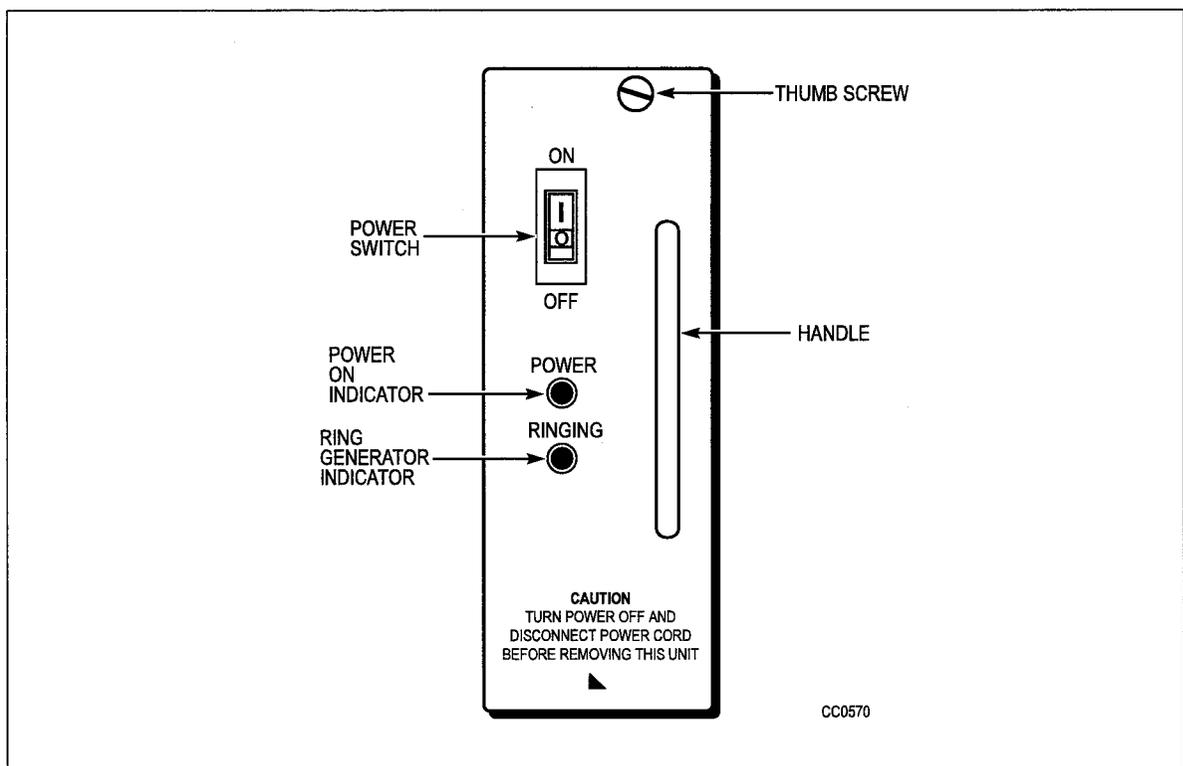


Figure 7-4 Bay Power Supply

Appendix A

System Initialization

General

- A.1 When the system is first installed, the default data must be entered into the system using the CDE forms. For initialization details, refer to Table A-1, Initial Power-up Procedures From The Terminal, and the *Installation Information Practice*.

| Table A-1 Initial Power-up Procedures From The Terminal | |
|---|---|
| Step | Action |
| 1. | Ensure that the System ID module is installed. Refer to the <i>Installation Information Practice</i> . |
| 2. | Insert the flash memory card into the slot on the Main Control Card II. |
| 3. | Turn the power supply ON, and wait for the power-up sequence to complete. When the sequence completes, the top seven-segment LED shows "E." and the lower seven-segment LED shows "8" until Step 9 is completed successfully. |
| 4. | Press the RETURN key four times; the terminal display returns: 1 - VT100 COMPATIBLE 2 - TTY TYPE SELECT A TERMINAL TYPE : |
| 5. | Select the terminal type by entering "1". The display returns: 1 - MAINTENANCE 2 - CDE 6 - QUIT SELECT AN APPLICATION (OR QUIT TO START OVER) : |
| 6. | Select the Customer Data Entry application by entering "2". The display returns: ENTER USERNAME : |
| 7. | Enter the INSTALLER level of access. The display returns: ENTER PASSWORD: |
| 8. | Enter the required password to access Customer Data Entry. The default password is 1000. A list of the system's forms is displayed. |
| 9. | Select Form 04 and enable all the software options that were purchased; both the top and lower seven-segment LEDs show "-". Note: Enable only the purchased options listed on the MOSS sheet that is included with the system software package. An error results when a purchased option is not enabled, when an enabled option is not purchased, or when the system id does not match. |
| 10. | Enter the Mitel Options password to activate the enabled features. The password must be the password that is printed on the MOSS sheet. The MOSS sheet is included with the system software package. |

Appendix B

Updating the Operating System Software

General

B.1 To update the operating system software, refer to Table B-1, Operating System Software Update Procedure From The Terminal, and the *Installation Information Practice*.

