

**SWITCHING SYSTEMS MANAGEMENT
CROSSBAR TANDEM
ASSIGNMENT PRACTICES**

CENTRALIZED AUTOMATIC MESSAGE ACCOUNTING—COMPUTERIZED (CAMA-C)

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NOTICE

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1. GENERAL

PURPOSE

1.01 This section provides basic guidelines for the administration of centralized automatic message accounting—computerized (CAMA-C) at a crossbar tandem switching office. The methods and procedures provided in this section should be considered as minimum requirements. Since all switching locations are not identical, they cannot be administered in the same way. However, many of the methods can and should be employed by all switching offices.

1.02 This section is a general revision of the issue dated June 1975 and is required due to the issuance of Generic 2 which is a new feature package for CAMA-C systems.

1.03 Much of the information contained in this section is also available in the referenced Bell System Practices in greater detail. It is presented here to aid the network administrator in establishing individual office administration procedures and to provide the network administrator with an information base to aid in the decision-making process.

1.04 This section provides standard administrative procedures which, if properly utilized, will ensure that CAMA-C provides the quality of billing service for which it was designed. In addition, a properly administered CAMA-C machine will provide accurate and useful maintenance reports.

1.05 Form codes are provided in this section to serve as a means of communication between various organizations and for use in establishing record-keeping procedures. Specific local instructions should supplement these guidelines. Reproducible copies of the form codes are provided for local use.

1.06 The title of each figure includes a number(s) in parentheses which identifies the paragraph(s) in which the figure is referenced.

SYSTEM DESCRIPTION

1.07 CAMA-C replaces the method of recording detailed billing information of customer-dialed calls in CAMA-equipped toll switching machines.

1.08 CAMA-C utilizes a high-speed minicomputer to replace the paper-tape perforators and the master timer in existing crossbar tandem and/or 4A installations.

1.09 Figure 1 is a block diagram of a typical CAMA-C installation. The system uses two IBM System/7 minicomputers: one as the primary machine and the other as a full-time backup machine. The primary computer receives the initial entries from the recorders and the connect and disconnect entries directly from the trunks. The backup machine differs from the primary machine in that it obtains both the initial entries and the connect/disconnect entries from the recorders.

Although both machines are on-line at all times, the backup machine does not continuously assemble calls. It remains in a standby mode and is used only upon request of the primary machine. Requests will occur due to failure or when the machines are manually transferred for maintenance reasons.

1.10 As shown in Figure 1, each machine has its own scanner. The primary machine can have a maximum of three scanners terminating 20 recorders plus the emergency recorder and 2000 trunks. The recorders and recorder connectors are cabled to the scanners of both the primary and the backup machines while the incoming trunks are cabled to only the primary machine. Figures 2 and 3 show the leads from the recorders and trunk circuits that will be cabled to the scanners. Table A shows the relative location of the recorders within the primary and the backup scanners.

1.11 The primary machine receives the connect/disconnect entries directly from the trunks. The backup machine receives these entries through the recorders and must be able to associate with a physical office recorder and a specific trunk through its data tables.

1.12 Each System/7 has its own memory, teletypewriter (35-type TTY, 5028 operator station), tape transport, and scanner cabinets. The primary machine can have a maximum of three cabinets while the backup machine has only one.

1.13 A room separate from the switching equipment which has the capability for a controlled environment is required for the CAMA-C System. Although the equipment is manufactured by International Business Machines (IBM), it is obtained through Western Electric. The scan cabinets are obtained on a purchase arrangement only. The operating telephone companies have the option of either buying or leasing the System/7 items.

1.14 The release of working equipment to Western Electric for wiring and testing during heavy traffic hours should be carefully studied. Depending upon equipment loading, it may be necessary to schedule this work during light traffic hours. This is especially true for the recorders.

2. SYSTEM OPERATION

OPERATION

2.01 The CAMA-C computer initiates a scan of all recorder leads every 10 milliseconds. A call indication conditions the system to gather the initial entry data from the recorder. This information is checked for validity and stored in temporary memory on disk until the entire call can be assembled and sent to a disk storage *sequential file* where it will remain until the file is transferred to 9-track magnetic tape.

2.02 The trunk scanner looks for seizure, connect, disconnect, and idle conditions. Once the initial entry is recorded, the associated trunk is constantly scanned every 100 milliseconds looking for an answer indication and a subsequent disconnect entry when the call is completed.

2.03 Periodically, the computer will transfer the assembled calls from disk memory onto the 9-track magnetic tape at a density rate of 1600 bits per inch (bpi). This dump to magnetic tape can occur at given time intervals or when the disk storage reaches a certain percentage fill. The type of magnetic tape and the format for assembling information onto the tape is very similar to that of Electronic Switching System (ESS) or Traffic Service Position System (TSPS) tapes.

2.04 As with paper tapes, the maintenance forces will forward the magnetic tapes containing billing information to the appropriate accounting location.

2.05 Refer to Bell System Practices Section 201-902-101 for a detailed description of the CAMA-C operation.

TAPE HANDLING

2.07 Basic magnetic tape management procedures are covered in Bell System Practices Section 034-311-301 and must be followed at all times. Additional security precautions must be taken due to the possibility of lost revenue resulting from theft, loss, or physical damage to the tapes. (Refer to Bell System Practices Section 201-902-010 for CAMA-C tape-handling procedures and responsibility.)

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TAPE DUMP

2.08 The time at which message data will be physically transferred from disk storage to the magnetic tape is controlled by network operations personnel. The tape dumps may be scheduled on any hourly interval desired. A system limitation exists in that a maximum of 15 tape dumps can be scheduled during a 24-hour period of time with midnight (00) as one of the dump times. Tape-dump scheduling procedures are outlined in Bell System Practices Section 201-902-303. Form code (FC) 05 is provided for keeping records of the tape dump times.

2.09 Coordination with the accounting department is necessary to determine which hours shall be recorded on any given tape. The hours specified by accounting will have an effect on the dump schedule. Adequate time should be allowed between the last dump on one tape and the first dump on the next tape to ensure that the tapes can be changed. This buffer time will allow for deviations from the scheduled change time because of serious failures or other emergency conditions.

2.10 All call types (including billable and nonbillable) identified by CAMA-C are stored in temporary memory on disks. Every billable call is automatically transferred to tape during a scheduled tape dump. Three call types are classified as unbillable:

X - Seizure release with initial entry

Y - Seizure release without initial entry

Z - Connect/disconnect without initial entry.

An option commonly referred to as XYZ is available to select the type of unbillable call to be transferred to magnetic tape. (See FC-09.) Only the X option will normally be recorded since this unbillable type is considered to be a legitimate attempt and is utilized for network completion studies. Options Y and Z will not normally be recorded since they are not classified as legitimate call attempts and create extremely lengthy printouts during message data processing in the accounting centers. These options may be recorded for special study purposes.

HOURLY AND DAILY MAINTENANCE REPORTS

2.11 CAMA-C provides several hourly, daily, and weekly maintenance reports which aid in

the identification and isolation of CAMA switching equipment troubles. (See Bell System Practices Section 201-902-304 for a detailed description of these reports and guidelines for their interpretation.) Part 3 of this section provides network administration with guidelines for establishing record-keeping procedures and information on the structure and content of the reports.

REMOTE TTY (GENERIC 2 ONLY)

2.12 A maximum of eight remote terminal ports are provided with generic 2 as a means of printing output messages at locations performing analysis, trouble-locating, or security functions. The operating telephone company has the option of equipping and assigning these remote terminals. (Refer to Bell System Practices Section 201-902-308 for remote TTY tests and operation.)

2.13 The generic 2 feature will provide CAMA-C with the capacity to transmit some classes of CAMA-C messages to remote terminals at any desired location over the direct distance dialing (DDD) network or over private lines.

2.14 The remote terminal software provides all of the required timing, buffering, distribution, checking, receiving, and transmitting of the input and output messages.

2.15 To provide some order in the message distribution arrangement, and to define the capabilities of various terminal names, all CAMA-C input and output messages have been grouped into classes. These classes, as defined in Table B, reflect a functional organization. For example, all commands and messages pertaining to the starting and stopping of the automatic message accounting (AMA) program are grouped into the same class and that class is permanently assigned to the local 5028 operator station. Other classes of messages are assignable to terminal names as indicated in Table C. These assignments are entered into the CAMA-C data base using recent change procedures. FC-04 and FC-08 are provided as administrative tools. These form codes provide a record of the equipped remote terminals with the class assignments to each one. FC-08 is described in Bell System Practices Section 201-902-010 and a copy is attached to this document.

A. Use of the Remote Terminal Feature

2.17 The CAMA-C output messages to the remote terminals are in accordance with the Bell System standard formats.

2.18 Typical operation with the remote terminal feature starts with the distant user establishing a connection with the required data set at the CAMA-C System location, either over the switched network or over a private line arrangement. After the connection is established, the user makes a request and the CAMA-C asks the user to log-on by identifying the terminal name and by supplying passwords and user identification. As messages assigned to this port are generated by the system, they are routed and printed at the user's remote terminal. Certain priorities and restrictions associated with the remote terminal feature provide for the most efficient distribution of input and output data with a minimum of blockage. Some of the more important ones are as follows.

- (a) Remote data terminals can only request data to be printed. They *cannot* change the data base or alter the system operation.
- (b) An input request can be made at any time but it will not be serviced until the message currently being printed, if there is one being printed, is completed.
- (c) Once an input request is made, only a limited period of time will be allowed to complete entry of the input data.
- (d) Only input commands permitted for the classes assigned to that terminal name will be acted upon when issued by that terminal. Other input commands will result in an error message being printed at the issuing terminal.
- (e) There is no limit on the number of attempts to log-on. Each log-on attempt that fails causes a message at the 5028.
- (f) Output message generation will be internally handled as is done for generic 1.
- (g) Output messages will be synchronized for all terminals to eliminate individual queueing problems and the same message will always print at the same time on all eligible terminals. During

this printing time, all ineligible terminals will be idle.

RECENT CHANGE PROCEDURES

2.19 The office data base for the CAMA-C primary and/or backup generic programs is loaded into the machine at the central office. The procedures used to accomplish data-base loading and manipulation are called recent change procedures (RCPs). (Refer to Bell System Practices Section 201-902-303 for additional details on RCPs and initial program loading.)

2.20 The CAMA-C data base is used for the following:

- (a) AMA call assembly
- (b) Formatting and recording assembled messages on magnetic tape
- (c) Formulation of maintenance-related information pertaining to the electromechanical AMA equipment.

2.21 Table D identifies the CAMA-C recent change functions, option number, and the number of parameter counts required for each.

2.22 The office data base is initially loaded into the CAMA-C system as a recent change. The same procedures are used to make day-to-day changes to the data base and to prepare copies of the current data base. Only one RCP can be executed at a time.

2.23 When a RCP is used to enter or modify office data, the changes can be made to the on-line CAMA-C machine. However, it is recommended that changes to the office data base be entered initially in the off-line machine to allow for verification of their accuracy. Off-line manipulation of the office data base prevents the introduction of incorrect data while calls are being recorded.

2.24 Once the data have been entered and verified, hard copies of the current data can be automatically prepared and preserved for future use. These hard copies of both the primary and the backup office data bases are used to reload the machine after the installation of a new generic program or are used to recover quickly from disaster.

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2.25 Most of the data required by the CAMA-C machine for its data base are determined by office parameters or arbitrarily established by the operating telephone companies. Recent changeable data have associated form codes. Suggested form codes are provided in this section or in appropriate Bell System Practices (see Bell System Practices Section 201-902-010 for FC-06 through FC-08). The form codes are devices which allow the network administrator to communicate with the machine operator in a controlled manner. If the suggested forms do not meet the needs of the operating telephone companies, the companies should make an effort to establish their own forms and procedures.

2.26 CHG-01—Recorder Assignment To Multiplexer and Central Office Index (COI) Table (FC-01):

(a) RCP CHG-01 has two parameters which must be defined for each regular recorder. If the office contains fewer than 20 regular recorders, this change will be used to delete the unused recorders.

(b) The first parameter (recorder number [RN] with a range from 00 through 19 [see FC-01, column RN]) identifies the regular or physical recorders for cross-reference with the second parameter COI.

(c) The second parameter (COI table [RC] with a range from 00 through 19; see FC-01) identifies the recorder group designation assigned to the recorder. Each recorder group is assigned a relative COI table number and all recorders in the same recorder group will use the same recent change number. Nonexistent or unwired recorders must be deleted from the office data base to prevent false maintenance-related messages for these recorders.

2.27 CHG-02—Central Office (NNX) Code, Wide Area Telephone Service (WATS), Teletypewriter Exchange (TWX), and Originating Numbering Plan Area (NPA) Assignment to COI (FC-02):

(a) The principal functions of RCP CHG-02 are to assign an originating office code to its equivalent COI and to describe its parameters in a relative COI table.

(b) A central office code (NNX) is a 3-digit originating office code that may be sent to the recorders as a 2-digit COI (RE = 00 through 29). This table is required to translate the COI back to the original NNX code to satisfy AMA magnetic tape format requirements. A maximum of 30 COIs is assigned in any one recorder group and each recorder group must be assigned to a relative COI table (RC = 00 through 19). All recorders in the same recorder group must refer to the same relative COI table; hence, this change routine is required only once for each NNX code assignment in a recorder group.

(c) If an NNX code is reserved for WATS usage, this must be indicated by setting the W parameter equal to one (for non-WATS or non-TWX, W = zero) for proper magnetic tape message format. If an NNX code is reserved for TWX usage it must be indicated by setting the W parameter equal to two. If an originating area code (NPA) is to be recorded within each AMA message the associated NPA must be entered along with the NNX code. Before an NPA is entered it must first be defined in RCP CHG-09.

2.28 CHG-03—Terminating Area Code Assignment To Compressed Code Digits (FC-03):

RCP CHG-03 has two parameters which must be entered for each 3-digit terminating area code (NPA) assigned by the accounting department to a compressed area code digit (N = zero through nine). The compressed area code digit is used to compress frequently used terminating area codes into a single digit in 4- and 6-line initial entries. CHG-03 is used to enter the assignment of these area codes so that the compressed area codes can be translated back to the original 3-digit area code to satisfy AMA magnetic tape format requirements.

2.29 CHG-04—Number of System Scanners And Maximum Number Of Recorders (FC-04):

(a) **Generic 1 Issue 2 Only:** RCP CHG-04 has two parameters which are entered only once per primary or backup CAMA-C.

(1) The first parameter (NS 01 through 03) (see Table A) is for the number of scanners connected to the respective primary or backup CAMA-C.

(2) The second parameter (NR = 00 through 19 [FC-01, column RN]) is for the number assigned to the highest-numbered regular recorder (physical recorder number from CHG-01). It is used to limit the number of trunks being scanned by a CAMA-C. This change automatically adjusts the maximum digital output address according to the maximum number of recorders for which the primary and backup CAMA-Cs are equipped. ***If the NS or NR parameters are reduced below the maximum number of equipped scanners and recorders, severe loss of revenue will result.***

(b) ***Generic 2 Only (Security Port Numbers And TTY Flags):*** Generic 2 CHG-04 has the same parameters as generic 1 issue 2 CHG-04 for the NS and NR parameters. However, generic 2 adds the security port assignment parameters (SP = zero through seven) and the enable remote TTYs flag (RM = zero or one) to the data base. Although there is no security port or remote data feature in the backup CAMA-C, these parameters must be entered to satisfy the parameter count. (See FC-10.)

2.30 CHG-05—Tape Dump Schedule (FC-05):

The times at which data will be physically transferred from temporary disk storage to the magnetic tape may be controlled by CHG-05 (FC-05). The system is limited to a maximum of 15 scheduled tape dumps during any 24-hour period. Midnight (2400 hours) is a mandatory dump time. The remaining dumps may be scheduled on any hourly interval desired. It is recommended that the 15 allowable dump times be utilized to exercise the tape drives. A tape dump should be scheduled every hour during machine busy hours. Adequate time must be allowed between the last dump on one tape and the first dump on the next tape to ensure that the tapes can be changed. (See Bell System Practices Section 201-902-501.) If no times are selected for scheduled tape dumps, the machine default values supplied with the program will automatically dump data at 0900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2200, 2300, and 2400.

Note: The default values supplied with the program were carefully selected and should not be changed without completely analyzing the implications of a change.

2.31 CHG-06—Recording of Unanswered and Incomplete Call Types (FC-09):

RCP CHG-06 allows for the recording of unbillable calls on magnetic tape for statistical purposes. This is in addition to the normal billable calls. The various call types which can be obtained with this procedure are as follows:

X - Seize release with initial entry

Y - Seize release without initial entry

Z - Connect/disconnect without initial entry.

All call types are stored on disks. This procedure allows nonbillable calls to be recorded on the magnetic tape. If no options (X, Y, or Z) are selected, the machine will not transfer any option to magnetic tape.

2.32 CHG-07—Clock Compensation Factor Adjustment:

CHG-07 is provided to allow network maintenance personnel to adjust the compensation factor within the machine clock. The machine clock is initially compensated for inaccuracy at the time of the Western Electric program installation and it should not require any additional compensation. There may be circumstances under which the clock will have to be recompensated. These conditions may occur if the crystal clock in a processor is changed, such as during IBM maintenance or the replacement of a processor. (See Bell System Practices Section 201-902-305 for time change procedures and forms.)

2.33 CHG-08—Assign Recorder Group Number and Logical Recorder Number

To Each Recorder (FC-10): RCP CHG-08 is used to assign a 2-digit recorder group number (RG = 00 through 99) and a 2-digit logical recorder number (LR = 00 through 19) to each regular recorder (RN = 00 through 19). This information (RG and LR) is required by the AMA magnetic tape format and is recorded on tape with each message. All recorders in the same recorder group must have the same RG entry. The LR entry is the number of that recorder within the recorder group and is normally assigned by the accounting department.

2.34 CHG-09—Assign Office Identification Number, Enable Error Messages, Define Daily Report Hour, Enable Recording of Originating NPAs, and Define Originating

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NPA's (FC-03): RCP CHG-09 is used to enter eight miscellaneous parameters.

