FEATURE DOCUMENT
REMOTE OFFICE TEST LINE
NEAR-END AND FAR-END APPLICATIONS
NO. 3 ELECTRONIC SWITCHING SYSTEM

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NOTICE
Not for use or disclosure outside the
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NEAR END

INTRODUCTION

1. GENERAL INFORMATION

1.01 This document describes the Remote Office Test Line (ROTL) feature of the No. 3 Electronic Switching System (ESS). The ROTL feature may be used in conjunction with a Centralized Automatic Reporting On Trunks (CAROT) system to test central office trunks automatically from a remote location. The CAROT is a computerized system that can automatically control testing in a number of central offices simultaneously. With optional equipment, the trunk tests may be performed manually from the remote location without the assistance of the CAROT system.

1.02 When this section is reissued, the reasons for reissue will be included in this paragraph.

FEATURE AVAILABILITY

1.03 The ROTL feature is available for all No. 3 ESS systems equipped with the 3E3 or later generic program. However, offices with generics prior to 3E3 may employ the MINI-ROTL hardware in order to provide the far-end test line functions (105 test lines). In this case, the ROTL feature software is not provided and the office cannot perform near-end functions.

2. DEFINITION

2.01 In the No. 3 ESS, the ROTL feature provides the capability of testing interoffice trunks automatically with the aid of a CAROT system or manually from the central office or remote location with the use of optional equipment. The ROTL circuitry provided for the No. 3 ESS is similar to that used in the SXS ROTL-3 which differs significantly from the ROTL circuitry provided for other central office types. The No. 3 ESS ROTL circuitry is provided in a self-contained unit called a MINI-ROTL which requires only 8 inches of mounting space in the single-bay No. 3 ESS miscellaneous frame. This unit contains a microprocessor which provides all the necessary responder, terminating test line, and tone detector functions normally provided by separate hardware units in other ROTL applications.

2.02 The No. 3 ESS ROTL equipment can serve as a "near-end" office, a "far-end" office, or both. A near-end office contains equipment and software necessary to select and set up testing of trunks terminating in a distant office. A far-end office contains equipment necessary to permit access to its test equipment by incoming trunks seized at a near-end office under control of a CAROT test center or manual test position. Figure 1 shows the relationship between the CAROT system and a near-end and far-end office.

DESCRIPTION

3. USER OPERATION

3.01 The primary user of the No. 3 ESS ROTL feature is the CAROT system. The CAROT system automatically accesses and tests trunks without the aid of a craftperson. Testing may be done from a remote test location using a manually controlled interrogator/ROTL control unit (MCI/RCU), a ROTL system test set (RSTS), or a 92A control unit. The RSTS and 92A may also be used for portable on-site dial-up exercise of the ROTL.

3.02 In order to perform trunk tests, the user (either the CAROT system or the manual user) must first access the ROTL equipment via the DDD network or the local switching system by dialing a directory number which has been assigned for the ROTL input terminal. When the ROTL has been seized, a burst of 2225-Hz test progress tone (TPT) is returned to the testing location. The user then sends test priming information to the ROTL office. This priming information is a test request in the form of multifrequency (MF) digits which identifies the test to be performed, the trunk to be tested, and the directory number of the far-end test line. The information included in the test priming varies slightly with the type of test. The format of the priming information is shown in Table A. The ROTL office then seizes the designated trunk, sends a 500-ms burst of TPT to the user, and outpulses the far-end test line number over the seized trunk which is called the trunk under test (TUT). When a connection to the far-end test line has been established, the user receives a burst of TPT followed by a 500-ms quiet interval. A 500-ms burst of TPT is then returned to the user to indicate that the ROTL program is connecting the near-end responder. When the near-end responder is connected, the TPT is removed and the user is free to perform the desired tests.

