

CIRCUIT MAINTENANCE SYSTEM 3A (CMS 3A)
SYSTEM ADMINISTRATION FUNCTIONS
SPECIAL SERVICE CENTER

	PAGE		PAGE
1. GENERAL	2	A. System File Space	9
2. SYSTEM INITIALIZATION	2	B. Users Logged On	9
SITE DEPENDENT DATA	2	C. Cancel User Log On	9
A. SSC Identification	2	4. MANAGEMENT AND COORDINATION	9
B. User Identification	3	A. Software Trouble Recognition and Coordination	9
C. Customer Location Districts	4	B. Generic Installation Coordination	10
D. RSN Distribution	4	C. Hardware Trouble Recognition and Sectionalization	10
E. OSN Distribution	4	D. Installation and Repair Coordination	10
F. Holiday Information	5	E. Operations Systems Trouble Reporting (OSTR)	10
G. Escalation and D-Time Information	5	5. OTHER ADMINISTRATIVE ACTIVITIES	10
H. TIRKS Request Parameters	5	A. Retrieval of Archived Records	10
I. Polling List	5	B. Local Forms Creation	11
J. Logical Printer Assignment	5	C. Hardware Configuration	11
3. SYSTEM ADMINISTRATION	6	D. Report Generation and Distribution	11
DATA BASE	6	E. Fallback and Recovery	11
A. Archiving	6	F. Training	12
B. File Purge	7	G. System News	12
C. Critical Date Manager	7	H. System Performance	13
D. Utility Programs	8		
SYSTEM STATUS	9		

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CONTENTS	PAGE
6. REFERENCES	13

1. GENERAL

1.01 This section describes the functions and duties of the system administrator (SA) in a Circuit Maintenance System 3A (CMS 3A) supported Special Service Center (SSC).

1.02 This section is reissued for the following reasons:

- (a) To identify new site dependent data
- (b) To identify additional activities which will aid in maintaining a viable CMS 3A data base
- (c) To better define the functions of the SA in an SSC supported by CMS 3A.

Revision arrows are used to denote significant changes and additions.

1.03 The CMS 3A is a minicomputer based Operations Support System (OSS) designed to support plant operations in the installation and maintenance of special service circuits. The CMS 3A supported SSC mechanizes the administration of the circuit order and circuit maintenance activities required by these specialized circuits.

1.04 The SA is a member of the SSC management team (1st level supervisor) with line responsibilities in addition to the overall responsibility for the successful operation of CMS 3A in supporting the SSC operations. The person performing the function of the SA must possess a thorough knowledge and understanding of the CMS 3A system which includes system software capabilities and features, computer and terminal equipment hardware, and dialup and private line data communications hardware and protocol. In addition, the SA must have a thorough knowledge of the SSC methods and procedures, work flows, and interfaces.

1.05 Some of the duties of the SA in supporting CMS 3A include the following:

- Initialization and maintenance of site dependent data
- Scheduling and performing data base activities (system administration)

- Management and coordination
- Other administrative activities.

2. SYSTEM INITIALIZATION

2.01 System initialization constitutes the providing of necessary site dependent information to CMS 3A. This data must exist in CMS 3A in accurate form in order to properly utilize the system. It is important that this site dependent information be provided and maintained accurately to assure a high level of performance which in turn improves service to the customer.

SITE DEPENDENT DATA

2.02 Site dependent information provides the necessary system parameters which allow CMS 3A to perform transactions requested by users. This site dependent data is entered into the system by the SA using CMS 3A commands. These SA commands are grouped together in the series from **000** through **099**. The SA should refer to Section 190-101-130 for a detailed explanation of these commands. Site dependent information which must be provided to the system includes the following:

- SSC identification
- User identification
- Customer location districts
- Report serial number (RSN) distribution
- Order serial number (OSN) distribution
- Holiday information
- Escalation and D-time information
- Trunks Integrated Records Keeping System (TIRKS) request parameters
- Polling list
- Logical printer assignments.

A. SSC Identification

2.03 The SSC identification information is entered into the system by utilizing the **019** command.

This command allows the SA to identify the SSC to CMS 3A. This information is also used by the system in the processing of SSC trouble reports and circuit orders.

2.04 The SA must provide the following information in order to identify the resident SSC to CMS 3A:

- Common language location identification (CLLI) code
- Data processing identification (DPI) code
- Administrative area (AREA) code
- Responsible reporting office (RRO) code
- Network control office (NCO) code.

Also to be provided is the following CMS 3A release information (system software product information):

- Generic issue number (GENERIC)
- Data base load tape number (LOAD)
- Date of data base load (DATE).