- (a) The first and second entries, NNNN and MM, are the first four digits and the fifth and sixth digits of the 6-digit CAMA-C office identification number. This number is assigned by the accounting department to be recorded on each CAMA-C magnetic tape and is unique to the CAMA-C installation.
- (b) The third parameter, E, is used to enable or disable console error messages when a COI is found which has not been assigned to an NNX as indicated under CHG-02. An entry of zero for E disables the error messages.
- (c) The fourth parameter (HH = 00 through 23) is used to control the hour in which the daily maintenance report is to be printed for the preceding 24-hour period.
- (d) The fifth parameter, R, is used to enable or disable the recording on tape of originating area codes with each message. An entry of one for R enables the feature and an entry of zero disables the feature. Normally, originating area codes will not be recorded and the default for R is zero. As part of the enabling of this feature, a maximum of three originating area codes must be defined using the sixth, seventh, and eighth entries of this routine and then entered in the NPA field of the CHG-02 routine for each NNX code.
- (e) The sixth, seventh, and eighth parameters (AAA, BBB, CCC) are used to define the three originating area codes that this CAMA-C services if originating NPAs are to be recorded in the AMA messages as indicated above. When originating NPAs are not being recorded, an entry of zero will suffice for each parameter entry. If no data are entered for CHG-09, the assumed values or the default values for the CHG-09 parameters are as follows:

<u>NNNN*</u>	<u>MM*</u>	<u>E</u>	<u>HH</u>	<u>R</u>	<u>AAA*</u>	<u>BBB*</u>	<u>CCC*</u>
BBB	BB	01	00	00	OBBB	OBBB	OBBB
			(mid- night)				

* "B" characters are what is recorded on magnetic tape when a parameter has not been assigned and the feature is recorded with the Bs representing noncheck dummy tape characters. The leading zero is not recorded and occurs when the default values are printed by the RCP.

2.35 CHG-10—Copy Office Data To Paper Tape: RCP CHG-10 is used to prepare a hard copy (punched paper tape) of all the office data for a primary or backup CAMA-C. The contents of the office data storage locations can be copied from memory and disk storage onto paper tape but this should only be done after the office data base has been completely entered and checked for accuracy.

2.36 CHG-11—Load Office Data From Paper Tape Into System: An office data base tape from the primary can be loaded into the primary or backup CAMA-C using the CHG-11 routine. **This procedure should be used on an off-line machine and must** be used on an off-line machine for Generic 2. When an office data base tape from a primary CAMA-C is loaded into a backup, the backup routine will accept only those data which are common to both the primary and the backup CAMA-C. The same applies to loading a backup tape into a primary CAMA-C. The CHG-11 routine will identify each piece of unusable data found on the paper tape.

2.37 CHG-12—Office Data Base Printout: RCP CHG-12 produces a printed copy of the office data base that exists in the CAMA-C System/7 computer. CHG-12 can be used to verify the current office data base and it serves as a record of the base data at that particular time. The data are broken into page-size blocks to facilitate record-keeping. When the routine is used on a backup machine it prints out all of the parameters of change routines CHG-01 through CHG-09. When used on a primary machine it prints out the CHG-01 through CHG-09 parameters plus the maintenance parameters of the LMT and TGX routines and in addition, for Generic 2 only, the trunk type distribution is printed. There are no options for selectable printouts. The routine will print the entire office data base unless canceled.

2.38 CHG-13—CAMA-C Machine Counts: This routine provides a daily printing of the customer engineer (CE) error log, the 3410 tape drive error statistics counts, the trunk change routine counters (primary machine only), and the

various other CAMA-C System counts. They are printed automatically and reset to zero following the daily status report. These reports can also be selectively printed on demand by using the CHG-13 command. When the report is printed using the CHG-13 command the counters are not reset to zero. (See Bell System Practices Section 201-902-303 for a description of reports and counts within the reports.)

2.39 CHG-14—Encoder Address Check Enable/Disable Generic 1, Issue 2

Only: Generic 1, Issue 2, software has provisions for verification of the 5096 scanner addressing. This change is only functional after a corresponding hardware change. If the hardware change is not available, RCP CHG-14 is used to turn off the software encoder check routine; otherwise, the machine will shut down due to an encoder check.

Note: Operation without the encoder check hardware and software is extremely risky. Incorrect billing and revenue loss may occur and go undetected. This temporary option permits program operation before the encoder check hardware is equipped. Generic 2 does not allow for this condition because when generic 2 is used the encoder check hardware **must** be equipped.

2.40 CHG-14—CAMA/TSP Trunk Assignments, Generic 2 Only (FC-12):

RCP CHG-14 is used to designate trunks as either CAMA trunks or TSP trunks. Entering a zero will designate all trunks as CAMA trunks and entering a one will designate all trunks as TSP trunks. Entering a two permits the user to designate a mixture of CAMA and TSP trunks. Entering a three prints out the distribution of CAMA/TSP trunks that has been designated.

Note: If no parameters are entered for CHG-14, the machine will assume that all trunks are CAMA and none are TSP.

2.41 CHG-15—RTTY Data Base (Generic 2 Only): RCP CHG-15 is used to assign a password (pass = 0000 through 9999) and message classes (C = two through six) to the nine terminal names (N = one through nine) in the primary CAMA-C. (See Bell System Practices Section 201-902-010, FC-08.)

2.42 LMT Maintenance Report Limits:

LMT is the command to change or list the parameters which determine the threshold at which the reports HS1, HS2, HS3, HS4, HS6, and DS2 are made. LMT also selects, removes, and displays the trunk group names which are used in the HS7 report. (See Bell System Practices Section 201-902-010 for procedures and forms for controlling and inputting this command.)

2.43 TGX Trunk Group Cross-Reference (FC-11 and FC-11A):

(a) TGX is the command used as follows:

- (1) To enter, delete, or list trunk group/NNX cross-reference data (FC-11)
- (2) To enter, delete, or list NNXs in the ambiguous trunk group (FC-11A)
- (3) To list trunks assigned to a trunk group
- (4) To list trunks that are not assigned to a trunk group
- (5) To list trunks which have never been seized but are assigned to a trunk group
- (6) To delete a trunk from the no-seizure report.

(b) Trunk groups are assigned a 3-character trunk group name for ease of identification. Each NNX code which can occur on a trunk within the same trunk group is assigned to the associated trunk group name. If an NNX code can appear in more than one trunk group, such as a special billing code, it should be put in the ambiguous trunk group.

3. HOURLY AND DAILY REPORTS

3.01 Hourly reports are printed every-hour-on-the-hour throughout any given 24-hour period. No specific input messages exist to allow the hourly printing of these reports to be changed. Procedures do exist, however, which can be used to suppress the hourly output on a periodic or demand basis only.

3.02 The daily reports are printed once during each 24-hour period. The actual time of

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printing may be controlled by CHG-09 (FC-03) as specified in Bell System Practices Section 201-902-303.

THRESHOLD FIGURES FOR REPORTS

3.03 The threshold figures used for the output reports will vary from machine to machine. These reports will be useful to accounting, maintenance, and network administration. The quantity of useful information will depend greatly upon the CAMA volume of the machine and the threshold values. The reports which will be of the greatest value to the network administrator are the DS2 and HS6 (trunk groups with the highest operator number identification [ONI] messages per total messages) and HS1 through HS4 and HS7 which show toll messages per toll attempts per trunk on selected trunk groups. The available reports are as follows (See Table E for output reports structure):

DS1: Trunks with no seizures (made busy or in trouble). This is a weekly report for Generic 2 and a daily report for Generic 1.

DS2: Trunk groups with ___ percent ONI

HS1: Trunks with less than ___ percent messages/attempts.

HS2: Trunks with greater than ___ percent messages/attempts.

HS3: Trunks with greater than ___ percent hits/seizures.

(A hit is a trunk seizure of 60 seconds for Generic 1 and one second for Generic 2 or longer without an initial entry.)

HS4: Trunks with greater than ___ percent messages of less than ___ seconds duration per message.

HS5: Number and type of recorder errors. This is a daily report.

HS6: Trunk groups with greater than ___ percent ONI messages per messages.

HS7: Messages per attempts on selected trunk groups.

The blank spaces in the preceding list and Table E represent the data that will be entered in

accordance with instructions given in Bell System Practices Section 201-902-304.

3.04 The reports are statistical reports on recorders, trunks, and trunk groups. They are outputted when the base parameter has been met and the report threshold has been exceeded. They also are outputted on a fixed schedule when applicable.

BASE PARAMETER

3.05 The base parameter, or validity statement, consists of attempts (ATT), messages (MSG), and seizures (SZR). Base parameter is defined as the number of ATTs, MSGs, or SZRs which must occur before an *individual trunk* becomes eligible for reporting. Base parameters for *trunk group* reports are not directly assigned but are generated in the program by multiplying the ATT base parameter for trunks by the number of trunks in the trunk group. Assigned values for individual trunk base parameters may be any number from 000 through 511. Each base parameter, or validity statement, controls the eligibility of one or more trunk group reports. Control relationship between base parameters and reports is as follows:

CONTROLLING BASE PARAMETER	SUGGESTED BASE PARAMETER (DENOMINATOR*)	REPORT CONTROLLED**
ATT	60	Trunk—HS1, HS2 Trunk Group—HS6, DS2
MSG	50	Trunk—HS4
SZR	10	Trunk—HS3

* The denominators (base parameters or validity statement) shown are starting values only. Ultimate base parameter thresholds will vary with each office. Refer to the appropriate Bell System Practices for procedures used to establish the base parameters thresholds. When adjusting parameter thresholds, it is important to remember that the ATT base parameter affects more than one report. The maximum value for the denominator parameters is 511.

**Reports that have no controlling base parameters are DS1, HS5, and HS7.

REPORT FORMAT AND ANALYSIS

3.06 All reports should be scanned for obvious troubles. Detailed analysis of one or two

reports during a specified period of time may uncover intermittent or obscure troubles. Table E gives the structure of the hourly and daily reports. (See Bell System Practices Section 201-902-304.)

3.07 The network administrator should review the reports and establish record-keeping techniques which will indicate a tendency toward deteriorating service or overloading conditions. The network administrator must be advised of all threshold changes. The following report formats and explanations will aid the network administrator. Bell System Practices Section 201-902-010 gives a more detailed description of data analysis.

3.08 HS1: TTTT TGN XXX YYY ZZZ PP HHH

TTTT = Trunk identity

TGN = Trunk group name

XXX = Number of trunks in group

YYY = Messages carried since last report

ZZZ = Attempts carried since last report

PP = Percentage of completion

HHH = Hours since last report

This message is issued on a trunk that has a low percentage of completion based upon the established report threshold. Percentage of completion and hours since last report are good indicators of trouble. A very low percentage of completion is a strong indication of trouble. Extremely high attempts may indicate testing in progress which would distort the data.

3.09 HS2: TTT TGN XXX YYY ZZZ PP HHH

TTTT = Trunk identity

TGN = Trunk group name

XXX = Number of trunks in group

YYY = Messages carried since last report

ZZZ = Attempts carried since last report

PP = Percentage of completion

HHH = Hours since last report

This message is issued on a trunk that has a high percentage of completion based upon the established report threshold. Analysis procedures for this report are the same as the analysis procedures for HS1. In this case, a very high completion percentage combined with a low number of hours since the last report indicate trouble. A series of completed test frame tests may distort these data. Another consideration is that the completion percentage on certain trunk groups can be higher than average because of unique traffic patterns. Initial analysis will identify these groups so that normal completion percentages may be established. Only relatively large deviations from these norms should be investigated.

3.10 HS3: TTTT TGN XXX YYY ZZZ PP HHH

TTTT = Trunk identity

TGN = Trunk group name

XXX = Number of trunks in group

YYY = Number of hits since last report

ZZZ = Number of seizures since last report

PP = Percentage of hits

HHH = Hours since last report

This message is issued on a trunk that has a high percentage of hits based upon the established report threshold. Multiple printouts of HS3 reports normally indicate a major equipment failure which would be identified earlier by other means.

3.11 HS4: TTTT TGN XXX YYY ZZZ PP HHH

TTTT = Trunk identity

TGN = Trunk group name

XXX = Number of trunks in group

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YYY = Number of short duration calls since last report

ZZZ = Number of messages carried since last report

PP = Percentage of short duration calls

HHH = Hours since last report

This message is issued on a trunk that has a high percentage of short duration calls in a given length of time based upon the established report threshold. The number of short duration calls on a particular trunk may vary considerably. When an HS4 report is received, the trunk identity should be checked and compared to previous HS4 messages to determine if the trunk has been consistently reported upon. Any time a trunk is reported as having an extremely high percentage of short duration calls, it should be investigated. A large volume of short holding time data set calls must also be considered as a possible reason for the report.

3.12 HS5: RR AAA BBB CCC DDD EEE FFF GGG III JJJ KKK XXXXX YYYYY PP HH

RR = Record number

AAA = Number of mutilations of A digit

BBB = Number of mutilations of B digit

CCC = Number of mutilations of C digit

DDD = Number of mutilations of D digit

EEE = Number of mutilations of E digit

FFF = Number of mutilations of F digit

GGG = Number of initial entries that had missing supplementary lines

III = Number of initial entries that had extra supplementary lines

JJJ = Number of apologies

KKK = Number of charge guards

XXXXX = Total number of errors

YYYYY = Number of initial entries

PP = Percentage of errors

HH = Hours since last report (unmeaningful data)

This message is printed daily as a summary of errors experienced by each recorder in the office during the previous 24-hour period. Recorder errors involving digit mutilation should produce a trouble card at the trouble recorder and the HS5 report should be used to supplement the trouble cards. The number of charge guard entries should be checked daily to determine if any given recorders are causing an excessive number of this type of entry or if the sum of charge guard entries for all recorders is too high. Each charge guard entry by a recorder will be reported on the CAMA-C TTY by an CHGRD message on a real-time basis. These messages may not be adequate to determine what caused the charge guard entry but when used with the daily HS5 report they can be helpful in analyzing the problem. A minimum number of charge guard entries should be made during any given day. An upward trend in the number of entries is cause for immediate investigation due to resultant loss of billable initial and overtime minutes.

3.13 HS6: TGN XXX YYYYY ZZZZZ PP

TGN = Trunk group name

XXX = Number of trunks in the group

YYYYY = Number of ONI attempts carried by the trunk group in the past hour

ZZZZZ = Total number of attempts carried by the trunk group in the past hour

PP = Percentage of ONI attempts

This message is issued on an automatic number identification (ANI) trunk group that has a high percentage of ONI calls based upon the established report threshold. These are to be considered ANI failures since 100 percent of the ONI trunk groups are not eligible for reporting. When analyzing this report, it must be kept in mind that ONI calls from multiparty lines and PBXs that are served by ANI trunk groups will be

reported even though ANI is the normal method of processing these calls. Therefore, ANI trunk groups carrying this type of traffic must be identified, with the expected percentage of ONI traffic. When two or more HS6 reports are issued on a trunk group within a few hours deteriorating service is indicated.

3.14 HS7: TGN XXX YYYYY ZZZZZ PP

TGN = Trunk group name

XXX = Number of trunks in group

YYYYY = Number of messages carried by the trunk group in the past hour

ZZZZZ = Number of attempts carried by the trunk group in the past hour

PP = Percentage of completion

This message is issued every hour on all trunk groups placed in the HS7 table for completion rate monitoring. Since this report is utilized as a monitor of selected trunk group performance, a printout normally does not indicate a problem. Analysis of this message should consist of checking the percentage of completion periodically to determine if a significant change in completion rate has occurred. It must be noted that fluctuations in completion rates at different times of the day are normal as traffic patterns change. From 2 to 3 consecutive hours of overly high or low completions are indications of possible trouble. The HS7 printout should be cross-referenced with HS1/HS2 messages to determine if one or more trunks in the group is causing the problem. By continually monitoring a trunk group it may be determined that variable traffic patterns are responsible for the significant change in completion percentage.

3.15 DS1: TTTT TGN XXX

TTTT = Trunk number

TGN = Trunk group name

XXX = Number of trunks in the group

This report is issued daily for Generic 1 and weekly for Generic 2 on all trunks that have not been seized in the previous period. Daily

fluctuations in traffic volumes can make this report difficult to use for Generic 1. To minimize analysis time and increase report effectiveness, the DS1 reports should be kept for a few periods before analysis. At the end of this period, all DS1 reports should be compared to determine if any trunks have appeared on the report every day. When an office is equipped with Generic 1, it will be normal for this report to occur on a large number of trunks over a weekend when the trunks are usually inactive.

3.16 DS2: TGN XXX YYYYY ZZZZZ PP

TGN = Trunk group name

XXX = Number of trunks in the group

YYYYY = Number ONI attempts carried by the trunk group in the past day

ZZZZZ = Total attempts carried by the trunk group in the past day

PP = Percentage of ONI attempts

This message is issued daily on the trunk groups as specified by the established report threshold with the highest percentage of ONI attempts during the past 24-hour period. Trunk groups with 100 percent ONI attempts are not reported because they are assumed to be ONI trunk groups. Excessive time should not be spent analyzing a DS2 report since other methods will normally detect ANI failures long before the daily printout is received. These messages should be scanned briefly to detect gross irregularities. An ANI trunk group with a very high percentage of ONI calls (normally, greater than from 30 to 40 percent) should be checked to determine if any major failures occurred. The reasons for a high percentage of ONI calls should be investigated. The reasons could be related to multiparty lines and centrex groups that must be operator identified. Since this is a normal situation, knowing which groups carry this type of traffic will save analysis time.

4. FORM CODES AND ASSIGNMENTS—WORKING SWITCHING SYSTEM

4.01 The generic programs developed and maintained by Bell Telephone Laboratories and used in the IBM System/7 computer for CAMA-C require

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that certain information unique to a particular office be inputted into data tables through recent change procedures before the turnup of working systems. Western Electric will manually input this information into the primary machine via TTY. After the data load is completed, Western Electric will make a paper tape to use in loading the backup system. The majority of the information required is a one-time entry and probably will not change significantly throughout the life of the machine.

4.02 The data which will change due to machine growth jobs, code arrangements, COI assignments, etc, are normally conveyed to the appropriate party by the network administrator. Therefore, the network administrator is the logical keeper of the CAMA-C data.

4.03 To acquire the necessary information to complete the data tables, the network administrator must consult with the accounting personnel, the network design order, Western Electric drawings, and the A4424 accounting AMA recording information worksheet (Fig. 4) or an equivalent record.

4.04 Figure 5 shows most of the data tables and the relationship (if any) that each table has to another. Figures 4 through 18 are examples of the forms required with CAMA-C to complete the data tables.