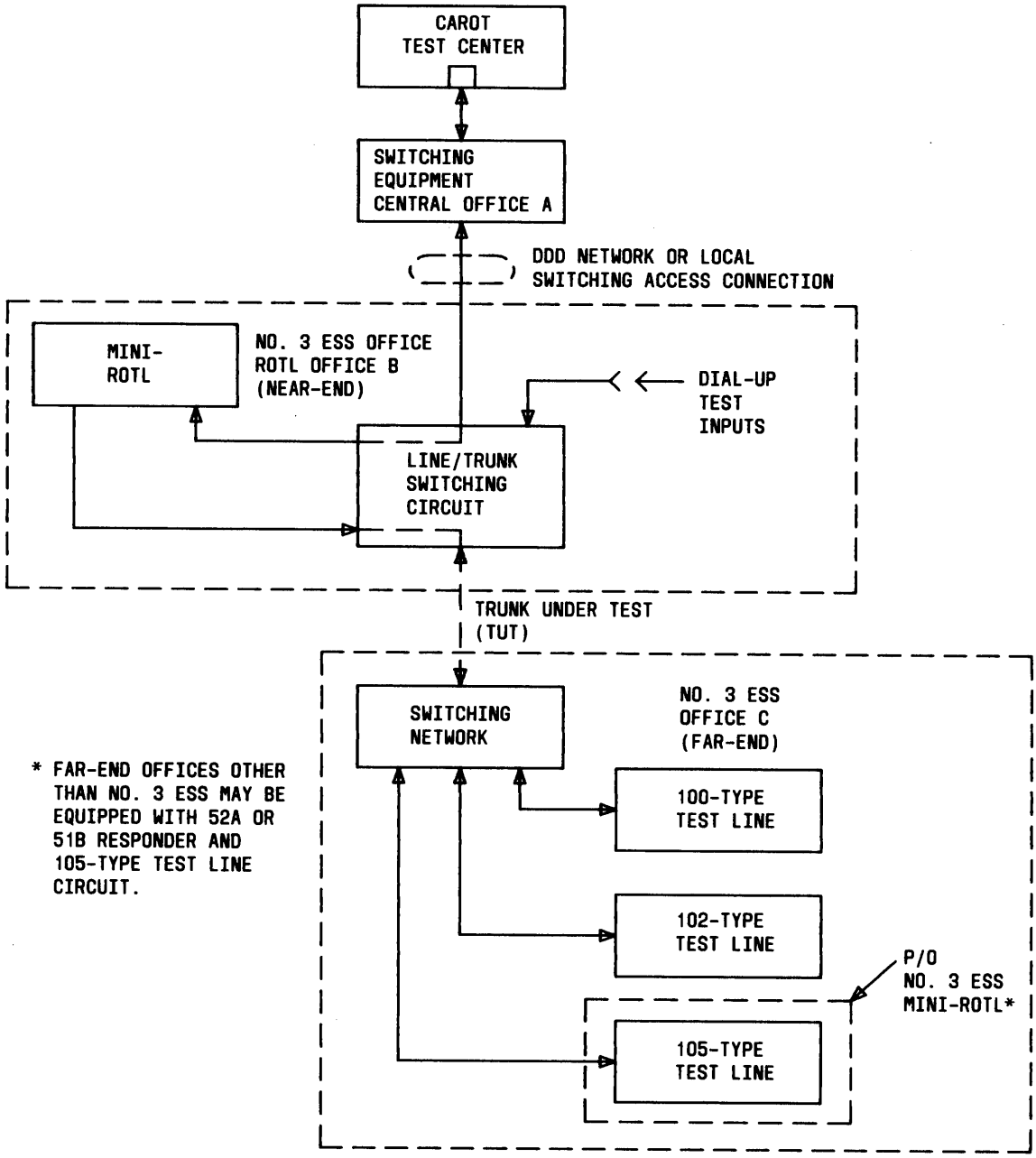


Fig. 1—Simplified Block Diagram of ROTL Network

SECURITY CALLBACK AND REMOTE MAKE BUSY

3.03 If the user wishes to make a trunk maintenance busy or restore a trunk to idle via a remote make-busy or restore request, a security callback is required to insure that the user is authorized to perform this function. The No. 3 ESS ROTL office can authorize up to six remote locations to make busy or restore ROTL office trunks. The request is initiated by a test request code followed by a single-digit identification (ID) code (0 through 5). This digit identifies the test center that is requesting to make busy or restore trunks in the ROTL office. The No. 3 ESS ROTL office uses the test center ID code to obtain the callback number assigned to that test center and initiates a call to the test center via the Autoconnect feature. (Refer to Section 233-190-033 for further details