| Table B-1 Operating System Software Update Procedure From The Terminal | |
|---|--|
| Step | Action |
| 1. | Back up the existing database to the PC before proceeding. |
| 2. | Ensure that the power to the system is OFF. |
| 3. | Ensure that the System ID module is installed. Refer to the <i>Installation Information Practice</i> . |
| 4. | Remove the old flash memory card from the slot on the Main Control Card II. |
| 5. | Insert the new flash memory card into the slot on the Main Control Card II. |
| 6. | Turn the power supply ON, and wait for the power-up sequence to complete. When the sequence completes, the top seven-segment LED shows "C" for several seconds; then the top and the lower seven-segment LED show "-". |
| 7. | Press the RETURN key four times; the terminal display returns: 1 - VT100 COMPATIBLE 2 - TTY TYPE SELECT A TERMINAL TYPE : |
| 8. | Select the terminal type by entering "1". The display returns: 1 - MAINTENANCE 2 - CDE 6 - QUIT SELECT AN APPLICATION (OR QUIT TO START OVER) : |
| 9. | Select the Customer Data Entry application by entering "2". The display returns: ENTER USERNAME : |
| 10. | Enter the INSTALLER level of access. The display returns: ENTER PASSWORD: |
| 11. | Enter the current password to access Customer Data Entry. A list of the system's forms is displayed. |

Appendix C

Username Command Privileges

Table C-1 lists the command privileges of all of the valid username levels:

| Table C-1 Username Command Privileges | | | | | |
|---------------------------------------|-----------|--------|--------|------------|-----------|
| COMMAND | Installer | Maint1 | Maint2 | Supervisor | Attendant |
| DATABASE RESTORE | X | | | | |
| DATABASE BACKUP | X | | | | |
| LOGS_BACKUP | X | | | | |
| SET TIME | X | X | X | X | X |
| SET DATE | X | X | X | X | X |
| SET PASSWORD | X | X | X | X | X |
| SET SPEED | X | X | | | |
| SHOW DATE | X | X | X | X | X |
| SHOW TIME | X | X | X | X | X |
| SHOW DEVICE | X | X | X | X | X |
| SHOW IDENTITY | X | X | X | X | X |
| MONITOR SMDR | X | X | X | X | |
| MONITOR DIAG | X | X | X | X | |
| MONITOR LOGS | X | X | X | X | |
| STOP MONITOR | X | X | X | X | |
| TEST | X | X | | | |
| SHOW ERRORS | X | X | | | |
| CLEAR ERRORS | X | X | | | |
| ENABLE/DISABLE BG DIAGS | X | X | | | |
| ENABLE/DISABLE PWR UP DIAGS | X | X | | | |
| BUSY-OUT RETURN TO SVC | X | X | | | |
| TRAFFIC SET | X | X | X | X | |
| RESTART | X | | | | |
| SET RESET_TIME | X | | | | |
| SET ALARM_THRESH | X | | | | |
| TRAFFIC SHOW | X | X | X | X | |

Table C-1 Username Command Privileges (continued)

| COMMAND | Installer | Maint1 | Maint2 | Supervisor | Attendant |
|------------------|-----------|--------|--------|------------|-----------|
| TRAFFIC PRINT | X | X | X | X | X |
| TRAFFIC READ | X | X | X | X | X |
| TRAFFIC STOP | X | X | X | X | X |
| LOGS SET AUTO | X | X | | | |
| LOGS READ | X | X | | | |
| LOGS PRINT | X | X | | | |
| STOP PRINT LOGS | X | X | | | |
| LOGS DELETE | X | X | | | |
| SHOW ALARMS | X | X | | | |
| SHOW CONFIG | X | X | X | | |
| SHOW STATUS | X | X | X | | |
| SHOW CHANNEL_MAP | X | X | X | | |

NOTES

NOTES

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SX-200[®] ML PABX

Field- Replaceable Units

NOTICE

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IMPORTANT SAFETY INSTRUCTIONS

These instructions are intended to be used as a general guide to provide basic installation information which is necessary for the proper and safe functioning of this equipment.

WARNING: FAILURE TO FOLLOW ALL INSTRUCTIONS MAY RESULT IN IMPROPER EQUIPMENT OPERATION AND/OR THE RISK OF ELECTRIC SHOCK.

General

- Read and understand all instructions. Keep these instructions with the equipment.
- Do not attempt to install or service this equipment unless you are skilled in the installation and maintenance of electronic telecommunication equipment and have successfully completed specific training for this equipment.
- This product must be installed and serviced in accordance with this document and the information contained in this set of technical practices. Practices 9109-098-501-NA, 9109-098-502-NA, and 9109-098-503-NA are the Practice Index documents.
- Follow all the steps outlined in this document in the sequence that is given.
- Configure this product only with the assemblies specified and in the locations stated in this document and in this set of technical practices.
- Replace all guards or barriers. Close and lock doors at the completion of installation or before returning the equipment to service.
- Grounding circuit continuity is vital for safe operation of telecommunication equipment. Never operate telecommunication equipment with grounding conductor disconnected. Ensure grounding conductor is installed before connecting telecommunication cabling to any system. (See Note, below).

Note: All cabinets must be unplugged from the ac mains during servicing. Unplugging a LIGHT control cabinet means the cabinet is “floating”, thus presenting a potential static problem. To reduce static susceptibility on a LIGHT control cabinet (or any other node) always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a node into an antistatic bag.

Installation of Telecommunication Wiring

Telecommunication wiring to this product shall conform to all applicable safety and electrical wiring regulations. Installation of telecommunication wiring shall be performed following precautions in accordance with standard industry practice. The precautions to be followed include:

- Never install telephone wiring during a lightning storm.

- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

Use of Notices and Symbols

The following information provides an explanation of the notices and symbols which appear on the product and in the practices for this product.



Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Caution indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property.

| | |
|---|--|
|  <p>DANGEROUS VOLTAGE</p> | <p>The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a significant risk of electric shock to persons.</p> |
|  <p>INSTRUCTIONS</p> | <p>The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.</p> |
|  <p>PROTECTIVE GROUNDING TERMINAL</p> | <p>The ground symbol within a circle identifies the terminal which is intended for connection to an external protective conductor. This connector must be connected to earth ground prior to making any other connections to the equipment.</p> |

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1 Introduction

This document contains ordering information and field replacement instructions for the Mitel SX-200® ML PABX.

Reason for Issue

- 1.1 This document reflects the content of the *SX-200* ML LIGHTWARE™ 16 software release.

Ordering Information

The ordering information is divided into the following tables:

- Table 1-1 lists digital cards and modules required
- Table 1-2 lists spares
- Table 1-3 lists peripheral equipment
- Table 1-4 lists system documentation.

Note: A complete list of circuit card part numbers, engineering numbers and revision levels is provided in the *Safety Instructions Practice*.

Warranty

- 1.2 The MITEL® PABX communications system is warranted against defective material and workmanship. Equipment requiring service or repair during the warranty period must be packaged in accordance with Chart 2-3 and returned prepaid to the supplier. Repaired or replacement equipment is returned to the customer, post prepaid by MITEL.

Spares Level

- 1.3 MITEL recommends that the minimum sparing level be one replacement unit for any part installed in the field for the first system installed. This would be 100% spares for the first system installed. As the number of installed systems increases, the sparing level should decrease to 10% of the installed units.

| Table 1-1 Digital Peripheral Cards | | |
|------------------------------------|-----------------|---|
| Common Name | Part Number | Comments |
| ONS Line Card | 9109-010-000-SA | For Rotary and DTMF Telephones (12 circuits per card) |

Page 1 of 2

Table 1-1 Digital Peripheral Cards (continued)

| Common Name | Part Number | Comments |
|----------------------------|------------------------------------|--|
| ML only ONS Line Card | 9109-010-003-NA | For Rotary and DTMF Telephones (12 circuits per card) (1 per <i>SX-200</i> ML system) |
| COV Line Card | 9109-020-000-SA | 6 COV Circuits per card |
| OPS Line Card | 9109-040-000-SA | 6 OPS Circuits per card |
| ML only Digital Line Card | 9109-012-002-NA | 12 DNIC Circuits per card (2 per <i>SX-200</i> ML system) |
| Digital Line Card | 9109-012-000-SA 9109-012-001-NA | 12 DNIC Circuits per card 12 DNIC Circuits per card (bridge taps not allowed) |
| LSGS Trunk Card - CSA | 9109-011-001-SA | 6 CO Trunk Interfaces (for use in Canada and the United States) |
| DID Trunk | 9109-031-000-SA | 6 DID Circuits per card |
| T1 Trunk Card | 9109-021-000-SA | Includes T1 Trunk Adapter. |
| T1 Trunk Adapter | 9400-100-302-NA | |
| Dual T1 Trunk Adapter | 9400-100-304-NA | for 2 links |
| Main Control Card II | 9109-070-001-NA | with Stratum 3 Clock Module |
| Main Control Card II | 9109-070-000-NA | with Stratum 4 Clock Module |
| Universal Card | 9109-005-000-SA | supports: - E&M Trunk Module - Music-on-Hold/Pager Module - Receiver/Relay Module |
| E&M Trunk Module | 9109-013-000-SA | 1 E&M Trunk Circuit per Module |
| Music-on-Hold/Pager Module | 9109-018-000-SA | Music Input, Paging Preamp Output, and Relay to control external amplifier |
| Receiver/Relay Module | 9109-016-000-SA | 4 DTMF Receivers and 2 General Purpose Relays |

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Table 1-2 Spares

| Marketing Name | Part Number | Comments |
|--|-----------------|----------|
| Bay Control Card | 9109-017-000-SA | |
| Bay Power Supply 120 V ac | 9109-008-000-SA | |
| Bay Power Supply 230 V ac | 9109-008-003-NA | |
| <i>SX-200</i> ML LIGHTWARE 16 2 Megabyte PCMCIA Memory Card | 9109-418-000-NA | |
| <i>SX-200</i> ML LIGHTWARE 16 4 Megabyte PCMCIA Memory Card | 9109-418-001-NA | |
| System ID Module | 9400-200-302-NA | |
| ML Cabinet Interface Assembly | 9400-300-313-NA | |

