NO 4 ELECTRONIC SWITCHING SYSTEM
MACHINE ADMINISTRATION RESPONSIBILITIES

CONTENTS PAGE

1. GENERAL

1.01 This section provides an outline of the responsibilities of the machine administrator in a No. 4 Electronic Switching System (ESS) office. The general responsibilities outlined in the following paragraphs may overlap into other closely related work areas; however, greater operational efficiencies and coordination of activities should be gained by assigning related responsibilities to the machine administrator.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

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

2. DESCRIPTION OF MACHINE ADMINISTRATOR'S RESPONSIBILITIES

2.01 The functional and administrative responsibilities of the machine administrator in the No. 4 ESS office have been addressed in the two procedural (type) documents:

- Task Oriented Procedures (TOP)
- Dial Facilities Management Practices (DFMP)

2.02 The Task Oriented Procedures (TOP) organizes the machine administrator center (MAC) effort into six documentation packages.

BSP NO.	TITLE
234-152-001	MAC—Circuit Order
234-152-002	MAC—Routing Changes
234-152-003	MAC—Rollforward and Rollback
234-152-004	MAC—Equipment Order (equipping existing frames)
234-152-006	MAC—Equipment Order—Growth (installing new frames)

These procedures provide a step-by-step approach for those routine activities performed by the MAC

on a day-to-day basis. These procedures provide the MAC with the basic operational instructions to physically perform its basic duties.

2.03 The Dial Facilities Management Practices (DFMP), Division H, Section 9, provides the MAC and the machine administrator with the basic procedural guidelines required for formulating management and administrative decisions affecting the No. 4 ESS service. The following paragraphs parallel the DFMP format and expand on the functional outline of the TOP procedures.

2.04 The responsibilities of the machine administrator in the No. 4 ESS environment can be organized into the following categories:

(a) Assignment Practices

(b) Circuit Order Administration

(c) Circuit Maintenance System

(d) Recent Change Administration

(e) Rollback, Rollforward, and Reinitialization

(f) Measurement System

(g) Network Management

(h) Machine Administration Records

(i) Data Collection and Analysis

(j) Transition (Growth) Management

(k) Service Surveillance

(l) Machine Utilization

(m) Recorded Announcements

2.05 These areas of responsibility reflect an extension of the scope of the traditional dial administration duties in electromechanical systems and other electronic switching systems. In the No. 4 ESS environment, the additional management and administrative features and capabilities provided by the system software, have greatly expanded the scope of the machine administrator's role in the efficient operation and management of the No. 4 ESS.

2.06 The software features which allow recent change activity to be performed without interruption to service and automatic collection of traffic measurements and machine service data have enhanced the machine administrator's ability to anticipate needed controls in response to service needs on a real time (current) basis.

2.07 In the following sections, those areas of machine administrator's principle responsibilities and subordinate responsibilities in addition to coordination rules shall be summarized. In each area references shall be made to the detailed procedures outlined in other supporting documents such as Dial Facilities Management Practices (DFMP) or Bell System Practices (BSP).

3. ASSIGNMENT PRACTICES

3.01 For the initial assigning of the No. 4 ESS office it will be the responsibility of the machine administrator and the routing supervisor to prepare the input forms for the office data assembler (ODA). The machine administrator may assist in:

(a) Establishing trunk subgroups (TSGs)

(b) Assigning trunks to TSGs

(c) Assigning TSGs to routing data blocks (RDB)

(d) Directing codes to the RDBs

(e) Specifying screening requirements

(f) Specifhing other assignment considerations

(g) Assigning traffic separation classes

(h) The machine administrator is also responsible for updating assignments data

3.02 The machine administrator shall be responsible for the administration of the No. 4 ESS recent change system. The recent change system, described in Section 6 will be used to modify translations data structures and assignments created by the ODA.

3.03 The No. 4 ESS Translation Guide (TG-4) describes the entries for all ODA input forms. Dial Facilities Management Practice (DFMP), Division

H, Section 9c, Assignment Practices, provides detailed procedural information for initial assignments.