TABLE A

DIGIT FORMAT FOR NO. 3 ESS ROTL PRIMING INFORMATION

ROTL USAGE			DIGITS TRANSMITTED TO ROTL MF RECEIVER																					
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	21	22
TRANSMISSION TESTS		100-TYPE	KP	0	0	* TRUNK STATE	GROUP NUMBER			MEMBER NUMBER			(FAR-END TEST LINE NUMBER (11 DIGITS MAX)) †							[ST]					
		102-TYPE	KP	0	2																			
		105-TYPE	KP	0	5																			
	OVERRIDE MADE-BUSY	100-TYPE	KP	1	0																			
		102-TYPE	KP	1	2																			
		105-TYPE	KP	1	5								ST											
BALANCE AND LONG TERM TESTS			KP	4	0																			
	OVERRIDE MADE-BUSY		KP	4	1																			
MAKE-BUSY & RESTORE	MAKE TRK REMOTE BUSY		KP	5	0																			
	RESTORE TRUNK REM BUSY		KP	5	1																			
TRUNK STATUS REQUEST	INDIVIDUAL TRUNK		KP	5	2																			
	TRUNK GROUP BY TRUNK		KP	5	3																			
	TRUNK GROUP BY GROUP		KP	5	4					ST														
CALLBACK UNLOCK REQUEST			KP	5	5	ID	ST																	
CONNECTION APPRAISAL	100-TYPE		KP	6	0	(FAR-END TEST LINE PHONE NUMBER (12 DIGITS MAX)) [ST]																		
	102-TYPE		KP	6	2																			
	105-TYPE		KP	6	5																			
MF RECEIVER TEST			KP	7	6	1	2	3	4	5	6	7	8	9	0	ST								

* 0 = LOCAL (CURRENT REQUIRED VALUE)
1 = BYPASS (RESERVED BUT NOT IMPLEMENTED)

† IF THE CAROT OR THE RSTS USER ENTERS LESS THAN 7 DIGITS, THE ROTL OUTPULSES THE DIGITS AS ENTERED. IF 7 OR MORE DIGITS ARE ENTERED, THE DIGITS ARE TRANSLATED AND OUTPULSING IS PERFORMED BASED ON THE RESULTS OF THE TRANSLATION PROCESS (DIGITS ARE ADDED OR DELETED AS NECESSARY).

related to the Autoconnect feature.) Upon receipt of callback from the ROTL office, the user sends a 1000-Hz signal to the ROTL office. When this signal is received, the ROTL returns a single burst of TPT to indicate that the user is permitted to make busy or restore trunks in the ROTL office.

3.04 The ROTL office responds to a make-busy or restore request as follows:

- TPT (0.5 second minimum)—Trunk made busy or restored.
- Two Bursts of TPT—Trunk made busy and automatic maintenance limit (AML) exceeded. (This response is made only to a manual request.)
- 60-IPM Low Tone—Request refused because AML was previously reached or exceeded, or some local trunk condition prevents the requested action.
- 120-IPM Low Tone—Priming information (test request code) error or security callback for ROTL unlock not completed.

TRUNK STATUS REQUEST

3.05 The user can request the status of a single trunk or a trunk group in the No. 3 ESS ROTL office. A single trunk request asks if the specified trunk is currently available to customer traffic. A group request asks if any trunk in the group is maintenance-busy and if the AML has been exceeded. The ROTL office responds to a trunk or trunk group status request as follows:

- TPT (0.5 second minimum)—An individual trunk not made busy, or no members in this group are made busy.
- Two Bursts of TPT—Some members of the trunk group are made busy, but fewer than the AML.
- 60-IPM Low Tone—Individual trunk is made busy, or the number of made busy trunks in the group has reached or exceeded the AML.
- 120-IPM Low Tone—Priming information (test request code) error.

TEST TYPES

3.06 The following paragraphs describe the tests that can be performed by the user.

A. 100-Type Test

3.07 This test is a 1-way (far-to-near) transmission loss and near-end noise measurement test from a new 100-type test line in the far-end office. To initiate this test, the test center calls the ROTL office and sets up the test as described in paragraph 3.02. The ROTL responds with one of the following signals when the test request is received.