4.05 Some of the form codes will have preprinted entries. In most cases, these entries are arbitrary or predetermined assignments and are referred to as relative entries. An example of a predetermined assignment is the remote terminal port assignments (FC-04).

4.06 Figure 6 (Sheets 1 through 9) gives an overview of the type of information required to complete the CAMA-C form codes. Beginning with item one on Page one and following through to Page nine, all of the possible options presented are shown. These charts may answer many of the questions that the network administrator may have. Figure 6 does not cover all of the form codes required but it does consider the most complicated ones. Form codes not considered are self-explanatory with the aid of this section and the applicable Bell System Practices.

4.07 Before completing the individual form codes, it may be helpful to complete the worksheet

shown in Figure 7. Much of the form-code information can be gathered on this worksheet and transcribed to the appropriate column of the form codes. Sheet 2 of Figure 7 shows a completed worksheet for an office with two recorder groups, 841 and 842, and 13 physical recorders numbered 00 through 12. The entries should be self-explanatory except for those in the RG column which consist of only the last two digits of the recorder group number. The accounting department will be able to identify duplicate 2-digit LR numbers from different offices by a tape identification message. This message will be entered in row one of the miscellaneous table (FC-03) and included at the beginning of each magnetic tape.

4.08 FC-01—Recorder Table (Fig. 8) (CHG-01):

(a) Recorder Table (Primary):

- (1) **Office:** Enter office name.
- (2) **Issue:** Enter issue number 1, 2, 3, etc.
- (3) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.
- (4) **Row:** For line identification.
- (5) **,:** Most data columns are followed by a comma. This entry is used by network maintenance when inputting a recent change.
- (6) **RN:** Enter the physical recorder equipment number (00 through 19).
- (7) **RC:** This entry can either be a number or the letter D. If this entry is a number, it is an arbitrary number assigned by the network administrator. It is an index number and points the program to the correct COI table. If there is more than one recorder in any recorder group, this entry must be made. Start with 00 for the first recorder group, 01 for the second, etc. This number will also be entered at the top of each associated COI table. If an office has two recorder groups, use 00 and 01. If the office has eight recorder groups, use 00 through 07. An individual recorder can be a recorder group. If this entry is the letter D, it indicates that the

recorder is being deleted. All unassigned recorders must be deleted.

(8) **Order Number:** For change after in-service, enter one order number on the appropriate line for the change being made.

(9) **Due Date:** Enter the due date of the change order or the date of initial installation.

(10) **Remarks:** Use for coordinated orders, time, etc.

4.09 Recorder Table (Backup): The recorder table for the backup will be completed with information identical to the information for the recorder table for the primary.

Note: If each physical office recorder is a recorder group and the recorders are numbered starting with 00, the recorder table need not be filled out. The generic program automatically provides a prebuilt table for a maximum of 20 recorders. Any deviation requires that the form code be completed. If there are not 20 recorders, the unassigned recorders must be deleted.

4.10 FC-02—Central Office Index Table (Fig. 9) (CHG-02):

- (a) **Office:** Enter office name.
- (b) **Issue:** Enter issue number 1, 2, 3, etc.
- (c) **Accounting Recorder Group:** Enter the RG from the worksheet or the last two digits of the accounting recorder group.
- (d) **RC:** Enter the RC number that is assigned on the worksheet and entered on the recorder table. This is an arbitrarily assigned number, usually starting with 00 and ascending for each recorder group in the office.
- (e) **Update Column:** For recent change identification enter A for add, C for change, and D for delete.
- (f) **Row:** For line identification only.

(g) **RE:** RE lines 00 through 29 equate to a maximum of 30 possible COIs which are shown on Form A4424 (Fig. 4, column [h]).

(h) **NNX:** Enter the originating office NNX code or special billing number assigned to a given office index. This information is shown on Form A4414, column (c).

(i) **W:** Enter a one if the code serves originating WATS. Enter a two if the code serves originating TWX. Enter a zero if it serves non-WATS/TWX. This information is from Form A4424, column (f). See Figure 4.

(j) **NPA:** Enter the originating NPA of the listed NNX or special billing codes for a machine which serves more than one NPA. If all NNX/NXXs reside in the home NPA, enter zeros.

(k) **Order Number:** For changes after in-service, enter the order number on the appropriate line for the change being made.

(l) **Due Date:** Enter the due date of the change being made or date of initial installation.

(m) **Remarks:** Use for coordinated orders or time.

4.11 FC-03—NPA Table and Miscellaneous Table (Fig. 10) (CHG-03 and CHG-09):

(a) **FC-03—NPA Table (CHG-03):** The NPA table is the assignment of the ten most heavily used terminating (called number) area codes which use four line entries and are presented to the System/7 as a single digit, zero through nine. Completion of this table will be required for all machines using this recording option format. A joint discussion with network maintenance and the accounting department is required to determine this information. The determination of the ten compressed area codes is normally supplied by the accounting department and by the maintenance group. Cards may be dropped at the trouble recorder to provide an accurate record of which NPA is associated with each of the compressed digits zero through nine.

Note: Do not use the compressed codes which appear on local OMS operator tickets because they may be different.

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- (1) **Office:** Enter the office name.
- (2) **Issue:** Enter the issue number 1, 2, 3, etc.
- (3) **Update Code:** The update column is used for recent change identification. Enter A for add, C for change, and D for delete.
- (4) **Row:** For line identification only.
- (5) **N:** The compressed single-digit code for each NPA.
- (6) **NPA:** Enter the correct NPA associated with the compressed digits zero through nine.
- (7) **Order Number:** Enter "initial" if for the initial installation. This form code will seldom change.
- (8) **Due Date:** Enter the due date of change order or the date of initial installation.

(b) **FC-03—Miscellaneous Table (CHG-09):**

- (1) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.
- (2) **Row:** For line identification only.
- (3) **NNNN,MM:** A 6-digit number used to identify the office which the magnetic tapes are from. This number will be obtained from the accounting department.
- (4) **E:** Enter a one if a printout of error messages for unassigned COIs is desired. If no error messages are desired, enter a zero. If no COI tables are filled out, E must be set to zero. Network maintenance will provide this information.
- (5) **HH:** This entry determines the time the daily maintenance report will print out (00 = 12 am and 23 = 11 pm).
- (6) **R:** Enter a one if the NPAs listed on the COI table are to be entered on the CAMA tapes. If the NPAs are not required, enter a zero. Ask the accounting department

if the NPA is required or if the accounting computer will automatically build the required NPA.

- (7) **AAA, BBB, CCC:** If the originating NPA or NPAs are required to be entered on the CAMA tape (R = one), enter them here. If the machine serves one NPA, use AAA; two NPAs, use AAA and BBB; three NPAs, use all three. All unused entries will be set to zero.

4.12 FC-04—Number Scanners, Maximum Number of Recorders, Security Port Assignment, Enable RTTY Flag (Fig. 11) (CHG-04):

- (a) **Office:** Enter the office name.
- (b) **Issue:** Enter the issue number 1, 2, 3, etc.
- (c) **Update Code:** For recent change identification enter A for add, C for change, and D for delete.
- (d) **Row:** For line identification only.
- (e) **NS:** Enter the number of scanner equipment 1, 2, or 3.
- (f) **RN:** Enter the highest regular recorder number 00 to 19.
- (g) **SP:** Machine port to which the security RTTY is assigned 00 to 07.
- (h) **RM:** The enable parameter for the security ports (0 = no; 1 = yes).

Note: There is no security port or remote TTY feature in the backup CAMA-C. However, these parameters must be entered and enabled in the backup machine to satisfy the parameter count.

- (i) **Order Number:** For change after in-service enter one order number on the appropriate line for the change being made.
- (j) **Due Date:** Enter the due date of change order or the date of initial installation.

(k) **Remarks:** Use for coordinated orders, time, etc.

4.13 FC-05—CAMA-C Tape Dump Schedule (Fig. 12) (CHG-05): The data required to designate the times at which data will be physically transferred from temporary disk storage to magnetic tape will be controlled with FC-05.

- (a) **Office:** Enter the office name.
- (b) **Issue:** Enter the issue number 1, 2, 3, etc.
- (c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.
- (d) **Row:** For line number identification only.
- (e) **Time of Day Tape Dump is Required:** Tape dumps can be requested on any hourly schedule on-the-hour such as, every hour, every five hours, etc. Tape dumps are limited to 15 per 24-hour period. Enter the hour per 24-hour clock (0100 through 2400). The time 2400 midnight must be one of the dump times.
- (f) **XX:** Machine dump times. Enter hour the dump is wanted (2400 = midnight = 00 0100 = 01 through 2300 = 23).
- (g) **Order Number:** Enter the order number of the change being made. If more than one line is being changed, list the order numbers and corresponding row.
- (h) **Due Date:** Enter the due date of the recent change or date of initial installation.
- (i) **Remarks:** Use as required.

4.14 FC-09—Unbillable Call Statistics Recorded on Magnetic Tape (Fig. 13) (CHG-06): Call types which can be transferred from disk memory to magnetic tape are as follows:

- X - Seize release with initial entry
- Y - Seize release without initial entry
- Z - Connect/disconnect without initial entry.

(a) **Office:** Enter the office name.

(b) **Issue:** Enter the issue number 1, 2, 3, etc.

(c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.

(d) **Row:** For line number identification only.

(e) **Recorder:** Enter zero or one to disable or enable the option recording feature. With no selection, a zero will be assumed.

(f) **Order Number:** For change after in-service, enter one order number on the appropriate line for the change being made.

(g) **Due Date:** Enter the due date of the change order or the date of initial installation.

(h) **Remarks:** Use for coordinated orders.

4.15 FC-10—Recorder-Group Cross-Reference Table (Fig. 14) (CHG-08): This table provides association for each recorder group to the recorder numbers within the group. It is used by the System/7 to relate recorder table information with recorder group and recorder number relationships for calls placed on the CAMA-C tape.

(a) **Office:** Enter the office name.

(b) **Issue:** Enter the issue number 1, 2, 3, etc.

(c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.

(d) **Row:** For line number identification only.

(e) **RN:** Enter the RN number from the worksheet. RN is the physical recorder number (recorder 00 through 19). It is the same as the RN number in the recorder table (FC-01).

(f) **RG:** Enter the RG number from the worksheet. RG is the accounting recorder group number 00 through 99 and constitutes one or more recorder circuits (RNs).

(g) **LR:** Enter the LR number from the worksheet. LR is the logical recorder assigned

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by the accounting department to each recorder within a recorder group.

- (h) **Order Number:** Enter the order number of the change being made. If more than one line is being changed, list the order numbers and corresponding row.
- (i) **Due Date:** Enter the due date of recent change or date of initial installation.
- (j) **Remarks:** Use as required.

4.16 FC-11—Trunk Group Cross-Reference Table (Fig. 15) (TGX): The information inputted on the trunk group cross-reference table is used by the computer to print out status reports. This table associates NNX office codes to a particular trunk group. Each trunk group, up to a maximum of 128, uses a 3-digit or character name for identification.

- (a) **Office:** Enter the office name.
- (b) **Issue:** Enter issue number 1, 2, 3, etc.
- (c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.
- (d) **Row:** For line identification only.
- (e) **Command:** Enter *new* if this is the first time the trunk group has been used. Enter *old* if this trunk group has been used previously. (Recent changes must include an asterisk following "command.")
- (f) **GGG:** Enter an arbitrarily assigned trunk group name. The entry can be alphabetical, numerical, or a combination of both. A maximum of 128 names can be inputted into this table. Multiple entries for a trunk group which requires two or more lines to accommodate more than ten NNXs are not included in the 128 maximum. If more than ten NNXs are assigned to a given group, enter the same name on the next line and continue to list NNXs.
- (g) **::** Recent changes must include a semicolon following GGG—not a comma.
- (h) **NNX:** Opposite each trunk group name, enter the NNXs associated with this trunk

group. Only entries between 200 and 999 are valid. Do not list special billing numbers, WATS access, etc.

- (i) **Order Number:** Enter the order number of the change being made. If more than one line is being changed list the order numbers and corresponding row.
- (j) **Due Date:** Enter the due date of the recent change or the date of initial installation.
- (k) **Page No:** Enter the page number if more than one page is used.

Note: The last NNX in each row shall *not* be followed by a comma.

4.17 FC-11A—Ambiguous Trunk Group Cross-Reference Table (Fig. 16) (TGX): The information inputted on the trunk group cross-reference table is used by the computer to print out status reports. This table associates NNX office codes to a particular trunk group. Each trunk group, up to a maximum of 128, uses a 3-digit or character name for identification.

- (a) **Office:** Enter the office name.
- (b) **Issue:** Enter the issue number 1, 2, 3, etc.
- (c) **Update Code:** The update code is used for recent change identification. Use A for add, C for change, and D for delete.
- (d) **Row:** Line identification only.
- (e) **Command AN**:** For inputting NNXs assigned to the ambiguous trunk group. These are NNXs which appear in more than one trunk group such as special billing codes to indicate WATS, etc.

Note: Recent changes must include two asterisks following "AN."

- (f) **NNX:** Opposite each trunk group name, enter the NNXs associated with this trunk group. Only entries between 200 and 999 are valid. Do not list special billing numbers, WATS access, etc.

(g) **Order Number:** Enter the order number of the change being made. If more than one line is being changed list the order numbers and corresponding row.

(h) **Due Date:** Enter the due date of recent change or date of initial installation.

(i) **Page No.** Enter page number if more than one page is used.

If a company or office uses the standard 11-character common language name, Figure 17 shows a 3-digit-to-11-digit trunk group name conversion form which can be used. If this form is used, it should be updated and forwarded to the maintenance group to assist them in interpolation of common language for troubleshooting.

4.18 FC-12—CAMA/TSP Trunk Assignment (Fig. 18) (CHG-14)—For Generic 2 Only: This form allows for the designation of trunks for a mixed office (CAMA/TSP). Circle appropriate base parameter at the bottom of FC-09.

(a) **Office:** Enter the office name.

(b) **Issue:** Enter issue number 1, 2, 3, etc.

(c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.

(d) **Row:** For line identification only.

(e) **From Trunk No:** List the starting trunk number of a group.

(f) **To Trunk No:** List the ending trunk number of a group.

(g) **CAMA/TSP:** Designate the trunk group as CAMA or TSP: 0 = CAMA; 1 = TSP.

(h) **Order Number:** Enter the order number of the change being made. If more than one line is being changed, list the order numbers and corresponding row.

(i) **Due Date:** Enter the due date of the recent change or date of initial installation.

(j) **Page No.:** Enter the page number if more than one page is used.

Note: If no parameters are assigned, the machine will assume that all trunks are CAMA.

4.19 Remote TTY Port Assignments (CHG-15—For Generic 2 Only): FC-08, shown in Bell System Practices Section 201-902-010, allows for the assigning of passwords and message classes to the nine terminal names in the primary CAMA-C.

(a) **Office:** Enter the office name.

(b) **Issue:** Enter issue number 1, 2, 3, etc.

(c) **Update Code:** For recent change identification. Enter A for add, C for change, and D for delete.

(d) **Row:** For line identification only.

(e) **N:** Enter terminal name designation number (N = one through nine)

1 = SEC (security port)

2 = MTC (maintenance port)

3 = ECT (error billing accuracy control [EBAC])

4 = RT1 (remote terminal number 1)

5 = RT2 (remote terminal number 2)

6 = RT3 (remote terminal number 3)

7 = RT4 (remote terminal number 4)

8 = RT5 (remote terminal number 5)

9 = 5028 (IBM computer operator [5028 TTY])

(f) **Pass:** Assign four arbitrary digits as a password; 5028 must be used for the terminal name designation of 9.

(g) **C:** Assign message class two through six for data required at individual ports. Class 0 and 1 cannot be assigned with the RCP. An error message will be produced if classes other than 2-6 are entered.

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- (h) **Order Number:** Enter the order number of the change being made. If more than one line is being changed list the order numbers and corresponding row.
- (i) **Due Date:** Enter the due date of the recent change or date of initial installation.
- (j) **Remarks:** Use as required.

5. FORM CODES AND ASSIGNMENTS—NEW SWITCHING SYSTEM

5.01 The instructions outlined for the conversion of a working machine to CAMA-C can be used for a new installation. Figure 19 shows an event chart for a CAMA-C installation. The overall interval for the CAMA-C portion is small in comparison to a total installation of a new machine. This interval will be scheduled in the later portion of the total machine interval. Therefore, all input data source information should be available by the time Western Electric requires the data forms for machine input.

5.02 To ensure that proper documentation (Form A4424, compressed code list, Western Electric drawings, etc) is available by the time that the form codes are to be completed, the network administrator should utilize the early contact meetings to establish interdepartmental requests for the various data needed.

5.03 Depending upon local company structure, the CAMA-C form code responsibility may be with a central cross-connect or an assignment group or it may be only coordinated by the network administrator as part of the overall machine installation.

6. RECENT CHANGE PROCEDURE

6.01 After the completion of the initial data load into the System/7 computer, changes of data should be done on a recent change basis. The original form codes, along with a transmittal, can be used to convey any changes to the maintenance force and EBAC.

6.02 The following steps can be followed for required recent changes:

- (a) To maintain an accurate office record, make a copy of the form code to be changed and file it with the original.
- (b) On the original record, change the entry to the new information. Forward two copies to network maintenance and EBAC with the transmittal. The same procedure should be followed when no figures are being changed and only additional entries are made.
- (c) When all changes on the form codes are completed, fill out a recent change order transmittal (Fig. 20).

6.03 CAMA-C Recent Change Order Transmittal (Fig. 20):

- (a) **Order Number:** Enter the order number of the recent change being requested.
- (b) **Office:** Enter the office name. If more than one office is served by a location, an identification stamp may be used on the face of transmittal.
- (c) **Due Date:** Enter the date the change shall be made, including the time, if required.
- (d) **Coordinate With:** Enter any other numbers with which this change is to be coordinated.
- (e) **Replaces Order Number:** Enter the previous order number for the information being changed.
- (f) **Description of Work:** Enter a description of the work such as: add new recorder to recorder group 02, add new NNX to office alpha, or change time entry for output status messages.
- (g) **Forms Attached:** Enter the quantity and type of forms that are attached.
- (h) **Others:** For future use.
- (i) **Total No. of Forms:** Enter the quantity of forms of all types that are attached.