B. User Identification

2.05 Every user needing to interface with CMS 3A must first be identified in the system. Identifying a user to CMS 3A includes the following:

- User identification (ID)/password assignment
- Work function privileging
- Activation privileging
- Control area/work position (CA/WP) assignment
- Extended command privileging
- ♦Restricted command privileging♦
- Trouble type assignment.

2.06 Identifying a user to the system is accomplished by the SA via the **015** command. This

command is used to authorize a user in the system and to privilege the user to perform specific work functions in an SSC or to perform specific work functions involved with CMS 3A operation. The **015** command also provides the SA with the capability of deleting a user from the system or updating a user's command privileging.

User ID/Password Assignment

2.07 In order to be authorized in CMS 3A, a user must be assigned a unique user ID/password combination. Both the user ID and password may be chosen by the user or assigned by the SA. However, subsequent to initial input by the SA, users may change their own password via the **018** command. Note that passwords provide system security and, therefore, only the SA and the specific user should know the assigned password.

Work Function Privileging

2.08 Once a user has been authorized to use CMS 3A, the SA must designate the command privileging characteristics for the user. These characteristics may be determined from sets of commands applicable to predefined work classifications (eg, maintenance tester, installation analyzer, controller tester, etc). This is also known as work function privileging. (Commands which a user is privileged to perform for each work function classification may be found in Section 190-101-125.)

2.09 Work function privileging should accommodate the needs of each user. However, caution should be exercised to ensure that users are not privileged to perform commands outside their area of responsibility.

CA/WP Assignment

2.10 Assignment of personnel to CA/WPs should reflect the organizational structure of the SSC. There are 16 maintenance areas (00-15) and ♦25 installation areas (50-74)♦ available in CMS 3A. With the exception of CA00, users may be assigned to maintenance CAs 01-15 and ♦installation CAs 50-74.♦ (Control area 00 is reserved for SSC summary work lists.) Note that users may neither be assigned to any WP in CA00 nor to WP0 in any other CA.

2.11 The SA may assign each SSC user to a CA/WP which reflects the management/craft hierar-

chy found in the SSC. Although the CA/WP structure has been defined to represent the management/craft hierarchy, the SA is not restricted to follow these conventions. Appropriate use of methods will dictate the extent to which this structure is followed in an individual SSC. ♦[Note, however, that a record acceptor/administrator (RA/A) should be assigned to CA02 since all irregular RSNs will automatically default there.]♦

Activation Privileging

2.12 Activation privileging is a sensitive capability. It allows a user assigned to a given CA to activate an RSN assigned to another CA regardless of the RSN state (eg, retest). This privilege should only be given to personnel with a need to activate RSNs in CAs other than their own.

Extended Command Privileging

2.13 Extended command privileging allows a user to perform up to six commands in addition to those allowed by work function privileging. However, if a user does not fall into one of the work functioning categories, then extended command privileging may be utilized to allow the user to be privileged to perform up to six commands.

♦Restricted Command Privileging

2.14 Restricted command privileging is used to restrict a user from performing up to six commands. This is useful when personnel do not require the full privileging associated with a specific work function. [For example, the SA may not want a user who is privileged as an RA/A to be able to activate on OSNs (normally privileged for the RA/A work function). Through restricted command privileging, this RA/A may be restricted from using the 110 command.]♦

Trouble Type Assignment

2.15 Trouble type assignment identifies the type of troubles that a user is allowed to work on. This assignment is used in conjunction with the 081 display to show the maintenance testers available for work distribution. (The status of the maintenance testers may be changed from "available" to "unavailable" and vice versa via the 082 command.)

C. Customer Location Districts

2.16 Customer location districts (CLD) are used in the work distribution process and are neces-

sary to identify the repair organization responsible for field maintenance. The CLDs are entered into CMS 3A using the 013 command.

2.17 The primary CLD and DPI codes should reflect the field organization responsible for the most classes of service. This will minimize the number of auxiliary DPI code entries. If no auxiliary DPI codes are specified, then the system, when searching for a match between class of service (COS) and DPI codes, will default to the primary DPI code (entered on the trouble report).

2.18 A record for each end office location within the geographic area of responsibility of the SSC must be provided to CMS 3A.

D. RSN Distribution

2.19 A work distribution file must be established for controlling the distribution of trouble reports to CAs. The SA accomplishes this (using the 012 command) by inputting sets of report type (RT), COS, and distribution code (DC) codes for each CA to which work is to be distributed. This process creates a table in the maintenance work distribution file which will be used by the system for automatic work distribution.

2.20 When the first match for all three parameters is found, RSNs will be distributed to the appropriate CA. However, not all parameters need to be specified in order to distribute work to a CA. (For example, RSN distribution can be determined by only a report type code.) If the system cannot find a match of RT, COS, and/or DC, then all regular RSNs will default to CA 1. Irregular RSNs will always default to CA 2.