- TPT (0.5 second minimum)—Trunk is seized.
- 60-IPM Low Tone (4 seconds)—Trunk cannot be seized, normally because it is busy.
- 120-IPM Low Tone (4 seconds)—Priming information error or trouble encountered.

If low tone (60- or 120-IPM) is returned, the user may send the recycle command and request the test again after the TPT is removed or the user may go on-hook to release the ROTL equipment. If 120-IPM low tone is returned, the user may send a ring-forward command (100 ± 30 ms of 1300-Hz tone). The ROTL then responds with a guard-data-guard signal in which the length of the data portion of the response specifies the trouble encountered. A recycle command from the user then resets the ROTL. This procedure also applies to all following test procedures.

3.08 When the trunk has been successfully seized and the 100-type test line has been connected, the far-end transmits a 1000-Hz tone at 0 dBm0 for 5.5 seconds to the ROTL office, followed by a quiet termination. The responder at the ROTL office measures the signal received and forwards the results to the test center. After the results are forwarded, the received 1000-Hz signal is sent to the test center as long as it is present from the far-end office. When the 1000-Hz signal is completed, a noise measurement is made.

B. 102-Type Test

3.09 This test is a 1-way loss test (far-to-near) from a 102-type test line in the far-end office. The test is initiated when the test center calls the ROTL office and sets up the test as

previously described. When the 102-type test line is connected to the TUT, the test line transmits a 1000-Hz tone at 0 dBm0 to the ROTL office at preset intervals. The responder in the ROTL office makes loss measurements on the transmitted tone and relays the results to the test center.

C. 105-Type Test

3.10 This test is a 2-way transmission test for loss and noise measurements and a variety of other measurements on the TUT. The test is initiated when the test center calls the ROTL office and sets up the test as previously described. When the far-end 105-type test line and associated responder at the distant office are connected to the TUT, the test center is given control over the responders. The test center controls the far-end and near-end responders via 2-out-of-6 MF command signals. This test configuration allows both loss and noise measurements and a variety of other tests to be done on a near-to-far and far-to-near basis.

D. Balance and Long Term (BALT) Testing

3.11 This testing arrangement provides for manual position testing of 1-way incoming trunks in far-end offices that originate in a ROTL office. These trunks are tested for 1-way loss and noise (far-to-near) or to make balance measurements. This test is set up in the same manner as a transmission test.

3.12 After outpulsing the far-end test line number over the selected trunk to the class 4 office, the ROTL program expects to receive a 1000-Hz tone over the TUT which indicates that the far-end has been seized. On receipt of the tone, the ROTL applies a 1000-Hz 0 dBm0 tone on the TUT for 10 seconds followed by a quiet termination and starts a 1.2 minute timer. This sequence permits a measurement of 1-way loss and the measurement and adjustment of terminal balance in the class 4 office. A recycle or disconnect command received during the 1.2 minute interval results in the TUT being disconnected from the quiet termination circuit and the idling of both circuits. After this time interval, the No. 3 ESS connects the ROTL BALT test call to a high-tone trunk until disconnect occurs. Two simultaneous BALT call connections are allowed, one connected to each of the two quiet termination circuits provided by the No. 3 ESS office. The second connection may be established after the first minute of quiet termination of the first call.

4. SYSTEM OPERATION

NEAR-END ROTL APPLICATION

4.01 A block diagram showing the interconnections between the No. 3 ESS and the MINI-ROTL is shown in Figure 2, and a flowchart showing the operations of near-end application of the ROTL feature is shown in Figure 3. When the test center dials the directory number of a ROTL input terminal in the ROTL office, the No. 3 ESS attempts to seize the ROTL access port. If the access port is busy, the No. 3 ESS returns busy tone to the test center and supervises for on-hook. If the ROTL access port is available, the No. 3 ESS attempts to activate the TTY channel through which it communicates with the MINI-ROTL. If the TTY channel cannot be activated because the TTY controller is busy, the No. 3 ESS returns busy tone to the calling party and supervises for on-hook. When the TTY channel has been activated, a continuity test is performed on the network connection from the calling party to the ROTL front end. If the test passes, the calling party is connected to the ROTL front end and the No. 3 ESS supervises for disconnect. If the continuity test fails, or if the TTY channel fails, the No. 3 ESS returns reorder tone to the calling party.

