ELECTRONIC TANDEM NETWORK SERVICE PROCEDURES
SWITCHING CONTROL CENTERS
OPERATIONS SUPPORT SYSTEMS

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1. GENERAL

1.01 This section describes the operational procedures employed by No. 1/1A Switching Control Centers (SCCs) and central offices to implement the installation, maintenance, and administration of Electronic Tandem Switches (ETS) and Electronic Tandem Networks (ETNs) served by No. 1/1A switching vehicles. It describes the SCC operational responsibilities for ETN intertandem tie trunks, access tie trunks, Peripheral Unit Controller Data Link (PUC/DL), network routing and network features.

1.02 Whenever this section is reissued, the reason for reissue will be given 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.

1.04 This section also describes the SCC interface with other service centers having ETN responsibilities and the interface with Other Common Carriers (OCCs) that interconnect with ETN circuits switched via No. 1/1A Electronic Switching System (ESS) central offices.

2. ORGANIZATION

2.01 SCCs that are involved in the switching of ETS/ETN service via the No. 1/1A switching vehicle should follow the organizational guidelines established in Network Maintenance Management Switching Control Center Sections 190-130-110, -120, -130, and -160.

2.02 An SCC designated responsible for ETS/ETN installation and maintenance may be assigned either Sub-Control Office (SCO) or Non-Control Office (Non-CO) responsibilities. (See Section 660-005-011.) In addition to being assigned one of the above responsibilities, the SCC may also be required to serve as a Responsible Reporting Office (RRO). RRO functions are described in Section 010-520-105.

2.03 When the SCC is assigned SCO responsibilities for Central Office to Central Office (CO/CO) circuits or Non-CO responsibilities for Central Office to Customer Premise (CO/CP) circuits the SCC will interface with the Plant Control Office (PCO). The SCC will interface with the SCO when assigned Non-CO responsibilities for CO/CO circuits.

2.04 The functions and responsibilities of the Switching Control Center/Central Office (SCC/CO) work force including training requirements and shift coverage are briefly described in subsequent paragraphs. These work functions can be performed by one or more craft personnel in accordance with SCC/ETN work load requirements.

A. ETN Service Order Coordination

2.05 The SCC/CO service order coordination function is normally performed by craft personnel assigned to trunk maintenance who are trained in the installation and maintenance of ETN service. This includes circuit layout, make busy and repair procedures, software features and messages.

2.06 If the SCC/CO is designated (SCO) for ETN CO/CO circuits, it coordinates the installation and testing of service orders, including circuit, Network Routing Guide (NRG), and network feature orders on an end-to-end basis. In addition, it interfaces with the PCO to report service order status and completion.

2.07 If the SCC/CO is designated Non-CO for ETN CO/CO circuits, it coordinates the installation of service orders at the No. 1/1A offices under its control. The Non-CO SCC also assists the SCO with end-to-end preservice tests and reports service order status and completion.

2.08 The SCC/CO always functions as a Non-CO when service orders are received for CO/CP circuits. It coordinates the installation of the Central Office portion of these orders only, and interfaces with the PCO to assist with preservice tests and reports service order status and completion.

2.09 Some additional ETN service order coordination functions of the SCC/CO are the maintenance of order tracking and control logs and the provision of Centralized Automatic Reporting On Trunks (CAROT) data base information. ETN service order coordination should normally be a day shift function.

B. ETN Circuit, Routing and Feature Maintenance

2.10 This SCC/CO function is performed by craft personnel trained in the installation and maintenance of special service circuits. It requires a knowledge of circuit access procedures, circuit maintenance, software features and messages. Some of the responsibilities associated with this function are:

(a) The processing of No. 2 Switching Control Center System (SCCS), TN08 Multiple Message Thresholding (MMT), and TN08 batch analysis failure reports.

(b) The processing of CAROT transmission test failure reports on No. 1/1A ESS terminated ETN circuits.

(c) The processing of ETN customer trouble report referrals and machine detected trouble reports including the preparation, referral monitoring, closing, and analyzation of trouble tickets.

(d) The processing of ETN circuits on the Trunk Out Of Service (TOS) lists.

(e) When designated SCO for ETN CO/CO circuits they function as follows:

- Receives and records customer trouble report referrals from the PCO
- Verifies, sectionalizes, and dispatches troubles
- Turns circuits down or up as required
- Verifies repairs and notifies the PCO of repair status and completion.

(f) When designated Non-CO for ETN CO/CO circuits they function as follows:

- Receives and records trouble reports from the SCO
- Turns circuits down or up upon request from the SCO
- Assists PCO with trouble sectionalization
- Dispatches on trouble conditions
- Verifies repairs, and notifies the PCO of repair status and completion.

(g) When assigned Non-CO for CO/CP circuits, they function as follows:

- Receives and records trouble reports from PCO
- Turns circuits down and up upon request from PCO
- Assists PCO with trouble sectionalization
- Dispatches on trouble conditions

- Verifies repairs, and notifies the PCO of repair status and completion.

C. PUC/DL Maintenance

2.11 This function is performed by the office controller who responds to and coordinates the repair of the following:

- Machine detected trouble
- Customer reported trouble referred from the PCO or the Repair Service Bureau (RSB).

3. SERVICE ORDER PROCESSING

3.01 The service order process includes those activities required to plan and implement a service order successfully. A service order is a document formulated to transmit the necessary information to provide network services or to rearrange or disconnect these services.

3.02 There are three types of service orders required to implement the installation or modification of an ETN circuit.

- Circuit orders
- NRG orders
- Network feature orders.

3.03 The following paragraphs describe each of the three types of orders and the SCC/CO's involvement with each type, from reception to completion.

CIRCUIT ORDERS

3.04 An ETN circuit order specifies the engineering design of intertandem tie trunks, access tie trunks, or data links (PUC/DLs). Two basic types of ETN circuit orders are processed in a No. 1/1A ESS SCC/CO.

(a) ETN CO/CO circuit orders cover the installation, rearrangement or disconnect of ETN intertandem, or access tie trunks that interconnect a No. 1/1A ESS/ETN switching node with another No. 1/1A ESS/ETN switching node, or a CTX/CO serving as an end PBX on an ETN.

(b) ETN CO/CP circuit orders cover the installation, rearrangement or disconnect of ETN intertandem, or access tie trunks that interconnect a No. 1/1A ESS/ETN switching node with a DIMENSION® PBX/ETN switching node, or an end PBX on an ETN.

3.05 Orders for PUC/DLs between No. 1/1A ESS/ETN switching nodes and 93A Customer Premise Systems are also classified as CO/CP circuit orders and are processed in the same manner as CO/CP access tie trunks.

3.06 An ETN circuit order is issued by means of a Circuit Layout Record Card (CLRC) and is associated with a Universal Service Order (USO) and a trunk order. The CLRC performs the following functions:

- Provides circuit identification, associated order number, and the Due Date (DD)
- Lists the types of facilities and equipment per office and specifies transmission loss and noise measurements
- Identifies the Network Control Office (NCO), PCO, and SCO (when CO/CO circuits are involved).

3.07 The USO performs the following functions:

- Provides critical report dates, such as Designed, Verified and Assigned (DVA), Plant Test Date (PTD), and DD
- Indicates the NCO, PCO, SCO, and RRO for a particular ETN.

3.08 The trunk order performs the following functions:

- Lists the trunk number, trunk group, trunk network number, trunk class code, and cable and pair assignments
- Indicates the type and direction of pulsing
- Provides trunk layout and transmission information
- Indicates the PTD and DD.

A. Order Reception

3.09 The Circuit Provisioning Bureau (CPB) forwards the CLRC and the trunk order to the ETN Service Order Coordinator (SOC) at the SCC via company or US mail, and the TELCO sales organization forwards the USO to this same coordinator via ADministrative NETwork (ADNET). Upon receipt, orders are reviewed for accuracy and obvious errors, such as deleted or unreasonable critical report dates, and incomplete facility or equipment assignments. If this service order review reveals discrepancies that require resolution, the ETN/SOC refers them to the responsible organization (PCO, SCO).

B. Order Processing and Control

3.10 A complete circuit order is normally composed of a USO, CLRC, and trunk order. After reviewing the USO, the ETN/SOC records it in the Order Control Log (see Fig. 1), initiates a Work File Face Sheet (see Fig. 2), and files these documents in the pending order file.

3.11 After the CLRC and the trunk order are received and reviewed for completeness and accuracy, the ETN/SOC records their reception in the Order Control Log (see Fig. 1), initiates a Work Request (see Fig. 3), itemizing in detail the work required to complete the order, and updates the Work File Face Sheet (see Fig. 2) by recording the work items indicated. The ETN/SOC then forwards the work request to the SCC dispatcher for pricing and loading to the field maintenance, field frame, and translation forces in accordance with Sections 190-130-130 and 190-130-160 of the Network Maintenance Management Plan (NMMP) series. The coordinator then files the USO, CLRC, trunk order, and work file face sheet in the "in progress" file.

3.12 The ETN/SOC should review the order control log and the "in progress" file on a continuing basis to ensure that circuit order critical dates (DVA, PTD, DD) are met and reported on schedule (see Section 010-520-105). After the field maintenance and translation forces complete order verification, the ETN/SOC records this fact in the order control log and work file face sheet and notifies the appropriate control office (PCO, SCO) that the DVA date has been met. Should CAROT testing be applicable to the trunks covered in this circuit order, CAROT data base information must be forwarded via ADNET to the same control office on or before this DVA date. On the PTD, the ETN/SOC ensures that all preservice testing, including testing that requires coordination with other offices, is completed, and then notifies the control office (PCO, SCO) that the PTD has been met. On the DD, the ETN/SOC turns up the circuits installed by the order and coordinates with other offices (PCO, SCO, Non-CO) in the control office hierarchy involved in establishing service. The coordinator then notifies the proper control office (PCO, SCO) that the DD has been met and closes out associated logs and records.

3.13 If the completion of a circuit order is delayed because of unavailable or inoperative facilities or equipment (hardware or software), the ETN/SOC issues a jeopardy report and forwards it to the concerned control offices (see Sections 010-520-105 and 010-520-115). The ETN/SOC then tracks the jeopardy condition and when it is resolved, notifies the concerned control office by forwarding a clearance report.

C. Installation

3.14 After pricing the circuit order, the dispatcher at the SCC loads the work to the field maintenance force and the translation force for verification and installation (see Section 190-130-160). When field maintenance receives a circuit order, the equipment, facility, and cross-connection assignments are verified by physical inspection at the No. 1/1A ESS office. When the translation force receives the circuit order, it checks and verifies such items as trunk network number, trunk group, trunk class code, code and routing, and traffic register assignments using a No. 2 SCCS work station cathode ray tube (CRT) to access the No. 1/1A ESS. After the maintenance force or the translation force completes circuit order verification, they notify the ETN/SOC in sufficient time for the DVA date to be met, and then records the completion of this process in accordance with Section 190-130-130 NMMP. The ETN/SOC then records the DVA completion in the order control log, the work file face sheet, and notifies the appropriate control office (PCO, SCO).

3.15 The field maintenance force installs plug-in equipment, facilities, and cross-connections in accordance with the circuit order, updates work request, load and work time records per Section 190-130-160, and notifies the ETN/SOC via the

dispatcher when the equipment is ready for preservice testing. Field maintenance should keep the ETN/SOC informed of order progress and jeopardy conditions encountered during the installation of circuit orders.

3.16 The translation force prepares and enters the required translations in the recent change area of the No. 1/1A ESS using Section 231-118-320, Recent Change Message Program Listings, Section 231-118-321, General Recent Change Information, Section 231-118-323, Trunk Translation Recent Change Procedures, Section 231-118-329, Traffic Measurement Recent Change Procedures, Section 231-118-348, Implementation of ETN Translations. These newly entered translations are then tested for accuracy using No. 1/1A ESS input messages to verify trunk group translations, trunk-to-peripheral equipment translations, trunk-to-trunk group translations, trunk class code translations, and traffic register translations. Verification input messages are covered in Sections 231-118-323, 231-118-329, 231-118-348, 231-144-350, and Input Manual 1A/6A001. The translation force then updates work request, load and work time records per Section 190-130-160, and notifies the ETN/SOC via the dispatcher that the circuit order software is installed and ready for preservice testing. Translation also has the responsibility of generating a work request for translation card writing by field maintenance if the DD precedes the next scheduled program store card updates in the associated No. 1 ESS office.

> ***Note:*** Trunk group translations associated with the addition of new circuits should ***not*** be inserted into active memory prior to the scheduled PTD. This procedure is recommended to minimize the period in which the new circuits will appear as TOS. Translations associated with disconnect orders should be removed from memory on the service order DD.

D. Preservice Testing

3.17 Upon notification from the dispatcher that the circuit order hardware or software has been installed, the ETN/SOC records the work completion date in the work file face sheet, and when both portions of the installation are complete, preservice testing is conducted at the SCC. The ETN/SOC coordinates preservice testing with other control offices on the ETN based on the SCC's control office designation.

3.18 Should the SCC/CO be designated SCO for ETN CO/CO circuits, it coordinates preservice testing on an end-to-end basis. This entails contacting the far-end Non-CO to ensure that all equipment (hardware and software) has been installed and verified in accordance with the circuit order and then performing preservice testing. Should the SCC/CO function as a Non-CO for CO/CO or CO/CP circuits, it performs preservice testing at the SCC under the direction of the SCO or PCO respectively.

3.19 If the SCC (SCO or Non-CO) is equipped with a trunk test console (badger unit), the ETN/SOC can perform several preservice tests such as the following:

1. Diagnostic test calls to synchronous or nonsynchronous test lines and to permanent busy test lines

2. Outpulsing tests calls on trunks which cannot be tested via diagnostic tests

3. Miscellaneous tests including make busy, traffic release, voltmeter, and supervision tests

4. Transmission test calls to 100-, 102-, 105-type test lines, or the application of milliwatt, balance, ac open or ac short terminations for transmission testing from the far-end or on a loop around basis (see IL 78-11-036, No. 1/1A ESS/SCC Trunk Maintenance Methods and Procedures).

3.20 Upon completion of the preservice testing, the ETN/SOC records the test results in the work file face sheet, updates the order control log, and notifies the proper office in the ETN control office hierarchy (PCO or SCO) that the PTD has been met.

3.21 If the SCC is not equipped with a trunk test console (badger unit), the ETN/SOC must request the field maintenance force via the dispatcher to perform the required operational tests. Upon receipt of this request, field maintenance performs the required operational circuit tests employing the Manual Trunk Test Position (MTTP) and the Auxiliary Manual Test Position (AMTP).

These test positions and test procedures are described in Sections 231-130-120, 231-130-320, and 231-131-520.

3.22 After the completion of these preservice tests, field maintenance records test results in the work request, updates the load and work time record, and forwards this information via the dispatcher to the ETN/SOC. The ETN/SOC places the order in the DD file and notifies the proper office in the ETN control office hierarchy (PCO, SCO) that the PTD has been met.

E.. Order Completion

3.23 On the date and time specified in the USO, the ETN/SOC places the new circuits in service. This turn-up procedure is normally performed at the SCC using the trunk test console or a work station at this same location. After the service is activated, the ETN/SOC records this fact in the work file face sheet, order control log, files the order records, and reports that DD has been met to the proper control office (PCO, SCO).

NETWORK ROUTING GUIDE

3.24 The NRG (see Sections 788-103-400 and 420) provides the network information required to implement the installation and rearrangement of an ETN. It includes such information as follows:

- Intermachine trunking
- Facility restriction levels
- Network code
- Routing and translation records
- Time of day routing patterns and plant test codes.

Based on this NRG data, a translation order containing code and routing information is issued by the Network Administration translations group responsible for the particular ETN switch involved.

A. Order Reception

3.25 The NRG and the translation order are forwarded to the ETN/SOC at the SCC by the Network Administration translations group via company or US mail. The associated USO is forwarded to the ETN/SOC via ADNET by sales. Upon receipt, orders are reviewed for accuracy and obvious errors, such as deleted or unreasonable critical report dates, and incomplete code and routing information. If this service order review reveals discrepancies that require resolution, the ETN/SOC refers them to the responsible organization (PCO, SCO).

B. Order Processing and Control

3.26 A complete order is normally composed of a USO, NRG, and a translation order. Upon receipt of the first of these three documents, usually the USO, order processing and control is initiated and continues until the order is completed. After reviewing the USO, the ETN/SOC records it in the appropriate Order Control Log (see Fig. 1), initiates a Work File Face Sheet (see Fig. 2), and files the USO and the work file face sheet in the pending work file.

3.27 After the NRG and the translation order are received and reviewed for completeness and accuracy, the ETN/SOC records them in the Order Control Log (see Fig. 1), initiates a work request itemizing in detail the work required to complete the order, and updates the Work File Face Sheet (See Fig. 2) by recording the work items requested. The ETN/SOC then forwards the work request to the SCC dispatcher for pricing and loading to the translation force (see Section 190-130-160). The coordinator then files the USO, NRG, Translation Order, and the work file face sheet in the "in progress" file. It should be noted that the ETN/SOC can verify and enter the translations for the less complex NRG orders, precluding their assignment to the translation function.

3.28 The ETN/SOC should review the order control log and the "in progress" file on a continuing basis to ensure that NRG order critical dates (DVA, PTD, DD) are met and reported on schedule (see Section 010-520-105).

3.29 When the translation order has been verified by the translation force, the ETN/SOC records this fact in the work file face sheet and notifies the appropriate control office (PCO, SCO), that the DVA date has been met. On the PTD, the ETN/SOC ensures that all preservice tests have been completed, then updates the order control log and work file face sheet, and notifies the control office (PCO, SCO) that the PTD has been met. On the DD the ETN/SOC activates network service

and if required, coordinates this service activity with far-end locations. This coordinator then closes out associated logs, records, and notifies the control office (PCO, SCO) that the DD has been met.

3.30 If the completion of the NRG order is delayed due to such conditions as unavailable or inoperative equipment (hardware or software), the ETN/SOC issues a jeopardy report and forwards it to the proper control office (see Sections 010-520-105 and 010-520-115). The ETN/SOC then tracks the jeopardy condition and when it is resolved, notifies the concerned control office by forwarding a clearance report.