4. CIRCUIT ORDER ADMINISTRATION

4.01 The circuit order administration job in a No. 4 ESS office is closely related to the functions performed in the machine administration center (MAC). The machine administrator and the circuit order administrator may be the same person. Because of this relationship, it is recommended that the overall responsibility for circuit order administration is assigned to the machine administrator. In these situations where the machine administrator does not have the responsibility for circuit order administration, the duties of the machine administrator, as stated in this document, will be assumed by the circuit order administrator.

4.02 The machine administrator shall be responsible for the successful completion of circuit order requests received from the circuit provision bureau. A circuit order may require the machine administration to:

(a) Add new trunks or new TSGs

(b) Introduce changes to existing trunks or TSGs

(c) Delete existing trunks or TSGs

4.03 The machine administrator shall be responsible for:

(a) The input of circuit order data into the circuit maintenance system (CMS)

(b) Data Collection

(1) Verify that the equipment is available in the No. 4 ESS office

(2) Verify that each office involved has a copy of the circuit order and work schedule

(3) Verify that the proper recent change messages required to establish the circuit order requirements have been initiated

(4) Assign terminal equipment

(c) Coordination and scheduling of circuit order activities with the other work centers through CMS and office communications.

(d) Documentation completion

(1) Verify circuit data records are complete

(2) Verify equipment data records are complete

(3) Verify test data records are complete

(4) Verify translation data records are complete

(5) Verify administrative reports are complete

(e) Clear circuit orders upon completion

(1) Update the in-effect report

(2) Make circuit order documents available to all work centers

(3) Allow automatic referrals via worklist changes

(4) Provide a record of circuit order status on the circuit order ticket and log.

4.04 For more detailed procedural information on circuit order administration, refer to the No. 4 ESS Translation Guide (TG-4), or Dial Facilities Management Practice (DFMP), Division H, Section 9d, Circuit Order Administration, or Bell System Practices, (BSP), 103-270-103, Circuit Maintenance System Machine Administration Center Displays, and 234-152-001 Machine Administration Center-Circuit Order.

5. CIRCUIT MAINTENANCE SYSTEM

5.01 The responsibilities of the machine administrator shall also include administrative duties for the circuit maintenance system (CMS). The circuit order administration function which is performed by the machine administrator (Section 4.) is implemented through the circuit maintenance system. Because the machine administration center has been charged with the responsibility for circuit order administration, the machine administrator will also assume certain administration and coordination responsibilities for the circuit maintenance system.

5.02 The circuit maintenance system is a mini-computer system apart from the No. 4 ESS 1A processor. This system was developed as a circuit maintenance record keeping system which

performs the following administrative and operational functions:

(a) Establishes and maintains work lists for each circuit order and test position

(b) Provides trouble ticket information

(c) Provides an interface with the No. 4 ESS, central automatic reporting on trunks (CAROT), switched maintenance access system (SMAS), and carrier transmission measurement system (CTMS).

(d) Provides for operational and transmission tests on circuits

(e) Provides a work dispatching function

(f) Interfaces between the CMS data base and other data buses

5.03 The machine administrator shall be responsible for:

(a) Implementing the circuit order process through CMS

(b) Coordinating circuit order scheduling

(c) Coordinating circuit order status through the use of CMS reports

5.04 For further detailed information on the circuit maintenance system administration, refer to the No. 4 ESS Translation Guide (TG-4), or Dial Facilities Management Practices (DFMP), Division H, Sections 9d, Circuit Order Administration, and 9m, Circuit Maintenance System 1A, and Bell System Practices (BSP) 234-152-001, Machine Administration Center-Circuit Order.

6. RECENT CHANGE

6.01 The center change system is used to modify translation data which was originally generated by the ODA. The machine administrator has the overall responsibility for the successful completion of a recent change message. Pursuant to this objective, other work centers have the capability of initiating recent changes. However, it is the responsibility of the machine administrator to provide the overall control and coordination of this activity.