4.02 When the incoming ROTL call has been connected to the ROTL front end, the MINI returns 15 seconds of TPT or until service is granted, and upon removal of TPT, ROTL begins a 3-minute overall timing period. (If the test center has not recycled or disconnected by the end of this time period, the MINI resets all ROTL functions and sequences to the next user.) The MINI checks for the presence of carrier on the incoming ROTL call beginning sometime during the TPT period. Presence of carrier indicates that the user is attempting to initiate the diagnostic routine. If the carrier is present, the No. 3 ESS marks all idle 105-type test lines busy, begins to time the TTY channel, and marks test lines with existing calls busy when the calls disconnect. The MINI then enters the diagnostic mode. When the TTY timer expires (2 minutes), the TTY channel is released. Upon completion of the diagnostic routines, the user disconnects and the No. 3 ESS returns all 105-type test lines to service.

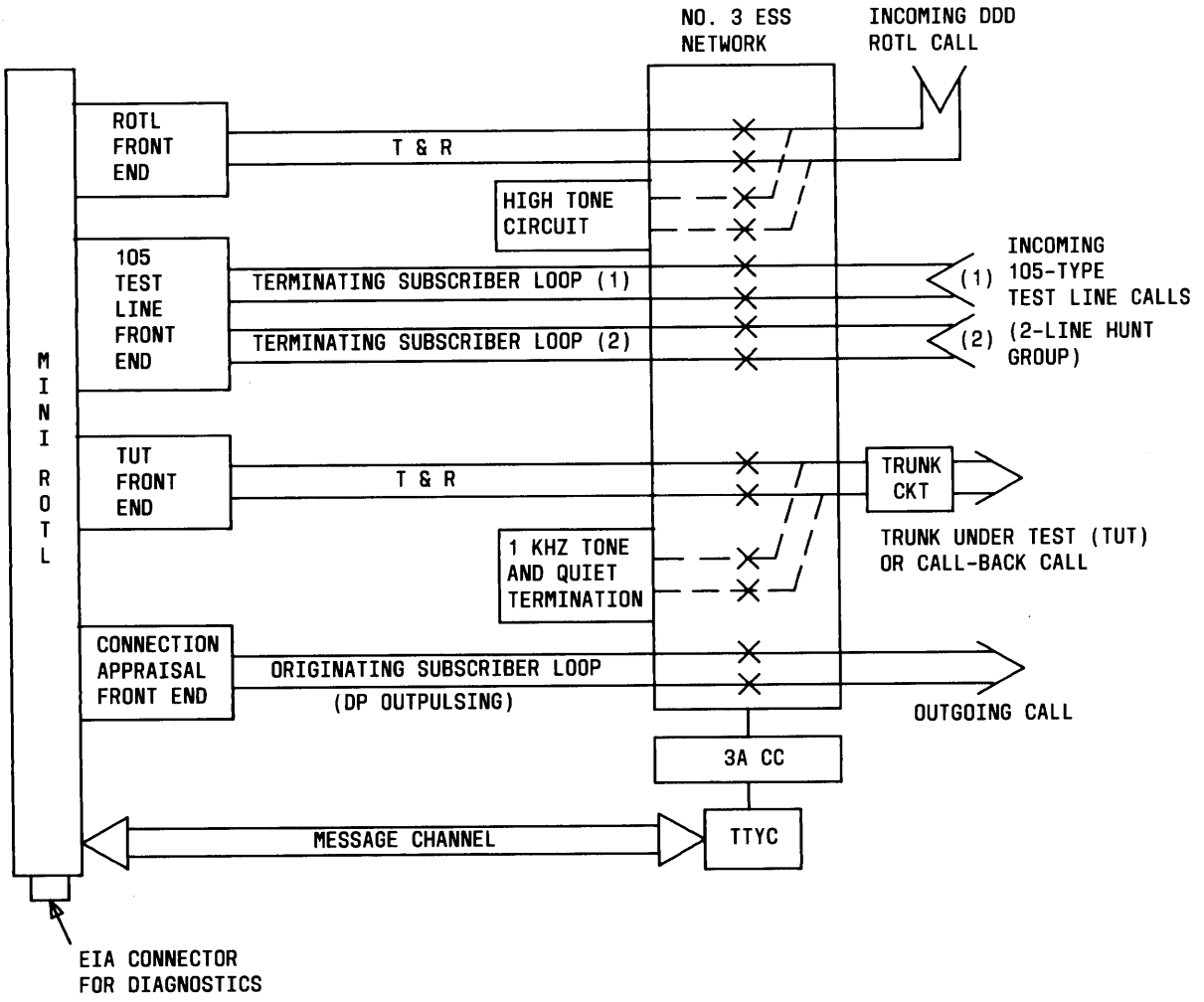


Fig. 2—Interconnections Between No. 3 ESS and MINI-ROTL

4.03 If the diagnostic routines are not desired, as indicated by the absence of carrier, the MINI receives the priming information from the test center and checks the data for validity. If the data is invalid, the MINI returns the appropriate response to the test center and waits for a recycle command. If the priming data is valid, the MINI checks the data to determine which type of test is to be performed.

Connection Appraisal Test

4.04 If the priming data indicates that a connection appraisal test is to be performed, the MINI originates a call to the far end on the originating subscriber loop (see Figure 2). The No. 3 ESS processes this call like any other outgoing call. The MINI then performs the connection appraisal routines after which the test center sends a recycle command. The MINI then recycles and sequences to the next user.

Security Callback Request

4.05 When a security callback is desired, the No. 3 ESS checks the ID digit (from the priming data) to verify that the digit is currently valid. If the ID digit is invalid, the MINI returns busy tone response and waits for a recycle command. If the ID digit is valid, the MINI returns a burst of TPT and places the continuity termination on the TUT front end. The No. 3 ESS then makes a continuity check, utilizes the Autoconnect feature to perform the callback procedure, and connects the call to the TUT front end. The MINI then