(j) **Notes:** Use for additional information if required.

(k) **Network Operations:**

(1) **MTCE:** Enter the initials of the person in the maintenance department requesting a recent change.

(2) **OPRNS:** Enter the initials of the person in network administration updating the office records when the maintenance completion of work is received.

(l) **Network Maintenance:** The maintenance group will use this section to show by whom and when the recent change was completed. When the maintenance department has completed the work, their returned transmittal will serve as a completion notice.

6.04 Figure 21 is a recent change log to use in keeping track of outstanding orders.

6.05 When the form code and the transmittal are complete, send one copy to the maintenance group responsible for updating the CAMA-C program and one copy to the EBAC group. When the maintenance group returns the transmittal showing the completion of the changes requested, forward the copy to EBAC as a completion notice. Remove the copy of the original record in file (the one made before making changes) and replace it with the final completed copy.

7. ABBREVIATIONS AND ACRONYMS

7.01 The following is a list of abbreviations and acronyms used throughout this section.

A	Add
AMA	Automatic message accounting
ATT	Attempts
C	Change
CAMA-C	Centralized automatic message accounting—computerized
CE	Customer engineer
CHG	Change

COI	Central office index
D	Delete
DDD	Direct distance dialing
EBAC	Error billing accuracy control
ESS	Electronic switching system
FC	Form code
LG	Logical recorder
MSG	Message
NNX	Central office code
NPA	Numbering plan area
ONI	Operator number identification
RC	Index number for recorder group
RCP	Recent change procedure
RG	Recorder group
RM	Remote
RN	Recorder number
RR	Relative recorder
SZR	Seizure
TGX	Trunk group cross-reference
TSPS	Traffic Service Position System
TTY	Teletypewriter
TWX	Teletypewriter exchange service
WATS	Wide area telephone service
X	Seize release with initial entry
Y	Seize release without initial entry
Z	Connect/disconnect without initial entry

SECTION 12c(5)

8. REFERENCES

8.01 The following is a list of Bell System Practices which contain additional information pertaining to this section.

SECTION	TITLE	SECTION	TITLE
201-902-101	Description	201-902-305	Time Changes
201-902-010	CAMA-C Maintenance Management	201-902-306	Broadcast Warnings and Overwrites
201-902-301	Emergency Action Procedures	201-902-307	Disk Handling Procedures
201-902-302	Multiplexer Scanner Tests	201-902-308	Remote TTY Tests and Operations
201-902-303	Recent Change Procedures and Initial Program Load	201-902-503	Analysis of Irregular Network Signaling Features—Tests
201-902-304	Hourly and Daily Maintenance Reports	201-902-501	Routine Maintenance Tests
		201-902-502	Recorder and Recorder Connector Tests
		201-902-309	Trunk and Sender Monitor Features

TABLE A

RELATIVE LOCATIONS OF RECORDERS IN SCANNERS

PHYSICAL OFFICE RECORDER	PRIMARY SCANNER	PRIMARY SCANNER RELATIVE RECORDER	BACKUP SCANNER	BACKUP SCANNER RELATIVE RECORDER
EM	0	0	0	0
0	0	1	0	1
1	0	2		2
2	0	3		3
3	0	4		4
4	0	5		5
5	0	6		6
6	0	7		7
7	1	0		8
8	1	1		9
9	1	2		10
10	1	3		11
11	1	4		12
12	1	5		13
13	1	6		14
14	1	7		15
15	2	0	16	
16	2	1	17	
17	2	2	18	
18	2	3	19	
19	2	4	0	20

TABLE B

**CAMA-C MESSAGE CLASSES (See FC-10 Figure 6)
GENERIC 2 ONLY**

MESSAGE CLASS	DESCRIPTION
00	<p>A more detailed description of the messages by class is given in BSP 201-902-308. The following is a brief description.</p> <p><u>PRIMARY SYSTEM CLASS:</u> Permanently assigned to only the local 5028 operator station — input and output.</p> <p>This class includes system startup and stop, tape drive control, system trouble messages, data base and time change functions, Broadcast Warning Change Notice capability, and the ability to initiate the recorder test program. These functions cannot be remoted.</p>
01	<p><u>ANALYSIS OF NETWORK IRREGULAR SIGNALING CLASS:</u> Permanently assigned to only the designated security port — output only.</p> <p>This class includes only the messages generated by the network irregular signaling feature. These functions cannot be delegated to any other terminal.</p>
02	<p><u>STATISTICAL REPORTS CLASS:</u> Assignable to each port-output only.</p> <p>This class includes messages generated by the trunk maintenance reports of CAMA-C.</p>
03	<p><u>ELECTROMECHANICAL CIRCUIT MAINTENANCE CLASS:</u> Assignable to each port — input and output.</p> <p>This class includes exception report type messages generated by CAMA-C and the ability to operate the existing trunk monitor and sender test printout function of CAMA-C.</p> <p>The exception report messages are due to receiving an invalid central office index, apology, mutilated digits, number check recording failure, etc. They are related to possible Recorder and Trunk troubles.</p> <p>These messages are printed out as they occur.</p>
04	<p><u>PRIMARY STATUS CLASS:</u> Assignable to each port — output only</p> <p>This class includes messages indicating the operating state of the primary and backup machines, as seen from the primary machine.</p>
05	<p><u>PRIMARY SUMMARY DATA:</u> Assignable to each port — input and output</p> <p>This class includes the ability to print both the CAMA-C data base and the internal machine counters for the primary machine.</p> <p>These messages are provided only by request. A new hard copy may be desirable when data base is changed to compare old with new. The internal machine counters are counts of trunk seizures, count of trunk idle to seizure state, number of recorders, etc.</p>
06	<p><u>TERMINAL CLASS:</u> Permanently assigned to all remote ports — not on local 5028 operator station — input and output.</p> <p>This class includes miscellaneous messages and commands needed to administer the remote terminal feature, such log-on.</p>

TABLE C

CAMA-C TERMINAL NAMES AND MESSAGE CLASS ASSIGNMENTS
 (See FC-10 Figure 6)
 GENERIC 2 ONLY

TERMINAL NAME	DESCRIPTION
5028	<u>5028 OPERATOR STATION:</u> This is the basic system terminal and is hardwired to the IBM System/7 at the local CAMA-C location. It is used to control and operate the System/7 equipment and to do all basic CAMA-C operations which do not lend themselves to remote control.
SEC	<u>SECURITY:</u> This terminal name would be used for a remote terminal which would receive the messages associated with CAMA-C's analysis of network irregular signaling. It is required by AT&T Security that this remote terminal be connected to the CAMA-C System through a private line arrangement. (See FC-04)
MCT	<u>MAINTENANCE CENTER:</u> This class of port would be used for a remote terminal located in the maintenance center of the crossbar tandem or No. 4 crossbar office and would receive messages which would relate to AMA circuit failures, including recorders and trunks.
ECT	<u>ERROR BILLING ACCURACY CONTROL (EBAC) OR DDD CENTER:</u> This terminal name would be used for a remote terminal located in the EBAC or DDD center and would receive the statistical reports generated by CAMA-C.
RT1-RT5	<u>OTHER TERMINAL NAMES:</u> Any remaining CAMA-C terminal names, may be designated by the Telco, for use with remote terminals, as required. Terminal names as above, may be duplicated for message distribution to multiple locations or new terminal names can be designated to satisfy local requirements.
ASSIGNMENT OF MESSAGE CLASSES TO TERMINAL NAME	
5028	(A) Permanently assigned message class 00. (B) Permanently restricted from receiving message class 01. (C) Will receive, by default, message classes 02, 03, 04, and 05 even if these classes are assigned to other ports.
SEC	(A) Permanently assigned to receive message classes 01 and 06. (B) Permanently restricted from message class 00. (C) Can be assigned all other classes if local practice combines the security function with other functions.
MTC	(A) Permanently assigned message class 06. (B) Permanently restricted from message classes 00 and 01. (C) Can be assigned message classes 02, 03, 04, and 05 to provide local printout of switching related trouble and administrative data in the maintenance center if the CAMA-C System is remotely located.

TABLE C (Cont)

CAMA-C TERMINAL NAMES AND MESSAGE CLASS ASSIGNMENTS
 (See FC-10 Figure 6)
GENERIC 2 ONLY

TERMINAL NAME	DESCRIPTION
ASSIGNMENT OF MESSAGE CLASSES TO TERMINAL NAME (Cont)	
ETC	(A) Permanently assigned message class 06. (B) Permanently restricted from message classes 00 and 01. (C) Can be assigned message classes 02 and 05 to provide statistical analysis printout of network troubles.
RT1-RT5	(A) Permanently assigned message class 06. (B) Permanently restricted from message classes 00 and 01. (C) Can be assigned all other classes to meet local requirements.

tpa000000

TABLE D
COMMAND ROUTINE SELECTION

RECENT CHANGE FUNCTION	COMMAND RECENT CHANGE SELECTION OPTION NUMBER	NUMBER OF PARAMETERS
Recorder Assignment To COI Table	CHG (01)	2 per recorder
NNX Code, WATS, TWX And Originating NPA Assignment To COI	CHG (02)	5 per COI
Terminating Area Code Assignment To Compressed Code Digit	CHG (03)	2 compressed code
Defines Number of Scanners and Maximum Number Of Recorders Generic 1 Issue 2 Only	CHG (04) Generic 1 Issue 2 Only	2
Defines Number Of Primary System Scanners, Maximum Number Of Recorders, Security Port Number, And RTTY Enable Flag Generic 2 Only	CHG (04) Generic 2 Only	4
Defines Hours In Which Tape Dumps Are To Occur	CHG (05)	15
Enables Recording of Unanswered And Incomplete Types	CHG (06)	3
System Clock Adjustment Factor	CHG (07)	1
Assign Recorder Group Number And Logical Recorder Number To Each Recorder	CHG (08)	3 per recorder
Assign Office Identification Number Enables Error Messages On Vacant COI, Defines Daily Report Hour, Enables Recording Of Originating NPAs, and Defines The Acceptable Originating NPAs	CHG (09)	8
Copy Office Data To Paper Tape	CHG (10)	—
Load Office Data From Paper Tape Into Machine	CHG (11)	—
Office Data Base Printout	CHG (12)	0
CAMA-C Machine Counts	CHG (13)	3
Encoder Address Check Enable/Disable Generic 1 Issue 2 Only	CHG (14) Generic 1 Issue 2 Only	1

TABLE D (Cont)

COMMAND ROUTINE SELECTION

RECENT CHANGE FUNCTION	COMMAND RECENT CHANGE SELECTION OPTION NUMBER	NUMBER OF PARAMETERS
CAMA/TSP Trunk Assignments Generic 2 Only	CHG (14) Generic 2 Only	1 if all trunks same or 3 for each range of different trunks
RTTY Data Base Maintenance Report Thresholds NNX Code to Trunk Groups	CHG (15) Generic 2 Only LMT TGX	Up to 7* per RTTY Varied 2* per NNX

*Primary Machine Processor Only

TABLE E
STATUS REPORT

Lowest Expected % Limit	Upper Expected % Limit	Suppl. Data Required by CAMA-C	Condition Reported	Processing Based On	Remarks
HS1, --	HS2, --	NONE	$\frac{\text{MESSAGES}}{(\text{---}) * \text{ATTEMPTS}} = \%$	Individual Trunks	Completed calls too low or too high to be realistic (HS1 or HS2 hourly status report)
NA	HS3, --	NONE	$\frac{\text{HITS}}{(\text{---}) * \text{Seizures}} = \%$	Individual Trunks	Hit = Idle to Seize to Idle (trunk supervision trouble) (HS3 hourly status report)
NA	HS4, --	---	Messages of less than (SC)** seconds duration = % $\frac{(\text{---}) * \text{Messages}}{(\text{---}) * \text{Messages}} = \%$	Individual Trunks	Trunks with supervision hits, transmission troubles or time release problems (HS4 hourly status report)
NA	NA	NA	$\frac{\text{ERRORS}}{\text{Initial Entries}} = \%$	Individual Recorders	Extra lines, missing lines, Apology, charge guard (HS5 daily status reports)
NA	HS6, --	NONE	$\frac{\text{ONI Messages}}{(\text{---}) * \text{messages}} = \%$	Trunk Group	ANI Equipment failures (HS6 hourly status report)
NA	NA	NA	$\frac{\text{Messages}}{\text{Attempts}} = \%$	Selected Trunk Group	(SLT) = Trunk Groups listed on selected Trunk Group Table, Figure 14 (HS7 hourly status report)
NA	NA	NA	Trunks with no seizures	Individual Trunks	Trunks are made busy, out of service, or are not being selected (DS1 weekly status report for Generic 2.) (DS1 daily status report for Generic 1.)
NA	DS2, --	NONE	Report identifies those trunk groups having highest % of ONI messages. Use the following calculation. $\frac{\text{ONI messages}}{(\text{---}) * \text{Messages}} = \%$ EXAMPLE: IF DS2, -- is set to 10 the 10 trunk groups having highest % ONI messages will be identified	Trunk Groups	DS2, is not a threshold. It defines the number of trunk groups (MAX. 50) for which a daily status report is required.

*(-- --) is a "validity statement" the value entered within the brackets (000 to 511) specifies the minimum amount of data required to constitute a reliable report. If the specified volume of records is not recorded a status report will not occur. The validity statement is not a part of the actual calculation, it is a threshold that tells the computer whether or not a calculation should be made.

** (SC) is the short call threshold which defines the calculation.

Only messages of less than -- seconds will be included. Max. value = 999 seconds.

***The value is the number of attempts for the HS1 and HS2 reports multiplied by the number of trunks in the trunk group.

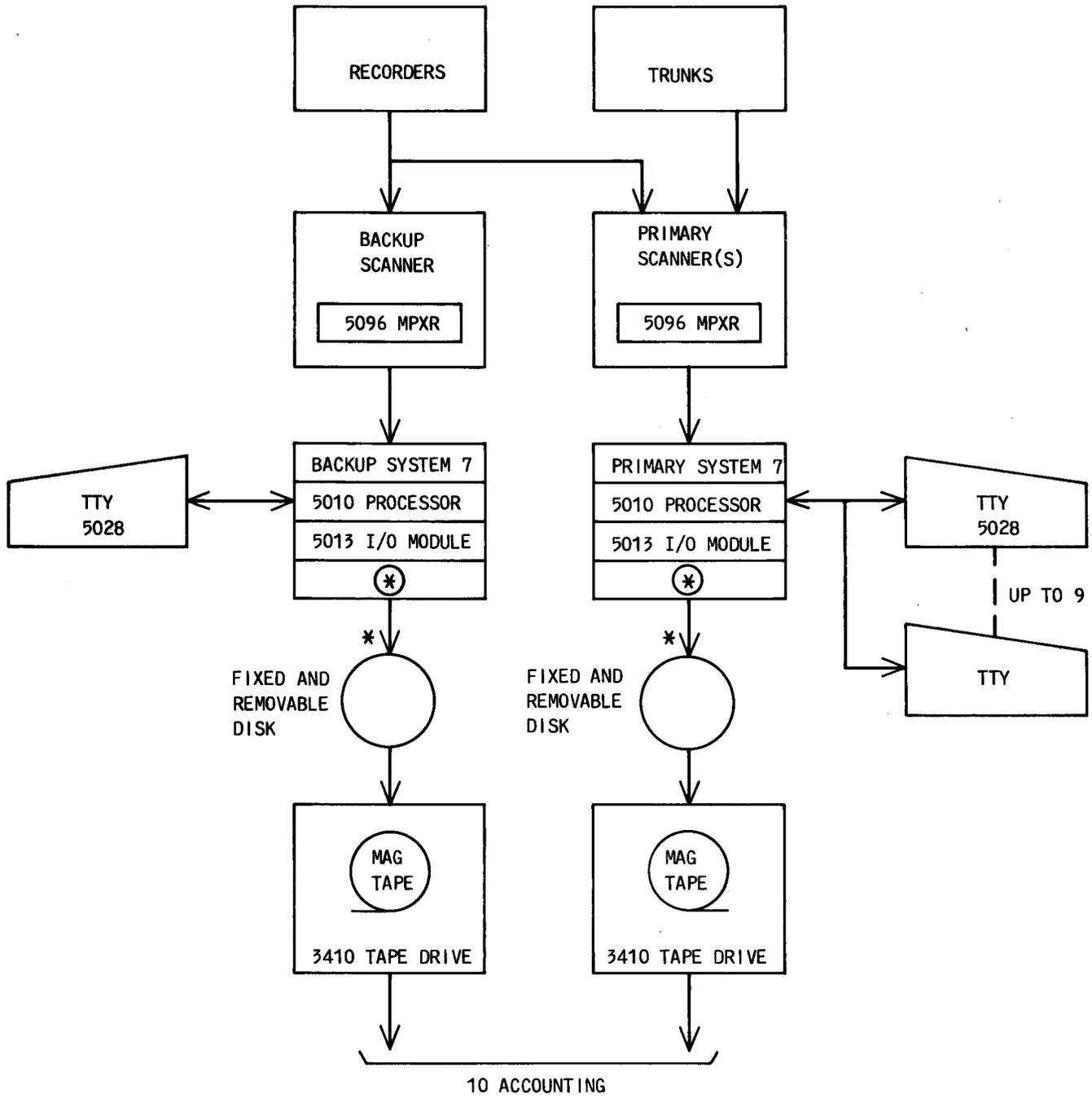


Fig. 1—CAMA-C Block Diagram (1.09, 1.10)