Table 1-3 Peripheral Equipment

| Marketing Name | Part Number | Comments |
|---|-----------------|---|
| ACD TELEMARKETER® Reporting System | 9150-ACD-02D-NA | |
| SUPERCONSOLE 1000™ attendant console (English) | 9189-000-001-NA | Console with tilt LCD display (interfaces to Digital Line Card) and English documentation |
| <i>SUPERCONSOLE1000</i> attendant console (French) | 9189-000-003-NA | Console with tilt LCD display (interfaces to Digital Line Card) and French documentation |
| SUPERSET 7000™ attendant console | 9119-000-011-NA | PC-based Attendant Console |
| SUPERSET™ Line Cord Pack | 9170-048-004-NA | Spare Line Cord for <i>SUPERSET</i> telephones and for <i>SUPERCONSOLE 1000</i> Attendant Consoles (quantity: 10) |
| SUPERSET 401+™ Telephone | 9113-000-002-NA | Single line digital telephone set |
| SUPERSET 410™ Telephone | 9114-000-000-NA | Multi-line digital telephone set |
| SUPERSET 420™ Telephone | 9115-000-000-NA | Multi-feature, multi-line digital telephone set |
| SUPERSET 430™ Telephone | 9116-000-000-NA | Full-feature, multi-line digital telephone set |
| <i>SUPERSET 401+</i> Telephone | 9113-502-002-NA | Single line digital telephone set (dark grey) |
| <i>SUPERSET 410</i> Telephone | 9114-502-000-NA | Multi-line digital telephone set (dark grey) |
| <i>SUPERSET 420</i> Telephone | 9115-502-000-NA | Multi-feature, multi-line digital telephone set (dark grey) |
| <i>SUPERSET 430</i> Telephone | 9116-502-000-NA | Full-feature, multi-line digital telephone set (dark grey) |
| International Handset for <i>SUPERSET</i> 400 series | 9115-007-001-NA | Spare Handset for <i>SUPERSET</i> 400 series telephone sets (quantity:10) |
| International Handset Cord for <i>SUPERSET</i> 400 series | 9115-010-001-NA | Handset Cord for <i>SUPERSET</i> 400 series telephone sets (quantity:10) |
| Static Protection Unit | 9180-067-001-NA | Protects system against static discharges at stations. Installed at distribution frame. One unit handles 25 stations. |
| Standalone DATASET 1103 | 9141-110-300-NA | Standalone asynchronous DATASET |
| MILINK™ Data Module | 9112-100-000-NA | |
| Programmable Key Module | 9112-200-000-NA | |
| Standalone DATASET 2103 | 9141-210-300-NA | Standalone synchronous/asynchronous DATASET |
| DNIC Music / Paging Module | 9401-000-024-NA | connects to DNIC line circuit |

Table 1-4 Documentation

| Marketing Name | Part Number | Comments |
|---|------------------------------------|---|
| <i>SX-200 ML LIGHTWARE</i> 16 System Documentation | 9109-953-050-NA | Contains Technical Documentation, covering all features. |
| Attendant Console Guide | 9109-090-005-NA | Details Attendant Console operation. |
| <i>SUPERSET 7000</i> Attendant Console Guide | 9119-953-012-NA | Details Attendant Console operation. |
| French Attendant Console Guide | 9108-090-010-CA | |
| General Information Guide (CA is French version) | 9109-952-006-NA 9109-952-006-CA | Describes the <i>SX-200</i> DIGITAL PABX features and peripheral devices. |
| Extension User Guide | 9180-953-009-NA | |
| DATASET 1100 Series User Guide | 9141-953-110-NA | |
| ACD Agent Reference Card | 9109-953-005-NA | |
| ACD Supervisor/Senior Supervisor Guide | 9109-953-006-NA | quantity: 10 |
| ACD <i>TELEMARKETER</i> Reporting System User Guide | 9150-953-002-NA | |
| <i>MILINK</i> Data Module User Guide | 9112-953-100-NA | |
| Programmable Key Module Guide | 9112-953-200-BA | |
| <i>SUPERSET 401+</i> Quick Reference Guide | 9109-953-039-NA | |
| <i>SUPERSET 410</i> Quick Reference Guide | 9109-953-036-NA | |
| <i>SUPERSET 420</i> Quick Reference Guide | 9109-953-037-NA | |
| <i>SUPERSET 430</i> Quick Reference Guide | 9109-953-038-NA | |

2 Field-Replacement Procedures

Only persons who have successfully completed a MITEL Installation and Maintenance training course for the *SX-200 LIGHT* and the *SX-200 ML PABX* should perform removal and replacement procedures.

WARNING: INSTRUCTIONS MUST BE FOLLOWED EXPLICITLY WHEN THEY INVOLVE WORK WITH AND CHANGES TO THE PRIMARY POWER SUPPLY OF THE UNIT.

Precautions

2.1 Observe the following precautions when working on the system, particularly when handling PCB cards or using test equipment to measure voltages.

- When replacing PCB cards turn power off (when possible), but maintain the ground connections to the equipment (see Note, below). Power must be OFF when inserting or removing common control cards. These cards are identified with appropriate warnings on their faceplates.
- Always wear an antistatic wrist strap when handling printed circuit cards. Handle PCB cards only by the edges and avoid contact with any exposed electrical connections. When removing a new card from its package, touch the package to the cabinet frame first to release any static voltage buildup, prior to removing the card and inserting it into the equipment.
- Conductive packages (antistatic bags) should be grounded prior to opening them to remove the contents, and similarly grounded prior to placing a card in the package. Suspected faulty cards should be placed in conductive packages to prevent further possible damage to the cards. Cards that are not correctly packed in antistatic bags when returned will not be covered by any warranty.

Note: All cabinets must be unplugged from the ac mains during servicing. To reduce static susceptibility, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed from a node into an antistatic bag.

Power Down System

2.2 When you have completed Chart 2-1

- The system will be powered down.

| Chart 2-1 Power Down System | | |
|-----------------------------|---|--|
| Step | Action | Comments |
| 1. | Power Down System Unlock and open door. | |
| 2. | Turn off Bay Power Supply switch and remove cabinet line cord from the wall outlet. | The system is now properly powered down. |

Power Up System

- 2.3 When you have completed Chart 2-2
- The system will be powered up.

| Chart 2-2 Power Up System | | |
|---------------------------|---|---|
| Step | Action | Comments |
| 1. | Power Up System Plug cabinet line cord into the wall outlet. Turn on Bay Power Supply switch. | The system is now properly powered up, and its door is closed and locked to prevent unauthorized access to equipment. |
| 2. | Replace any covers or barriers that were removed previously. Close and lock the door. | |

Replace Printed Circuit Cards

- 2.4 When you have completed Chart 2-3
- You will know how to remove circuit cards from the PABX.
 - You will know how to repack printed circuit cards for return.