returns the appropriate response to the test center, and waits for a recycle command.

Make Busy or Restore Request

4.06 If the priming data represents a make-busy or restore request, the results of the previous security callback request are inspected to determine if the user is authorized to make busy or restore trunks. If the user is not authorized to perform these operations, the MINI returns the reorder tone and waits for the recycle command. However, if the user is authorized to make busy or restore, the MINI passes the trunk identification and the make-busy or restore request to the No. 3 ESS. The No. 3 ESS completes the request and the MINI returns the appropriate response to the test center and waits for the recycle command.

Trunk Status Request

4.07 If the priming information indicates that the user has requested the status of a trunk or group of trunks, the MINI passes the trunk or trunk group identification and the test request code to the No. 3 ESS. The No. 3 ESS passes the status information to the MINI. The MINI then relays this information to the test center in the form of a tone response and waits for the recycle command.

Trunk Transmission Test

4.08 If the priming information indicates that a trunk transmission test or BALT test is to be performed, the MINI passes the following data (from the priming information) to the No. 3 ESS:

- Normal seizure or override maintenance busy
- Trunk group and member number
- State of trunk to be tested (local state is only one accepted)
- Far-end test line address digits
- Request type (100-type test line, 102-type test line, 105-type test line, or balance and long-term test).

The No. 3 ESS then returns one of the following trunk status messages:

- Trunk seizable
- Do not understand message
- Trunk unseizable (busy, etc)
- TUT port not available
- TUT port not defined.

4.09 If the trunk was not seizable, the No. 3 ESS resets, and the MINI returns the appropriate tone response to the test center and waits for a recycle command.

4.10 If the trunk was seized, the MINI returns a burst of TPT to the test center, places the continuity termination on the TUT front end, and the No. 3 ESS attempts a call setup on the TUT. A check is then made to verify that outpulsing facilities are available by which to outpulse the number of the far-end test line (FETL). If no facilities are available, or if a connection setup difficulty is encountered, the MINI returns the appropriate response to the test center and waits for the recycle command.