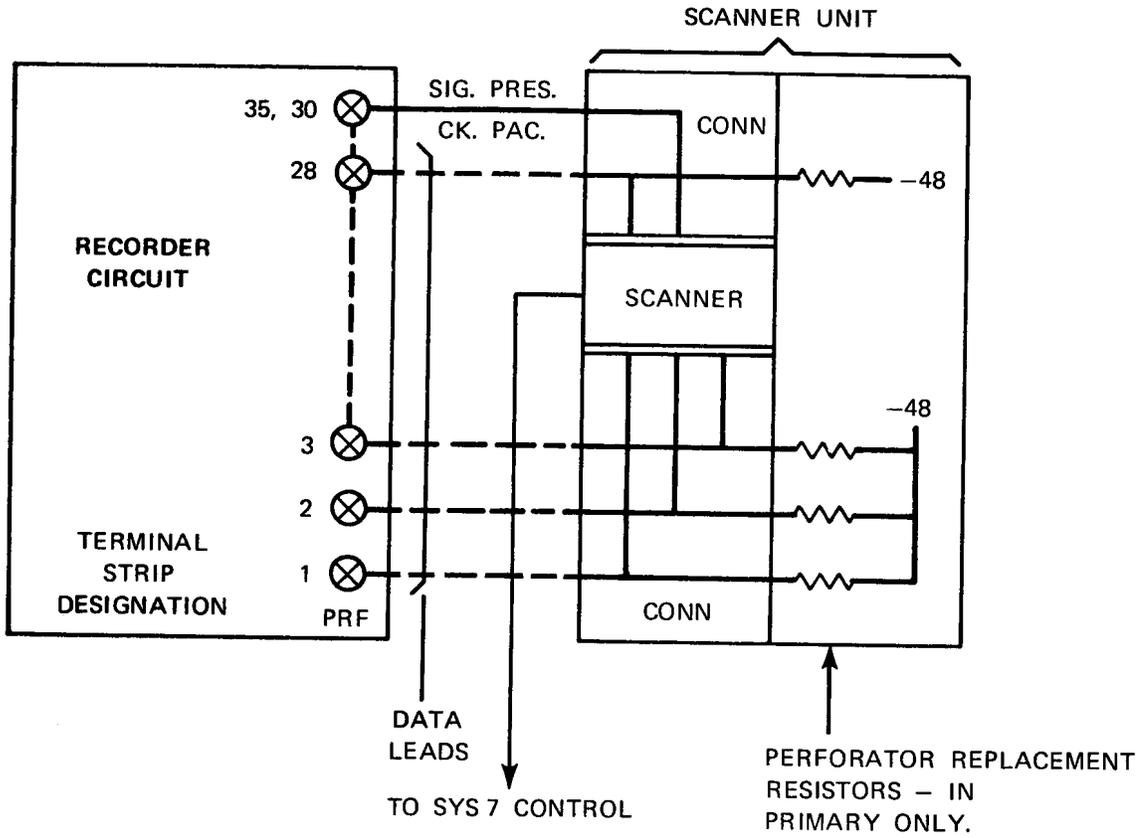
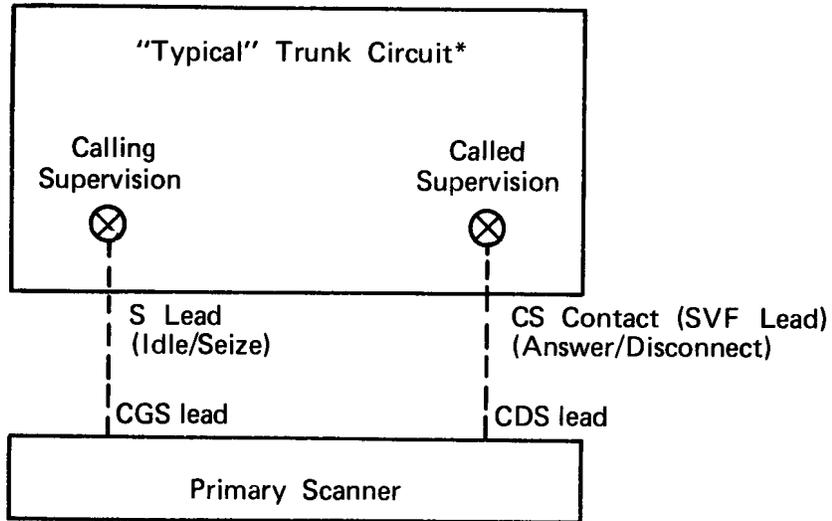


Fig. 2—Physical Recorder Attachment (1.10)



*Most trunk circuits require no internal change.

Fig. 3—Physical Trunk Attachment (1.10)

AMA RECORDING INFORMATION

A 4424 (8-70)

CME TRS ISSUE (a)	TRAFFIC ORIGINATED ITEMS										ACCOUNTING ORIGINATED ITEMS						NOTES (r)
	NPA (b)	NNX OR SBN PFX (c)	EXCHANGE AND RATE DISTRICT (d)	"HOME" CO (COMMON LANGUAGE) (e)	TYPE OF SERVICE (f)	LINE NUMBER BLOCK (g)	CENT OFC INDEX (h)	INDEX COIL NO (i)	ADDITIONAL RECORDING INFORMATION (j)	EDP CODES		TRANS PREFIX (m)	CCSA		BLG RAO NO (p)	BLG RND (q)	
										ORC (k)	OTC (l)		PROC CODE (n)	CUST CODE (o)			
	209	422	Modesto	MDST-02	TEL-ANI						019	28			254	16	
	209	423	Modesto	MDST-02	TEL-ANI						019	28			254	2	
	209	424	Modesto	MDST-02	TEL-ANI						019	28			254	20	
	209	063	Modesto	MDST-02	TEL-SBN	(52X)					019	28			254	-	
	209	545	Modesto	MDST-04	TEL-ANI						019	28			254	25	
	209	065	Modesto	MDST-04	TEL-SBN	(545)					019	28			254	25	
When formatted for CAMA-C offices, the COI shows RG # and COI.																	

TYPE OF SERVICE				NOTES	RECORDING LOCATION				TYPE/RCDG			
TEL LAMA (Reg Tel)	TEL	COIN ZONE DIALING	CZ	I. Issued for record purposes	NAME	COM LANG.	RECORDER # S	EMG REC	CAMA-C XB MKR GRP XBT ISSUE DATE 11-2-73 REC GRP			
TEL-ANI CAMA (Reg Tel)	TEL-ANI	CENTREX CO	CTX-CO		Modesto	MDST-01	06-01	MDST-02				
TEL-ONI CAMA (Reg Tel)	TEL-ONI	CENTREX CU	CTX-CU									
TEL-TSP (Para. Coll. Etc.)	TEL-TSP	CENTREX CU AIOD	AIOD									
SPECIAL BILLING #	TEL-SBN	CTX CU AIOD ESS	E-AIOD	S. Miyamoto	Mtce.	Pgmg.	11-2-73	3				
3-ROW TWX (80 SP)	3R-TWX	SW SERV NETWORK	CCSA	(ACCTG)	NAME	SECTION	DATE	TABLE #	CYCLE #	ISSUE #	IN SERVICE (CHANGE DATE)	
4-ROW TWX (100 SP)	4R-TWX	FED TELECOMMUNIC SERV	FTS	K. Bartels	Tr. Eng.		10-31-73					
WIDE AREA TEL SERV	WATS	SENDER MONITOR	SDR	(TRAFFIC)	NAME	SECTION	DATE	J. Grieye	Stf	Clk	10-31-73	
DATAPHONE 50	DPH-50			AREA	Northern Sector		DIVISION	Inland	EDP LOCATION		Sacramento	PG OF

Fig. 4—AMA Recording Information (4.03, 4.04, 4.10)

DATA ENTRIES ARE EXAMPLES ONLY

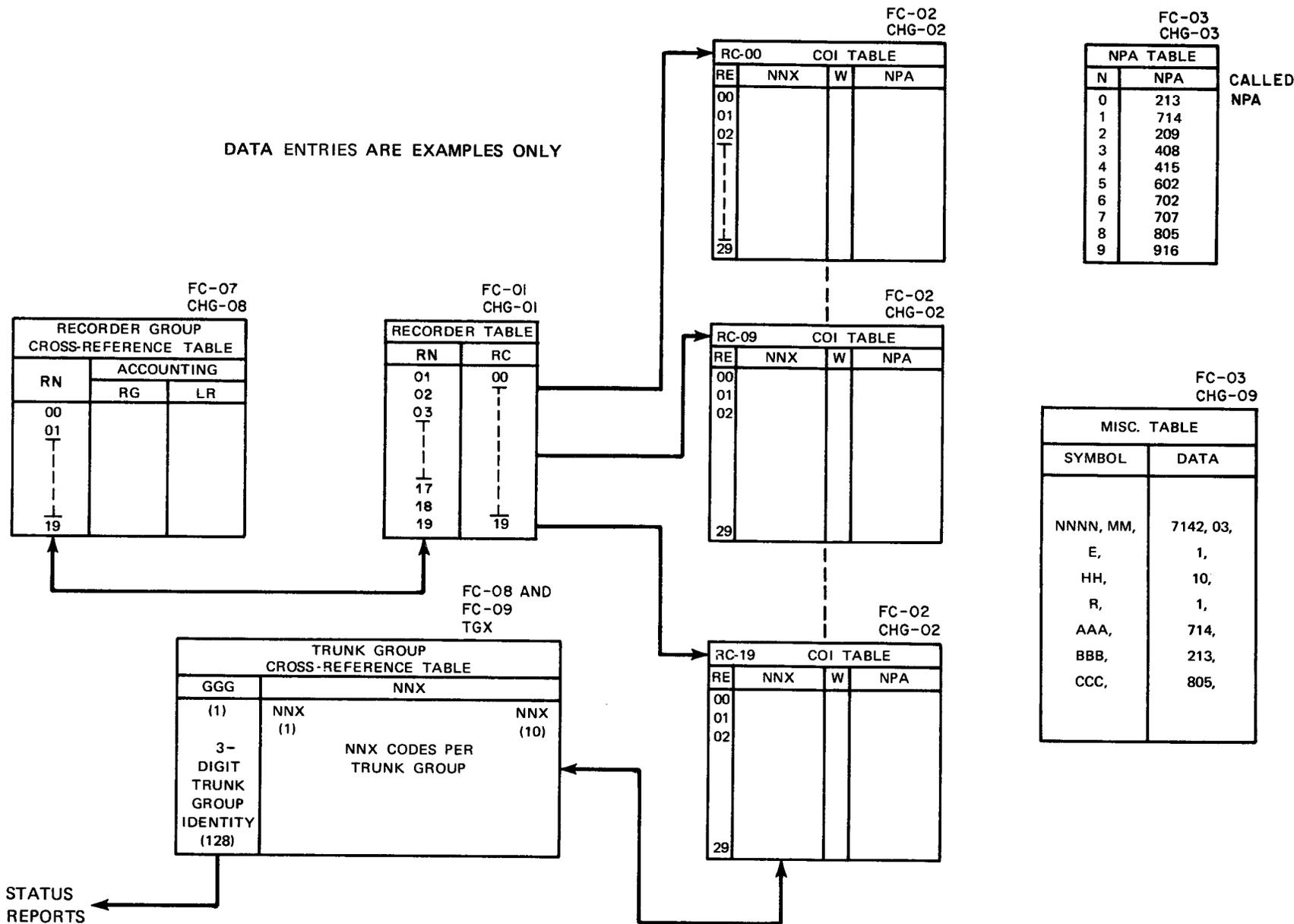


Fig. 5—CAMA-C Table Relationships (4.04)

[1] USING COI TABLE, FC-02, ASSIGN A NUMBER (00-19) TO RC-- TO IDENTIFY AND ASSOCIATE THIS TABLE WITH A RECORDER GROUP NUMBER ASSIGNED BY THE ACCTG. CENTER. LIST THE RCDR. EQPT. NUMBER(S) ASSIGNED TO THE RCDR GRP (SEE NOTE 1)

[2] ON COI TABLE LOCATE RE COLUMN (OFFICE INDEX). UNDER NNX-NXX COLUMN, ASSIGN AN NNX-NXX CODE TO RE NUMBER TO ASSOCIATE AND IDENTIFY THE ORIGINATING OFFICE WITH THE OFFICE INDEX (SEE NOTE 2)

NOTE 1
A RCDR GRP MAY CONSIST OF ONE RECORDER OR MORE THAN ONE RECORDER HAVING ITS OWN IDENTIFICATION W/IN THE RCDR GRP. THE FIRST COI TABLE MUST BE NUMBERED 00 FOR FIRST RCDR GRP, 01 FOR SECOND, ETC. FOR EACH COI TABLE EQUATE RC--TO RCDR GRP NUMBER. ONE COI TABLE REQUIRED FOR EACH RCDR GRP IN OFFICE

FC-02 (CHC-02)
CENTRAL OFFICE INDEX (COI) TABLE

RC ___ ACCTS RCDR GRP ___									
ASSIGNED TO RCDR EQT									
ROW	RE	NNX OR XXX	W	NPA	ROW	RE	NNX OR XXX	W	NPA
1	00.	---	---	---	16	15.	---	---	---
2	01.	---	---	---	17	16.	---	---	---
3	02.	---	---	---	18	17.	---	---	---
4	03.	---	---	---	19	18.	---	---	---
5	04.	---	---	---	20	19.	---	---	---
6	05.	---	---	---	21	20.	---	---	---
7	06.	---	---	---	22	21.	---	---	---
8	07.	---	---	---	23	22.	---	---	---
9	08.	---	---	---	24	23.	---	---	---
10	09.	---	---	---	25	24.	---	---	---
11	10.	---	---	---	26	25.	---	---	---
12	11.	---	---	---	27	26.	---	---	---
13	12.	---	---	---	28	27.	---	---	---
14	13.	---	---	---	29	28.	---	---	---
15	14.	---	---	---	30	29.	---	---	---

THIS TABLE ASSOCIATES EACH ORIGINATING OFFICE IN A RECORDER GROUP WITH ITS 2-DIGIT OFFICE INDEX, WITH ITS AREA CODE, AND WHETHER OR NOT IT IS WATS.

NOTE 2
LEAVE UNASSIGNED NNX-NXX'S BLANK

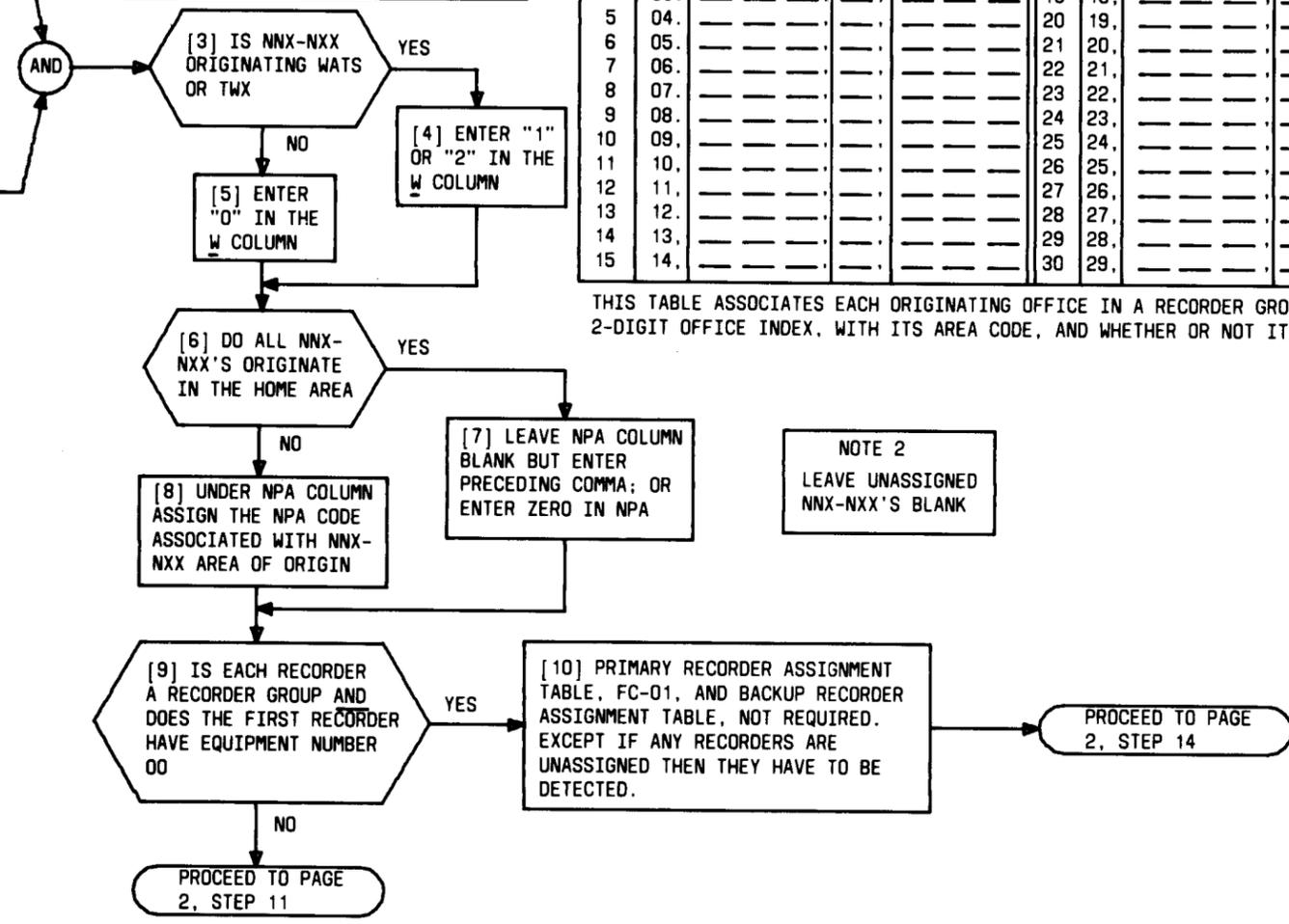


Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 1 of 9) (4.06)

FC-01 (CHG-01)
PRIMARY RECORDER & BACKUP ASSIGNMENT TABLE

ROW	RN	RC	ROW	RN	RC
1	0 0	---	11	1 0	---
2	0 1	---	12	1 1	---
3	0 2	---	13	1 2	---
4	0 3	---	14	1 3	---
5	0 4	---	15	1 4	---
6	0 5	---	16	1 5	---
7	0 6	---	17	1 6	---
8	0 7	---	18	1 7	---
9	0 8	---	18	1 8	---
10	0 9	---	20	1 9	---

THIS TABLE ASSOCIATES EACH RECORDER BY EQUIPMENT NUMBER, WITH ITS SCANNER ASSIGNMENT, (BACK-UP SYSTEM HAS ONLY ONE SCANNER) WITH ITS COI TABLE, AND WITH ITS ONE HUNDRED TRUNKS

NOTE 3
SCANNER 0 - EMERG AND FIRST 7 RCDRS AND ASSOCIATED TRUNKS
SCANNER 1 - NEXT 8 RCDRS AND ASSOCIATED TRUNKS
SCANNER 2 - LAST 5 RCDRS AND ASSOCIATED TRUNKS
THE EMERGENCY RECORDER IS NOT INDICATED IN TABLE BUT WILL BE ASSIGNED TO SCANNER - 0 POSITION - 0 DURING INSTALLATION