C. Installation

3.31 After pricing the NRG order, the SCC dispatcher loads the work to the translation force for verification and installation. When translation receives the work request, it checks and verifies this routing request using a No. 2 SCCS work station CRT to access the serving No. 1/1A ESS. After the translation force completes the NRG order assignment verification, it notifies the ETN/SOC in sufficient time for the DVA date to be met, and then records the completion of this process in the work request (see Section 190-130-130). The ETN/SOC records DVA completion in the order control log and the work file face sheet and notifies the appropriate control office (PCO, SCO) that DVA has been met.

3.32 The translation force prepares and enters the required translation in the recent change area of the No. 1/1A ESS per Section 231-118-320, Recent Change Message Program, Section 231-118-321, General Recent Change Information, Section 231-118-324, Rate and Route Recent Change Translations, and Section 231-118-348, Implementation of ETN Translations. After the translations are entered in recent change, the translation force notifies the ETN/SOC that the NRG order is ready for preservice testing.

D. Preservice Testing

3.33 The translation force normally conducts the preservice testing of NRG orders; however, when less complex jobs are involved, preservice testing may be conducted by the ETN/SOC. Preservice testing must be completed in sufficient time to meet the PTD, and is performed to ensure that the translations have been placed in recent change in accordance with the translation order. This test includes the verification of 3- and 6-digit translations, route index and route pattern translations. Verification input messages are covered in Section 231-118-324, Rate and Route Recent Change Translations, Section 231-118-348, Implementation of ETN Translations, IM 1A/6A001 and OM 1A/6A001.

3.34 After preservice testing is completed, the translation force records the test results in the work request, updates the load and work time record (see Section 190-130-160), and notifies the ETN/SOC via the dispatcher that preservice testing is completed and the PTD has been met. The ETN/SOC, in turn, notifies the proper control office (PCO, SCO) that PTD has been met, updates the order control log and the work file face sheet, and places the order in the DD file.

3.35 NRG orders which involve more complex arrangements, such as Automatic Alternate Routing (AAR) or Automatic Route Selection (ARS) may require end-to-end preservice testing under control of a project team or the Non-CO. See Section 309-400-001.

E. Order Completion

3.36 On the date and time specified in the USO, the ETN/SOC activates the new or rearranged network routing. This turn-up procedure is normally performed at the SCC using the trunk test console or the work station CRT at the same location. After the service is activated, the ETN/SOC records this fact in the work file face sheet and the order control log, files the USO, NRG, and the work file face sheet in the completed order file, and reports the DD met to the proper control office (PCO, SCO).

NETWORK FEATURE ORDER

3.37 A network feature order covers the installation or rearrangement of ETN features. It is composed of a USO, issued by sales, which specifies the features required and a translation order, prepared by the Network Administration translations group, which specifies the translations required to implement the order. Network feature orders provide such ETN capabilities as follows:

- Automatic route selection
- Facility restriction levels

- Account codes
- Authorization codes
- Trunk queueing
- Station Message Detail Recording (SMDR).

Should hardware, such as PUC/DL for SMDR also be required to provide a network feature, a circuit order must be issued to cover this portion of the installation.

Order Reception

3.38 The translation order is forwarded to the ETN/SOC at the SCC by the Network Administration translations group via company or US mail. The associated USO is forwarded to the ETN/SOC by sales via ADNET. Upon receipt, orders are reviewed for accuracy and obvious errors, such as deleted or unreasonable critical report dates, or incomplete feature information. If this service order review reveals discrepancies that require resolution, the ETN/SOC refers them to the responsible organization (PCO, SCO).

3.39 Network feature order procedures for order processing, control, installation, preservice testing, and order completion will be conducted in the same manner and using the same guidelines as outlined for NRG orders.

CIRCUIT ORDER/INSTALLATION FLOWCHARTS

3.40 Flowcharts, Figures 4 through 9, are provided to illustrate the ETN/SOCs involvement in the circuit order/installation process. The ETN/SOCs responsibilities may vary depending upon the type of circuit being installed and the designated responsibility (SCO or Non-CO) applicable to the SCC/CO. The following order processes are depicted by the flowcharts:

(a) Figure 4—ETN CO/CO Circuit Installation With the SCC/CO Designated SCO Responsibilities

(b) Figure 5—ETN CO/CO Circuit Installation With the SCC/CO Designated Non-CO Responsibilities

(c) Figure 6—ETN CO/CP Circuit Installation With the SCC/CO Designated Non-CO Responsibilities

(d) Figure 7—ETN PUC/Data Link Installation With the SCC/CO Designated Non-CO Responsibilities

(e) Figure 8—ETN Network Routing Guide Order Installation

(f) Figure 9—ETN Network Feature Order Installation.

4. MAINTENANCE

4.01 The SCC trunk maintenance force implements and coordinates the corrective and preventive maintenance requirements of the ETN circuits. This force responds to both customer reported trouble referred from a PCO and machine detected trouble. Necessary corrective action is initiated by recording, verifying, and sectionalizing reported trouble. Trunk maintenance will refer identified trouble conditions to the proper maintenance organization for repair and track the repair process to ensure that service is restored expeditiously. Scheduling and tracking preventive maintenance requirements according to Equipment Test Lists (ETLs) are also the responsibility of the SCC trunk maintenance force.

4.02 In order to detect, verify, and sectionalize ETN circuit troubles, trunk maintenance employs several test procedures. These include: CAROT tests, Automatic Progression Tests, SCCS, TN08, MMT, batch analysis programs, transmission tests, and operational tests, such as diagnostic, make busy, outpulsing, traffic release, voltmeter, and supervision tests. The SCC trunk test console (badger unit) is used to perform remote and demand operational tests, except for certain tests, such as dial pulsing trunk tests which must be performed at the No. 1/1A ESS Supplementary Trunk Test Panel (STTP) or Trunk and Line Test Panel (TLTP).

CORRECTIVE MAINTENANCE—CUSTOMER REPORTED TROUBLE

A. CO/CO Circuit—SCC/CO (SCO)

4.03 When an SCC/CO is designated as SCO for ETN CO/CO circuits, the trunk maintenance force receives and responds to customer trouble

reports referred from the PCO. (See Flowchart—Fig. 10.)

4.04 Upon receipt of a trouble report, trunk maintenance records it in the SCC Telephone Log (Fig. 11), and prepares a Trouble Ticket (Fig. 12). Should the specific circuit involved not be identified in the trouble report, which is frequently the case, trunk maintenance performs trunk group to trunk sectionalization using the SCC trunk test console (badger unit) to identify the specific trunk in trouble. (See IL 78-11-036, Trunk Maintenance Methods and Procedures.) Should the trouble be service affecting, trunk maintenance makes the trunk busy and requests the far-end SCC/CO (Non-CO) to turn down the trunk outgoing, if such a procedure is warranted to prevent service failures, as in the case of troubles on 2-way or incoming trunks. After removing the defective trunk from service, trunk maintenance performs operational tests from the trunk test console and transmission tests from the work station CRT to sectionalize the trouble. Should these tests indicate trouble at the near-end No. 1/1A ESS, trunk maintenance refers the trouble to the dispatcher for pricing and loading to the field maintenance force. (See Sections 190-130-130 and 190-130-160.)

4.05 Should these tests locate the trouble toward the far-end Non-CO, it is referred there for repair. Trunk maintenance has the responsibility of tracking repairs by the field forces on a continuing basis to ensure that circuits are returned to service expeditiously. Prompt repair of ETN circuits is essential because by contractual agreement ETN customers are entitled to billing rebates on circuits which are out of service. (See Section 309-400-004.)

4.06 After completing near-end repairs, the field force notifies trunk maintenance via the dispatcher, who records the repair time (see Section 190-130-160). When far-end trunk repairs are completed, the Non-CO notifies the SCO trunk maintenance which verifies the repair and turns up the trunk. If the circuit in question is a 2-way or incoming type, trunk maintenance requests the Non-CO to verify and restore the trunk at that end. Trunk maintenance then closes out the trouble ticket and the SCC telephone log, and notifies the PCO that the trunk circuit has been repaired and returned to service.

B. CO/CO Circuit—SCC/CO (Non-CO) (See Flowchart—Fig. 13)

4.07 When a SCC/CO is designated Non-CO for ETN CO/CO circuits, the Non-CO trunk maintenance receives and responds to customer trouble reports from the SCO at the far end. The Non-CO trunk maintenance assists the SCO with trouble verification and sectionalization, and turns down trunks under SCO control. Should the trouble locate toward the near end, the Non-CO trunk maintenance logs the trouble, refers it via dispatcher to the local field maintenance for repair, tracks the trouble, notifies the SCO when repairs have been completed, and closes out logs and trouble tickets.

C. CO/CP Circuit—SCC/CO (Non-CO) (See Flowchart—Fig. 14)

4.08 When a SCC/CO is assigned maintenance responsibilities for ETN CO/CP circuits terminated at a No. 1/1A ESS office, it functions as a Non-CO and interfaces with a PCO. Customer trouble reports are sectionalized by the PCO and then forwarded to the Non-CO trunk maintenance, if the trouble locates toward the No. 1/1A ESS. Upon receipt of a trouble report, trunk maintenance assists the PCO by performing trouble verification tests at the trunk test console (see IL 78-11-036, Trunk Maintenance Methods and Procedures), and should these tests indicate trouble at the serving No. 1/1A ESS, turns down the circuit under PCO control. It is the responsibility of the PCO to ensure that 2-way or incoming circuits are turned down at the customer premises, if such a procedure is warranted, to prevent service failures.

4.09 After removing a defective trunk circuit from service, trunk maintenance records the trouble in the SCC Telephone Log (Fig. 11), prepares a Trouble Ticket (Fig. 12), and refers this trouble to the dispatcher for pricing and loading to field maintenance forces at the No. 1/1A ESS. (See Sections 190-130-130 and 190-130-160.) Trunk maintenance has the responsibility of tracking trunk repairs by field forces on a continuing basis to ensure that equipment is repaired and returned to service promptly.

4.10 After completing repairs, the field force notifies trunk maintenance via the dispatcher, who records the time required to make repairs (see Section 190-130-160). Trunk maintenance verifies

repairs via the SCC trunk test console, notifies the PCO, and assists them with overall repair verification. The trunk is then turned up by trunk maintenance under PCO control and the telephone log and trouble ticket are closed out.

MACHINE DETECTED TROUBLES

4.11 The SCC trunk maintenance is alerted to machine detected troubles on ETN trunks via SCC alarms, Teletypewriter (TTY) messages, Critical Indicator Panel (CIP) and alarm monitor CRT, all of which are usually located in the trunk maintenance section of the SCC. When an ETN trunk is automatically made busy by a serving No. 1/1A ESS due to a machine detected trouble, the alarm monitor CRT displays a TN06 change in state message identifying the busied trunk by TNN and TGN, along with a unique alphanumeric ETN customer identification. The TN06 message also indicates the type of test failure which generated the automatic make busy, such as CAROT2 (Q2) failures, Trunk Error Analysis (TERA) list, failures on diagnosable trunks, or System DiaGnostic (SDG) failures.

4.12 SDG test failure indications include failures resulting from manually requested diagnostic trunk tests or automatically requested diagnostic tests of trunks placed on the Trunk Maintenance List (TML) because of previous call test failures, automatic progression test failures, continuity and polarity test failures, or TERA failures on diagnosable trunks. (See PD 1A045, Trunk and Service Circuit Diagnostic Programs, PD 1A045, Trunk Error Analysis Program, PD 1A049, Trunk and Service Circuit Maintenance Control Program, Section 190-102-100, CAROT Description, Section 190-102-010, CAROT Center and Control Office Responsibilities, Section 190-103-300, CAROT Center and Remote Office Responsibilities, and Output Manual [OM 1A001] or [OM 6A001].)

4.13 Machine detected troubles that presently do not cause trunks to be automatically made maintenance busy include the following:

- CAROT (Q1) Failures—Failures which do not exceed immediate action limits
- TERA Failures—On nondiagnosable trunks
- TN08 Failures—MMT or batch analysis ineffective attempts.

Note: No. 2 SCCS equipped with Generic 2ASC6 and later programs allow TN08 ***outgoing*** MMT failures to automatically lock out offending trunks if the Automatic Maintenance Limit (AML) is not exceeded.

A. TN08 Failures

4.14 When ETN trunk TN08 (ineffective attempt) failures exceed the parameters of the No. 2 SCCS MMT analysis program, the alarm monitor CRT displays a call failure message identifying the trunk by TNN and TGN and the ETN customer by alphanumeric code.

B. Permanent Signals

4.15 When a permanent signal is detected on an ETN trunk, it is placed in the High and Wet (H&W) state, making the trunk busy outgoing, and unable to accept incoming traffic. Upon release of this permanent signal, the trunk is automatically restored to service. If trunk maintenance desires to check the Trunk High And Wet (THAW) lists, an input message requesting this list is entered via the work station CRT. The No. 1/1A ESS responds by displaying a TN10 output message providing the requested information (see IM/OM 1A001) or (IM/OM 6A001).

C. Carrier Group Alarms

4.16 The No. 2 SCCS generates two types of Carrier Groups Alarm (CGA) failure messages for display on the trunk maintenance alarm monitor CRT: CGA screening and CGA multimessage thresholding (MMT).

- CGA Screening—When the SCCS receives a carrier group alarm failure message from a No. 1/1A ESS, it screens this message by retaining it for approximately one minute to allow a carrier group restored message to arrive, negating the CGA alarm. This screening arrangement limits the number of alarms generated by carrier group failures of short duration, such as carrier hits. If the SCCS does not receive a restoral message in the allotted time, it sounds a major alarm and displays a CGA screening failure indicating the following:

  (1) Failure type—CGA

(2) Failure category—CGA screening

(3) CGA number

(4) Alarm group number

(5) Alarm type.

However, this display provides no identification of the trunks associated with a failing carrier group, and as a result, any ETN trunks effected must be identified by checking carrier group records.

- CGA MMT—The SCCS uses MMT to count repeated CGA failures of less than one minute on each associated No. 1/1A ESS carrier group, and when the established failure rate parameters are exceeded, generates a CGA MMT display. This message indicates the following:

(1) Failure type—CGA

(2) Failure category—CGA

(3) CGA number

(4) Alarm group

(5) Alarm type (MMT).

4.17 All trunks in a failing carrier group are automatically made busy outgoing and disabled incoming by the serving ESS office, and when the carrier group is restored, the alarm monitor CRT displays an AR01 message to indicate this restoral.

D. TERA Failures

4.18 When a TERA failure occurs on an ETN trunk, the alarm monitor CRT displays a TE03 message identifying the trunk by TNN, TGN, and the ETN customer by alphanumeric code. The TE03 message also indicates the specific action taken by TERA in an attempt to diagnose the failure. The following action messages apply to ETN trunks:

- REQ RPT—Trunk is diagnosable and a repeat test has been requested

- REQ TML—Trunk is diagnosable and has been placed on TML for diagnosis

- RPT DENY—A repeat test was requested to confirm a high error rate, but was denied because no repeat test register was available or trunk could not be taken out of service because the AML had been reached

- TWAY DNA—High error on a nondiagnosable 2-way trunk—trunk returned to service.

4.19 In addition to the TE03 message, the alarm monitor CRT displays a TN06 message when a diagnosable ETN trunk has been removed from service due to a diagnosed TERA failure or when a diagnosable ETN trunk fails TERA requested diagnostics but cannot be removed from service because the AML has been reached. This TN06 message supplements the TE03 message by revealing that the trunk has been removed from service due to a TERA failure and identifying it by TNN, TGN, and ETN customer number. Conversely, nondiagnosable ETN trunks experiencing TERA failures do not generate TN06 messages, since they are not automatically made busy but instead are returned to service.

CORRECTIVE ACTION—MACHINE DETECTED TROUBLES

A. CO/CO Circuit SCC/CO (SCO) (See Flowchart—Fig. 15)

4.20 As previously stated, the SCC trunk maintenance force at the SCO is alerted to machine detected troubles on ETN trunks via minor and major audible alarms, TTY messages, CIP, and an alarm monitor CRT. When the No. 1/1A ESS detects a major fault, the offending trunk is automatically locked out and trunk maintenance is alerted to the trunk change of state by a TN06 output message on the alarm monitor CRT. After being alerted to such machine detected troubles as SDG, TERA, CAROT, H&W, or CGA, trunk maintenance first verifies the trouble by performing diagnostic tests at the SCC trunk test console (see IL 78-11-036, Trunk Maintenance Methods and Procedures). If trunk maintenance detects trouble, the trunk is locked out (unless the No. 1/1A ESS diagnostic program has already made the trunk busy). The trouble is then recorded in the SCC Control Log (Fig. 16) and a Trouble Ticket (Fig. 12) is prepared. If it is apparent that the trunk will be locked out for more than nine minutes, trunk maintenance must notify the PCO of the action taken. Trunk maintenance may also request the far-end Non-CO to turn down the faulty trunk, if

such a procedure is justified to prevent service failures on 2-way or incoming trunks.

4.21 Next, trunk maintenance performs operational and transmission tests using the SCC trunk test console to sectionalize the trouble. Should these sectionalization tests indicate trouble at the near-end No. 1/1A ESS, trunk maintenance refers it to the dispatcher for pricing and loading to the field maintenance force (see Sections 190-130-130 and 190-130-160). Should sectionalization locate the trouble toward the far-end, it is referred to the Non-CO for repair. Trunk maintenance at the SCO has the responsibility of tracking trunk repairs to ensure that service is restored as soon as possible, since as explained earlier, customers are entitled to rebates on TOS.

4.22 After clearing the trouble, the field force notifies trunk maintenance via the dispatcher, who records the repair time (see Section 190-130-160). When a far-end trouble is cleared, the Non-CO notifies the SCO. Trunk maintenance verifies the repair using the trunk test console, turns up the trunk at the near-end, and should a 2-way or incoming trunk be involved, requests the far-end to verify and restore the trunk to service. Trunk maintenance then closes out the trouble ticket, the control log, and notifies the PCO of the action taken. If the initial verification tests of the ETN trunk indicate All Tests Passed (ATP), trunk maintenance should review trouble records for previous reports, and based on the information gathered, perform diagnostic repeat tests.