6.02 Recent change messages may be initiated because of a need to:

(a) Add or delete trunk subgroups (TSGs)

(b) Add or delete routing data blocks (RDBs)

(c) Change routing data block characteristics

(d) Add or delete trunks from a trunk subgroup

(e) Change trunk subgroup characteristics

(f) Change other miscellaneous information

(g) Implement unit changes

6.03 The machine administrator shall be responsible for:

(a) Initiating recent change data message (RCDM)

(b) Coordinating the recent change messages through the buffered, test, and activate states until completion

(c) Maintaining recent change records, status and schedules

(d) Assigning recent change order numbers

(e) Assisting maintenance operations center (MOC) personnel in the implementation of rollback, rollforward, and reinitialization strategy (Refer to Section 7.)

(f) Initiating requests for verification of translation data

6.04 For more detailed procedural information on the recent change process, refer to the No. 4 ESS Translation Guide (TG-4), Dial Facilities Management Practices (DFMP), Division H, Section 9g, Machine Administrator's Responsibilities Affecting Rollback, Rollforward, and Reinitialization, or Bell System Practices (BSP), 234-105-005, Recent Changes, Verification System, Rollback/Rollforward Description, 234-152-002, Machine Administration Center—Routing Changes, and 234-152-003, Machine Administration Center-Rollforward and Rollback.

7. ROLLBACK, ROLLFORWARD, and REINITIALIZATION

7.01 Service problems in the No. 4 ESS may lead to "interupts" that result in automatic or manual rollbacks of recent changes. In the event of such abnormal occurrences as rollback, rollforward, or reinitialization, the machine administrator must be able to quickly provide the maintenance operation center (MOC) supervisor a status of recent change activity, identify which changes will be lost as a result of rollback or reinitialization, and formulate a schedule for reinserting rolled back changes (rollforward).

7.02 Generally, the responsibility for rollback, rollforward, and reinitialization shall rest with the maintenance operations center (MOC) personnel. The machine administrator shall provide close technical support to the maintenance operations center (MOC) personnel in determining a rollback, rollforward, or reinitialization strategy to minimize service interruption.

7.03 The machine administrator shall be responsible for:

(a) Maintaining a status of the effect rollback would have on recent change activity and the routing and trunking structure of the No. 4 ESS

(b) Identifying which changes would be lost in the event of rollback

(c) Formulating the rollback, rollforward, reinitialization strategy with the MOC supervisor

(d) Providing a schedule for resubmitting recent changes which have been rolled back

7.04 For more detailed procedural information on rollback, rollforward, and reinitialization process, refer to Dial Facilities Management Practices (DFMP), Division H, Section 9g, Machine Administrator's Responsibilities Affecting Rollback, Rollforward, and Reinitialization, or Bell System Practices (BSP), 234-105-005, Recent Changes, Verification System, Rollback/Rollforward Description, and 234-152-003, Machine Adminitration Center—Rollforward and Rollback.

8. MEASUREMENT SYSTEM

8.01 The No. 4 ESS measurement system measures the traffic which is presented to the switching system. The data collected is required by the various user groups within the No. 4 ESS environment in order to detect and correct problem areas and to determine the level and quality of service being delivered. The machine administrator is responsible for the administration of the measurement system and the promulgation of this data to other user groups through the various reports provided by the system.

8.02 The measurement system in the No. 4 ESS provides a computerized data collection, and reporting system which is a departure and manual analysis method used in electromechanical switching systems. The versatility of the software features in the No. 4 ESS allows the machine administrator and other user groups to automatically:

(a) Record traffic counts and measurements

(b) Output traffic data through the 24 measurement schedules

(c) Provide standarized reports

(d) Perform special studies

8.03 The machine administrator shall be responsible for:

(a) Determining the measurements required by user group

(b) Determining the frequency on which these measurements are required

(c) Assigning measurements to an available output schedule

(d) Administering the 24-traffic output schedules

(1) Determining the maximum number of measurements per schedule

(2) Determining the maximum number of TSG measurements per schedule

(3) Determining which measurement subclasses and output measurement sets are to be included in the schedule