NOTE 4
RC--= NUMBER ASSIGNED ON THE COI TABLE, FC-02

[11] UNDER RN COLUMN, FC-01, LIST THE ASSOCIATED PHYSICAL RECORDER EQUIPMENT NUMBER (00-19) (SEE NOTE 3)

[12] UNDER RC COLUMN, FC-01, LIST THE RC NUMBER TO IDENTIFY THE RECORDER GROUP THAT THE RECORDER NUMBER IS ASSIGNED TO (SEE NOTE 4)

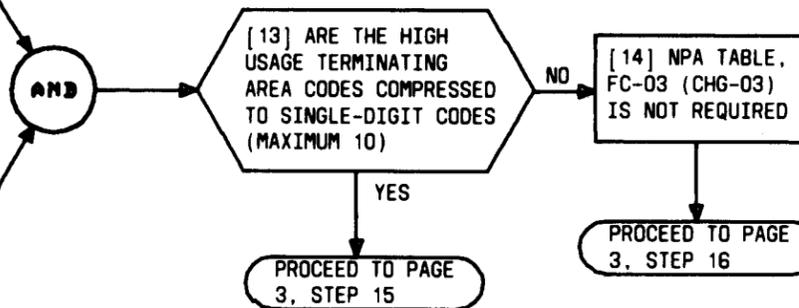
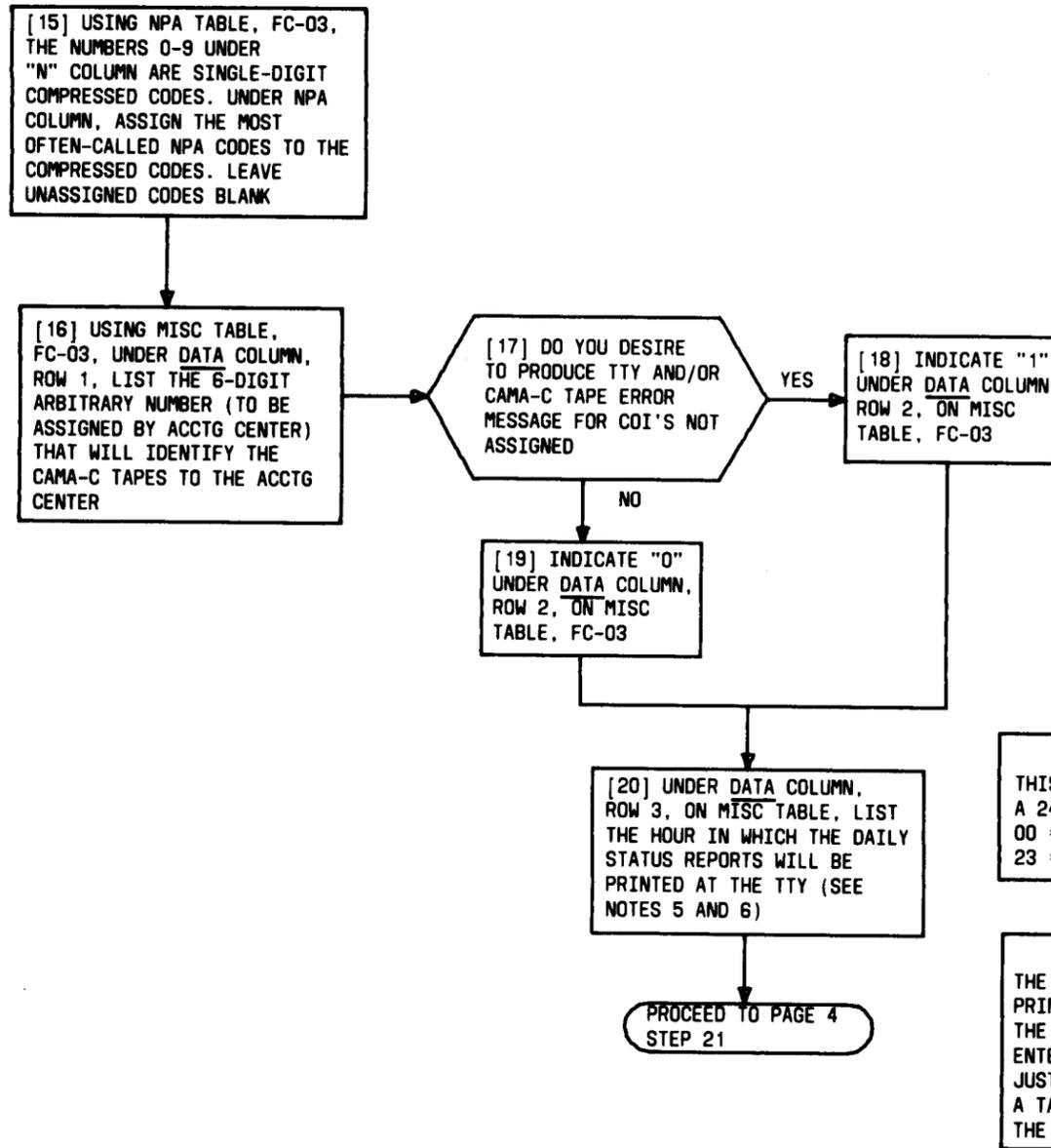


Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 2 of 9) (4.06)



FC-03 (CHG-03)
NUMBERING PLAN AREA (NPA) TABLE

ROW	N	NPA
1	0,	_____
2	1,	_____
3	2,	_____
4	3,	_____
5	4,	_____
6	5,	_____
7	6,	_____
8	7,	_____
9	8,	_____
10	9,	_____

THIS TABLE ASSIGNS THE TEN HIGH USAGE TERMINATING AREA CODES TO TEN SINGLE DIGIT COMPRESSED CODES

FC-03 (CHG-09)
MISCELLANEOUS TABLE

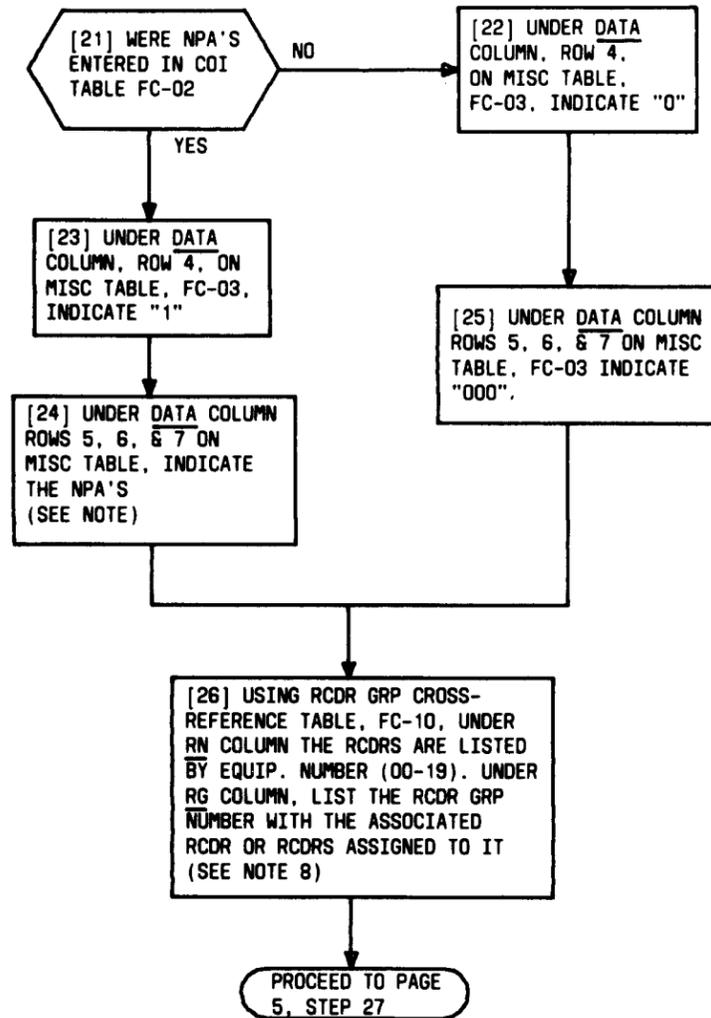
ROW	SYMBOL	DATA
1	NNNN, MM,	_____
2	E,	_____
3	HH,	_____
4	R,	_____
5	AAA,	_____
6	BBB,	_____
7	CCC	_____

THIS TABLE IS A COLLECTION OF ITEMS SERVING VARIOUS FUNCTIONS WHICH ARE ENTERED INTO THE COMPUTER IN ONE "STRING"

NOTE 5
THIS TIME IS BASED ON A 24-HOUR CLOCK WITH:
00 = 12M (MIDNIGHT)
23 = 11 PM

NOTE 6
THE DAILY STATUS REPORTS PRINTOUT WILL BEGIN ON THE HOUR ENTERED ON THE TABLE OR JUST AFTER THE TAPE DUMP IF A TAPE DUMP WILL OCCUR ON THE HOUR

Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 3 of 9) (4.06)



NOTE 7
 THESE NPA'S ARE ASSOCIATED WITH AREA OF ORIGIN (MAXIMUM 3). IF LESS THAN 3 NPA'S ARE SERVED, ENTER "000" IN UNUSED ROWS

NOTE 8
 THIS IS THE ACCTG CENTER'S RECORDER GROUP ASSIGNMENT NUMBER (00-99) AND MAY HAVE ONE OR MORE RECORDERS (RN'S) ASSIGNED TO IT

FC-10 (CHG-08)
 RECORDER GROUP CROSS-REFERENCE TABLE

ROW	RN	RO	LR	ROW	RN	RO	LR
1	0 0	---	---	11	1 0	---	---
2	0 1	---	---	12	1 1	---	---
3	0 2	---	---	13	1 2	---	---
4	0 3	---	---	14	1 3	---	---
5	0 4	---	---	15	1 4	---	---
6	0 5	---	---	16	1 5	---	---
7	0 6	---	---	17	1 6	---	---
8	0 7	---	---	18	1 7	---	---
9	0 8	---	---	19	1 8	---	---
10	0 9	---	---	20	1 9	---	---

THIS TABLE ASSOCIATES EACH RECORDER GROUP WITH THE RECORDER NUMBER(S) WITHIN THE GROUP

Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 4 of 9) (4.06)

[27] UNDER LR COLUMN OF FC-10, LIST LOGICAL RECORDER ASSIGNMENT NUMBER OF THE RCDR ASSIGNED TO THE RCDR GRP (SEE NOTE 9)

NOTE 9
LR IS A NUMBER ASSIGNED BY THE ACCTG CENTER TO A RECORDER WITHIN A RECORDER GROUP. THESE DATA ARE USED BY THE COMPUTER TO PRODUCE RECORDER GROUP AND RECORDER NUMBER RELATIONSHIPS FOR CALLS ON CAMA-C TAPE TO ACCTG CENTER

PROCEED TO STEP 28

[28] USING THE TRUNK GROUP CROSS-REFERENCE TABLE, FC-11, ENTER NEW # UNDER THE COMMAND COLUMN AND LIST THE NAME OF THE TRUNK GROUP UNDER GGG COLUMN (SEE NOTE 10)

FC-11 (TGX)
TRUNK GROUP CROSS-REFERENCE TABLE

ROW	COMMAND	GGG	NNX-NXX
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

[29] UNDER NNX-NXX COLUMNS, FC-11, LIST THE NNX-NXX'S ASSOCIATED WITH THE (GGG) TRUNK GROUP NAME (SEE NOTES 11 AND 12)

AND

[30] DOES GROUP HAVE LESS THAN 10 OFFICE CODES

YES

[31] LEAVE UNUSED SPACES IN ROW BLANK

NO

[32] USE AS MANY ROWS AS NEEDED AND REPEAT -OLD* AND THE GROUP NAME OR NUMBER FOR EACH ROW

[33] REPEAT STEPS 30-34 FOR EACH ASSIGNED TRUNK GROUP (SEE NOTE 13)

PROCEED TO PAGE 6, STEP 34

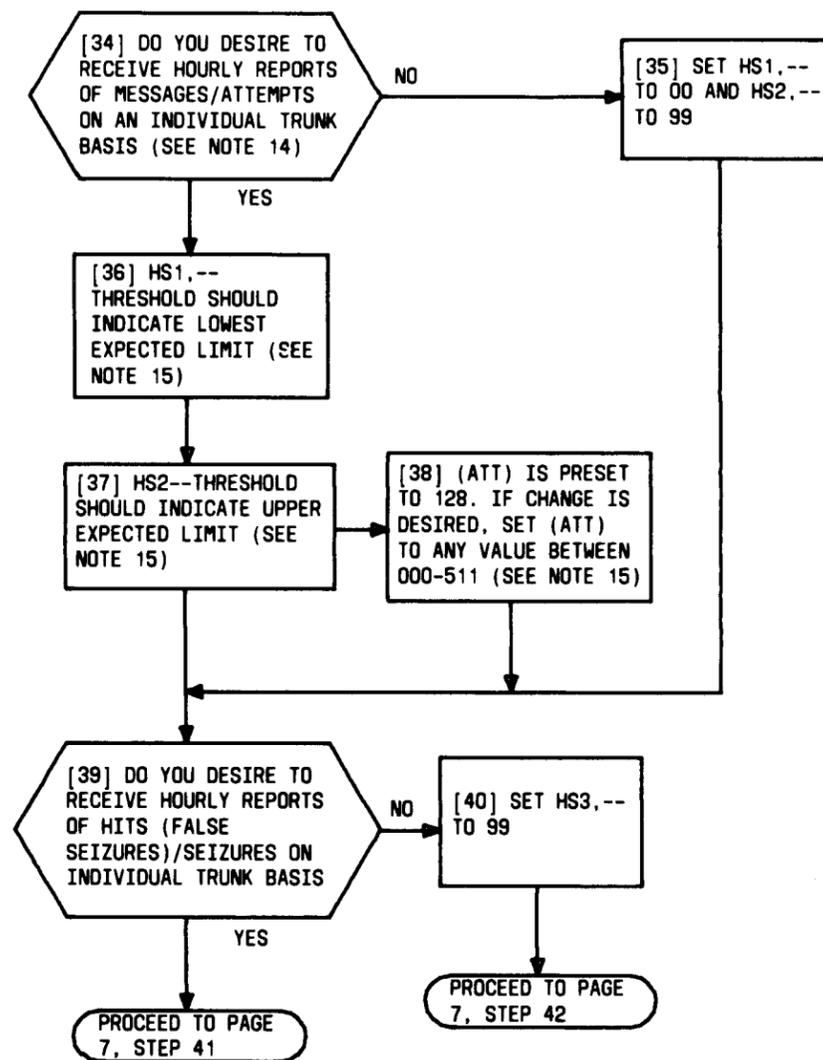
NOTE 10
(GGG) TRUNK GROUP NAME IS IN REFERENCE TO A TRUNK GROUP FROM A SPECIFIC OFFICE BUILDING LOCATION OR UNIT DESIGNATION, AS IT IS REFERRED TO BY THE OPERATING COMPANY FOR IDENTIFICATION. IT MAY CONTAIN MORE THAN ONE NNX-NXX. TRUNK GROUP NAME MAY BE NUMERALS AND/OR LETTERS. MAXIMUM OF 128 NAMES MAY BE USED

NOTE 11
THE NNX-NXX'S ARE THE ORIGINATING OFFICE CODES. THIS TABLE ASSOCIATES ALL OF THE OFFICE CODES IN THE SAME TRUNK GROUP WITH THE GROUP NAME OR NUMBER. THESE DATA ARE USED BY THE COMPUTER FOR STATUS REPORTS

NOTE 12
NNX-NXX'S ARE RESTRICTED TO 3-DIGIT NUMERALS BETWEEN 200 AND 999. CODES 000-199 WILL NOT BE INCLUDED ON MAINTENANCE REPORTS

NOTE 13
REPRODUCE THIS FORM TO RECORD MORE THAN 10 GGG'S OR 100 NNX-NXX'S

Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 5 of 9) (4.06)



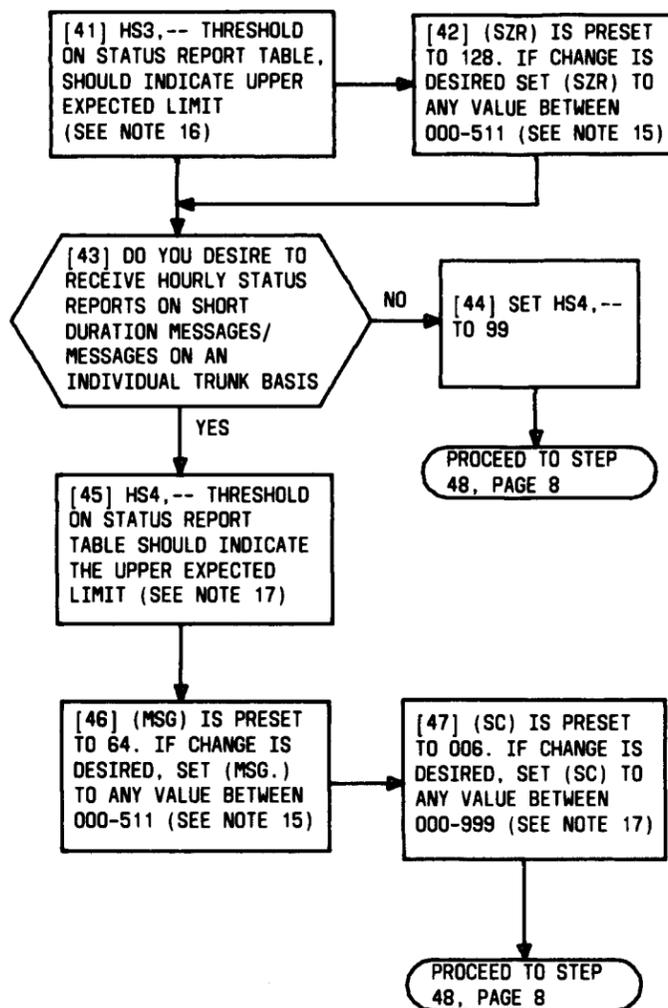
NOTE 14
THIS TABLE WILL PROVIDE INFORMATION CONDITIONS WHICH ARE REPORTED EITHER HOURLY OR DAILY. THRESHOLDS, (LIMITS) CAN BE SET SO THAT IF EXCEEDED WILL PROVIDE HOURLY OR DAILY TTY MESSAGES