2.21 The SA should consult with SSC management to determine the deployment of craft personnel which must be correlated with the distribution process.

E. ♦OSN Distribution

2.22 Automatic work distribution of OSNs must be established for the screener/distributors (S/D) and installation analyzers (IA). The SA accomplishes this task (via the 014 command) by specifying the CA/WP of each S/D and IA to which orders will automatically be distributed by the system. Orders from remote entry will be distributed to S/D posi-

tions on a rotating basis. In a similar fashion, after order completion, orders which had missed due dates or jeopardies, will be distributed to the IA position.

F. Holiday Information

2.23 A holiday information file must be established for the resident SSC (via the **016** command). It is necessary that this file be created and maintained since it is used by the system when scheduling designed, verified, and assigned (DVA) dates.♦

G. Escalation and D-Time Information

2.24 Escalation time thresholds provide an early warning that an RSN has exceeded a given amount of time in a particular maintenance state (eg, retest, untested, etc). The SA is responsible for creating and maintaining (via the **011** command) a table containing this escalation time threshold information. The SA should consult with SSC management to determine both the acceptable thresholds and the location of the **TIMER** printer. When the times established in the table are exceeded, escalation printouts are generated by the system and sent to the designated **TIMER** printer. A threshold that is too short will result in excessive escalation printouts while a threshold that is too long may result in poor service to the customer.

2.25 If the SA does not establish escalation time thresholds, then the system will automatically default to 20 days for all thresholds.

H. TIRKS Request Parameters

2.26 The **025** command provides the SA with a means for establishing parameters which will delay user requests for the same work order record and details (**WORD**) circuit description (**CD**) section.

2.27 It is recommended that an initial delay interval of 15 minutes be specified for this parameter. At a later date, the SA should test the response time of **WORD** document requests from **TIRKS** and adjust the parameter accordingly. Effective use of the **025** command in establishing this parameter will prevent users from tying up the **CMS 3A/TIRKS** link.

2.28 The SA also uses the **025** command to input and maintain a record of the last **TIRKS** record base update. This date will be used by the file purge program to decide which **WORD** documents

are eligible to be removed from the **CMS 3A** data base. This command also provides the SA with the ability to override the **TIRKS DAYTIME SHUT-DOWN** time for the current date.

I. Polling List

2.29 Prior to input of polling information, the SA should decide the layout and assignment of **DV11** lines (ie, private and dialup). The only restrictions are that lines 0, 1, and 2 be reserved for the Special Service System (**SSS**) and **TIRKS** interface links. Line 3 on the **DV11** should be assigned to the system maintenance position located at the **CMS 3A** computer site.

2.30 Initially, Western Electric (**WE**) installation personnel will turn polling on via a command network control (**CNC**) command using the system console. The SA will either provide **WE** with detailed polling information for all synchronous **DV** lines or be present to perform this operation.

2.31 ♦Utilizing the **041** command, the SA can specify synchronous line usage and enable line polling to be turned on and off. However, to properly execute this command when performing any function other than displaying the current status (eg, updating), the following sequence must be followed:

- (1) Display current polling information (via the **041** command) and make modifications, as necessary.
- (2) Enter modifications into data base (via the **041/ENTER** command). This only changes the system polling file and does *not* change the actual system polling status.
- (3) Again, the polling information must be displayed. This gives you a chance to ensure that the modifications made were correct before the actual system polling status is updated.
- (4) Update the actual polling status (via the **041/UPDATE** command). The new or updated synchronous polling list goes into effect, *now*. (Synchronous lines are turned on or off according to the previous entries.)♦

J. Logical Printer Assignment

2.32 The SA must be familiar with the **CMS 3A** philosophy of printed message distribution.

The SA must then pay careful attention to the assignment and location of physical printers. Printer message outputs are coded into application software which specifies logical printer assignments. (See Section 582-300-200 for additional information.) Using the **046** command, the SA will map these logical printer assignments to the physical printers by specifying the line and device numbers of the physical printers.

2.33 ♦When the system is outputting lengthy reports or a high volume of printouts, the improper use of this command could result in the separation of a report or printout (eg, the beginning pages are outputted on one printer while the remaining pages are outputted on another printer). To prevent this from occurring, the following series must be performed whenever the logical printer assignments are modified:

- (1) Display current logical printer assignments (via the **046** command) and make modifications as necessary.
- (2) Enter modifications into the data base (via the **046/ENTER** command). This only changes the printer assignment file and does *not* change the actual logical printer mapping in the system.
- (3) The printer assignments should be displayed again. This will provide a check to ensure that the modifications made were correct before the actual printer mapping is updated. However, this step is not mandatory for updating the logical printer assignments.
- (4) Update the actual printer mapping (via the **046/UPDATE** command). The new or updated logical printer mapping goes into effect, *now*.♦

3. SYSTEM ADMINISTRATION

3.01 System administration constitutes the scheduling and performance of activities necessary to maintain a viable data base. The frequency of these data base activities is dictated in part by the current status of CMS 3A. Also included as part of system administration is supporting users of CMS 3A.