B. CO/CO Circuit SCC/CO (Non-CO) (See Flowchart—Fig. 17)

4.23 The Non-CO responds to No. 1/1A ESS. The machine detects ETN CO/CO circuit troubles in basically the same manner as the SCO. The Non-CO trunk maintenance verifies the trouble by performing diagnostic tests at the SCC trunk test console and if trouble is detected, ensures that the trunk is locked out of service; then records the trouble in the SCC Control Log (Fig. 16) and prepares a Trouble Ticket (Fig. 12). Should diagnostic testing at the Non-CO isolate the trouble toward the Non-CO end, trunk maintenance refers the trouble to the field forces via the dispatcher and notifies the SCO of the action taken. Should diagnostic testing at the Non-CO indicate that the trouble requires sectionalization, it is referred to the SCO. The Non-CO trunk maintenance assists the SCO with trouble verification, sectionalization, and referral as required, tracks near-end trouble, notifies the SCO when repairs are completed, turns up the circuit under SCO control, and closes out the control log and the trouble ticket.

C. CO/CP Circuit SCC/CO (Non-CO) (See Flowchart—Fig. 18)

4.24 As previously stated, when a SCC/CO is assigned maintenance responsibilities for ETN CO/CP circuits terminated on a No. 1/1A ESS switching vehicle, it functions as a Non-CO and interfaces with a PCO Special Service Center/Serving Test Center (SSC/STC). When trunk maintenance is alerted to a No. 1/1A machine detected trouble on an ETN CO/CP circuit, the trouble is verified by performing diagnostic tests at the trunk test console; and if trouble is detected, trunk maintenance ensures that the trunk is locked out of service, then records the trouble in a SCC Control Log (Fig. 16), and prepares a Trouble Ticket (Fig. 12). Should diagnostic testing isolate the trouble toward the near-end, trunk maintenance refers the trouble to field force via the dispatcher and notifies the PCO of the action taken. Should diagnostic testing indicate that the trouble requires sectionalization, trunk maintenance refers it to the PCO, and assists with trouble verification and sectionalization. If the trouble locates back to the near-end, it is referred to the field force for repair. Trunk maintenance tracks the trouble, notifies the PCO when repairs are completed, turns up the circuit under PCO control, and closes out the control log and the trouble ticket.

NO. 2 SCCS TN08 FAILURE ANALYSIS

4.25 The No. 2 SCCS performs two types of analysis on the No. 1/1A ESS TN08 failures to isolate troubles on trunks, trunk groups, service circuits, and TN08 MMT analysis and TN08 batch analysis. These analysis procedures are described in detail in GL 77-02-162 and Section 190-113-315.

A. TN08 MMT Analysis

4.26 TN08 MMT analysis is used primarily as a means of service protection, since it quickly detects hard faults on trunks and service circuits. This analysis is performed in real time by the No. 2 SCCS as TN08 failure output messages are received from an associated No. 1/1A ESS office. As a result of this analysis program, TN08 MMT

exception reports are generated on incoming and outgoing trunks, and service circuits including transmitters and receivers exceeding the call failure rate parameters set for that particular No. 1/1A ESS office. These exception reports are displayed as they are generated by the No. 2 SCCS on the SCC trunk maintenance alarm monitor CRT. Exception reports displayed identify the No. 1/1A ESS office, date and time of alarm, alarm level (minor or major), type of failure (TN08), type of trunk (incoming or outgoing), service circuit (transmitter or receiver), TNN of the reported unit, and the call failure rate. Due to limited message space on the alarm monitor CRT, exception reports on ETN trunks do not display a TN08 failure identifier but instead display an alphanumeric ETN customer identifier. This unique ETN identifier is displayed in the interest of expediting the repair of these trunks, which are subject to customer billing rebates when out of service. (See Section 309-400-004.) Therefore, when trunk maintenance receives a TN08 failure on an ETN outgoing trunk, the recommended one hour delay is eliminated before a second diagnostic test is performed on a trunk that failed the initial diagnostic test. (See GL 77-03-162.)

4.27 When a TN08 MMT exception report indicates that an ETN trunk has failed outgoing, trunk maintenance locks out the offending trunk and verifies the trouble by performing diagnostic tests, or manual tests if the trunk is nondiagnosable, using the SCC trunk test console (see IL 78-11-036). If the trunk fails the diagnostic or manual tests, trunk maintenance records the trouble in the SCC Control Log (Fig. 16), and prepares a Trouble Ticket (Fig. 12). If the trunk repair process requires the trunk to be locked out for more than nine minutes, the control office must be notified. Trunk maintenance then processes this trouble report. (See Flowchart—Fig. 19.)

4.28 Should the diagnostic tests indicate ATP or diagnostics not available, and should the TN08 failure show that the message threshold count was reached in over two minutes, the trunk is restored to service. However, if this threshold was reached in two minutes or less, trunk maintenance logs the TN08 exception report and prepares a trouble ticket indicating that the trunk passed diagnostics but fails in service. If test results show that diagnostics are blocked, the tests should be repeated. However, if these diagnostics are blocked three times in an 8-to-10-minute period, trunk maintenance logs the TN08 exception report, prepares a trouble ticket noting on it that "diagnostic blocked" parameters were exceeded.

4.29 When a TN08 MMT exception report indicates an ETN incoming trunk failure, trunk maintenance proceeds in a different manner than it would on ETN outgoing failures, because the validity of diagnostic tests on incoming trunks cannot be assured unless the trunk is first locked out at the originating end. After receiving such a report, trunk maintenance determines if a trouble ticket on this trunk is outstanding. Should records indicate an outstanding trouble ticket, the trunk is placed in the disabled state to prevent additional failures and the originating end is notified via the control office hierarchy (PCO, SCO, Non-CO) that the trunk has been disabled at the terminating end, and should be locked out. Should records indicate no trouble ticket outstanding, the exception report is recorded in the SCC Control Log (Fig. 16), a Trouble Ticket (Fig. 12) is prepared, and the originating end is requested to lock out the offending trunk via the control office hierarchy (PCO, SCO, Non-CO). When this has been accomplished, trunk maintenance verifies the trouble by performing diagnostic tests at the SCC trunk console (see IL 78-11-036). Should diagnostic tests indicate ATP or NTST, the control office responsible for the originating end is informed of the test results and requested to verify the trunk from that end. This referral is then recorded on the trouble ticket. Should test results indicate diagnostic failures or diagnostic blocked parameters are exceeded (blocked three times in 8-to-10 minutes), trunk maintenance processes this report based upon the diagnostic results obtained. (See Flowchart—Fig. 20.)

B. TN08 Batch Analysis (See Flowchart—Fig. 21)

4.30 TN08 batch analysis is a scheduled routine analysis of No. 1/1A ESS TN08 failure messages received during a specified period (normally 24 hours). This analysis program is used primarily as a means of service improvement, since it can identify recurrent or intermittent troubles on trunks and service circuits that cannot be readily identified by TN08 MMT analysis. TN08 batch analysis is performed under the control of trunk maintenance, and is normally scheduled to run daily during the interval between 12:00 midnight and 5:00 a.m. for maintenance work load distribution purposes. The results of this daily batch analysis are printed on the trunk maintenance TTY at the

SCC. This report identifies trunks, trunk groups, and service circuits, which exceed the TN08 batch analysis failure parameters for a particular No. 1/1A ESS office. It presents such information as the time interval covered by the analysis, the individual thresholds for trunks, trunk groups, service circuits, failure count for a particular unit or group, TNN, TGN, and pulsing types of the reported units. TN08 batch analysis reports involving ETN trunks also provide an alphanumeric service type and customer identification so that special ETN maintenance procedures can be applied.

4.31 When a TN08 batch analysis report indicates that an ETN trunk or trunk group has failed, trunk maintenance accumulates a 1-week history of batch analysis reports on the offending ETN unit to determine the number of times failures were reported and the total number of failures. This information is then added to the batch analysis report under study. Next, trunk maintenance determines if a trouble ticket is outstanding on the ETN trunk. Should records indicate the existence of a trouble ticket, the ticket number is entered on the batch analysis report as an aid to future analysis. If no outstanding ticket exists, and the batch analysis history reveals two previous reports on this unit, a Trouble Ticket (Fig. 12) is issued and recorded in the SCC Control Log (Fig. 16) and on the batch analysis report. Finally, a copy of previous reports against the trunk or trunk group is attached to the trouble ticket. Trunk maintenance then sectionalizes the trouble and refers it for repair.

PREVENTIVE MAINTENANCE (See Flowcharts—Figures 22 Through 24)

4.32 The coordination and implementation of Preventive Maintenance (PM) on ETN trunks is the responsibility of the control office (PCO, SCO) accountable for corrective maintenance of these same ETN trunks. Therefore, the SCC/SCO is responsible for PM of CO/CO circuits, and the PCO (STC/SSC or RSB) is responsible for PM of CO/CP circuits.

4.33 ETN trunk PM involves the performance of scheduled automatic operational testing at the serving No. 1/1A ESS switching vehicle, and the performance of scheduled automatic transmission testing from a remotely located CAROT test center.

A. Automatic Progression Testing

4.34 Preventive Maintenance of No. 1/1A ESS trunks including ETN trunks is performed via the No. 1/1A ESS Automatic Progression Test (APT) program. The APT is an outgoing operational test of trunks selected sequentially by TNN; it is normally performed on a scheduled basis between the hours of 12 midnight and 5:00 a.m., so as not to interfere with Normal Business Day (NBD) traffic of both Message Telephone Service (MTS), and special services, such as ETN. This test is only performed on diagnosable trunks, which are trunks that can be dial terminated to synchronous, nonsynchronous, or busy line test lines at the distant end. Conversely, nondiagnosable trunks not having access to these test facilities are bypassed by the APT program. This limitation precludes ETN trunks that terminate on switching vehicles without test arrangements from this PM program (see PD 1A045, Trunk and Service Circuit Diagnostic Programs, and PD 1A049, Trunk and Service Circuit Maintenance Control Program).

4.35 After the scheduled APT has been completed, trunk maintenance reviews the TOS list and TN06 output messages for APT and other failures on ETN trunks. Having identified these offending trunks, trunk maintenance employs corrective maintenance procedures for machine detected trunk troubles as previously described.

B. CAROT Transmission Testing

4.36 ETN preventive maintenance from a remotely located CAROT test center involves the performance of 2-way automatic transmission tests on ETN CO/CO trunks which can be dial terminated on a 105-type CAROT test line at the serving No. 1/1A switching machine or the performance of far- to near-end tests on ETN CO/CP trunks which can be dial terminated at the CP end to a Loop Around Test Line (LATL). CAROT detected ETN trunk transmission failures are reported to the SCC responsible for maintenance via the SCC CAROT terminal.

4.37 There are two basic types of trunk transmission trouble reports received on the CAROT terminal: Q-1 and Q-2 reports. Q-2 reports are considered immediate action reports and ETN trunks appearing on them should be removed from service. ETN trunks can optionally be automatically made maintenance busy when failures occur on CAROT2

systems providing the No. 1/1A ESS AML is not exceeded. Should an ETN trunk be made busy in this manner, in addition to being reported via the CAROT terminal, a TN06 change of state message is displayed on the trunk maintenance alarm monitor CRT identifying the offending trunk, the type of failure, and ETN customer. Trunk maintenance compares the Q-2 report with the TOS list to determine if operational failures or previous reports have been received, and then employs corrective maintenance procedures for machine detected troubles as previously described.

4.38 Q-1 reports are not considered immediate action reports and ETN trunks appearing on them need not be removed from service. These Q-1 reports are verified, diagnosed, and repaired in a standard manner by trunk maintenance in accordance with corrective maintenance procedures for machine detected trouble as previously described.

PERIPHERAL UNIT CONTROLLER DATA LINK (PUC/DL) MAINTENANCE

4.39 The PUC/DL interfaces with the No. 1/1A ESS and is used in conjunction with ETN service to provide traffic and message detail data and network control features to a Customer Data Acquisition and Control (CDAC) vehicle. PUC/DL maintenance input/output messages are conveyed to the SCC via the host No. 1/1A ESS maintenance channel. Alarmed output messages appear on the SCC alarm monitor CRT and input messages are entered via the SCC office controller work station CRT (see PR 1A448—PUC Maintenance Programs and IM/OM 1A001C or IM/OM 6A001C).

A. Corrective Maintenance—Machine Detected Troubles (See Flowchart—Fig. 25)

4.40 PUC/DL troubles are normally detected by the PUC itself or by the host ESS rather than being detected and reported by customers. The PUC/DL is continually checking its own status and reporting the results to the host ESS employing continuous use and periodic testing techniques to detect faults. When PUC/DL faults are detected, the host ESS makes the offending circuit busy, performs fault recovery diagnostics, and rectifies these conditions by sending diagnostic and reconfiguration orders to the PUC/DL. The results of these software fault recovery and reconfiguration routines are transmitted to the No. 2 SCCS for evaluation by the SCC office controller. After receiving these nonalarmed messages by periodic browsing from a work station CRT, the office controller analyzes them and determines if additional maintenance action is required.

4.41 PUC/DL troubles which cannot be corrected by fault recovery and reconfiguration routines are reported to the SCC office controller via audible alarms, CIP, and alarm monitor CRT. These PUC/DL troubles include hardware faults that require repair or replacement of equipment, software faults that require manual reinitialization, or reconfiguration.

4.42 After being alerted to a PUC/DL trouble, the SCC office controller verifies the trouble by performing diagnostic tests at the SCC work station CRT using messages delineated in input and output manuals (see IM/OM 1A001C) or IM/OM 6A001C. If trouble is detected, the office controller sectionalizes the trouble, records it in the SCC Control Log (Fig. 16) and prepares a Trouble Ticket (Fig. 12). Central office troubles are referred to the dispatcher for pricing and loading to field maintenance (see Sections 190-130-130 and 190-130-160). After being notified of repair completion via the dispatcher, the office controller verifies repairs using the work station CRT. With the exception of certain manually forced states of the PUC/DL, circuits that pass diagnostic tests are automatically restored to service. The office controller then closes out the control log and the trouble ticket. If manual reinitialization or reconfiguration is required to clear a PUC/DL trouble, the office controller enters the proper messages at the work station CRT to initiate these procedures and closes out the control log and the trouble ticket. Should PUC/DL trouble sectionalization indicate a data link trouble toward the far end, the office controller refers it to the responsible RSB.

4.43 The office controller refers complex or intermittent PUC/DL troubles to the analysis group. If the analyzer determines that field investigation is warranted to clear the trouble, it is forwarded to the dispatcher for pricing and loading to field maintenance. When repairs are completed, the analysis group is notified via the dispatcher. The analyzer verifies the repairs, updates analysis records, and forwards the results to the office controller, who closes out the control log and the trouble ticket.

B. Corrective Maintenance—Customer Reported Troubles (See Flowchart—Fig. 26)

4.44 The SCC office controller normally receives ETN customer PUC/DL trouble report referrals from the PCO (STC/SSC, RSB) after they have been sectionalized to the serving No. 1/1A ESS by that PCO. Upon receipt of a trouble report, the office controller assists the PCO by performing trouble verification tests at the work station CRT using PUC/DL input/output messages. If the PUC/DL fails diagnostics, the offending circuit is automatically removed from service by the host No. 1/1A ESS (see IM/OM 1A001C or IM/OM 6A001C.) Should the trouble impair data link service, the faulty circuit is kept out of service with the approval of the PCO. The office controller then records and processes the trouble as previously described.

C. Preventive Maintenance (PM)

4.45 The SCC dispatcher is responsible for administering PUC/DL PM. The dispatcher schedules, records, and loads PM routines to the field forces in accordance with appropriate ETLs. PM routines that may adversely affect service should be performed outside the ETN customer's NBD period. The field force must notify the SCC office controller before starting PUC/DL - PM routines, so that resulting trouble conditions or reports can be discounted. When appropriate, the SCC should notify the PCO of PM activity for the same reason.

5. ADMINISTRATION

5.01 The installation and maintenance of ETN service requires the SCC to prepare, process, and maintain various records. These include the following:

- Order control logs
- Work file face sheets
- Work requests
- Circuit layout records
- Trunk orders
- USOs
- Translation orders
- NRGs
- Trouble logs
- Trouble tickets
- Trouble history records
- TOS lists
- TN08 batch analysis reports.

The SCC/CO functions that use these records include: ETN/SOC, trunk maintenance, translations, dispatcher, office controller, office analyzer, and field maintenance. For additional information on Central Office Maintenance Administrative Records and Procedures see Sections 190-130-110, 190-130-120, 190-130-130, and Controlled Maintenance Plan, Sections 201-020-510 and 231-001-010.

A. USO Order Control Log (Fig. 1)

5.02 The ETN/SOC initiates and maintains this order control log using it to record and track the status of ETN trunks, network routing and network feature orders. The control log entries include the following:

- USO number
- Circuit order number
- Trunk or translation order number
- Circuit telephone number
- Critical report dates (DVA, PTD, DD).

B. Work File Face Sheet (Fig. 2)

5.03 The ETN/SOC initiates and maintains this record using it to record job details and track the status of ETN trunk, network routing, or network feature orders. The information recorded on this form includes the following:

- Job description
- Job loading steps
- Work type

- Start date
- Loaded date
- Assignee
- Status
- Estimated and actual work time
- Trunk work units
- Critical dates (DVA, PTD, DD)
- Jeopardy report details.

The work file face sheet is filed with the USO until the service order is completed. A copy of this form can be forwarded to the field along with the Work Request (Fig. 3) or be substituted for it, depending on the complexity of the job.

C. Work Request (Fig. 3)

5.04 The ETN/SOC initiates these forms and forwards them to the dispatcher for the pricing and loading of service orders to the field maintenance and translation forces. Work requests cover the verification of equipment assignments, installation and testing of service orders, and hardware and software. Work requests give:

- Description of the work
- Job start and completion dates
- Estimated and actual work time
- Action taken to complete the work.

D. Circuit Layout Record Card (CLRC)

5.05 The CPB issues this input document and forwards it to the SCC (ETN/SOC) via company or US mail. The CLRC provides the following:

- Associated order numbers
- The DD
- Transmission loss and noise measurements
- ETN control offices (NCO, PCO, SCO)
- Sequential list of equipments
- Facilities which constitute a circuit layout and the offices involved.