PART OF STATUS REPORT TABLE
(SEE BELL SYSTEM PRACTICES SECTION 201-902-304)

LOWEST EXPECTED % LIMIT	UPPER EXPECTED % LIMIT	SUPL. DATA REQUIRED BY CAMA-C	CONDITION REPORTED	PROCESSING BASED ON	REMARKS
HS1,--	HS2,--	NONE	MESSAGES (---) ATTEMPTS = %	INDIVIDUAL TRUNKS	COMPLETED CALLS TOO LOW OR TOO HIGH TO BE REALISTIC (HS1 OR HS2 HOURLY STATUS REPORT)
NA	HS3,--	NONE	HITS (---) SEIZURES = %	INDIVIDUAL TRUNKS	HIT = IDLE TO SEIZE TO IDLE (TRUNK SUPERVISION TROUBLE) (HS3 HOURLY STATUS REPORT)

NOTE 15
THRESHOLDS FOR STATUS REPORT TABLE ARE PRESET IN THE PROGRAM. THESE THRESHOLDS CAN BE CHANGED IF DESIRED. ALL ITEMS IN () BRACKETS EXCEPT (SC) INDICATE TO THE COMPUTER THE MINIMUM NUMBER OF RECORDS REQUIRED IN ORDER TO MAKE A CALCULATION

Fig. 9 — Examples of Type of Information Required to Complete CAMA-C Form Codes
(Sheet 6 of 9) (4.06)



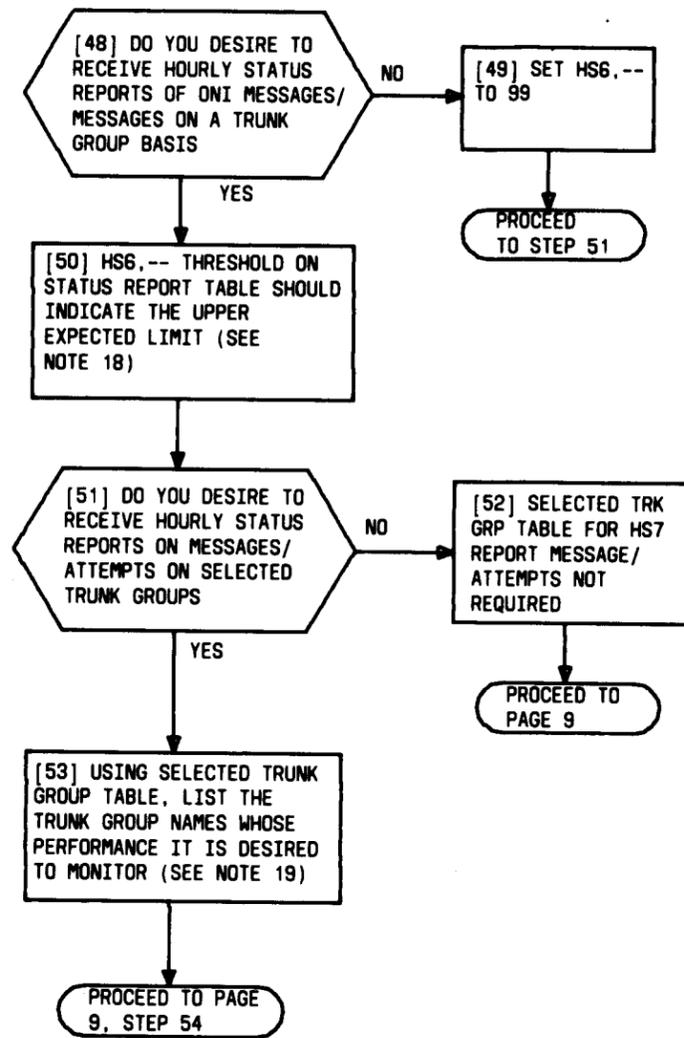
NOTE 16
 LOWEST EXPECTED LIMIT AND SUPPL DATA TO BE NA (NOT APPLICABLE) BECAUSE THIS IS A CONDITION WHICH DOES NOT HAVE A THRESHOLD OR WHICH HAS ONLY ONE SETTABLE LIMIT

PART OF STATUS REPORT TABLE
 (SEE BELL SYSTEM 201-902-304)

LOWEST EXPECTED % LIMIT	UPPER EXPECTED % LIMIT	SUPPL. DATA REQUIRED BY CAMA-C	CONDITION REPORTED	PROCESSING BASED ON	REMARKS
HS1,--	HS2,--	NONE	MESSAGES (---) ATTEMPTS = %	INDIVIDUAL TRUNKS	COMPLETED CALLS TOO LOW OR TOO HIGH TO BE REALISTIC (HS1 OR HS2 HOURLY STATUS REPORT)
NA	HS3,--	NONE	HITS (---) SEIZURES = %	INDIVIDUAL TRUNKS	HIT = IDLE TO SEIZE TO IDLE (TRUNK SUPERVISION TROUBLE) (HS3 HOURLY STATUS REPORT)
NA	HS4,--	---	MESSAGES OF LESS THAN (SC) SECONDS DURATION (---) MESSAGES = %	INDIVIDUAL TRUNKS	TRUNKS WITH SUPERVISION M11, TRANSMISSION TROUBLES OR TIME RELEASE PROBLEMS. (HS4 HOURLY STATUS REPORT)

NOTE 17
 (SC) IS PRESET TO 006 BY THE GENERIC PROGRAM. (SC) IS USED TO SPECIFY THE MAXIMUM DURATION OF A SC (SHORT CALL). LOWEST EXPECTED LIMIT WILL BE NA (NOT APPLICABLE)

Fig. 6—Examples of Type of Information Required to Complete CAMA-C Form Codes (Sheet 7 of 9) (4.06)



PART OF STATUS REPORT TABLE (SEE BSP 201-902-304)

NA	HS6, ---	NA	$\frac{\text{ONI MESSAGES}}{\text{() MESSAGES}} = \%$	TRUNK GROUP	ANI EQUIPMENT FAILURES (HS6 HOURLY STATUS REPORT)
NA	NA	NA	$\frac{\text{MESSAGES}}{\text{ATTEMPTS}} = \%$	SELECTED TRUNK GROUP	(SLT) = TRUNK GROUPS LISTED ON INACTED TRUNK GROUP TABLE, FIGURE 7 (HS7) HOURLY STATUS REPORT)

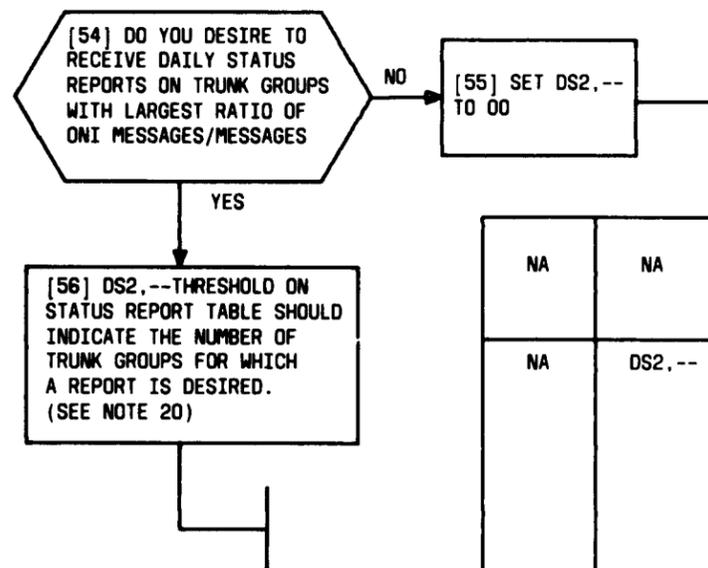
NOTE 18
 (---) FOR HS6 AND DS2 REPORT REFERS TO NUMBER OF MESSAGES PER TRK GRP. THESE VALUES ARE THE NUMBER OF ATTEMPTS TIMES THE NUMBER OF TRUNKS IN THE TRUNK GROUP

SELECTED TRUNK GROUPS FOR HS7 REPORT (MESSAGE/ATTEMPTS) (SEE BSP 201-902-304)

ROW	CODE	GGG
1	SLT*	-----
2	SLT*	-----
3	SLT*	-----
4	SLT*	-----
5	SLT*	-----

NOTE 19
 A MAXIMUM OF 50 GGG'S MAY BE USED. THIS REPORT WILL BE IDENTIFIED ON HOURLY STATUS REPORT AS HS7

Fig. 6—Example of Type of Information Required to Complete CAMA-C Form Codes (Sheet 8 of 9) (4.06)



PART OF STATUS REPORT TABLE
(SEE BELL SYSTEM PRACTICES SECTION 201-902-304)

NA	NA	NA	TRUNKS WITH NO SEIZURES	INDIVIDUAL TRUNKS	TRUNKS ARE MADE BUSY, OUT OF SERVICE, OR ARE NOT BEING SELECTED (DS1 DAILY STATUS REPORT)
NA	DS2.--	NA	REPORT IDENTIFIES THOSE TRUNK GROUPS HAVING HIGHEST % OF ONI MESSAGES. USE THE FOLLOWING CALCULATION. $\frac{\text{ONI MESSAGES}}{\text{() MESSAGES}} = \%$ EXAMPLE: IF DS2.-- IS SET TO 10 THE 10 TRUNK GROUPS HAVING HIGHEST % ONI MESSAGES WILL BE IDENTIFIED	TRUNK GROUPS	DS2.-- IS NOT A THRESHOLD. IT DEFINES THE NUMBER OF TRUNK GROUPS (MAXIMUM 50) FOR WHICH A DAILY STATUS REPORT IS REQUIRED.

NOTE 20
DS2.-- CANNOT BE GREATER THAN 50

Fig. 6—Example of Type of Information Required to Complete CAMA-C Form Codes (Sheet 9 of 9) (4.06)

CAMA-C OFFICE DATA TABLE WORK SHEET

OFFICE _____

ACTUAL OFC. REC. & REC. GRP. NO.			COI TABLE	PRIMARY RECORDER TABLE				RCDR. CROSS REFERENCE TABLE			
RECORDER GRP NO.	REC. NO. IN REC. GRP	REC. NO. IN OFC.		TRUNK	RC	RN		RG	LR		
			RC	0000							
				0100							
				0200							
				0300							
				0400							
				0500							
				0600							
				0700							
				0800							
				0900							
				1000							
				1100							
				1200							
				1300							
				1400							
				1500							
				1600							
				1700							
				1800							
				1900							

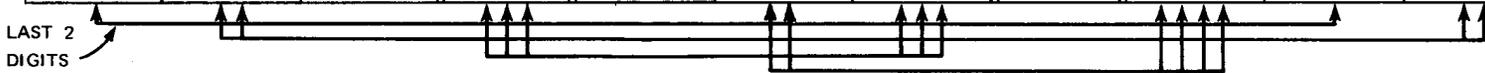


Fig. 7—CAMA-C Office Data Worksheet and Example of a Completed Worksheet (Sheet 1 of 2) (4.07)

CAMA-C OFFICE DATA TABLE WORK SHEET

OFFICE *ANTN US 01 017*

ACTUAL OFC. REC. & REC. GRP. NO.			COI TABLE RC	PRIMARY RECORDER TABLE			RCDR. CROSS REFERENCE TABLE		
RECORDER GRP NO.	REC. NO. IN REC. GRP	REC. NO. IN OFC.		TRUNK	RC	RN	RG	LR	
841	00	00	00	0000	00	00	41	00	
841	01	01	00	0100	00	01	41	01	
841	02	02	00	0200	00	02	41	02	
841	03	03	00	0300	00	03	41	03	
841	04	04	00	0400	00	04	41	04	
842	00	05	01	0500	01	05	42	00	
842	01	06	01	0600	01	06	42	01	
842	02	07	01	0700	01	07	42	02	
842	03	08	01	0800	01	08	42	03	
841	05	09	00	0900	00	09	41	05	
842	04	10	01	1000	01	10	42	04	
842	05	11	01	1100	01	11	42	05	
841	06	12	00	1200	00	12	41	06	
				1300					
				1400					
				1500					
				1600					
				1700					
				1800					
				1900					



Fig. 7—CAMA-C Office Data Worksheet and Examples of a Completed Worksheet (Sheet 2 of 2) (4.07)

OFFICE _____ CAMA-C FC-01
 ISSUE _____ (CHG-01)

**RECORDER TABLE
 (PRIMARY) (BACKUP)**

UPDATE CODE	ROW	RN	RC	ORDER NO.	DUE DATE	REMARKS
	0	1	00 ,			
0	2	01 ,				
0	3	02 ,				
0	4	03 ,				
0	5	04 ,				
0	6	05 ,				
0	7	06 ,				
0	8	07 ,				
0	9	08 ,				
1	0	09 ,				
1	1	10 ,				
1	2	11 ,				
1	3	12 ,				
1	4	13 ,				
1	5	14 ,				
1	6	15 ,				
1	7	16 ,				
1	8	17 ,				
1	9	18 ,				
2	0	19 ,				

NOTE:
 THIS FORM IS NOT REQUIRED IF EACH PHYSICAL RECORDER IN AN OFFICE IS A SEPARATE RECORDER GROUP AND THE FIRST RECORDER IS NUMBERED 00.

Fig. 8—Recorder Table (2.26, 4.04, 4.08, 4.10)

OFFICE _____

ISSUE _____

ACCOUNTING RECORDER GROUP _____ .

UPDATE CODE

CENTRAL OFFICE INDEX TABLE

RC

ROW	RE	NNX OR NXX	W	NPA	ORDER NUMBER	DUE DATE	REMARKS
0 1 0 0							
0 2 0 1							
0 3 0 2							
0 4 0 3							
0 5 0 4							
0 6 0 5							
0 7 0 6							
0 8 0 7							
0 9 0 8							
1 0 0 9							
1 1 1 0							
1 2 1 1							
1 3 1 2							
1 4 1 3							
1 5 1 4							
1 6 1 5							
1 7 1 6							
1 8 1 7							
1 9 1 8							
2 0 1 9							
2 1 2 0							
2 2 2 1							
2 3 2 2							
2 4 2 3							
2 5 2 4							
2 6 2 5							
2 7 2 6							
2 8 2 7							
2 9 2 8							
3 0 2 9							

PAGE _____ OF _____

Fig. 9—Central Office Index Table (2.27, 4.04, 4.10)

OFFICE _____

CAMA-C FC-03

ISSUE _____

NPA TABLE

(CHG 03)

(COMPRESSED AREA CODES)

UPDATE CODE	ROW	N		NPA	ORDER NUMBER _____ DUE DATE _____ REMARKS _____ _____ _____
	0 1	0	,		
	0 2	1	,		
	0 3	2	,		
	0 4	3	,		
	0 5	4	,		
	0 6	5	,		
	0 7	6	,		
	0 8	7	,		
	0 9	8	,		
	1 0	9	,		

MISC. TABLE

(CHG 09)

UPDATE CODE	ROW	SYMBOL						DATA						OFFICE I.D. ERROR MSG. HOUR RECORD ORIG. NPA? NPA1 (A0) NPA2 (A1) NPA3 (A2)	
	1	N	N	N	N	,	M	M	,						
	2	E	,												
	3	H	H							,					
	4	R	,												
	5	A	A							A	,				
	6	B	B							B	,				
	7	C	C							C	,				

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

Fig. 10—NPA Table (2.27, 2.28, 2.34, 4.04, 4.07, 4.11)

OFFICE _____

ISSUE _____

CAMA-C FC-04
(CHG-04)

UPDATE CODE	SECURITY PORT ASSIGNMENT									
	ROW		SYMBOL			PRIMARY DATA			(NOTE 1) BACK UP DATA	
	0	1	N	S			/	1	/	
	0	2	N	R				1	9	
	0	3	S	P		0		0	9	
	0	4	R	M	/		/	1	/	/

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

CHG (04) IS ENTERED ONLY ONCE FOR EACH MACHINE

NS = NUMBER OF SCANNERS (1-3)

NR = HIGHEST REGULAR RECORDER NUMBER (00-19)

SP = MACHINE PORT TO WHICH SECURITY PORT IS ASSIGNED (00 TO 07)

RM = ENABLE REMOTE TTYS (0, 1) 0 - NO 1 = YES

NOTE 1

FOR THE BACKUP MACHINE THE SP AND RM PARAMETERS
MUST BE ENTERED BUT ARE NOT CHECKED OR USED

Fig. 11—Security Port Assignment (2.15, 2.29, 4.04, 4.05, 4.12)

OFFICE _____
 ISSUE _____

CAMA-C FC-05
 (CHG. 05)

CAMA-C TAPE DUMP SCHEDULE

UPDATE CODE	ROW		TIME OF DAY TAPES DUMP REQUIRED	MACHINE DUMP TIMES (XX) (NOTE)			ORDER NUMBER	DUE DATE	REMARKS
		0	0	2400 (MIDNIGHT)	0	0	?		
	0	1				?			
	0	2				?			
	0	3				?			
	0	4				?			
	0	5				?			
	0	6				?			
	0	7				?			
	0	8				?			
	0	9				?			
	1	0				?			
	1	1				?			
	1	2				?			
	1	3				?			
	1	4							

NOTE:

DEFAULT VALUES ARE 00, 09, 10, 11, 12, 13, 14, 15, 16,
 17, 18, 19, 20, 22, & 23.

Fig. 12—CAMA-C Tape Dump Schedule (2.08, 2.30, 4.04, 4.13)

OFFICE _____
ISSUE _____

**UNBILLABLE CALL STATISTICS
RECORDED ON MAGNETIC TAPE**

UPDATE CODE	ROW		OPTION (NOTE 2)	RECORDED (NOTE 1)		ORDER NUMBER	DUE DATE	REMARKS
		0	0	X		?		
	0	1	Y		?			
	0	2	Z					

NOTES:

- 1: 0 - DISABLES (NOT RECORDED)
- 1 - ENABLES (RECORDED)
- 2: X = SEIZE RELEASE WITH INITIAL ENTRY.
- = SEIZE RELEASE WITHOUT INITIAL ENTRY.
- Z = CONNECT DISCONNECT WITHOUT INITIAL ENTRY.