3.02 Proper system administration is vital to the successful operation of an SSC supported by CMS 3A.

DATA BASE

A. Archiving

3.03 To satisfy legal retention requirements, documents relating to trouble, circuit order, and circuit history activity need to be archived and made available from off-line storage. ♦(Note that *all* archive tapes have a "permanent retention" requirement and, therefore, should be stored in a safe place.)♦ It is the responsibility of the SA to see that this is accomplished. The SA may initiate the archival process only after the concerned documents have been available on-line for a minimum period of time.

3.04 The SA utilizes the **021** command to initiate and/or halt the trouble report (RSN), ♦circuit order (OSN)♦, and circuit history archive programs. When the command to initiate the archive program is accepted, the program will process the entire data base and then terminate. However, the SA may halt the program at any time using the HALT option of the **021** command. The SA should schedule the archiving process for off hours as it will consume a large amount of system resources thereby affecting system response time.

3.05 While an archive program is running, all status and error messages are directed to the dedicated archive printer. Messages involving magtape problems are also sent to the system console to inform the system operator that additional action must be taken.

3.06 Each archive program (RSN, ♦OSN♦, and circuit history) has three options. These options are as follows:

- (a) Count the records that are eligible for archiving
- (b) Count and archive the eligible records on to tape
- (c) Count, archive onto tape, and delete records from the data base.

3.07 The RSN archive program counts and archives trouble reports (RSNs), SSS tickets, and trouble logs for trouble reports received on or before the specified archive date. Trouble reports must be accessible on-line for at least 92 days after the trouble report is initiated before they become eligible for

archival. Therefore, the specified archive date must be at least 92 days prior to the current date.

3.08 The OSN archive program counts and archives order cover sheets (OSNs), item lists, order logs, item work sheets, WORD and WORD notes, and benchmark test results for orders completed on or before the specified archive date. Circuit orders must be accessible on-line for at least 10 days after the completion of a circuit order. Therefore, the specified archive date must be at least 10 days prior to the current date.

3.09 The circuit history archive program counts and archives circuit history records for circuits which have been disconnected on or before the specified archive date. Circuit history records must be accessible on-line for at least 10 days after completion of a disconnect order. Therefore, the specified archive date must be at least 10 days prior to the current date.

3.10 When a magnetic tape is created during either of the archive programs (RSN, OSN, circuit history), the archived records will have the same format and content on tape as the corresponding records in the CMS 3A data base. In order to facilitate retrieval from tape at a later time, the tape will also include the following:

- (a) A tape header containing the type of archive program, the creation date and time, and the archive date
- (b) The masks and merge tables used by the system to display the records and merge the data on the user terminals.

B. File Purge

3.11 To maintain a viable data base (one that is not cluttered with unnecessary documents), the SA must occasionally delete unnecessary WORD documents from the data base.

3.12 The **024** command allows the SA to purge WORD document records from the CMS 3A data base. The SA has the option of purging all documents older than the last TIRKS update or of setting an alternate purge date.

3.13 When the command to initiate WORD purge is accepted, the program will process the en-

tire record base, delete documents received on or before the specified date, and terminate. However, the SA may stop the program at any time using the HALT option of the **024** command. While the purge program is running, all status and error messages are directed to the dedicated archive printer.

3.14 The archive and file purge programs should be scheduled to be run during off hours so as not to interfere with SSC operations.

C. Critical Date Manager

3.15 The critical date manager (CDMGR) is a CMS 3A subsystem that manages (either automatically by CMS 3A or manually via command **023**) date oriented work lists [ie, new records (218), S/D new orders (261), S/D daily (262), controller/tester (C/T) daily (263), C/T completed orders (264), and IA (265)]. (Refer to Section 190-101-132 for additional work list information.) The CDMGR manages these date oriented work lists in the following manner:

- (a) The S/D and C/T daily work lists are stored in several physical files. Each file contains a *time span* relative to "today's date". Work list entries are moved from one file to another when a calendar change causes an order to fall within a new relative *time span*.
- (b) All entries on the S/D new orders work list that have DVA dates which are past due or due today will be moved to the S/D daily work list. (The order state is also changed on the order cover sheet.)
- (c) After midnight on the second working day, the CDMGR will delete the following:
 - Local dates from the S/D and C/T daily work lists
 - Entries from the IA and RA/A new records work lists
 - Requested orders on the S/D new orders work list.