CAUTION: Power must be off when you are removing the Main Control Card II, Bay Control Card, and Bay Power Supply.

Cards that are not correctly packed in antistatic bags and foam packing when returned will not be covered by any warranty.

| Chart 2-3 Replace Printed Circuit Cards | | |
|---|--|---|
| Step | Action | Comments |
| 1. | Removing Cards <i>If you are removing cards from an operating system, turn power off, if possible.</i> | <p>CAUTION: The cards that must not be removed while the system power is on carry a Caution notice. These cards are: Main Control Card II, Bay Control Card and Bay Power Supply.</p> <p>The antistatic wrist strap must be connected to the PABX chassis, which must be connected to an approved ground to provide protection from static discharges.</p> |
| 2. | To remove a Bay Power Supply, refer to Chart 2-6. Make sure the PABX ground is connected (see Note at the end of this table). | |
| 3. | Put on the antistatic wrist strap when removing and repacking cards. | |

Chart 2-3 Replace Printed Circuit Cards (continued)

| Step | Action | Comments |
|-------------------------|---|--|
| 4. | Remove the card by using the extractor as a lever and pulling the card towards you. | Each digital peripheral card has one card extractor. The extractor helps seat the card firmly in the backplane. The extractor is used to provide leverage to pull the card free of the backplane connector. |
| Install New Card | | |
| 5. | Unpack the replacement card. If there are modules or jumpers on the original card, transfer them to the replacement card. Ensure that any switches on the replacement card are in the same position as the original card. | Retain the packaging material for the re-packing of the original card for return. |
| 6. | Install the replacement card into the card slot. | |
| Repacking Cards | | |
| 7. | Handle printed circuit cards by their edges only, except when seating connectors. | Packaging is shown in Figure 2-1. Handling the card faces or components may cause damage. |
| 8. | Do not touch the gold edge connectors. | |
| 9. | Avoid contact with any exposed electrical connections. | |
| 10. | Use the sleeve, foam packing, and antistatic bag kept after unpacking. | Use original or similar packaging material. |
| 11. | Ground the antistatic bag before putting a card in it. | |
| 12. | As soon as you remove a card from a slot, place it in an antistatic bag. | Place suspected faulty cards into antistatic bags to prevent further possible damage. |
| 13. | When you are finished, replace the antistatic wrist strap in the cabinet. | |
| 14. | If you have powered down the system, power it up again. | |
| Return Card | | |
| 15. | Return a damaged card according to local procedures. | |

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Note: All cabinets must be unplugged from the ac mains during servicing. To reduce static susceptibility, always attach the wrist strap from the cabinet being serviced, and immediately place any item removed into an antistatic bag.