(4) Sequencing schedule output priorities

(e) Providing traffic separations data to user groups

(1) Assigning TSGs to incoming separations (INSEP) classes

(2) Assigning destination codes to destination separations (DESEP) classes

(3) Distributing reports

(f) Maintaining and administering the following reports:

(1) Machine load and service summary (MLSS)

(2) Machine service report (MSR)

(3) Load distribution report (LDR)

(4) Load service report (LSR)

(g) Monitoring ineffective attempts data to identify and assist in correcting service problems

(h) Establishing special measurement reports etc, for special studies requested by other user groups

8.04 For more detailed procedural information on the measurement system, refer to the No. 4 ESS Translation Guide (TG-4), Dial Facilities Management Practices (DFMP), Division H, Sections 9f(1), Measurements—General, 9f(2) Traffic Measurements—Traffic Separations, 9f(3) Measurements—Machine Reports, 9f(4) Measurements—Ineffective Attempts, and Bell System Practices, (BSP), 234-152-004, Machine Administration Center—Traffic and Plant Measurements.

9. NETWORK MANAGEMENT

9.01 The network manager and the machine administrator functions are usually performed by two separate individuals. Today, in some No. 4 ESS offices, the functions of the network manager and machine administrator may be combined to effect economies of operation. In other No. 4 ESS offices where the network management function is handled from a remote location, the machine administrator may be assigned as a backup network manager in the event of service disruption. In either situation much of the data available to the network manager can also be utilized by the machine administrator and the machine administrator may be delegated certain network management functions to be performed at the network manager's direction. Where such an overlapping activities or direct assumption of network management functions occurs, the machine administrator may be required to assume additional responsibilities and duties.

9.02 The objectives of the network manager can be stated as follows:

(a) Minimize network congestion

(b) Utilize all available trunks

(c) Give priority to single line connections, when all available trunks are exhausted

(d) Inhibit switching congestion

Pursuant to these objectives the network management system provides the network manager an extensive monitoring system for data collection, analysis, and exception reporting, and a system for automatically or manually activating network controls in response to observed conditions.

9.03 Under normal operating situations where the machine administration and network management functions are separate, the machine administrator shall be responsible for:

(a) Providing the network manager with access to the data from the measurement system data base (See Section 8.)

(b) Initiating special studies requested by the network manager.

(c) Informing the network manager of changes to the measurements reports, etc, which have an effect on network management data.

9.04 Under other than normal situations where the machine administration and network management functions are combined or overlap,

the following responsibilities and duties may be assumed by the machine administrator:

(a) Monitor exception panel indications to determine if preset thresholds have been exceeded.

(b) Analyze exception indications through the network management cathode ray tube (CRT) display system.

(c) Apply manual and automatic controls to reduce reported congestion or other service problems.

9.05 For more detailed procedural information on the network management system, refer to the No. 4 ESS Translation Guide (TG-4), Dial Facilities Management Practices (DFMP), Division H, Sections 9i(1) Network Management—Controls, 9i(2) Network Management-Exception Panel 9i(3) Network Management—Display System, 9i(4) Network Management—System Printer, and 9i(5) Network Management—Operational Considerations.

10. MACHINE ADMINISTRATION RECORDS

10.01 In the No. 4 ESS office the machine administrator will be responsible for the establishment, use, maintenance, and verification of the data base and the manual record keeping system. The software features of the No. 4 ESS provide an extensive automatic record keeping system, which reduces or eliminates the magnitude of paper records required with other systems. This record keeping system provides the machine administrator with rapid access to an analysis of current machine service and administrative status. Hard copies of these reports can be obtained when needed from the DATA SPEED® 40 Printers in the machine administration center (MAC) and other similarly equipped work centers.

10.02 The machine administrator shall be responsible for establishing, using, maintaining, and verifying the following records:

(a) Office data assembler (ODA) input records

(b) Circuit order records

(c) Recent change records

(d) Reinitialization records

(e) Trunk subgroup (TSG) records

(f) Trunk assignment records

(g) Routing data block (RDB) records

(h) Code grouping records

(i) Screening records.