3.16 The CDMGR must be run to successful completion once each day. In order to determine if the CDMGR ran successfully, the CDMGR report (generated on the SA printer) should be checked. (The CDMGR report is generated after the CDMGR

SECTION 190-101-160

has completed processing.) If the report was not generated or if errors were detected in the report, then the CDMGR should be run again. (When the CDMGR is run more than once a day, previous work successfully done is not repeated.) A data base problem is indicated if repeated runs result in the same error report. The successful completion of the CDMGR must be attained prior to beginning the new days work in the SSC so that users will have the proper items on their work lists.

D. Utility Programs

3.17 Certain utility programs provide the SA with a method of gathering statistical information and maintaining data base integrity. These include the analysis report generator (ARG), analysis of data base (AUD), AUDIT, FAUDIT, and the filing system audit (FSAUDIT) programs.

ARG

3.18 The ARG program provides a CMS 3A site with the ability to gather statistical information about the CMS 3A data base. The ARG allows the user to scan a selected portion of the CMS 3A data base. Through a series of commands, the user determines what information is to be printed and how it will be formatted. The user can compare and/or print information, but ARG does not allow editing (ie, deleting, inserting, or updating) of the data base.

3.19 A thorough understanding of ARG with an understanding of the data base is highly recommended. The ARG can be both powerful and beneficial as long as it is used correctly. A misunderstanding of how ARG processes input commands can lead to misinterpretation of the results. The ARG also gives the special service center personnel a tool which will facilitate debugging and repairing the data base. (See Section 190-101-161 for a detailed description of ARG and its associated commands.)

AUD

3.20 The AUD is a program that affords the SA a method of maintaining the integrity of the CMS 3A data base. The AUD program examines the circuit and link records of circuits in the maintenance (M) state and produces a listing which indicates any fields which are in error. Whenever possible, the program also provides the correct field value. At the end

of the program, a summary of errors is provided. The AUD program is designed to run on a regular basis, such as once a week, to verify the fields of circuits and segments added on an ongoing basis (via the 511 and 512 commands). See Section 190-101-170 for a procedure for running the AUD program.

AUDIT

3.21 The AUDIT is a program which verifies the CMS 3A data base circuit tree pointer structure and the circuit full and partial hash files. This program also lists all records used but not assigned and all records assigned but not used.

3.22 To ensure a valid CMS 3A data base, it is recommended that AUDIT be run on a weekly basis. The AUDIT program may be run either off-line or on-line. However, to obtain more valid results, the AUDIT program should be run off-line. (See Section 190-101-170 for the procedures for running the AUDIT program.)

FAUDIT

3.23 The FAUDIT is an off-line program which should be run weekly to ensure a valid CMS 3A data base. (See Section 190-101-170 for a procedure for running the FAUDIT program.) The FAUDIT program performs the following functions:

- (a) Verifies that the filing system has not allocated a physical location to more than one file
- (b) Ensures that the filing system knows which areas are being used and which are free to be used
- (c) Checks the validity of the system allocation directory
- (d) Verifies the consistency of other system files.

FSAUDIT

3.24 The FSAUDIT is an off-line program which checks the contents of the variable partitioned files for consistency. To ensure a valid CMS 3A data base, it is recommended that the FSAUDIT program be run on a weekly basis. (See Section 190-101-170 for a procedure for running the FSAUDIT program.)

SYSTEM STATUS**A. System File Space**

3.25 The **022** command provides the SA with an administrative tool which may be used for deciding when the data base needs to be cleaned up (ie, when to archive records or purge WORD documents). By utilizing this command, the SA can display the following system file information:

- The number of RSN records available
- The number of OSN records available
- The number of circuit history records available
- The number of WORD documents in the data base
- The number of sectors used by WORD documents
- The number of sectors remaining.

B. Users Logged On

3.26 The **044** command is another SA administrative tool. It may be used to determine how many users are logged on CMS 3A, who they are, what line and device they are using, and to which CA/WP they are assigned. This information is useful when the SA must know to which line/device a user is logged on [eg, when a user(s) must be logged off a certain line and/or device due to a hardware failure].

C. Cancel User Log On

3.27 The **045** command is an administrative tool used by the SA to log users, associated with specified lines and/or devices, off CMS 3A. This command is especially useful when hardware failures occur. For example, if a hardware failure occurs on a synchronous line or device with which a user or users are associated, further system access is not possible. This is because CMS 3A software still considers the user as being active on the system and a user may not be active on two devices simultaneously using the same user identification code.

3.28 The **045** command thus provides the SA with the ability to log such users off CMS 3A. These

users may then relocate to spare terminals and reenter the system.