5.06 The ETN/SOC files the CLRC with the USO in the "in progress" file until the order is completed, and after the DD is met, places it in the CLRC file per Sections 190-130-130 and 682-000-011, CLRC Description.

E. Trunk Order

5.07 The CPB issues this input document and forwards it to the ETN/SOC at the SCC via company or US mail. It lists the following information:

- ETN trunk number
- Trunk group
- Trunk network number
- Trunk class code
- Cable and pair assignments
- Type and direction of pulsing
- Trunk layout and transmission data
- PTD and DD.

5.08 The ETN/SOC files the trunk order with the USO in the "in progress" file until the order is completed, and after the DD is met, files it with other completed trunk orders.

F. Universal Service Order (USO)

5.09 Sales issues this input document and transmits it to the ETN/SOC at the SCC via ADNET. It has the following functions:

- Authorizes the installation, rearrangement, or disconnect of ETN service
- Lists the circuits, network routing, and network features required
- Lists associated order numbers

- Identifies ETN control offices (NCO, PCO, SCO, RRO)
- Specifies the order critical report dates (DVA, PTD, DD).

The ETN/SOC files the USO in the "in progress" file until the order is completed, and after the DD is met, files it with other completed USOs.

G. Translation Order

5.10 The Network Administration translations group issues this document and forwards it to the ETN/SOC at the SCC via company or US mail. It contains the code and routing information required to place or rearrange ETN routing or feature translations in the serving No. 1/1A ESS. The ETN/SOC files the translation order with the USO in the "in progress" file until the order is completed, and after the DD is met, places it in the translation file.

H. Network Routing Guide (NRG)

5.11 The NRG provides the network information required to implement the installation and rearrangement of an ETN. It includes such information as the following:

- Intermachine trunking
- Facility restriction levels
- Network code
- Routing and translation records
- Time of day routing patterns
- Plant test codes.

The information contained in the NRG is required by the Network Administration translations group to write the associated translation order.

5.12 The ETN/SOC files the NRG with the USO in the "in progress" file until the order is completed, and after the DD is met, places it in the translation file.

I. SCC Telephone Log (Fig. 11)

5.13 Trunk maintenance uses this log to: (1) record customer reported ETN troubles received from control offices or other work centers, (2) track their repair, and (3) indicate the actions taken to clear them (see Section 190-130-130.) The office controller function uses a similar log to record and track customer reported PUC/DL troubles from control offices and work centers.

J. SCC Control Log (Fig. 16)

5.14 Trunk maintenance uses this log to: (1) record machine detected ETN troubles, (2) track their repair, and (3) indicate the actions taken to clear them (see Section 190-130-130). The office controller function uses a similar log to record and track machine detected PUC/DL troubles.

K. ETN Trouble Tickets (Fig. 12)

5.15 No. 1/1A ESS Trouble Ticket Form E-5231 is used to record both customer reported and machine detected ETN troubles, and the results of ensuing investigations. Trouble tickets should be prepared in accordance with Section 231-001-010, Controlled Maintenance Plan 2-Wire No. 1/1A ESS. To facilitate prompt repair of ETN circuits, the customer's alphanumeric identifier should be added to the trouble ticket, especially, since ETN customers receive billing rebates on circuits out of service for more than two hours.

L. Trouble History (Fig. 27)

5.16 The SCC trunk maintenance function keeps a history record of ETN troubles, and uses it as an aid in the analysis of complex or intermittent troubles. Each history record entry should include the following:

(a) Date and time reported

(b) Failing circuit or feature

(c) Trouble description

(d) The final disposition.

M. CAROT Data Base Administration

5.17 CAROT testing of ETN trunks is desirable and should be used for transmission testing

of CO/CO and CO/CP circuits, whenever testing facilities are available. Its application requires the forwarding of specific information from the SCC via the control office hierarchy, to build the CAROT control center data base. The ETN/SOC prepares the CAROT data base information on new circuit orders, and forwards it to the proper control office (PCO, SCO) via ADNET in sufficient time to meet the DVA date.

5.18 Upon receipt of the CAROT data, the CAROT center enters it in the data base, enabling the SCC to use CAROT for demand testing of circuit orders, and preventive maintenance after cutover (see Section 190-102-100, Centralized Automatic Reporting on Trunks — CAROT2 Description, and Section 190-102-010, Duties and Responsibilities of the CAROT Center and Control Offices).

6. OTHER COMMON CARRIER (OCC)

6.01 ETN circuits that terminate in No. 1/1A ESS switching vehicles and interconnect with OCC facilities are classified as Central Office connecting facilities (COCF), which are commonly referred to as end-links. These OTC provided end-links are considered ETN CO/CP circuits, since they terminate at OCC premises for interconnection with their facilities. Consequently, the control office hierarchy established for ETN CO/CP circuit installation and maintenance applies to end-links, with the SSC designated PCO and the SCC designated Non-CO. To provide effective communications with an OCC, a Trouble Reporting Control Office (TRCO) is also designated and interfaces between the OCC and the PCO to implement the installation and repair of end-links (see Section 471-200-001, Installation and Repair Responsibilities For Facilities Furnished to Other Common Carriers).

A. Installation

6.02 The SCC processes ETN circuit orders for end-links in accordance with Part 3 of this section, which covers the reception, processing and control, installation, preservice testing, and completion of CO/CP circuit orders.

B. Corrective Maintenance

6.03 The SCC processes OCC reported end-link trouble in accordance with Part 4 of this section, which covers the repair procedures for CO/CP circuits.

C. Preventive Maintenance

6.04 Scheduled maintenance including APT and CAROT is not performed on end-links. However, upon request from the PCO, the SCC assists the OCC with their routine transmission and operational tests (see Section 471-200-011).

7. GLOSSARY OF TERMS

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

AAR	Automatic Alternate Routing
AML	Automatic Maintenance Limit
AMTP	Auxiliary Manual Test Position
APT	Automatic Progression Test
ARS	Automatic Route Selection
ATP	All Tests Passed
CAROT	Centralized Automatic Reporting On Trunks
CDAC	Customer Data Acquisition and Control
CGA	Carrier Group Alarm
CIP	Critical Indicator Panel
CLRC	Circuit Layout Record Card
CO/CO	Central Office to Central Office
CO/CP	Central Office Customer Premises
CPB	Circuit Provisioning Bureau
CRT	Cathode Ray Tube
CTX-CO	Centrex Central Office
DD	Due Date
DVA	Designed, Verified, Assigned
ETLs	Equipment Test Lists
H&W	High and Wet

LATL	Loop Around Test Line
MMT	Multiple Message Thresholding
MTS	Message Telephone Service
MTTP	Manual Trunk Test Position
NBD	Normal Business Day
NCO	Network Central Office
Non-CO	Non-Control Office
OTC	Operating Telephone Company
PBX	Private Branch Exchange
PCO	Plant Control Office
PM	Preventive Maintenance
PTD	Plant Test Date
PUC/DL	Peripheral Unit Controller/Data Link
RRO	Responsible Reporting Office
RSB	Repair Service Bureau
SCC/CO	Switching Control Center/Central Office
SDG	System Diagnostic
SCO	Sub-Control Office
SOC	Service Order Coordinator
SCCS	Switching Control Center System
TERA	Trunk Error Analysis
THAW	Trunk High and Wet
TLTP	Trunk and Line Test Panel
TOS	Trunk Out of Service
TTY	Teletypewriter
USO	Universal Service Order

ORDER CONTROL LOG

MO____ DAY____ YR____

	SSO ORD NO.	CKT ORD NO.	USSO ORD NO.	CKT TEL NO.	D RC	PTD	DD	PE 1	PE 2	COMPLETION
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
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23										
24										
25										
26										
27										
28										
29										

DATE FILE COPY

EXAMPLE

Fig. 1—Order Control Log (3.10) (3.11) (3.26) (3.27) (5.02)

WORK FILE FACE SHEET E-10210

RECEIVED DATE _____

OFFICE/WORK FORCE _____ DUE DATE _____

☐ IN PROGRESS FILE ☐ SCHEDULE FILE SCHEDULED DATE _____ TIME _____

☐ PENDING WORK FILE ☐ DUE DATE FILE

☐ FUTURE WORK FILE ☐ PROGRAMMABLE FILE PRIORITY _____

ITEM IDENTIFICATION _____ RELATED ITEMS _____

DESCRIPTION OF WORK _____

NUMBER OF PRICED UNITS _____

_____

COORDINATION _____

_____

_____

_____

LOAD STEP	WORK TYPE CODE	START DATE	LOADED DATE	ASSIGNED TO	STATUS	TIME ESTIMATED/ACTUAL

EXAMPLE

TRUNK WORK UNITS — POST ON FORM E-4419

	DISTRIBUTING FRAME ACTIVITIES																			ADDITIONAL WORK													
	NON-GAIN CKTS.						CARRIER CKTS.						REPTR,DLL,ETC.										TRUNKS			S.P. SERVICES					COMMON EQP.				
	TERM			INTER			TERM			INTER			TERM			INTER			TIE	MISC	TRF REG	4W	COORD	4W/2W	4W	TEL	TG	COORD	TUR REG	STRAP IN	STRAP OUT	CARD	MESS	OTHER
LN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	24	26	27	28	29	30	31	32	33	34	35	36	37

TYPE ☐ MANUAL & CIRCUIT ☐ PANEL ☐ SXS ☐ XBAR ☐ ESS STD. FRAME ☐ ESS MOD FRAME

EQUIPMENT TEST LIST

TRUNK GROUP OR JOB NUMBER _____ ADD _____ REMOVE _____ TOTAL _____

UPDATE ETL_____ POST W. U._____ DATE COMPL. NOTICE SENT _____

Fig. 2—Work File Face Sheet (3.10) (3.11) (3.26) (3.27) (5.03)

WORK REQUEST E-6838

NUMBER_____

RECEIVED FROM_____ LOCATION_____ DATE_____

TELEPHONE NUMBER_____ REQUIRED COMPLETION DATE_____

COMPLETION REPORT REQUIRED_____ TO_____

EARLIEST START DATE_____ LATEST START DATE_____

ASSIGN TO (TRICK PREF)_____ WORK FORCE_____

ESTIMATED HOURS_____ EST./ORDER NUM_____ WORK TYPE CODE_____

☐ DEMAND LOAD ☐ DUE DATE_____

☐ SCHEDULED _____ ☐ PROGRAMMABLE_____

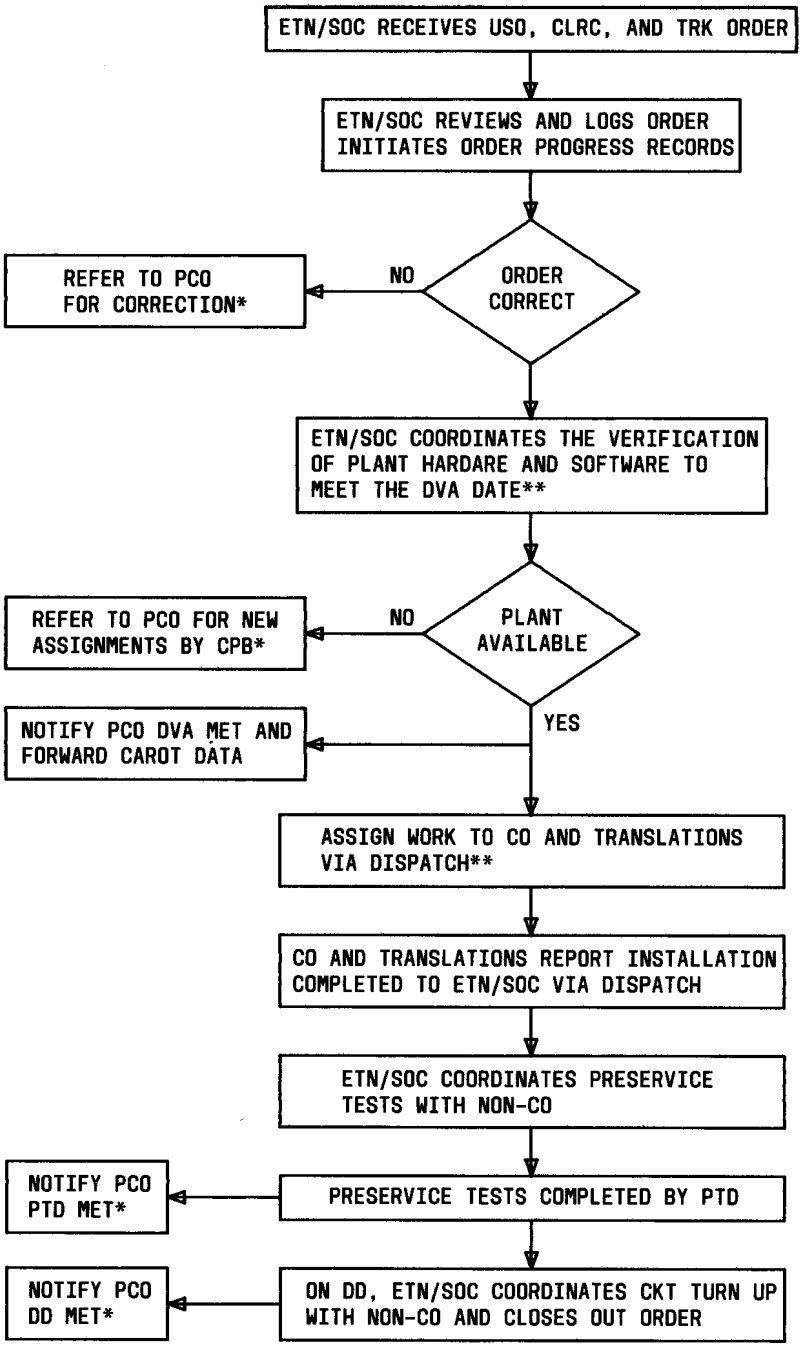
WORK REQUIRED:

EXAMPLE

ACTION TAKEN:

BY: WORK TIME_____ RETURN TO: ☐ ORIGINATOR ☐ FILE

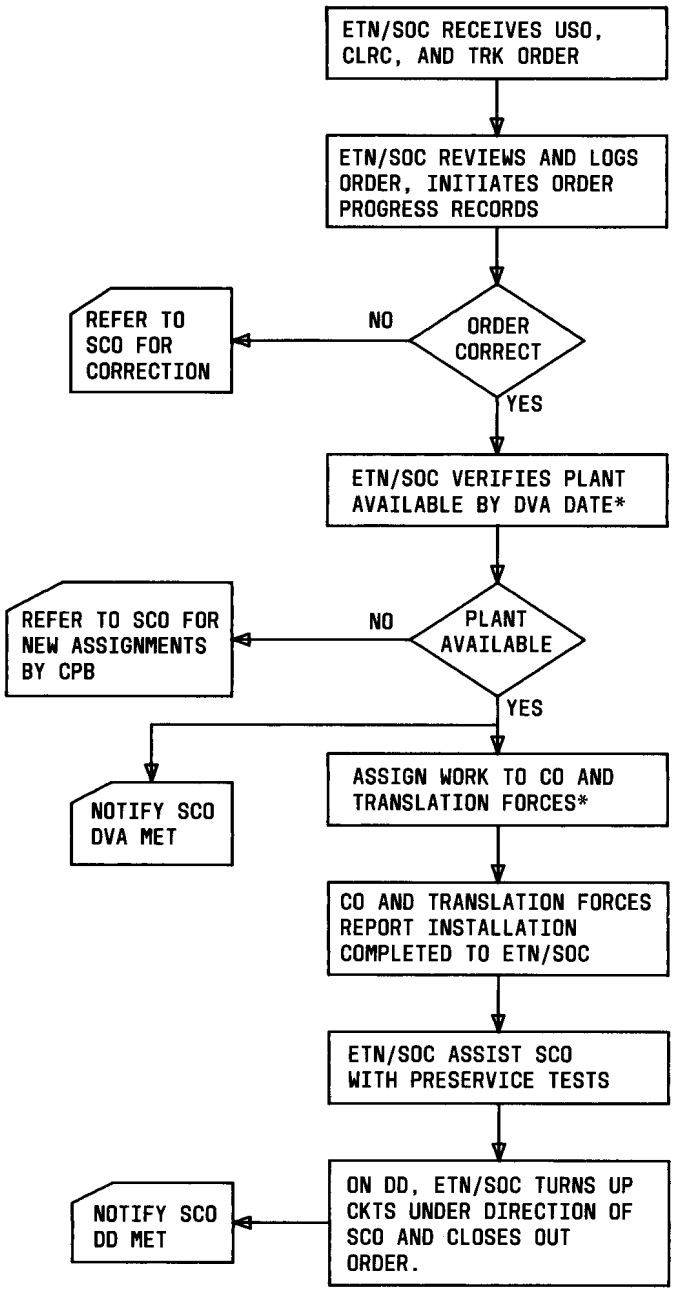
Fig. 3—Work Request (3.11) (5.03) (5.04)



*STC OR SCC NORMALLY FUNCTION AS PCO FOR INTERSTATE CKTS AND RSB FUNCTIONS AS PCO FOR INTRASTATE CKTS.