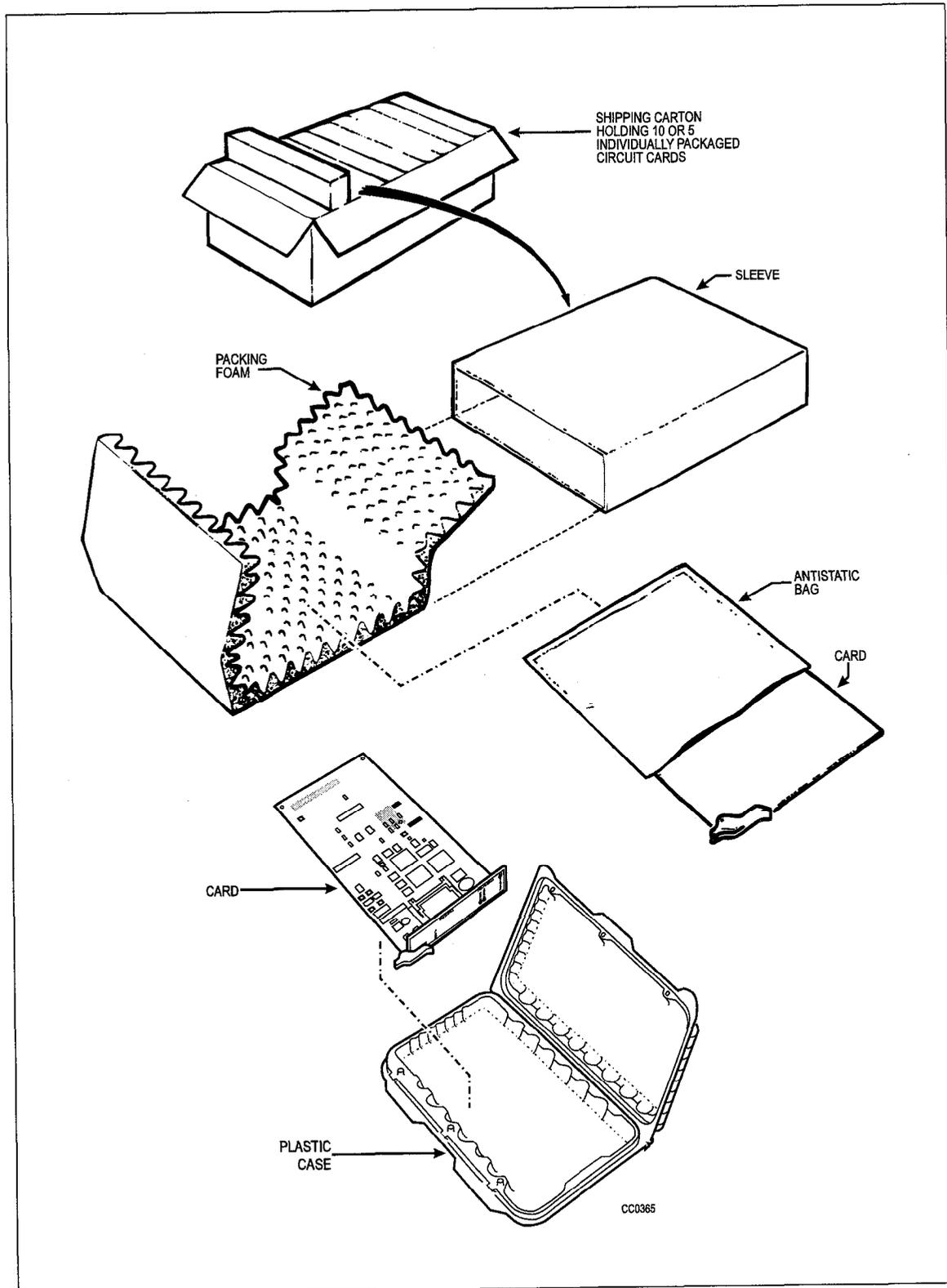


Figure 2-1 Printed Circuit Card Packaging

Replace the Main Control Card II

2.5 When you have completed Chart 2-4

- The original Main Control Card II (MCC II) will be disconnected and removed.
- The System ID module will be installed on the new MCC II.
- The new MCC II will be installed on the Bay Control Card (BCC).
- The BCC will be installed.

CAUTION: Turn off power before removing the Main Control Card II.

Remove conductive articles such as rings and watches before handling the Main Control Card II.

Do not use a screwdriver or any similar object to pry the module away from the main control card. Damage to components or circuit card tracks may result.

| Chart 2-4 Replace the MCC II | | |
|------------------------------|---|---|
| Step | Action | Comments |
| 1. | Follow general procedures for handling circuit cards. | Given in Chart 2-3. |
| 2. | Attach the antistatic wrist strap. | |
| 3. | Put the MCC II, component side down, onto the bag on top of the PABX or any nearby firm surface. Do not put it on a deformable surface. | CAUTION: The card may bend as pressure is applied to seat the connectors. |
| | Inspect the MCC II | |
| 4. | Inspect the MCC II. | |
| | Install System ID Module | |
| 5. | Remove the MCC II / BCC pair from the cabinet and separate the cards. Disconnect the MCC II ribbon cable when removing the MCC II. | The MCC II is attached to the BCC and the pair must be removed/installed together. The interface panel ribbon cable connects to the MCC II and must be routed under the faceplate. |
| 6. | Remove the MCC II System ID module from the original MCC II and install it on the new MCC II. | The plastic standoff mates with the System ID module. |
| | Install MCC II on BCC | |
| 7. | Mount the MCC II onto the BCC | |
| 8. | Connect the cable from the rear panel to connector J2 on the MCC II. Refer to Figure 2-2 for cable routing. | Ensure the cable is folded under the lower right corner of the faceplate and that the cable is flat against the MCC II to prevent contact with an adjacent peripheral interface card. |
| 9. | Slide the BCC and the attached MCC II into its slot. | |
| 10. | Seat the BCC into its connector. | |