4. MANAGEMENT AND COORDINATION

4.01 It is the responsibility of the SA to manage and coordinate the various activities that affect CMS 3A in order to ensure a minimum impact on center operation. These activities include the following:

- Software trouble recognition and coordination
- Generic installation coordination
- Hardware trouble sectionalization
- Installation and repair coordination.

A. Software Trouble Recognition and Coordination

4.02 There are certain things the SA can do which will assist in determining the probable cause of CMS 3A software problems. (Refer also to Section 190-101-180 for probable causes of problems.)

4.03 For instance, the SA may review user input and output information to verify correctness and accuracy. The SA may also review system error messages which have been received on the error message printer. If local investigation fails in identifying the problem area, the SA should contact the system operator (SO) at the computer operations center to determine if any system failures have occurred and are indicated on the system console. If the problem still cannot be identified, the SA should then refer it to the minicomputer maintenance operations center (MMOC) organization or, if one exists in the telephone company, the minicomputer support group (MSG). (Generally, the computer operations center is the MMOC.)

4.04 The SA should continue to monitor problem resolution subsequent to referral. The SA should also keep all involved organizations informed of resolution progress and any adverse effects which may be encountered while the situation exists.

4.05 The SA should consult with telephone company management personnel to determine areas of responsibility regarding the interfacing with technical and vendor organizations. This function

SECTION 190-101-160

will vary from company to company due to organizational structure. Technical and vendor organizations which may be involved in problem resolution include WE, American Telephone and Telegraph (AT&T), and Digital Equipment Corporation (DEC).

B. Generic Installation Coordination

4.06 When a new or updated software generic product installation is scheduled, the SA will be responsible for coordinating the efforts of all organizations involved. The SA must prepare planning information which will allow software installation to take place with minimal disruption to SSC operations.

4.07 The SA should prepare an acceptance testing scenario to ensure that the new software performs according to provided documentation. This need not be a complete system test but a review of newly implemented changes or verification that SSC responsibilities can adequately be performed during on-line operation.

C. Hardware Trouble Recognition and Sectionalization

4.08 The SA can perform some hardware trouble sectionalization and analysis. Since the SA should be familiar with the system configuration, determination can be made if the fault is limited to a specific device or applicable to a controller handling many devices. Further, the SA may determine if the problem is localized to specific controller or applicable to several or all controllers.

4.09 Through this analytical process the SA will either determine a probable trouble location and refer it to the appropriate repair organization or notify the MMOC to conduct further investigation involving the central processing unit, its peripherals, and data links to other systems. (See Section 190-101-180 for more specific information on trouble sectionalization and analysis.)

D. Installation and Repair Coordination

4.10 The SA is responsible for coordinating and monitoring all installation and repair efforts to CMS 3A. This may also involve the interface to technical and vendor organizations as well as the in-company repair, installation, and engineering groups.

E. Operations Systems Trouble Reporting (OSTR)

4.11 The OSTR System provides a means for reporting any type of customer (telephone company) problems to a centralized data base. Other potential users of this system include Western Electric (Merrimark Valley) and the Bell Telephone Laboratories. The OSTR System also provides for better management of these customer reported problems via the following mechanisms:

- (a) Creation of a current and historical trouble report data base
- (b) Entry of any type of problems directly into the data base
- (c) Access to copies of the most currently statused trouble reports
- (d) Access to overall status reports to obtain summary information for all troubles entered into the system.♦

5. OTHER ADMINISTRATIVE ACTIVITIES

A. Retrieval of Archived Records

5.01 Subsequent to archiving of circuit records, the SA, at some point, will be asked to retrieve various archived circuit information. The SA must coordinate this activity with MMOC personnel. The SA will then collect the printed output and distribute it to the user requesting the information.

5.02 The CMS 3A has the capability of retrieving all or specific circuit information that has previously been archived on a tape. This capability is provided the SA by the **821** command (see Section 190-101-138).

5.03 The **821** command is used to initiate and halt the RSN, OSN, and circuit history print programs. These programs are designed to read selected records from an archive tape and print them on the dedicated archive printer.

5.04 These archive programs allow the SA to do the following:

- (a) Print the entire archive tape
- (b) Print all records which match a specified circuit format or particular fields in the circuit identification (CID)

- (c) Print all records for a given month
- (d) Print all records for a given month which match a specified circuit format or fields in the CID.

5.05 When the command to initiate the print program is accepted, the designated print program will process the entire tape until an end-of-file or end-of-tape mark is encountered and then terminate. The SA, however, may halt the program at any time by using the HALT option of the **821** command.

5.06 While the print program is running, all error messages will be directed to the dedicated archive printer. Messages involving tape problems are also sent to the system console to inform the system operator that additional action must be taken.