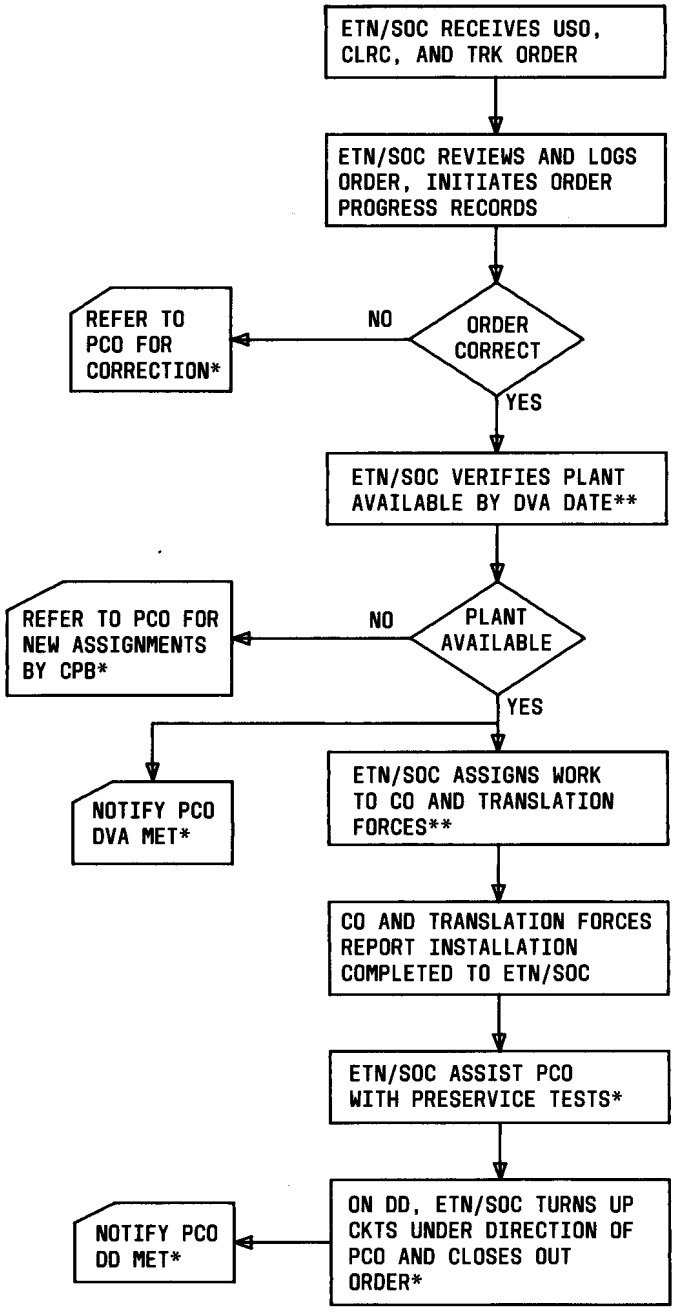
**ETN/SOC CAN VERIFY AND ENTER TRANSLATIONS FOR LESS COMPLEX JOBS.

Fig. 4—ETN CO-CO Circuit Installation-SCC/CO Designated SCO (3.40)



* ETN/SOC CAN VERIFY AND ENTER TRANSLATIONS FOR THE LESS COMPLEX JOBS.

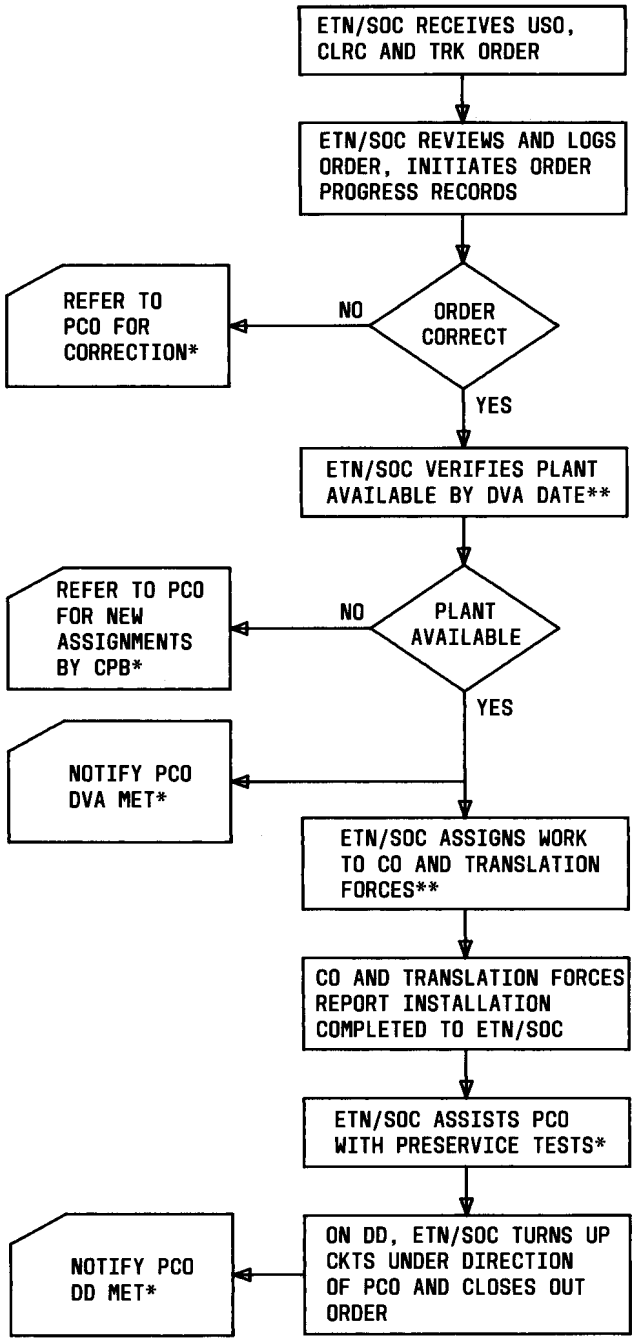
Fig. 5—ETN CO-CO Circuit Installation-SCC/CO Designated Non-CO (3.40)



* THIS PCO FUNCTION IS NORMALLY PERFORMED BY AN STC OR SSC WHEN INTERSTATE CKTS ARE INVOLVED AND BY AN RSB OR EQUIVALENT WHEN INTRASTATE CKTS ARE INVOLVED.

** ETN/SOC CAN VERIFY AND ENTER TRANSLATIONS FOR THE LESS COMPLEX JOBS.

Fig. 6—ETN CO-CP Circuit Installation-SCC/CO (Non-CO) (3.40)



*THIS PCO FUNCTION IS NORMALLY PERFORMED BY AN STC OR SSC WHEN INTERSTATE CKTS ARE INVOLVED AND BY AN RSB OR EQUIVALENT WHEN INTRASTATE CKTS ARE INVOLVED.

**ETN/SOC CAN VERIFY AND ENTER TRANSLATIONS FOR LESS COMPLEX JOBS.

Fig. 7—ETN PUC/Data Link Installation-SCC/CO (Non-CO) (3.40)

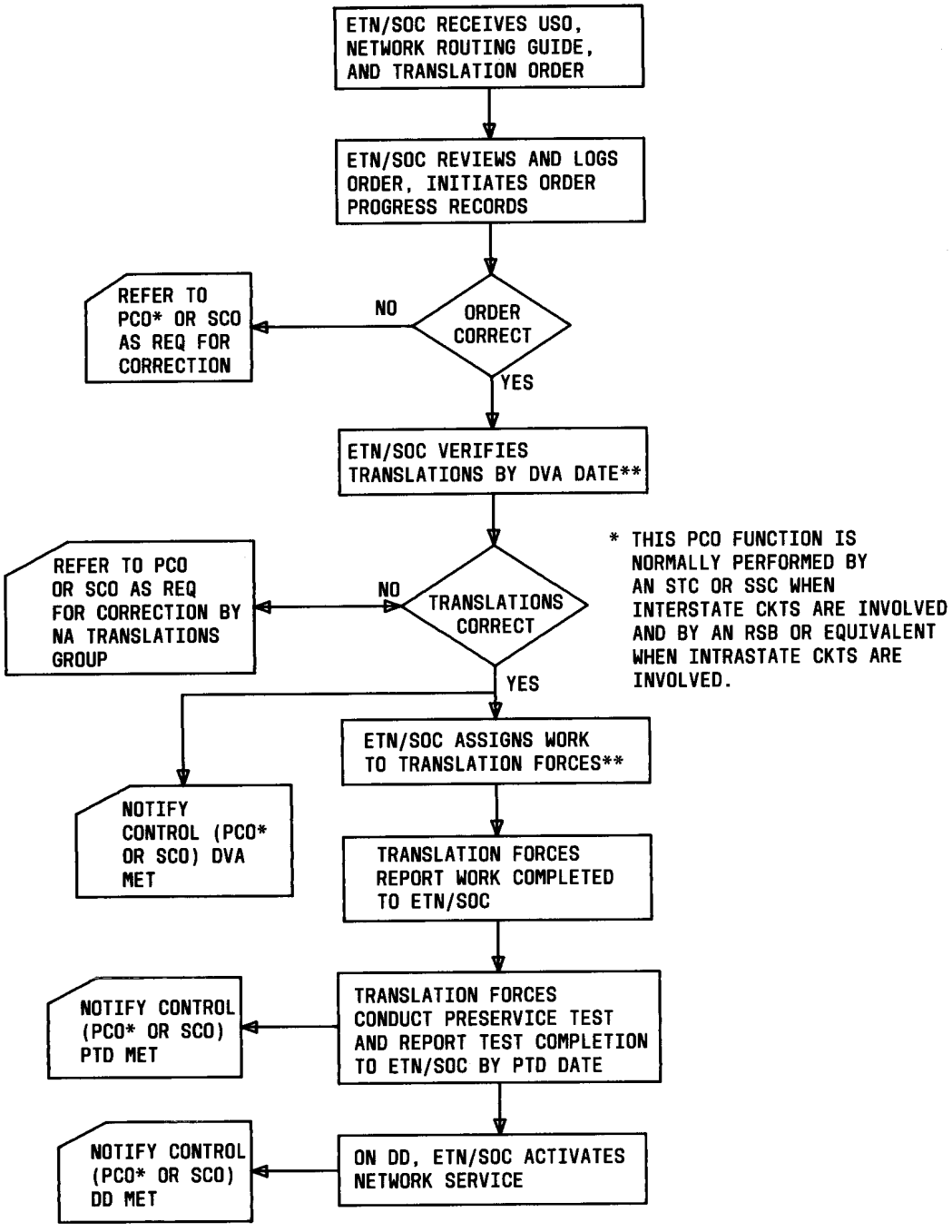


Fig. 8—ETN Network Routing Guide Order Installation-SCC/CO

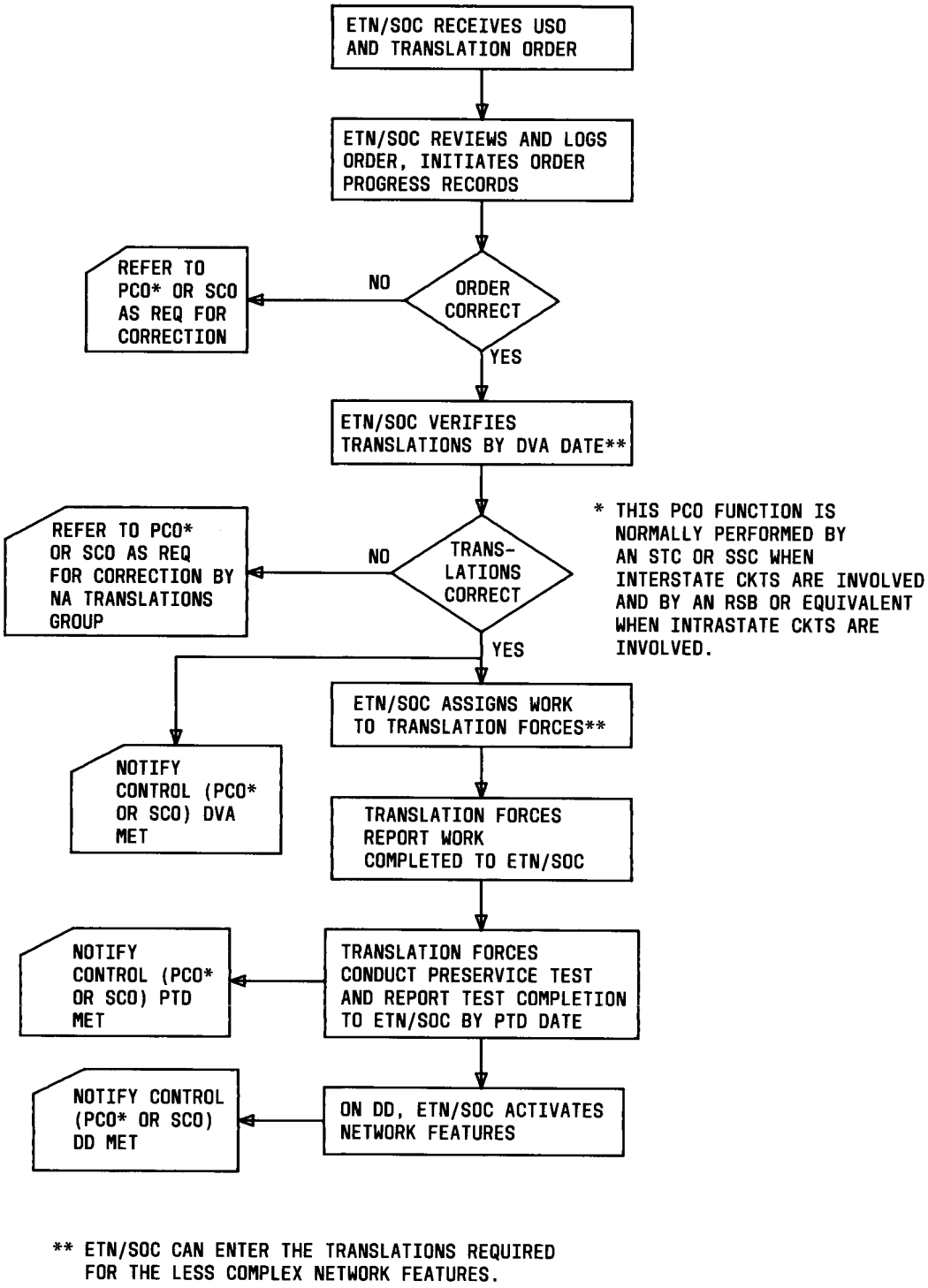
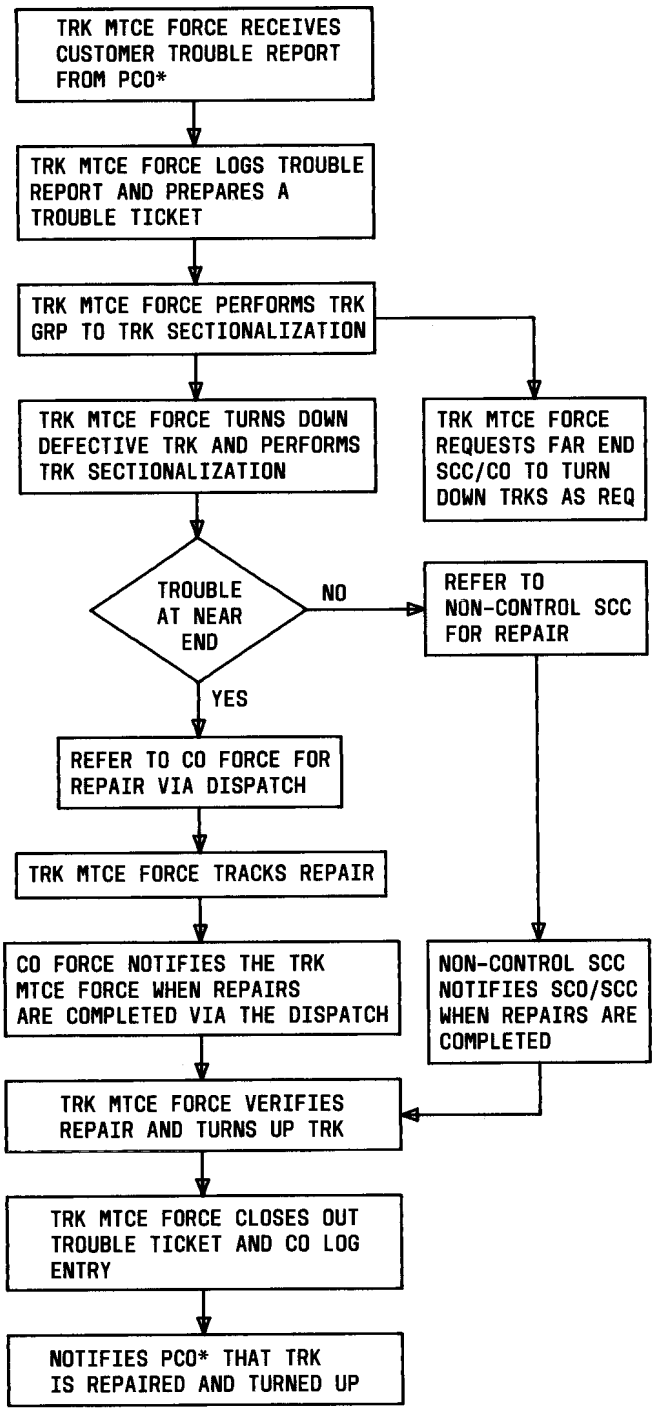


Fig. 9—ETN Network Feature Order Installation-SCC/CO (3.40)



*THIS PCO FUNCTION IS NORMALLY PERFORMED BY AN STC OR SSC WHEN INTERSTATE CKTS ARE INVOLVED AND BY AN RSB OR EQUIVALENT WHEN INTRASTATE CKTS ARE INVOLVED.

Fig. 10—ETN-CO-CO Circuit Corrective Maintenance of Customer Reported Troubles—SCC/CO (SCO) (4.03)

SCC TELEPHONE LOG

E-6831

WORK FORCE/OFFICE ______________________

TICKET NUM.	REPT. CLASS	TEL. NUM. TRUNK OR ITEM REPORTED	LINE OR TRUNK EQUIPMENT	ASSOC. EQ/ CA & PR.	RECEIVED FROM	BY	TIME	DISPATCH TO/ WHERE	DISP. TIME	CLRD TIME	CLRD DATE	TO
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.			ACTION				
DETAILS					CALL BACK NUM/LOC.							