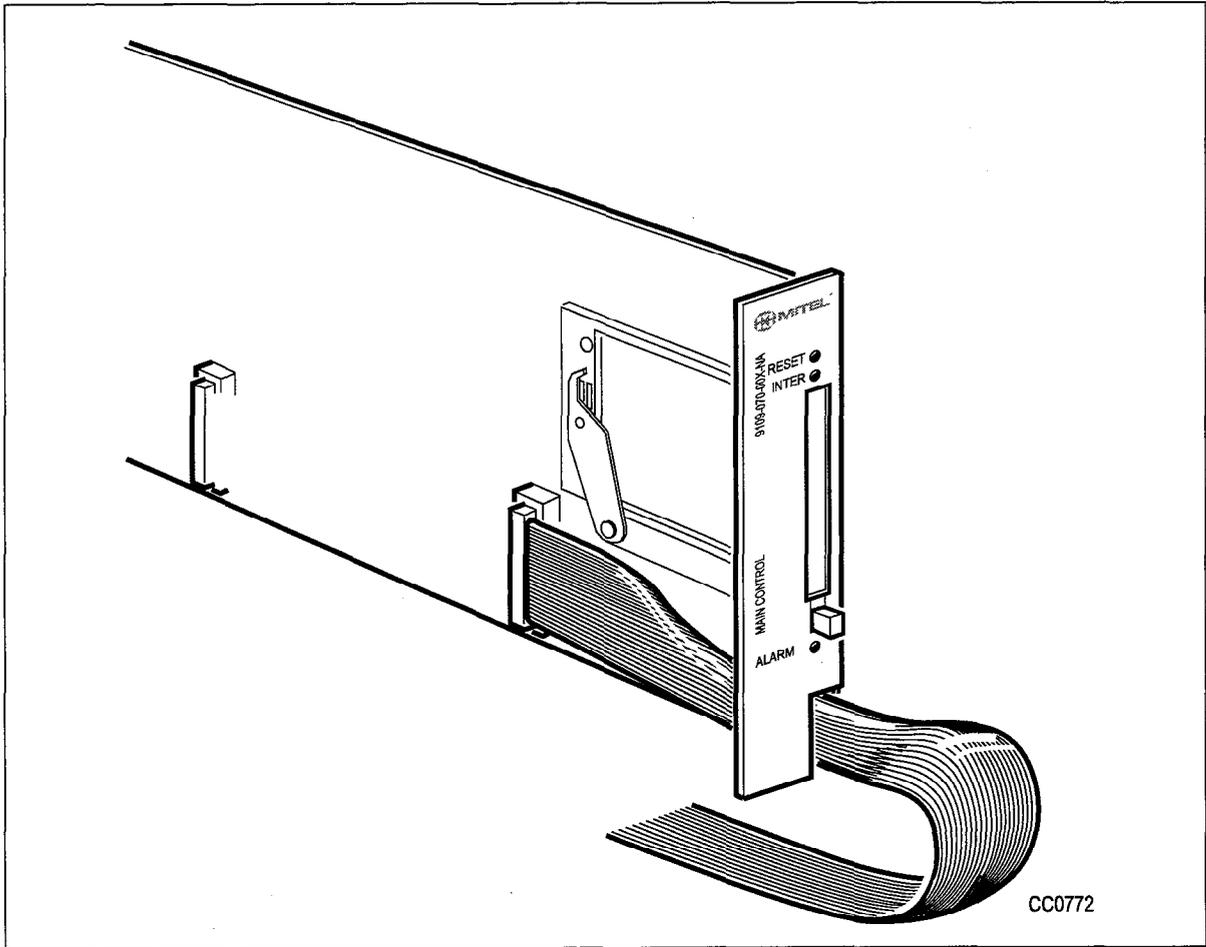


Figure 2-2 MCC II Ribbon Cable Routing

Replace a Bay Control Card

- 2.6 When you have completed Chart 2-5
- The original Bay Control Card (BCC) will be disconnected and removed.
 - The new BCC will be unpacked and inspected.
 - The BCC will be installed.

CAUTION: Turn off power before removing the Bay Control Card.

| Chart 2-5 Replace a Bay Control Card | | |
|--------------------------------------|--|---------------------|
| Step | Action | Comments |
| 1. | <p>Follow General Procedures</p> <p>Follow the general procedures for handling circuit cards.</p> | Given in Chart 2-3. |

| Chart 2-5 Replace a Bay Control Card (continued) | | |
|--|---|---|
| Step | Action | Comments |
| 2. | Remove Original BCC Attach the antistatic wrist strap and remove original BCC and its attached MCC II. Disconnect the MCC II cable. | The BCC and its slots are marked with a semicircle. Refer to MCC II replacement procedures for the MCC II that is attached to the BCC. |
| 3. | Unpack and Inspect New BCC Wearing the antistatic wrist strap, unpack and inspect the BCC for damage. | Retain packaging for shipment of original unit. |
| 4. | Install New BCC Attach the MCC II to the BCC and slide the BCC assembly into its slot. | The BCC and its slot is marked with a semicircle. Reconnect MCC II cable. |
| 5. | Repack and return any damaged or incorrect items. | |
| | | Page 2 of 2 |

Replace Bay Power Supply

2.7 When you have completed Chart 2-6

- The original Bay Power Supply (BPS) will be disconnected, and removed.
- The new bay BPS will be unpacked and inspected.
- The power cable will be plugged into the unit.

Note: The BPS is an ac-to-dc convertor. The BPS faceplate is labeled "BAY PSU". It has a ringing voltage generator used by the card slots it supports.

CAUTION: Turn off power before removing the Bay Power Supply.

| Chart 2-6 Replace Bay Power Supply | | |
|------------------------------------|---|--|
| Step | Action | Comments |
| 1. | Follow General Procedures Follow the general procedures for handling circuit cards. | Given in Chart 2-3. |
| 2. | Remove Original BPS Turn off the unit. | |
| 3. | Loosen the thumbscrew at the upper front of the BPS to release it from the cardfile. | Remove the cover plate on the back of the node and unplug the internal AC power cord. To remove the cover plate, unscrew the screws and place them nearby. |
| 4. | Remove the BPS from its slot. | |
| | | Page 1 of 2 |

Chart 2-6 Replace Bay Power Supply (continued)

| Step | Action | Comments |
|--|--|---|
| <p>Unpack and Inspect New BPS</p> | | |
| 5. | Wearing the antistatic wrist strap, unpack and inspect the BPS. | Retain packaging for shipment of original unit. |
| 6. | Repack and return the original unit. | |
| <p>Install New BPS</p> | | |
| 7. | Insert the BPS into its slot, and tighten the thumbscrew at the upper front of the BPS to secure it to the cardfile. | The BPS and its slot are each marked with a right triangle. The slot is located in the upper left corner of each bay. See Figure 2-3. |
| 8. | Make sure that the BPS I/O (on/off) switch is in the O (off) position. | |
| <p>Connect Power Cable</p> | | |
| 9. | Plug the internal AC power cord into the back of the Bay Power Supply, directly under the access cutout. | |
| 10. | Replace the access cover plate back over the cutout and replace the screws. | If a power down was performed, power-up the system (see Chart 2-2). |