B. Local Forms Creation

5.07 The SA has the responsibility of generating and maintaining local forms (via the **053** command). Local forms are free formatted site dependent displays (forms) generated by the SA for use by SSC personnel. Examples of local form usage include the following:

- Local callout numbers
- Referral directories
- Test directories
- SSC policies
- Work schedules
- Benchmark test parameters
- ♦Item work sheets♦
- SSC methods, etc.

5.08 The SA is the only person privileged to create local forms. This will prevent indiscriminate creation of local forms which could exhaust provided file space. Users may view and utilize existing local forms created by the SA by using the **853** command (see Section 190-101-138).

C. Hardware Configuration

5.09 The SA must be completely familiar with CMS 3A configuration and maintain current docu-

mentation regarding layout and location of existing hardware and facilities. The SA should also develop transition plans for the installation or removal of new or existing hardware. (Refer to Section 190-101-100 for an overall description of the CMS 3A configuration.)

5.10 The CMS 3A configuration knowledge will be useful in the SSC in determining the location of devices, terminals, data sets, and facilities. It will also prove useful in location and sectionalization of troubles to a given system component or location.

D. Report Generation and Distribution

5.11 All requests for reports should be directed to the SA. The SA is responsible for prioritizing all requests and scheduling report generation so that CMS 3A performance is not affected during busy hours. The SA is also responsible for collecting and distributing all user requested information.

E. Fallback and Recovery

5.12 ♦The CMS 3A data base is the most important component of the on-line system. Since it is susceptible to a wide variety of failures, this makes it the most vulnerable component of the system.

5.13 To eliminate data base vulnerability caused by detectable system failures, the SA **must** ensure that adequate copies of the system disk packs are being produced and maintained. In the event of a system failure, these backup copies may be used to reestablish a valid CMS 3A data base. This should help prevent the real time data base and SSC performance from being jeopardized.

5.14 Copies of the CMS 3A data base may be produced on either magnetic disk packs or magnetic tapes. Various CMS 3A utility programs provide the means for creating backup copies of the data base (system disk packs). These disk copy programs include the following:

- (1) COPYDISK
- (2) Image copy disk
- (3) PRESERVE.

5.15 Specific procedures for running these disk copy programs are contained in Section 190-

SECTION 190-101-160

101-170. Regardless of the method employed, backup copies of the on-line disk packs **must** be produced on a daily basis.

COPYDISK

5.16 The COPYDISK program is probably the most important utility in terms of providing backup protection for the CMS 3A data base. This program produces disk copies of all the CMS 3A on-line disk packs. These disk copies along with log tape updates (concurrently produced during the running of COPYDISK) may be used to reestablish a valid data base in the event of a system failure. It is the responsibility of the SA to ensure that COPYDISK is run daily and that adequate backup disk packs are being maintained on an on-going basis. (See Section 190-101-170 for a disk pack rotation method that will ensure that adequate copies of the data base are being produced and maintained.)

5.17 Disk packs created during COPYDISK are the first line of defense against a massive destruction of the CMS 3A data base caused by hardware failures (head crash, spiral write, etc), software failures (program writes all over the disk), or operator error (damage to a disk pack, formatting over a good disk pack, etc).

Image Copy Disk (ICDSK)

5.18 The ICDSK is the next line of defense for protecting the data base against a massive destruction. The ICDSK program produces an off-line disk copy of the CMS 3A data base disk packs.

5.19 In the event that a hardware failure prevents the use of the on-line COPYDISK copy feature (eg, a disk drive failure eliminates the use of the spare disk drive), the ICDSK program will provide a means for producing adequate backup copies of the data base. However, the disk pack copies produced by ICDSK will only back up the data base to the point in time when the copies were made.

5.20 Copies of the data base disk packs should also be created, using the ICDSK program, when the CMS 3A data base is initially loaded and whenever updates to the data base are made (eg, a new generic is installed).

PRESERVE

5.21 The PRESERVE is an off-line program which produces a tape copy of the CMS 3A system

disk packs. Tape copies of the system disk packs produced by the PRESERVE program provide the last line of defense against a massive destruction of the data base. Although unlikely that a fallback to PRESERVE tapes will be necessary, it is still highly recommended that a tape copy of the data base disk packs be maintained (off-site). Section 190-101-170 details the procedure for running the PRESERVE program and its counterpart, RESTORE (used to create a set of valid, bootable disk packs from PRESERVE tapes).♦

F. Training

5.22 The SA is required, at times, to perform individual on-the-job training for SSC personnel. The SA should note the types of training problems which are occurring in the SSC and refer them to the telephone company training department for possible development of formal training courses. Responsibility for on-the-job instruction dictates that the SA be familiar with CMS 3A operations and SSC methods and procedures.