EXAMPLE

DATE ______________________ PAGE _____ OF _____

Fig. 11—SCC Telephone Log (4.04) (4.09) (5.13)

TEL. NO./TRK GRP. & MEM. (A)	EQPT. NO. (A)	FRAME (A)	NO.1-NO.2-NO.3 ESS TROUBLE TICKET			E-5231 FRONT
CA. & PR./ASSOC. EQPT. (A)	CTX/MLHG NO. (A)	EST. TIME (B)	PRIORITY (B)	DATE (C)	OFFICE (D)	TKT. NO. (E)
DETAILS OF REPORTED TROUBLE (A)			REPT BY (F)	LOC (G)	RCVD BY (H) / TIME (H)	CLASS (I)
			CLEARED BY (J) TO		TIME (J) / DATE (J)	T / M — O/S (K)
			DISP TO (L)	START (L)	STOP (L) / DATE (L)	RESULT (L)
			REF. TO & TEL. NO. (M)		TIME (M) / DATE (M)	TKT NO. (M)
			FMN CK (N)	DISPOSITION (O)	CODE (P) / SCC WK. TIME (Q)	FIELD WK. TIME (R)

EXAMPLE

NOTE	DESCRIPTION
A	DETAILS OF TROUBLE REPORT.
B	TROUBLE PRIORITY AND ESTIMATED TIME.
C	DATE REPORT RECEIVED.
D	CENTRAL OFFICE NAME OR DESIGNATION.
E	SERIAL NO. OF TICKET.
F	INITIALS OF PERSON REPORTING OR EQUIPMENT DESIGNATION, IF FROM ALARM OR MCC-TTY.
G	ORIGIN OF REPORT.
H	INITIALS OF PERSON RECEIVING REPORT AND TIME.
I	REPORT CLASS (SEE TABLE).
J	INITIALS OF PERSON CLOSING REPORT, TIME, AND DATE REPORT CLOSED.
K	CHECK "O/S" (OUT OF SERVICE) IF EQUIPMENT IS REMOVED FROM SERVICE AND CHECK "T" (TROUBLE) OR "M" (MEMO).
L	GIVE INITIALS OF PERSON TROUBLE IS DISPATCHED TO, START AND STOP TIME, DATE, AND RESULT.
M	INITIALS AND TELEPHONE NO. OF PERSON THE REPORT IS REFERRED TO, TIME, DATE, AND TICKET NO. IF ANOTHER TICKET IS OPENED.
N	FOREMAN'S INITIALS UPON REVIEW OF TICKET.
O	DISPOSITION CODE FROM REAR OF TICKET.
P	CENTRAL OFFICE TROUBLE CODE.
Q	SCC TIME SPENT ON TROUBLE.
R	FIELD FORCE WORK TIME SPENT ON TROUBLE.

NOTE: ALL TIMES SHOULD BE ENTERED ON THE 24-HOUR CLOCK.

Fig. 12—No. 1 ESS Trouble Ticket (Form E-5231-Front) (4.04) (4.09) (4.20) (4.23) (4.24) (4.27) (4.29) (4.31) (4.42) (5.15)

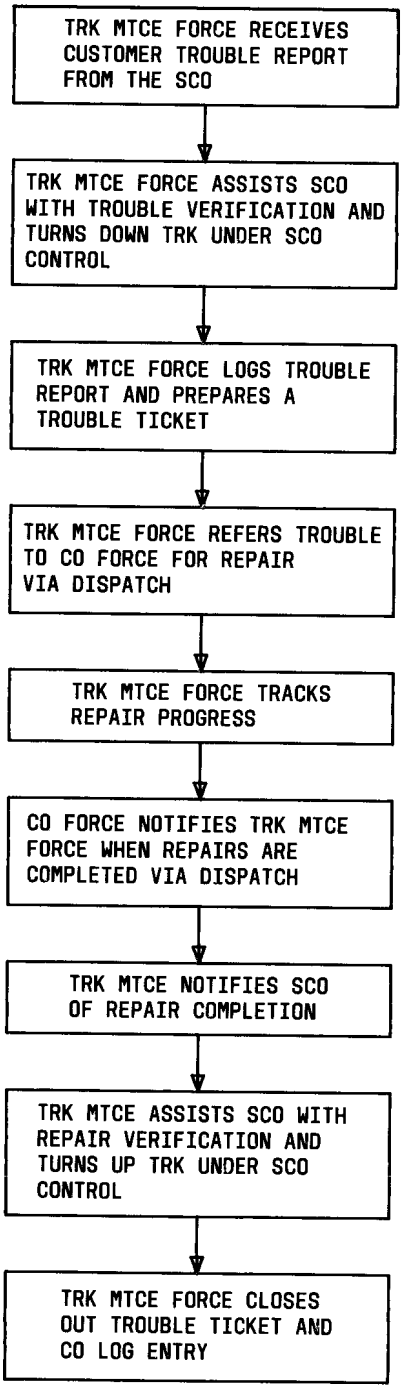
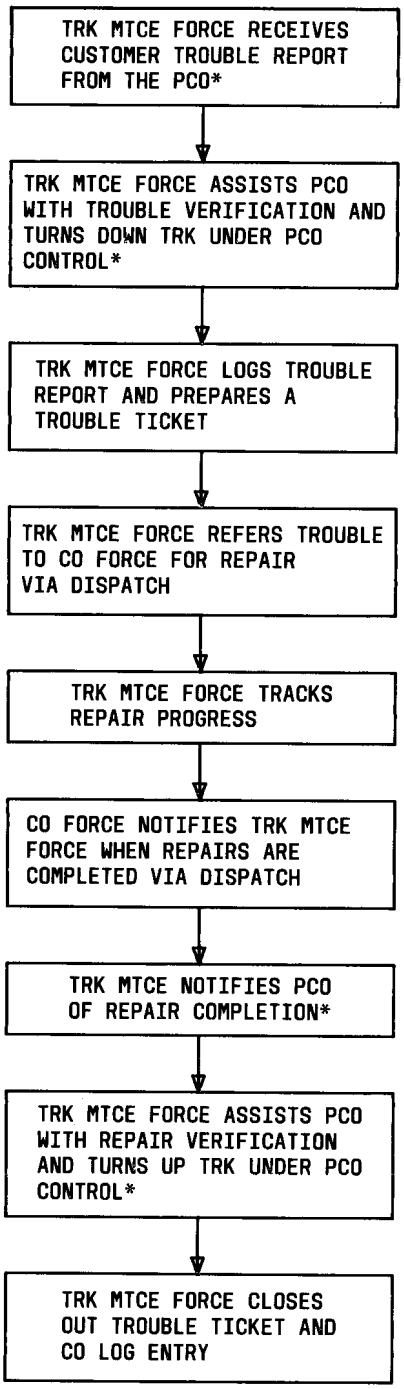


Fig. 13—ETN CO-CO Circuit Maintenance Customer Reported Troubles at SCC/CO (Non-CO) (4.07)



* THIS PCO FUNCTION IS NORMALLY PERFORMED BY AN STC OR SSC WHEN INTERSTATE CKTS ARE INVOLVED AND BY AN RSB OR EQUIVALENT WHEN INTRASTATE CKTS ARE INVOLVED.

Fig. 14—ETN CO-CP Circuit Corrective Maintenance-Customer Reported Troubles at SCC/CO (Non-CO) (4.08)

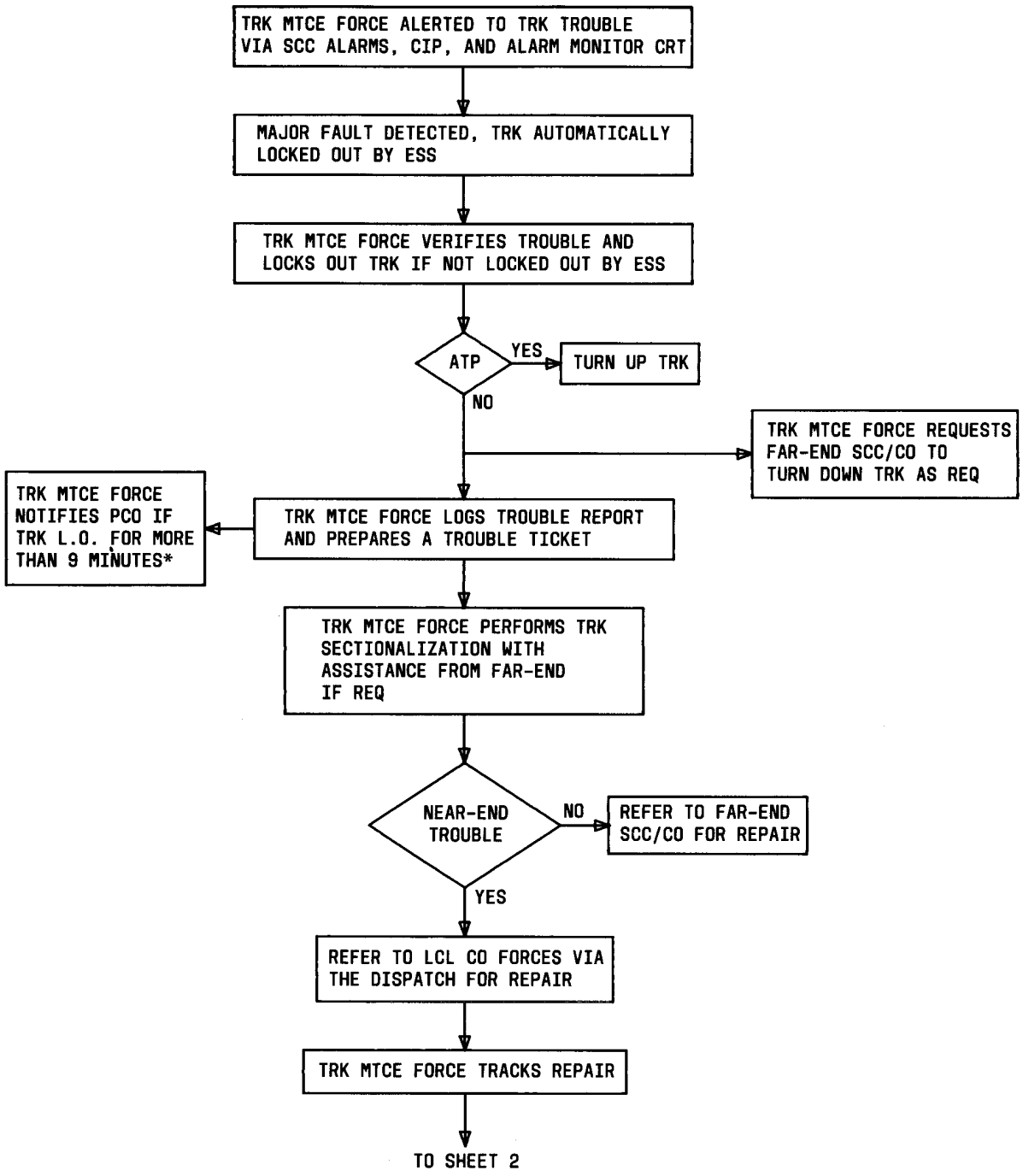
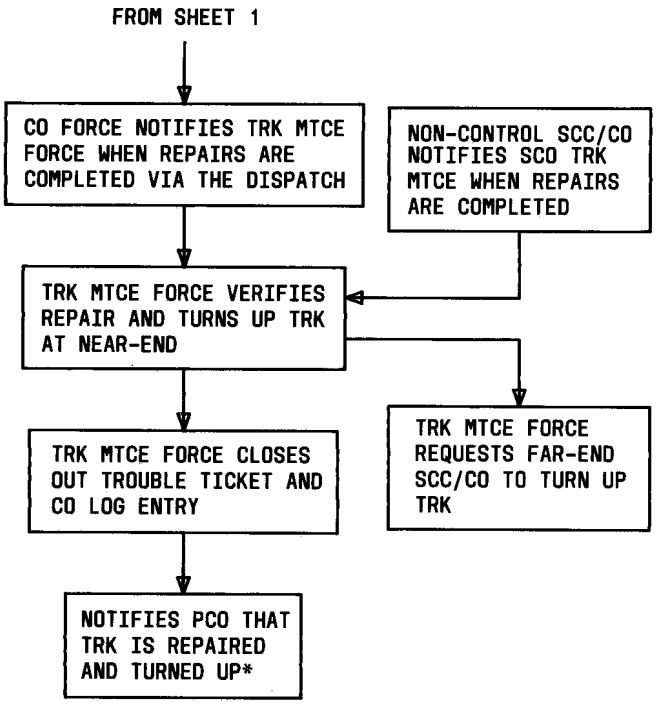


Fig. 15—ETN CO-CO Circuit Corrective Maintenance-Machine Detected Troubles at SCC/CO (SCO) (Sheet 1 of 2) (4.20)



* THIS PCO FUNCTION IS NORMALLY PERFORMED BY AN STC OR SSC WHEN INTERSTATE CKTS ARE INVOLVED AND BY AN RSB OR EQUIVALENT WHEN INTRASTATE CKTS ARE INVOLVED.

Fig. 15—ETN CO-CO Circuit Corrective Maintenance-Machine Detected Troubles at SCC/CO (SCO) (Sheet 2 of 2) (4.20)

SCC CONTROL LOG

OFFICE_____ PERIOD_____

DATE	TKT. NO.	TIME RCVD	FROM OR REPORT CLASS	NATURE OF REPORT OR ACTIVITY	DISP. TO	CLOSED OUT	EQPT. GROUP
				EXAMPLE			

Fig. 16—SCC Control Log (4.20) (4.23) (4.24) (4.27) (4.29) (4.31) (4.42) (5.14)

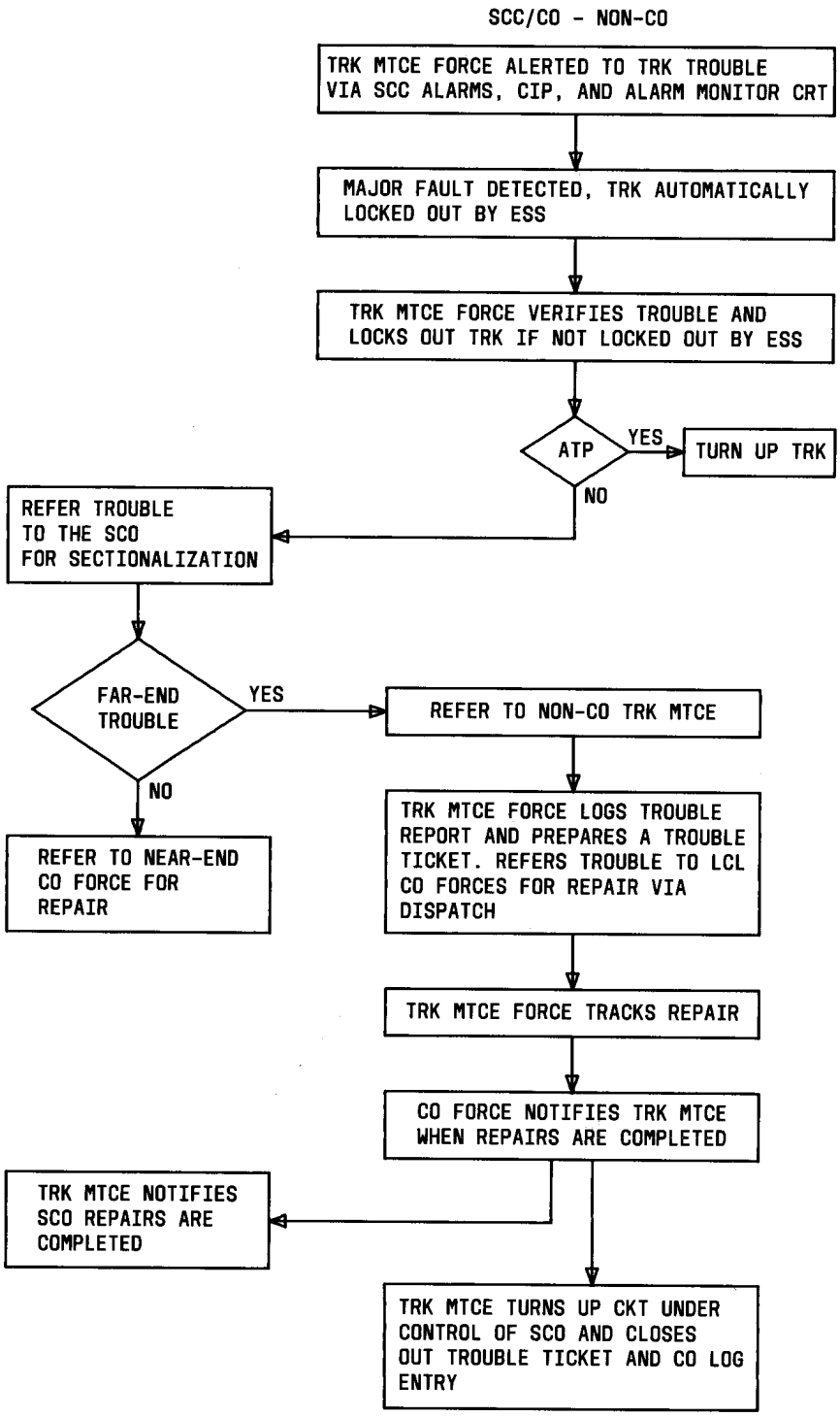


Fig. 17—ETN CO-CO Circuit Corrective Maintenance-Machine Detected Troubles at SCC/CO (Non-CO) (4.23)