Fig. 13—Unbillable Call Data Recorded on Magnetic Tape (2.10, 2.31, 4.04, 4.14)

OFFICE _____

CAMA-C FC-10
(CHG-08)

ISSUE _____

UPDATE CODE

RECORDER GROUP CROSS-REFERENCE TABLE

UPDATE CODE	ROW		RN		RG		LR		ORDER NUMBER	DUE DATE	REMARKS
0	1			?			?				
0	2			?			?				
0	3			?			?				
0	4			?			?				
0	5			?			?				
0	6			?			?				
0	7			?			?				
0	8			?			?				
0	9			?			?				
1	0			?			?				
1	1			?			?				
1	2			?			?				
1	3			?			?				
1	4			?			?				
1	5			?			?				
1	6			?			?				
1	7			?			?				
1	8			?			?				
1	9			?			?				
2	0			?			?				

Fig. 14—Recorder Group Cross-Reference Table (2.33, 4.04, 4.15)

OFFICE _____																						AMA-C FC-11 (TGX)
ISSUE _____																						
TRUNK GROUP CROSS-REFERENCE TABLE																						
UPDATE CODE	ROW	COMMAND	GCG	NNX CODES (200 - 999)																		
	0 1	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 2	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 3	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 4	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 5	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 6	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 7	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 8	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
0 9	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 0	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 1	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 2	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 3	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 4	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 5	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 6	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 7	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 8	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
1 9	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	
2 0	*	;	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	,	

ORDER NUMBER _____ DUE DATE _____

NOTE:
THE LAST NNX IN EACH ROW SHALL NOT BE FOLLOWED BY A COMMA FOR RECENT CHANGE.

PAGE _____ OF _____

Fig. 15—Trunk Group Cross-Reference Table (4.04, 4.16)

CAMA-C COMMON LANGUAGE CONVERSION FORM

	TRUNK GROUP CODE						TRUNK GROUP CODE				
	GGG	TOWN	ST	BLDG	TRF UNIT		GGG	TOWN	ST	BLDG	TRF UNIT
01						41					
02						42					
03						43					
04						44					
05						45					
06						46					
07						47					
08						48					
09						49					
10						50					
11						51					
12						52					
13						53					
14						54					
15						55					
16						56					
17						57					
18						58					
19						59					
20						60					
21						61					
22						62					
23						63					
24						64					
25						65					
26						66					
27						67					
28						68					
29						69					
30						70					
31						71					
32						72					
33						73					
34						74					
35						75					
36						76					
37						77					
38						78					
39						79					
40						80					

PAGE OF

Fig. 17—CAMA-C Common Language Conversion Form (4.16)

OFFICE _____
 ISSUE _____

FC-12
 (CHG-14)
 GENERIC 2 ONLY

CAMA/TSP TRUNK ASSIGNMENT

0 = CAMA, 1 = TSP

UPDATE CODE	ROW		FROM TRK NO.				TO TRK NO.				CAMA TSP	ORDER NO.	DUE DATE	REMARKS
	0	0				?				?				
0	1				?				?					
0	2				?				?					
0	3				?				?					
0	4				?				?					
0	5				?				?					
0	6				?				?					
0	7				?				?					
0	8				?				?					
0	9				?				?					
1	0				?				?					
1	1				?				?					
1	2				?				?					
1	3				?				?					
1	4				?				?					
1	5				?				?					
1	6				?				?					
1	7				?				?					
1	8				?				?					
1	9				?				?					
2	0				?				?					
2	1				?				?					
2	2				?				?					

CHG-14 BASE PARAMETERS ARE:
 0 = ALL CAMA, 1 = ALL TSP, 2 = MIXED CAMA/TSP
 3 = PRINT DISTRIBUTION

DEFAULT VALUE = 0 = ALL CAMA

PAGE ____ OF ____

Fig. 18—CAMA-C TSP Trunk Assignment (2.40, 4.04, 4.18)

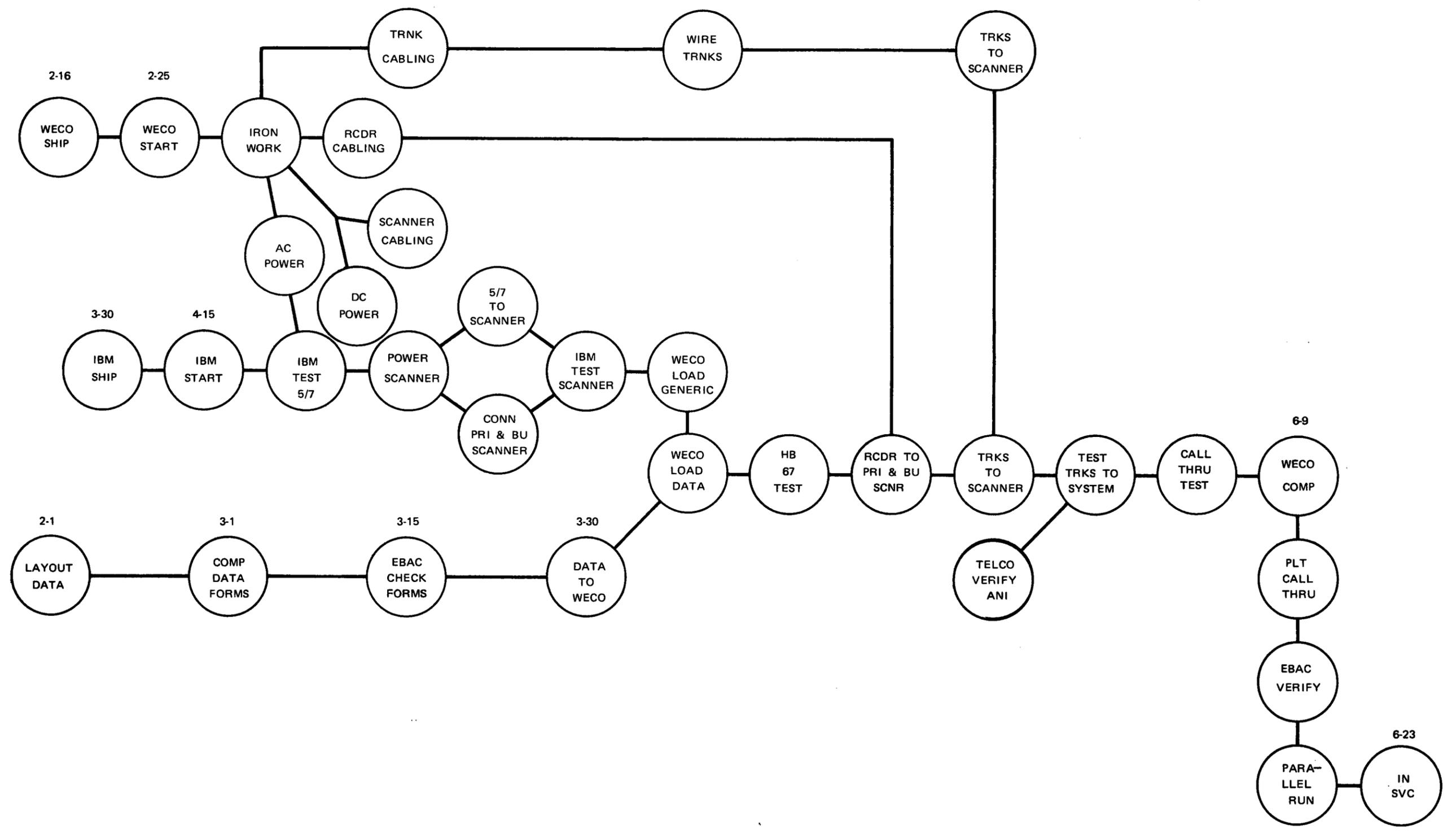


Fig. 19—Event Sequence of CAMA-C Work (Portland, Oregon, CAMA-C Installation) (5.01)

RECENT CHANGE ORDER TRANSMITTAL

ORDER NO. _____ OFFICE _____

DUE DATE _____ COORDINATE WITH ORDER NO. _____

REPLACES ORDER NO. _____

DESCRIPTION OF WORK _____

FORMS ATTACHED:

01 _____ 04 _____ 07 _____ 10 _____ 12 _____

02 _____ 05 _____ 08 _____ 11 _____ 13 _____

03 _____ 06 _____ 09 _____ 11A _____

OTHERS _____

TOTAL NUMBER OF FORMS _____

NOTES: _____

NETWORK OPERATIONS			
CAMA-C RECENT CHANGE		BY	DATE
REQUESTED BY	MTCE.		
	OPRNS.		
OFFICE RECORDS UPDATED			

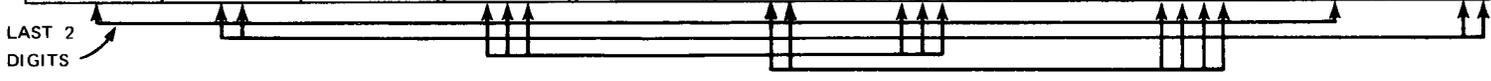
NETWORK MAINTENANCE		
RECENT CHANGE ORDER	BY	DATE
TELETYPE CODING		
INPUT TAPE CUT		
LOADED AND TESTED		
ACTIVATED		

Fig. 20—Recent Change Order Transmittal (6.02, 6.03)

CAMA-C OFFICE DATA TABLE WORK SHEET

OFFICE _____

ACTUAL OFC. REC. & REC. GRP. NO.			COI TABLE RC	PRIMARY RECORDER TABLE			RCDR. CROSS REFERENCE TABLE			
RECORDER GRP NO.	REC. NO. IN REC. GRP	REC. NO. IN OFC.			TRUNK		RC	RN	RG	
					0000					
					0100					
					0200					
					0300					
					0400					
					0500					
					0600					
					0700					
					0800					
					0900					
					1000					
					1100					
					1200					
					1300					
					1400					
					1500					
					1600					
					1700					
					1800					
					1900					



OFFICE _____

CAMA-C FC-01

ISSUE _____

(CHG-01)

UPDATE CODE

**RECORDER TABLE
(PRIMARY) (BACKUP)**

UPDATE CODE		ROW	RN	RC	ORDER NO.	DUE DATE	REMARKS
0	1	00	,				
0	2	01	,				
0	3	02	,				
0	4	03	,				
0	5	04	,				
0	6	05	,				
0	7	06	,				
0	8	07	,				
0	9	08	,				
1	0	09	,				
1	1	10	,				
1	2	11	,				
1	3	12	,				
1	4	13	,				
1	5	14	,				
1	6	15	,				
1	7	16	,				
1	8	17	,				
1	9	18	,				
2	0	19	,				

NOTE:

THIS FORM IS NOT REQUIRED IF EACH PHYSICAL RECORDER IN AN OFFICE IS A SEPARATE RECORDER GROUP AND THE FIRST RECORDER IS NUMBERED 00.

OFFICE _____

CAMA-C FC-02
(CHG-02)

ISSUE _____

ACCOUNTING RECORDER GROUP _____ .

UPDATE CODE

CENTRAL OFFICE INDEX TABLE

RC																			
ROW	RE			NNX OR NXX		W		NPA		ORDER NUMBER	DUE DATE	REMARKS							
0	1	0	0	,		,													
0	2	0	1	,		,													
0	3	0	2	,		,													
0	4	0	3	,		,													
0	5	0	4	,		,													
0	6	0	5	,		,													
0	7	0	6	,		,													
0	8	0	7	,		,													
0	9	0	8	,		,													
1	0	0	9	,		,													
1	1	1	0	,		,													
1	2	1	1	,		,													
1	3	1	2	,		,													
1	4	1	3	,		,													
1	5	1	4	,		,													
1	6	1	5	,		,													
1	7	1	6	,		,													
1	8	1	7	,		,													
1	9	1	8	,		,													
2	0	1	9	,		,													
2	1	2	0	,		,													
2	2	2	1	,		,													
2	3	2	2	,		,													
2	4	2	3	,		,													
2	5	2	4	,		,													
2	6	2	5	,		,													
2	7	2	6	,		,													
2	8	2	7	,		,													
2	9	2	8	,		,													
3	0	2	9	,		,													

OFFICE _____

CAMA-C FC-03

ISSUE _____

NPA TABLE

(CHG 03)

(COMPRESSED AREA CODES)

UPDATE CODE	ROW	N		NPA	
	0 1	0	,		
	0 2	1	,		
	0 3	2	,		
	0 4	3	,		
	0 5	4	,		
	0 6	5	,		
	0 7	6	,		
	0 8	7	,		
	0 9	8	,		
	1 0	9	,		

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

MISC. TABLE

(CHG 09)

UPDATE CODE	ROW	SYMBOL							DATA															
	1	N	N	N	N	,	M	M	,									OFFICE I.D.						
	2	E	,								,							ERROR MSG.						
	3	H	H								,												HOUR	
	4	R	,																					RECORD ORIG. NPA?
	5	A	A								A	,												NPA1 (A0)
	6	B	B								B	,												NPA2 (A1)
	7	C	C								C	,												NPA3 (A2)

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

OFFICE _____

ISSUE _____

CAMA-C FC-04
(CHG-04)

UPDATE CODE	SECURITY PORT ASSIGNMENT										
	ROW		SYMBOL			PRIMARY DATA			(NOTE 1) BACK UP DATA		
	0	1	N	S					1		
	0	2	N	R					1	9	
	0	3	S	P		0			0	9	
	0	4	R	M					1		

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

CHG (04) IS ENTERED ONLY ONCE FOR EACH MACHINE

NS = NUMBER OF SCANNERS (1-3)

NR = HIGHEST REGULAR RECORDER NUMBER (00-19)

SP = MACHINE PORT TO WHICH SECURITY PORT IS ASSIGNED (00 TO 07)

RM = ENABLE REMOTE TTYS (0, 1) 0 - NO 1 = YES

NOTE 1

FOR THE BACKUP MACHINE THE SP AND RM PARAMETERS
MUST BE ENTERED BUT ARE NOT CHECKED OR USED

OFFICE _____
 ISSUE _____

CAMA-C FC-05
 (CHG. 05)

CAMA-C TAPE DUMP SCHEDULE

UPDATE CODE	ROW		TIME OF DAY TAPES DUMP REQUIRED	MACHINE DUMP TIMES (XX) (NOTE)			ORDER NUMBER	DUE DATE	REMARKS
		0	0	2400 (MIDNIGHT)	0	0	?		
	0	1				?			
	0	2				?			
	0	3				?			
	0	4				?			
	0	5				?			
	0	6				?			
	0	7				?			
	0	8				?			
	0	9				?			
	1	0				?			
	1	1				?			
	1	2				?			
	1	3				?			
	1	4							

NOTE :

DEFAULT VALUES ARE 00, 09, 10, 11, 12, 13, 14, 15, 16,
 17, 18, 19, 20, 22, & 23.

OFFICE _____
 ISSUE _____

**REMOTE TERMINAL PASSWORD
 AND
 MESSAGE CLASS ASSIGNMENT**

UPDATE CODE	N	PASSWORD				MESSAGE CLASS								
	1	
2
3
4
5
6
7
8
9

ORDER NUMBER _____

DUE DATE _____

REMARKS _____

NOTE: Comma is not required after last message class entered.

OFFICE _____
ISSUE _____

FC-09
(CHG-06)

UPDATE CODE

UNBILLABLE CALL STATISTICS RECORDED ON MAGNETIC TAPE

UPDATE CODE	ROW		OPTION (NOTE 2)	RECORDED (NOTE 1)		ORDER NUMBER	DUE DATE	REMARKS
		0	0	X		1		
	0	1	Y		1			
	0	2	Z					

NOTES:

- 1: 0 - DISABLES (NOT RECORDED)
- 1 - ENABLES (RECORDED)
- 2: X = SEIZE RELEASE WITH INITIAL ENTRY.
= SEIZE RELEASE WITHOUT INITIAL ENTRY.
- Z = CONNECT DISCONNECT WITHOUT INITIAL ENTRY.

OFFICE _____

CAMA-C FC-10
(CHG-08)

ISSUE _____

UPDATE CODE

RECORDER GROUP CROSS-REFERENCE TABLE

UPDATE CODE	ROW	RN		RG		LR	ORDER NUMBER	DUE DATE	REMARKS
	0	1	?		?				
	0	2	?		?				
	0	3	?		?				
	0	4	?		?				
	0	5	?		?				
	0	6	?		?				
	0	7	?		?				
	0	8	?		?				
	0	9	?		?				
	1	0	?		?				
	1	1	?		?				
	1	2	?		?				
	1	3	?		?				
	1	4	?		?				
	1	5	?		?				
	1	6	?		?				
	1	7	?		?				
	1	8	?		?				
	1	9	?		?				
	2	0	?		?				

CAMA-C COMMON LANGUAGE CONVERSION FORM

	TRUNK GROUP CODE						TRUNK GROUP CODE				
	GGG	TOWN	ST	BLDG	TRF UNIT		GGG	TOWN	ST	BLDG	TRF UNIT
01						41					
02						42					
03						43					
04						44					
05						45					
06						46					
07						47					
08						48					
09						49					
10						50					
11						51					
12						52					
13						53					
14						54					
15						55					
16						56					
17						57					
18						58					
19						59					
20						60					
21						61					
22						62					
23						63					
24						64					
25						65					
26						66					
27						67					
28						68					
29						69					
30						70					
31						71					
32						72					
33						73					
34						74					
35						75					
36						76					
37						77					
38						78					
39						79					
40						80					

RECENT CHANGE ORDER TRANSMITTAL

ORDER NO. _____ OFFICE _____
 DUE DATE _____ COORDINATE WITH ORDER NO. _____
 REPLACES ORDER NO. _____

DESCRIPTION OF WORK _____

FORMS ATTACHED:

01 _____ 04 _____ 07 _____ 10 _____ 12 _____
 02 _____ 05 _____ 08 _____ 11 _____ 13 _____
 03 _____ 06 _____ 09 _____ 11A _____

OTHERS _____

TOTAL NUMBER OF FORMS _____

NOTES: _____

NETWORK OPERATIONS			
CAMA-C RECENT CHANGE		BY	DATE
REQUESTED BY	MTCE.		
	OPRNS.		
OFFICE RECORDS UPDATED			

NETWORK MAINTENANCE		
RECENT CHANGE ORDER	BY	DATE
TELETYPE CODING		
INPUT TAPE CUT		
LOADED AND TESTED		
ACTIVATED		