(j) Machine reports

(1) Machine load service and summary (MLSS)

(2) Load distribution report (LDR)

(3) Load service report (LSR)

(4) Machine service report (MSR)

(k) Other machine administration records

10.03 For more detailed procedural information on machine administration records, refer to the No. 4 ESS Translation Guide (TG-4), and Dial Facilities Management Practices (DFMP), Division H, Sections 9c, Assignment Practices, 9d, Circuit Order Administration, and 9e, Machine Administration Records.

11. DATA COLLECTION AND ANALYSIS

11.01 Data collection, validation, summarization, and analysis is an important phase of the machine administrator's responsibilities. The data and reports generated by the machine administrator will be required by all operating groups in the No. 4 ESS office for day-to-day supervision, management, and long term planning for the switching system and network. The data collection and coordination functions performed by the machine administrator serve in:

- Determining traffic and service requirements
- Planning for daily and long range equipment loading requirements
- Maintaining a traffic balance in the switching system
- Identifying service problems

- Recommending corrective action in response to service problems
- Determining capacity limits for the system
- Evaluating equipment capacities
- Planning for peak loads
- Implementation of traffic controls
- Evaluating procedures and routines
- Planning for future growth

11.02 These data collection and analysis functions affect every phase of the machine administrator's duties described in the previous sections. The importance of these functions to the efficient management and utilization of the switching system cannot be overemphasized.

12. TRANSITION (GROWTH) MANAGEMENT

12.01 The transition management shall assume an important role in the No. 4 ESS community in future years as growth requirements for existing machines are defined and formulated. Growth in the No. 4 ESS will involve either hardware or software additions or both. The planning, scheduling, installation, testing, and coordination of these transitional expansions will require support from the machine administrator along with other involved groups to assure a successful transition with a minimal impact on service.

12.02 The assignment of the overall responsibility for the coordination of the transition management function has not been resolved as of this document's issue. The maintenance operations center (MOC) and the machine administrator will assume central roles in managing this activity. Regardless of who is assigned this responsibility close coordination between the machine administrator, the MOC supervisor, and the network manager will be required. The machine administrator will be responsible for providing the following functions and services:

(a) Provide input during the planning phase of growth additions to insure efficient placement of equipment and transitions with minimum degradation to service

(b) Review the traffic order for adequacy prior to issuance

(c) Prepare the necessary forms for the development of new office data assembler (ODA) runs, if required

(d) Implement new circuit orders

(e) Initiate recent change messages to implement each new circuit order.

(f) Assist in the scheduling for hardware transitions

(1) Day of week

(2) Time of day

(3) Sequencing

(4) Out of service equipment quantities

12.03 Detailed procedural information on transition management has not been developed as of this document's issue. However, this subject will be addressed in a Dial Facilities Management Practices (DFMP), Division H, Section 9h, Method of Procedure, and Bell System Practices (BSP), 239-152-005, Machine Administration Center-Equipment Order, and 234-152-006, Machine Administration Center-Equipment Order—Growth.

13. SERVICE SURVEILLANCE

13.01 The machine administrator is also responsible for assuming that the overall service of the No. 4 ESS office is at or above the specified objective level. Pursuant to this goal, the machine administrator is responsible for performing a service surveillance function utilizing the data and resources at his disposal to insure that the service provided by the switching system and associated network is meeting the specified objective levels. In the event these levels of service are not being provided, the machine administrator should be in a position, by utilizing available data, to recommend appropriate correction action to alleviate the observed service problems.

14. MACHINE UTILIZATION

14.01 Pursuant to the objectives stated in Section 12, Service Surveillance, the machine

administrator is further given the responsibility for machine monitoring to insure that the equipment in the No. 4 ESS office is being used to the best advantage. This function would include:

(a) Monitoring queue areas for indications of congestion and equipment usage levels

(b) Analyzing machine load and service summary (MLSS) and machine service report (MSR) to identify problem areas

(c) Monitoring the adequacy of trunking assignments

(d) Performing surveillance over and administration of the assignment of routing data blocks (RDB)

15. RECORDED ANNOUNCEMENTS

15.01 The machine administrator shall monitor the availability, adequacy, and quality of the recorded announcements.