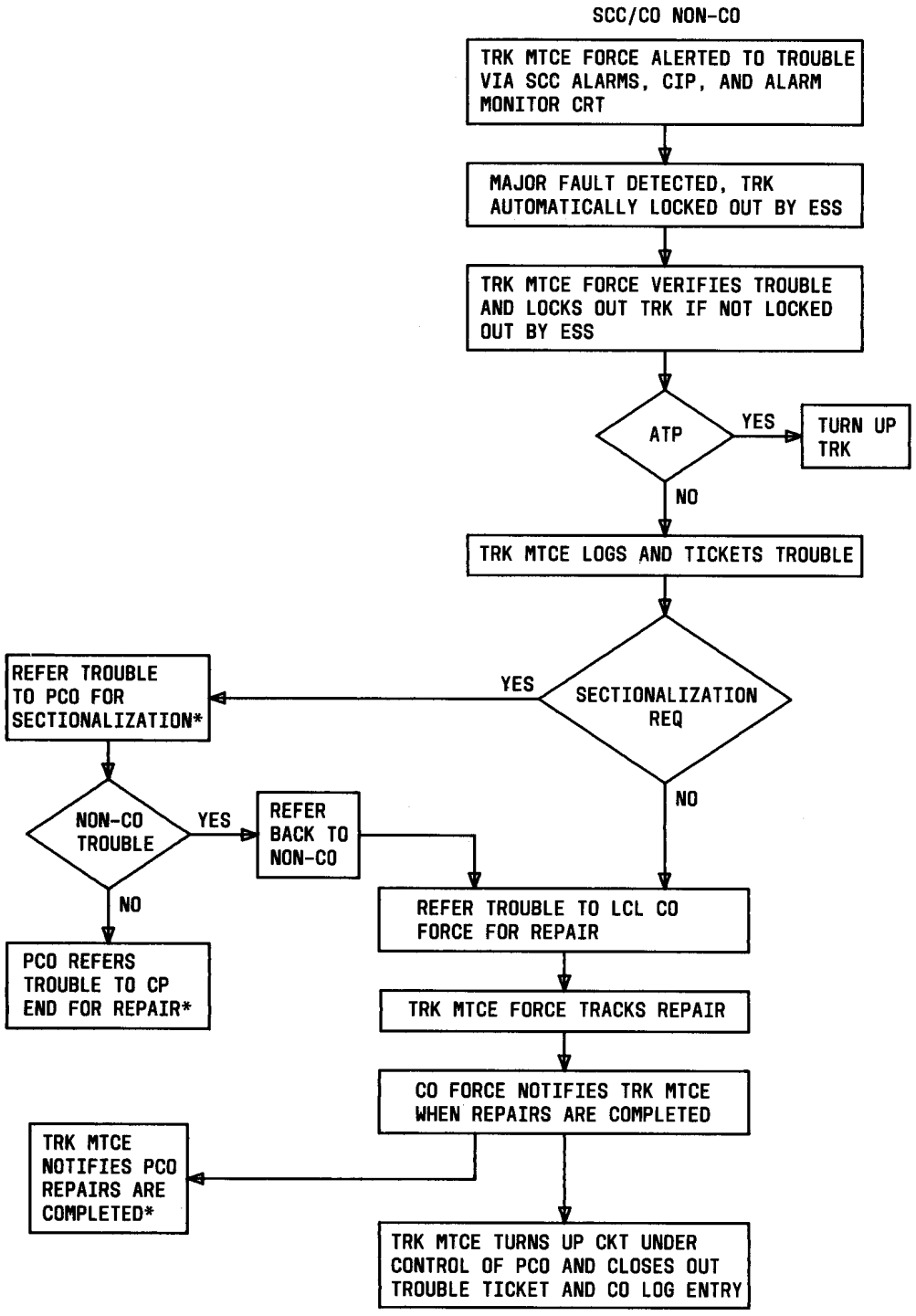


Fig. 18—ETN CO-CP Circuit Corrective Maintenance-Machine Detected Troubles at SCC/CO (Non-CO) (4.24)

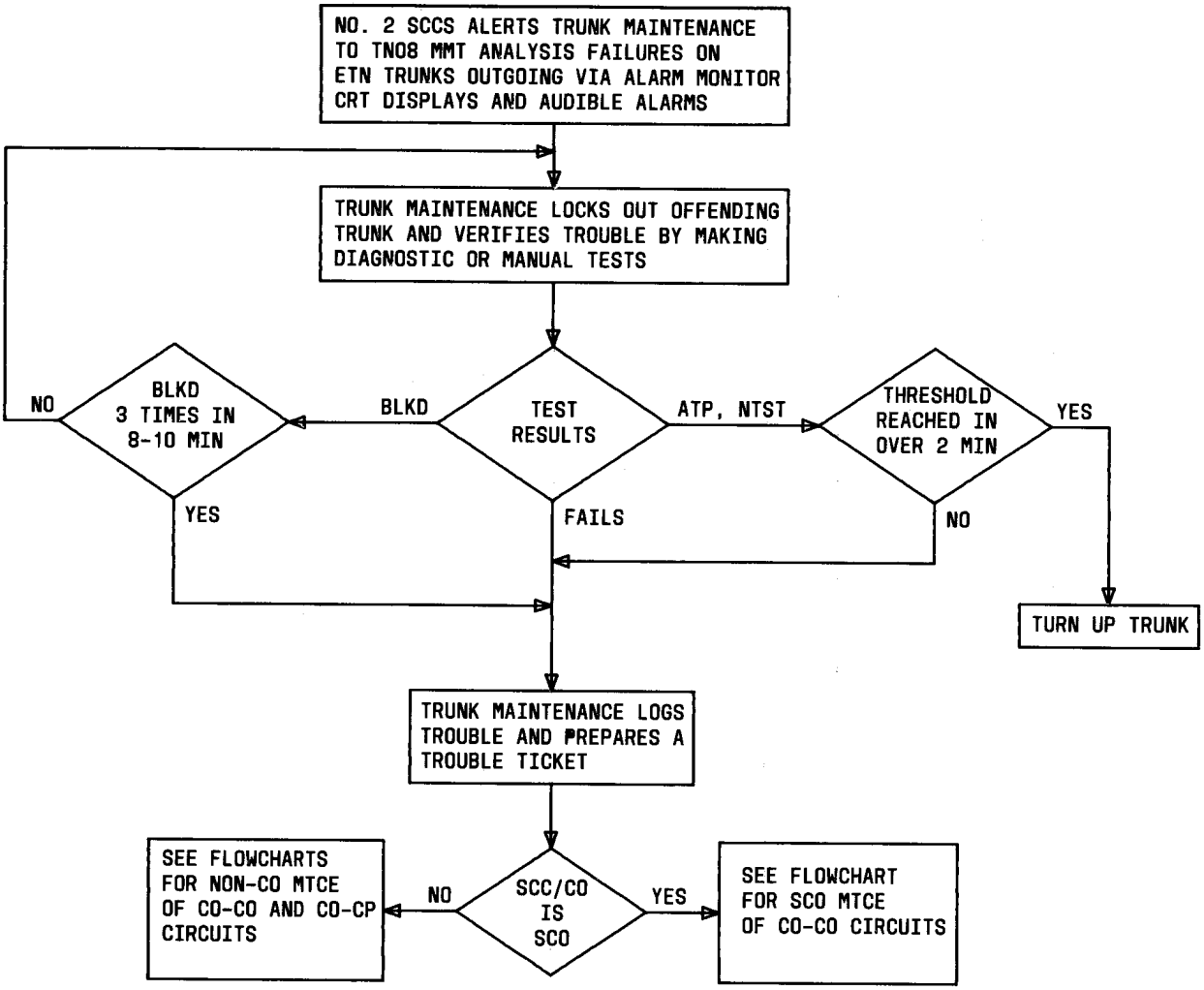


Fig. 19—TN08-MMT Analysis of ETN Trunks in the Outgoing Mode (4.27)

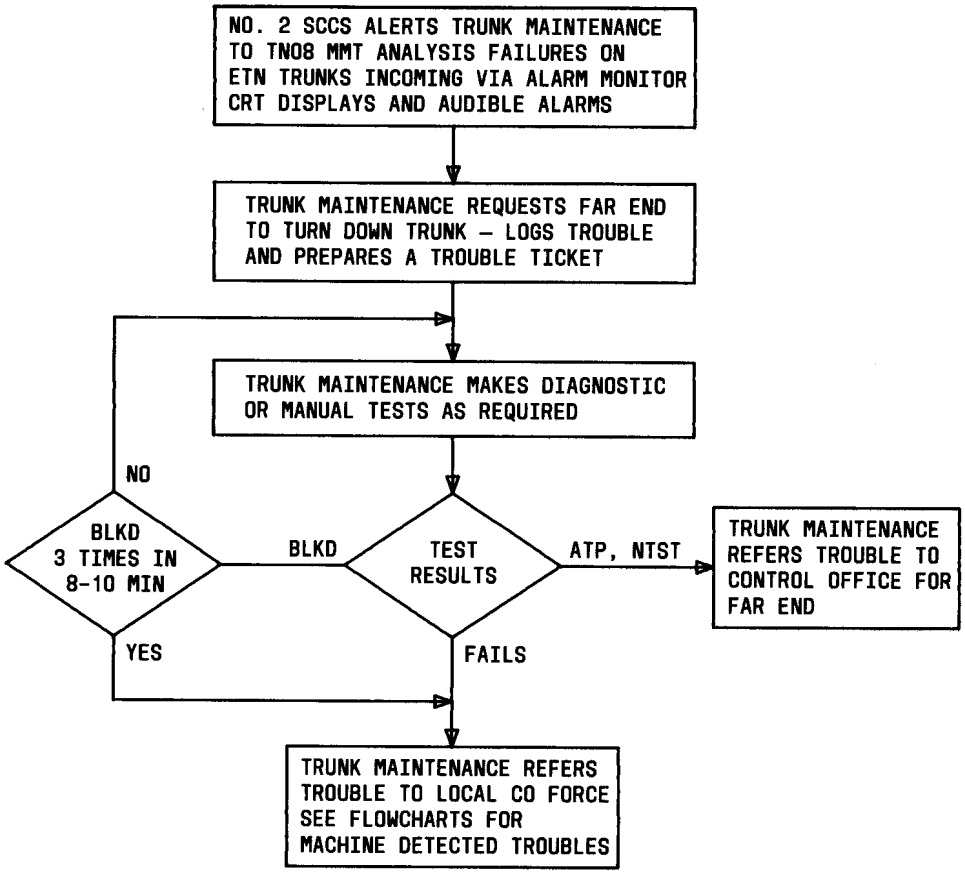
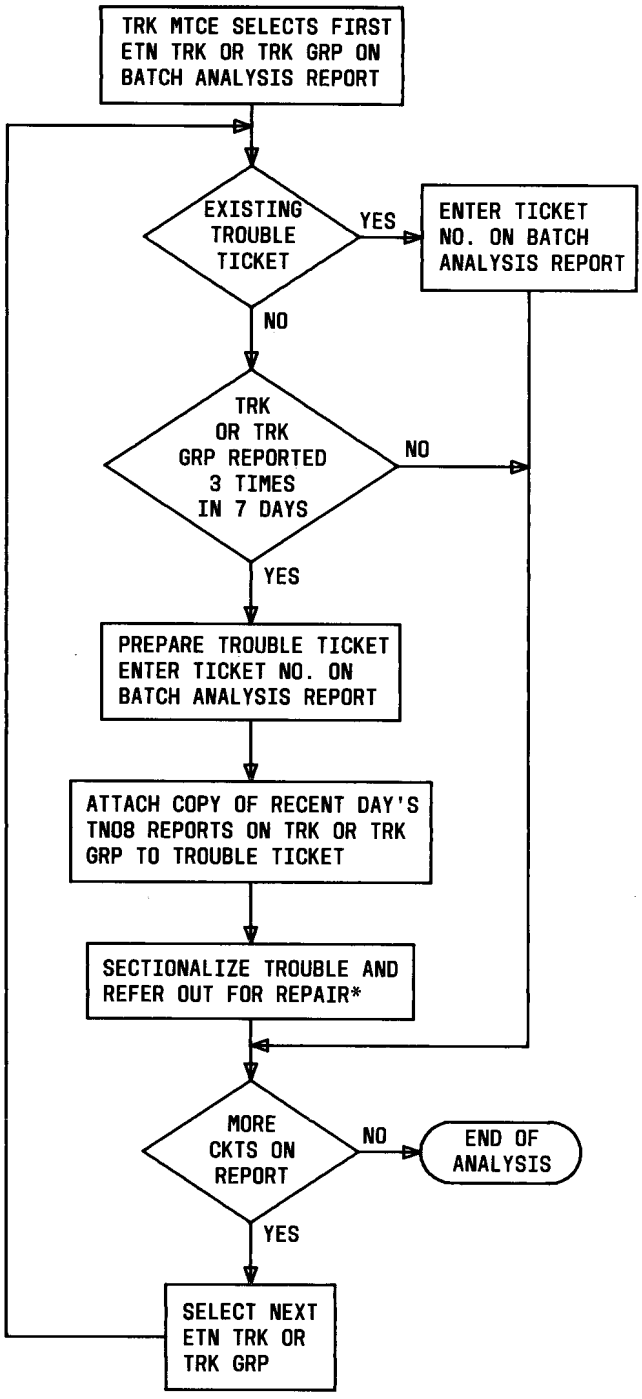


Fig. 20—TN08-MMT Analysis of ETN Trunks in the Incoming Mode (4.29)



* SEE FLOWCHARTS FOR MACHINE DETECTED TROUBLES ON TRKS.

Fig. 21—TN08 Batch Analysis of ETN Trunks and Trunk Groups (4.30)

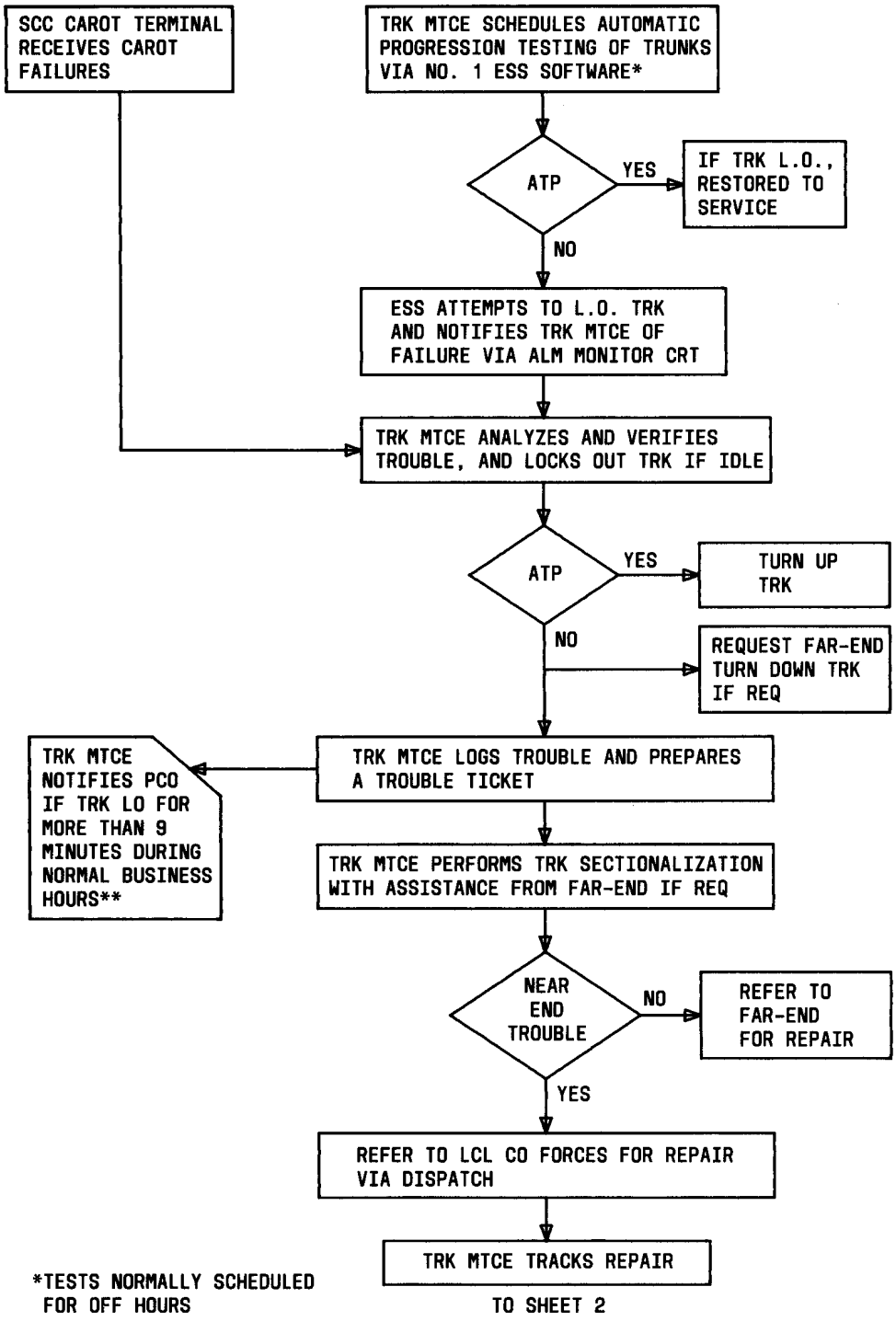


Fig. 22—ETN CO-CO Circuit Preventive Maintenance-SCC/CO (SCO) (Sheet 1 of 2) (4.32)

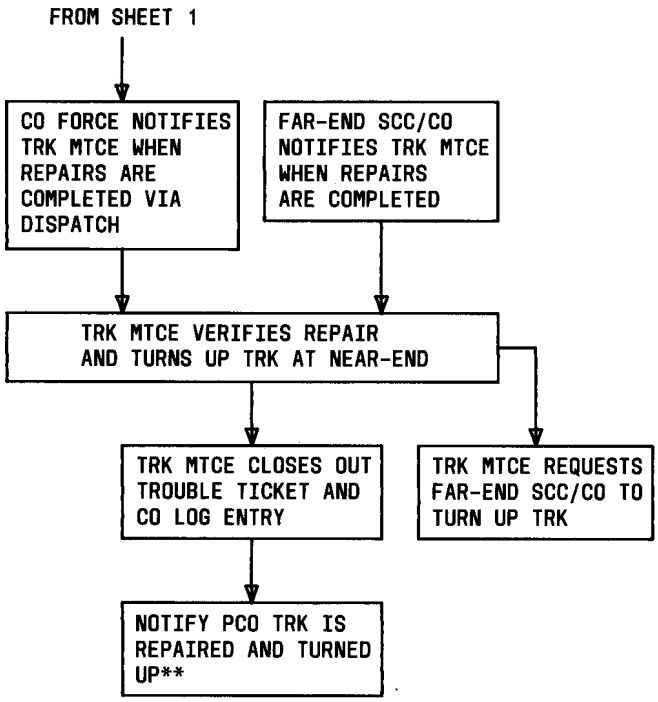


Fig. 22—ETN CO-CO Circuit Preventive Maintenance-SCC/CO (SCO) (Sheet 2 of 2) (4.32)