5.23 ♦The SA is responsible for providing training input to the SSC management team based on system problem analysis and new system features. This includes the following:

- (a) Conducting group meetings to identify system usage weaknesses and alerting SSC management of new training requirements necessitated by changes in system software and hardware
- (b) Monitoring system operations to identify weaknesses and recommend follow-up training for system operators.♦

G. System News

5.24 The CMS 3A provides the SA with methods for displaying newsworthy items to CMS 3A users (via the 051 command). Such items may include the following:

- New generic release information
- Scheduled system shutdown time
- Problems which exist and may affect operations
- Personnel changes, etc.

H. System Performance

5.25 In order to maintain CMS 3A system performance at an acceptable level, the SA should observe and note the following:

- System response time
- Any queuing or blocking on the synchronous lines
- Busy day and busy hour trends
- Frequency and duration of system outages.

5.26 ¶To assist in the monitoring of system performance, the SA should develop the following:

- (a) A system trouble reporting procedure for identifying, logging, and tracking all system problems whether they are referred to the local maintenance organization, Bell Laboratories, Western Electric, or a vendor organization
- (b) A system trouble analysis procedure for identifying problem areas in system performance.¶

SECTION**TITLE**

190-101-113

Data Merge Guidelines For TIRKS and SSS Load Tapes — General Description — Circuit Maintenance System 3A (CMS 3A)

190-101-114†

Circuit Maintenance System 3A (CMS 3A) — Record Base Transfer and Update

190-101-125

Circuit Maintenance System 3A (CMS 3A) — Terminal Command Indexes — Special Service Center

190-101-130

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 000 Through 099 — Logon/Logoff and System Administration — Special Service Center

190-101-131

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 100 Through 199 — Activation and Deactivation — Special Service Center

190-101-132

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 200 Through 299 — Work List Applications — Special Service Center

190-101-133

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 300 Through 399 — Maintenance Manual Entry Commands — Special Service Center

190-101-134

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 400 Through 499 — Document Access Commands — Special Service Center

190-101-135

Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 500 Through 599 — Installation Manual Entry Commands — Special Service Center

6. REFERENCES

6.01 The following is a listing of CMS 3A sections and sections associated with CMS 3A.

SECTION	TITLE	SECTION	TITLE
190-101-100	Circuit Maintenance System 3A (CMS 3A) — General Description — Special Service Center	190-101-133	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 300 Through 399 — Maintenance Manual Entry Commands — Special Service Center
190-101-110	Circuit Maintenance System 3A (CMS 3A) — Software Description	190-101-134	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 400 Through 499 — Document Access Commands — Special Service Center
190-101-111*	Circuit Maintenance System 3A (CMS 3A) — File Utilization	190-101-135	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 500 Through 599 — Installation Manual Entry Commands — Special Service Center
190-101-112	Circuit Maintenance System 3A (CMS 3A) — Circuit Identification (CID) Reconciliation Guidelines — General Description		

*This practice has not been issued as of this date. Consult future issues of indexes to determine the availability of this document.

†This practice has not been issued as of this date. Consult future issues of indexes to determine the availability of this document.

SECTION 190-101-160

SECTION	TITLE	SECTION	TITLE
190-101-137	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 700 Through 799 — Interface Message Command Applications — Special Service Center	660-249-200	Special Service Center — Administrative Guide — Mechanized (SSCAG/M)
190-101-138	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 800 Through 899 — Job Aids	824-101-116	Circuit Maintenance System 3A (CMS 3A) — Equipment Design Requirements — Operations Support Systems
190-101-139	Circuit Maintenance System 3A (CMS 3A) — Terminal Commands 900 Through 999 — Administrative Reports — Special Service Center	865-204-100	Circuit Maintenance System 3A (CMS 3A) — Engineering and Implementation Methods System (EIMS) — Special Service Center
190-101-161*	Circuit Maintenance System 3A (CMS 3A) — Analysis Report Generator — Description	865-204-101	Circuit Maintenance System 3A (CMS 3A) — Trunks Integrated Records Keeping System (TIRKS) Interface — Engineering Information — Special Service Center
190-101-170	Circuit Maintenance System 3A (CMS 3A) — System Operator — Description and Operating Procedures	865-204-102	Circuit Maintenance System 3A (CMS 3A) — Special Service System (SSS) Interface — Engineering Information
190-101-180	Circuit Maintenance System 3A (CMS 3A) — Maintenance, Trouble Analysis, and Correction	865-204-105	Tape Specifications For Data Base Merge Process — Description — Circuit Maintenance System 3A (CMS 3A)
582-300-200	“DATASPEED” 4540 Station Arrangements — Installation	951-701-101	Circuit Maintenance System 3A (CMS 3A) — System General Description — Special Service Center (SSC)

*This practice has not been issued as of this date. Consult future issues of indexes to determine the availability of this document.