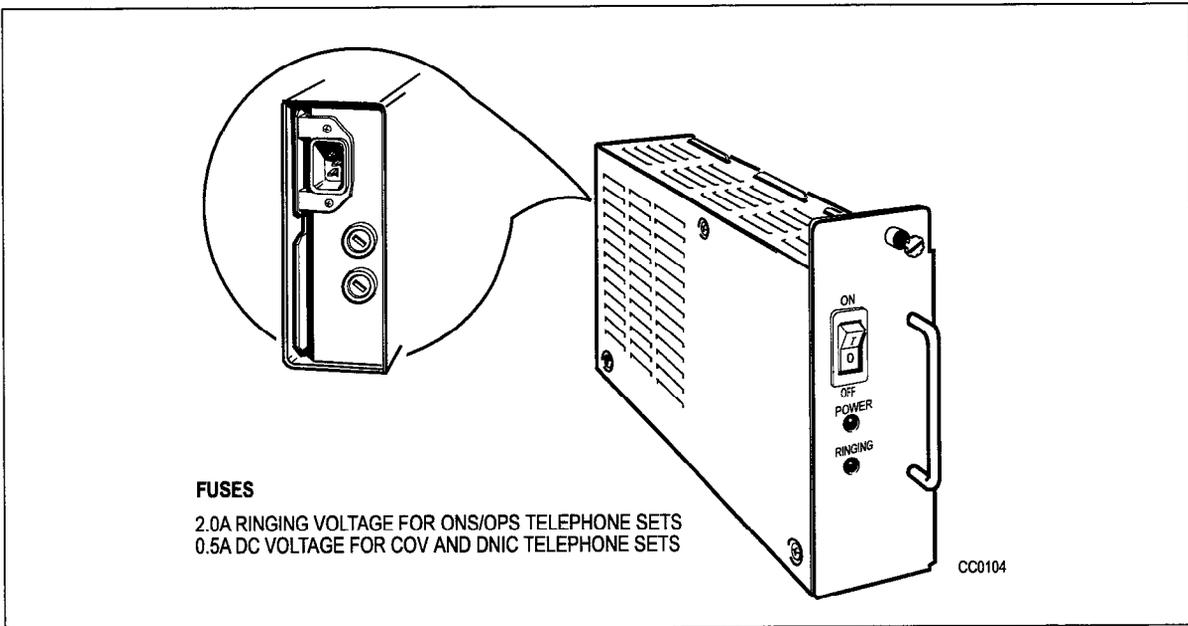


Figure 2-3 Bay Power Supply

SX-200 ML PABX Music-on-Hold/Pager Unit

2.8 The following chart describes how to remove and replace the SX-200 ML PABX Music-on-Hold/Pager Unit. This procedure only interrupts SX-200 ML PABX functions

which are directly associated with the Music-on-Hold/Pager Unit (night bells, alarms, paging and Music-on-Hold). The rest of the SX-200 ML PABX continues to function.

| Chart 2-7 Replace SX-200 ML PABX Music-on-Hold/Pager Unit | | |
|--|--|---|
| Step | Action | Comments |
| | Prepare the Music-on-Hold/Pager Unit | |
| 1. | Power down the external equipment including paging amplifiers, night bells, alarms etc. | |
| | Replace the unit | |
| 2. | Disconnect the 25 pair Amphenol connector from the unit. | A small screwdriver may be needed to detach the connector locking screw. |
| 3. | Replace the unit with a new one. | If the unit is wall mounted, it may be necessary to loosen the mounting screws. |
| 4. | Reattach the 25 pair Amphenol connector. The Status LED will light. | |
| 5. | Reapply power to the external equipment. When the pager is in use, the status LED will wink. | |

SX-200 ML PABX Cabinet Interface Assembly

2.9 The following chart describes how to remove and replace the cabinet interface assembly.

| Chart 2-8 Replace Cabinet Interface Assembly | | |
|---|---|--|
| Step | Action | Comments |
| | Power down the PABX | |
| 1. | Power down the PABX. | |
| | Remove the unit | |
| 2. | Identify and disconnect external cables. | |
| 3. | Remove four screws from the rear panel. Retain screws. | |
| 4. | Remove the assembly from the rear, identify and disconnect the internal cables connected to it. | |
| | Install replacement unit | |
| 5. | Connect the cables from the old assembly to the replacement assembly. | |
| 6. | Reinstall the assembly using the retained mounting screws. | Ensure that cables are clear and unobstructed. |
| 7. | Reconnect external cables. | |
| 8. | Power up the PABX | |

Repack Equipment for Shipment

2.10 Complete Chart 2-9 to properly repack equipment for shipment.

- Note:**
1. Do not disconnect the system ground until printed circuit cards have been properly packed. The system must be properly grounded for the wrist strap to be effective.
 2. Whenever possible, re-use original packing material to repack equipment for shipment.

| Chart 2-9 Repack Equipment For Shipment | | |
|--|--|--|
| Step | Action | Comments |
| 1. | Pack all circuit cards in antistatic bags and PC card shipping cartons. | Wear the antistatic wrist strap while handling circuit cards. |
| 2. | Handle cards by the edges only, and follow the card handling procedures. | |
| 3. | Wrap all items with air-cushion type material, and surround with loose paper to minimize movement within the carton. | Ensure that items within the carton cannot shift about, and will not get scratched or damaged. |
| 4. | Repack all items carefully, and list the contents of each carton on the label. | |