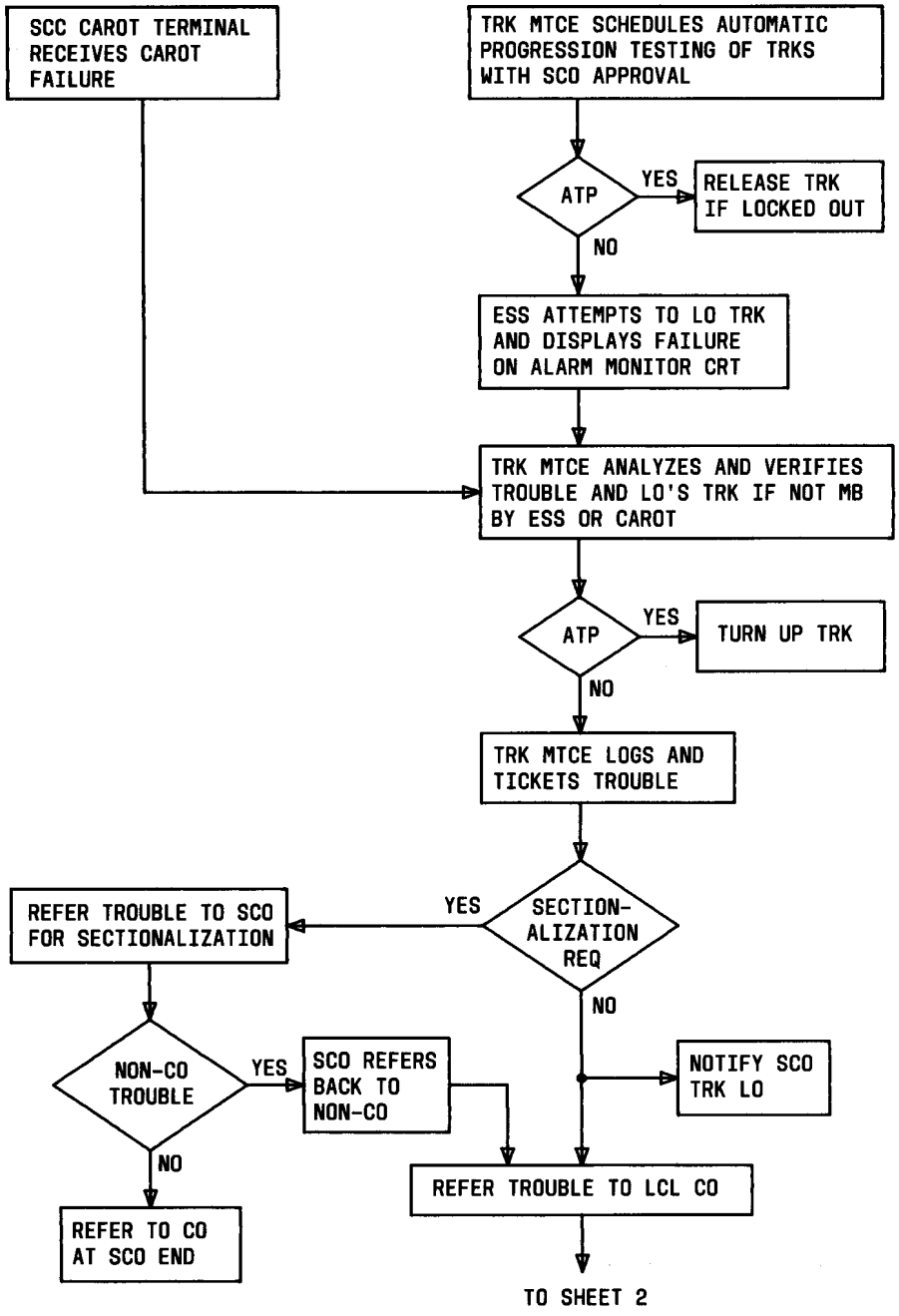


Fig. 23—ETN CO-CO Circuit Preventive Maintenance-SCC/CO (Non-CO) (Sheet 1 of 2) (4.32)

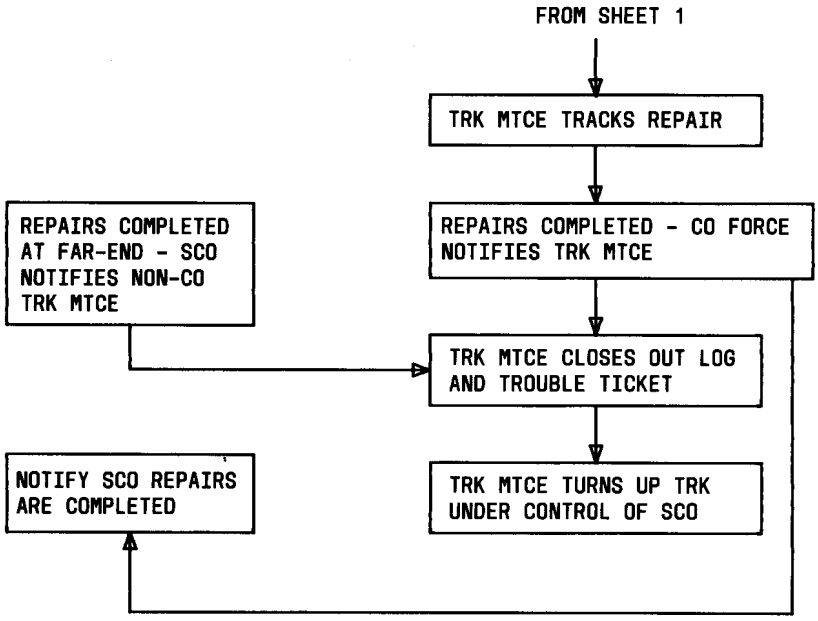


Fig. 23—ETN CO-CO Circuit Preventive Maintenance-SCC/CO (Non-CO) (Sheet 2 of 2) (4.32)

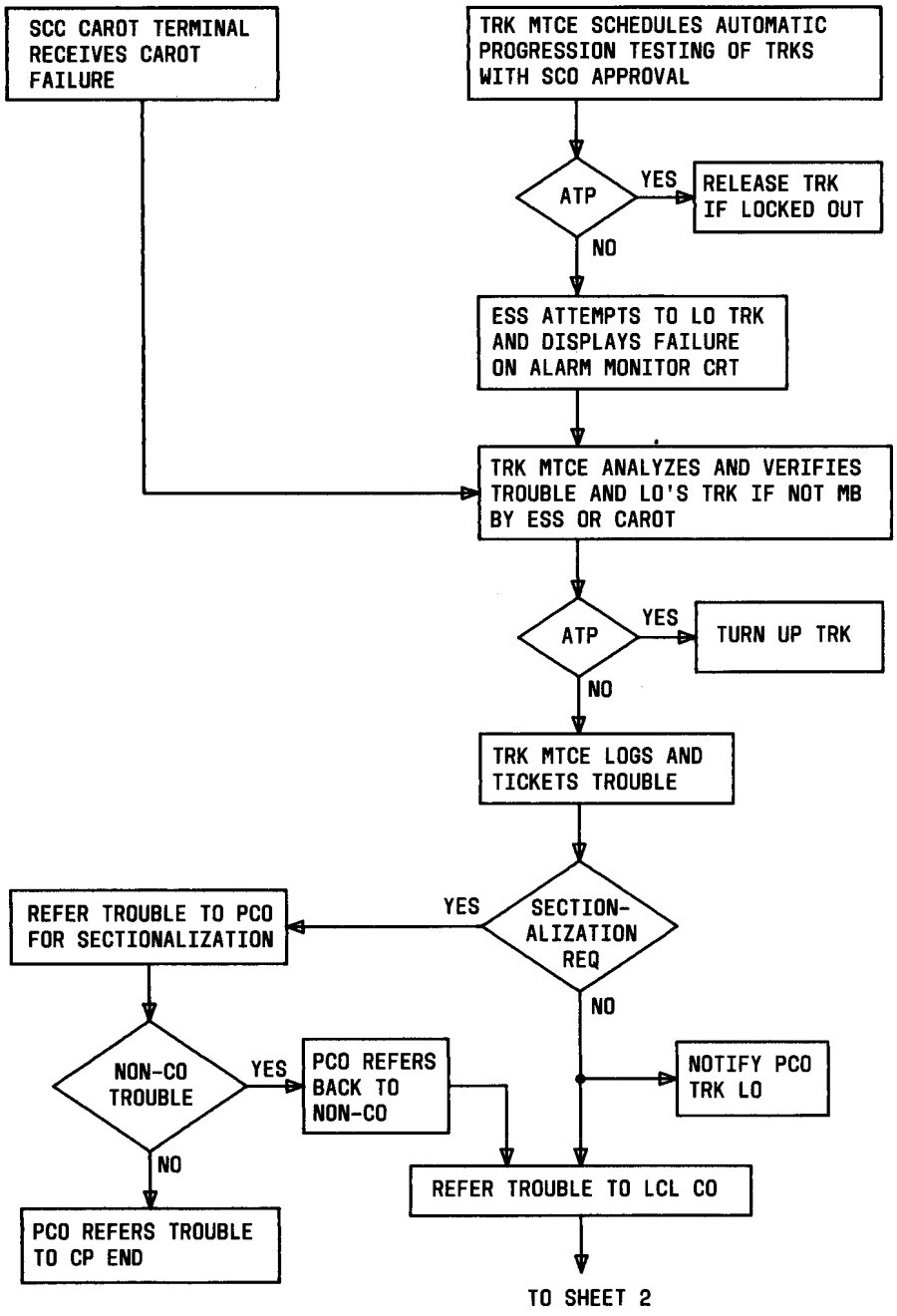


Fig. 24—ETN-CO-CP Circuit Preventive Maintenance-SCC/CO (Non-CO) (Sheet 1 of 2) (4.32)

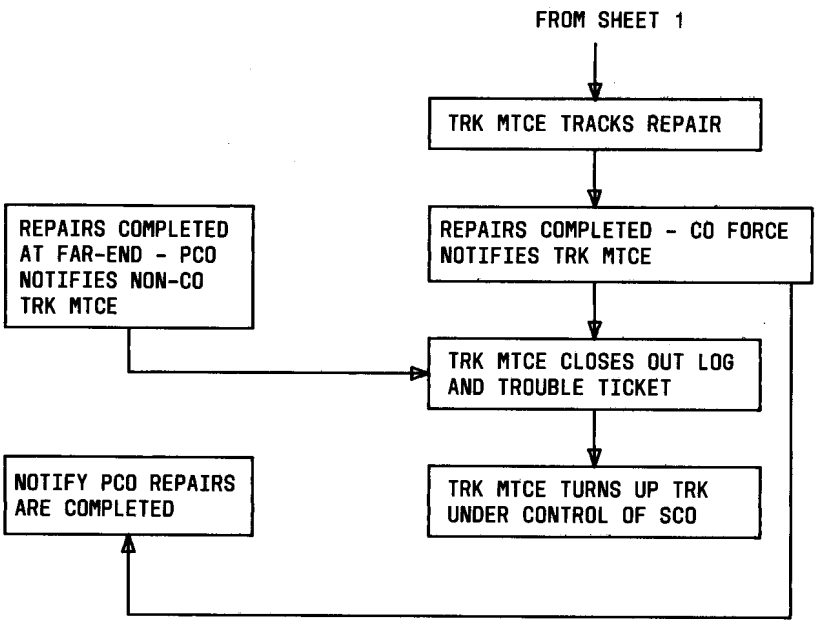
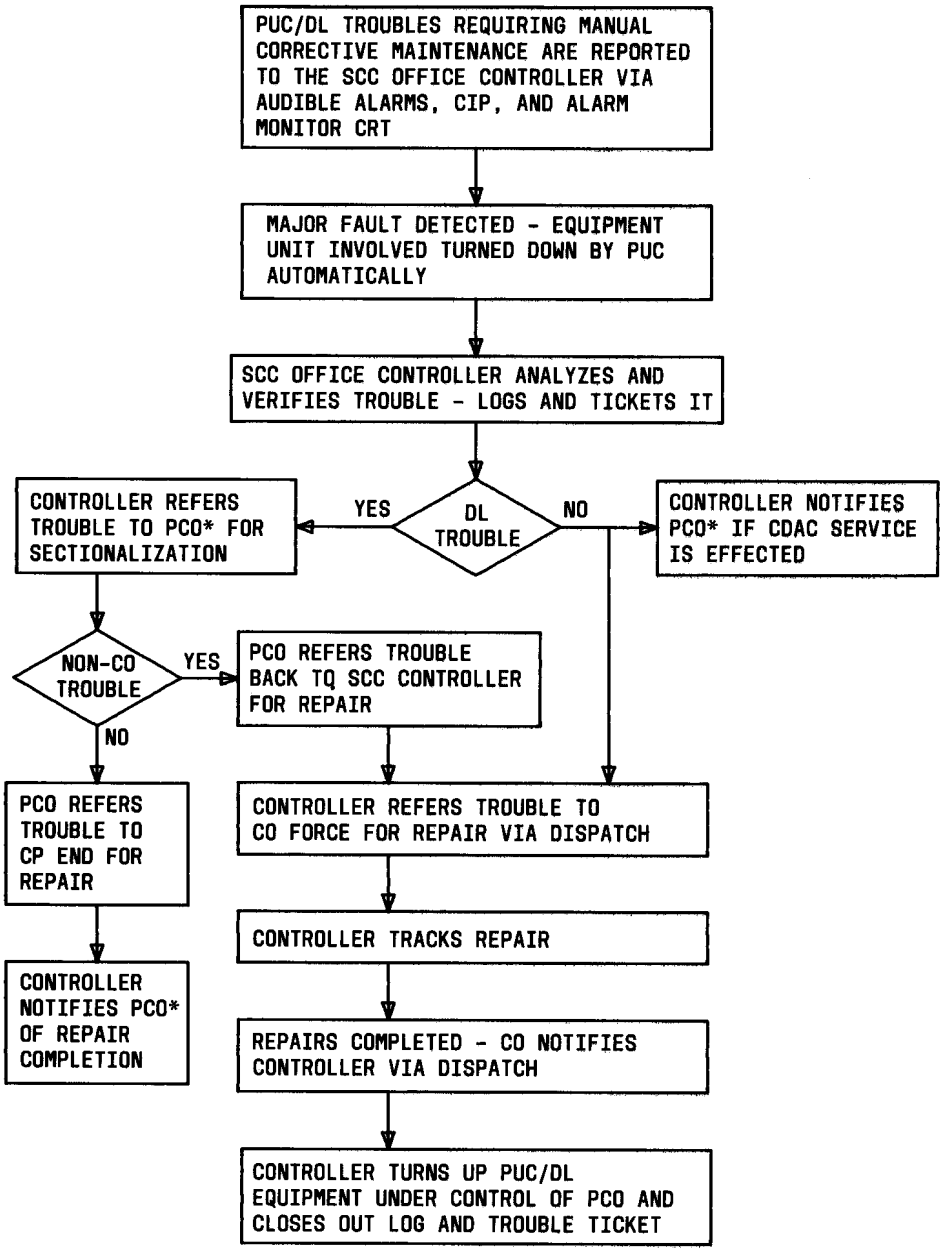
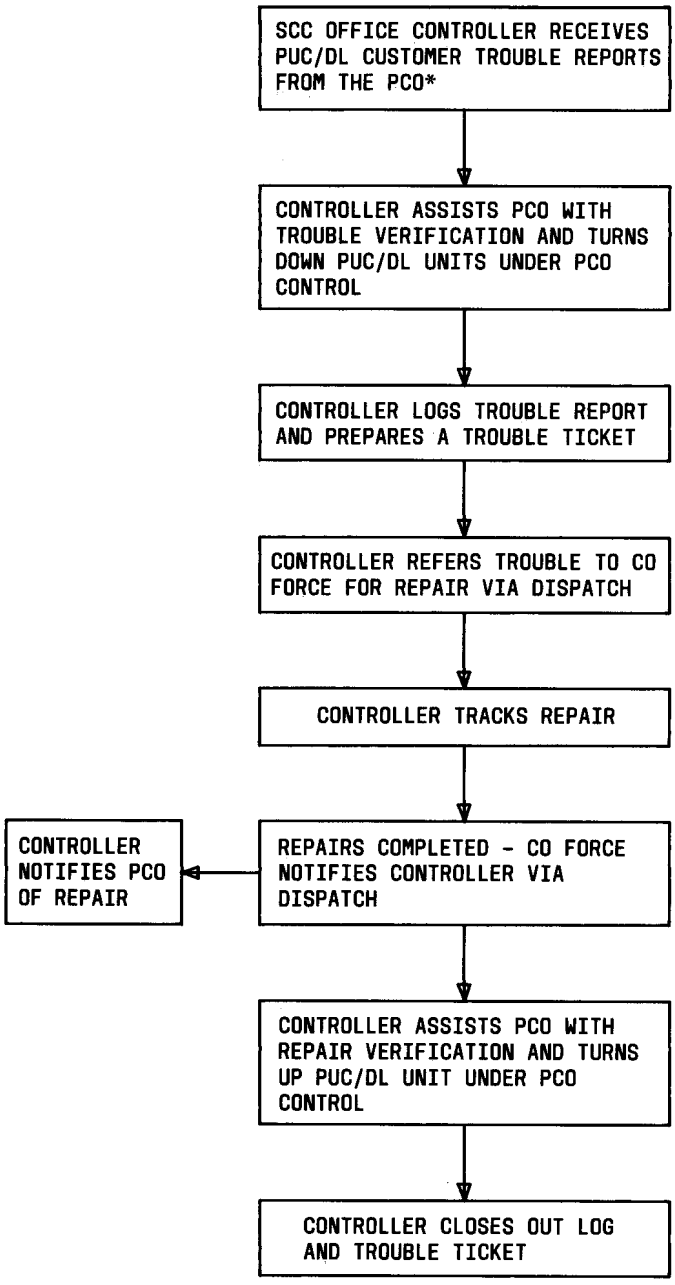


Fig. 24—ETN-CO-CP Circuit Preventive Maintenance-SCC/CO (Non-CO) (Sheet 2 of 2) (4.32)



* AN STC OR SSC PERFORMS THE PCO FUNCTION FOR INTERSTATE CIRCUITS AND AN RSB PERFORMS THE PCO FUNCTION FOR INTRASTATE CIRCUITS.

Fig. 25—ETN-PUC/DL-SCC Corrective Maintenance-Machine Detected Troubles (4.40)



* AN STC OR SCC NORMALLY PERFORMS THE PCO FUNCTION FOR INTERSTATE CIRCUITS AND AN RSB PERFORMS THE PCO FUNCTION FOR INTRASTATE CIRCUITS.

Fig. 26—ETN-PUC/DL-SCC Corrective Maintenance-Customer Reported Troubles (4.44)

TRK	DATE	TROUBLE HISTORY

EXAMPLE

Fig. 27—Trouble History Record (5.16)