4.11 If the outpulsing facilities are available, the No. 3 ESS outpulses the number of the FETL. The No. 3 ESS then connects the TUT to the MINI with the network junctors in the bypass state. The MINI then removes the TUT front-end continuity condition and returns the proper tone response to the test center based on the results of the call to the FETL (busy, reorder, answer, etc). If the appropriate tone response has been received from the far end, the MINI returns the appropriate TPT to the test center and then determines if a balance and long-term test (BALT) is to be performed. If a BALT test is not to be performed, answer supervision on the TUT is checked. If the answer supervision is not received from the far end, the No. 3 ESS disconnects and the MINI returns the appropriate response and waits for the recycle command. If answer supervision is received, the MINI applies the "responder seized" response to the test center. The test center is then free to perform the desired tests. Upon completion of these tests, the test center may wish to release the responder or release the responder and make the trunk busy. If a make-busy operation

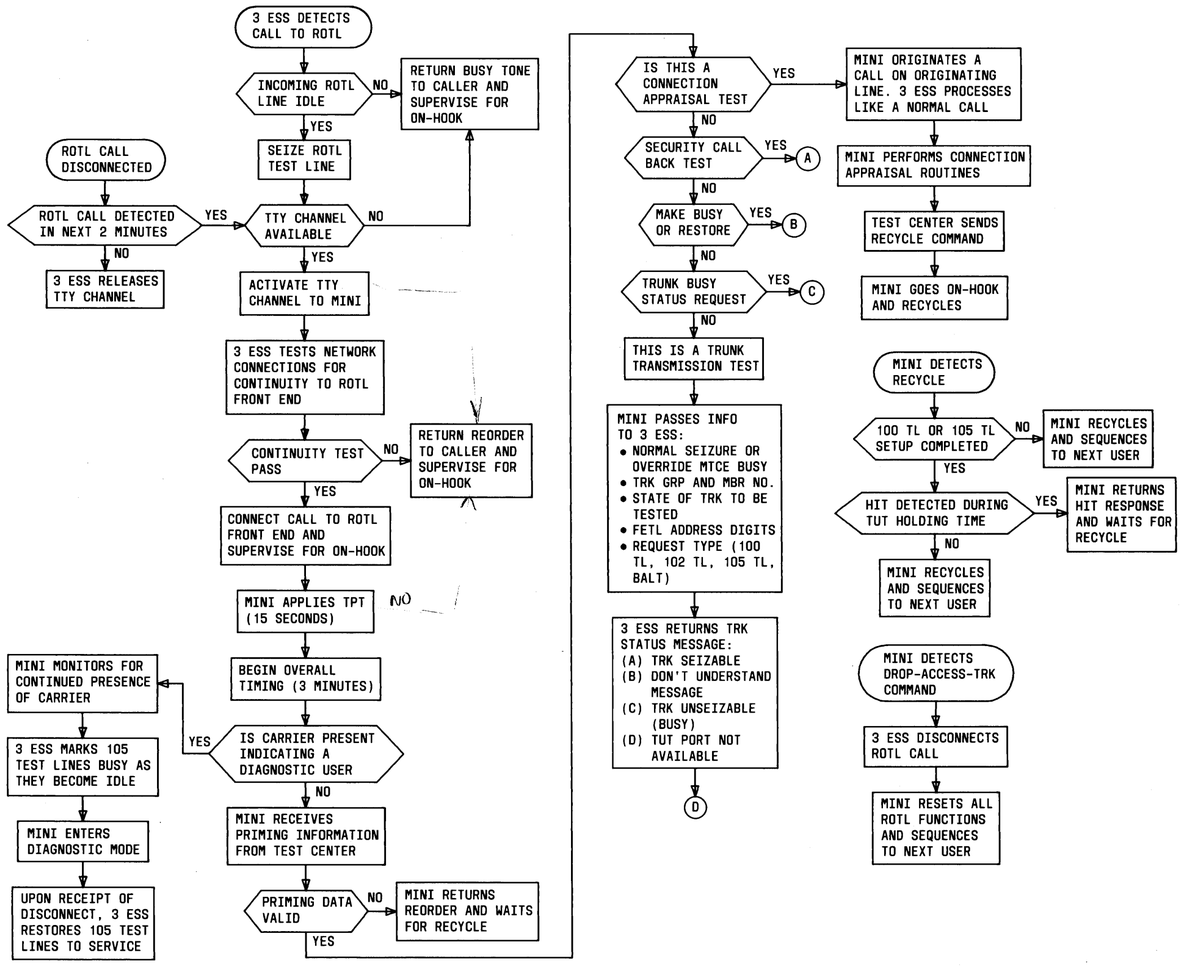


Fig. 3—Flowchart for ROTL Call Setup (Near-End Application) (Sheet 1 of 2)

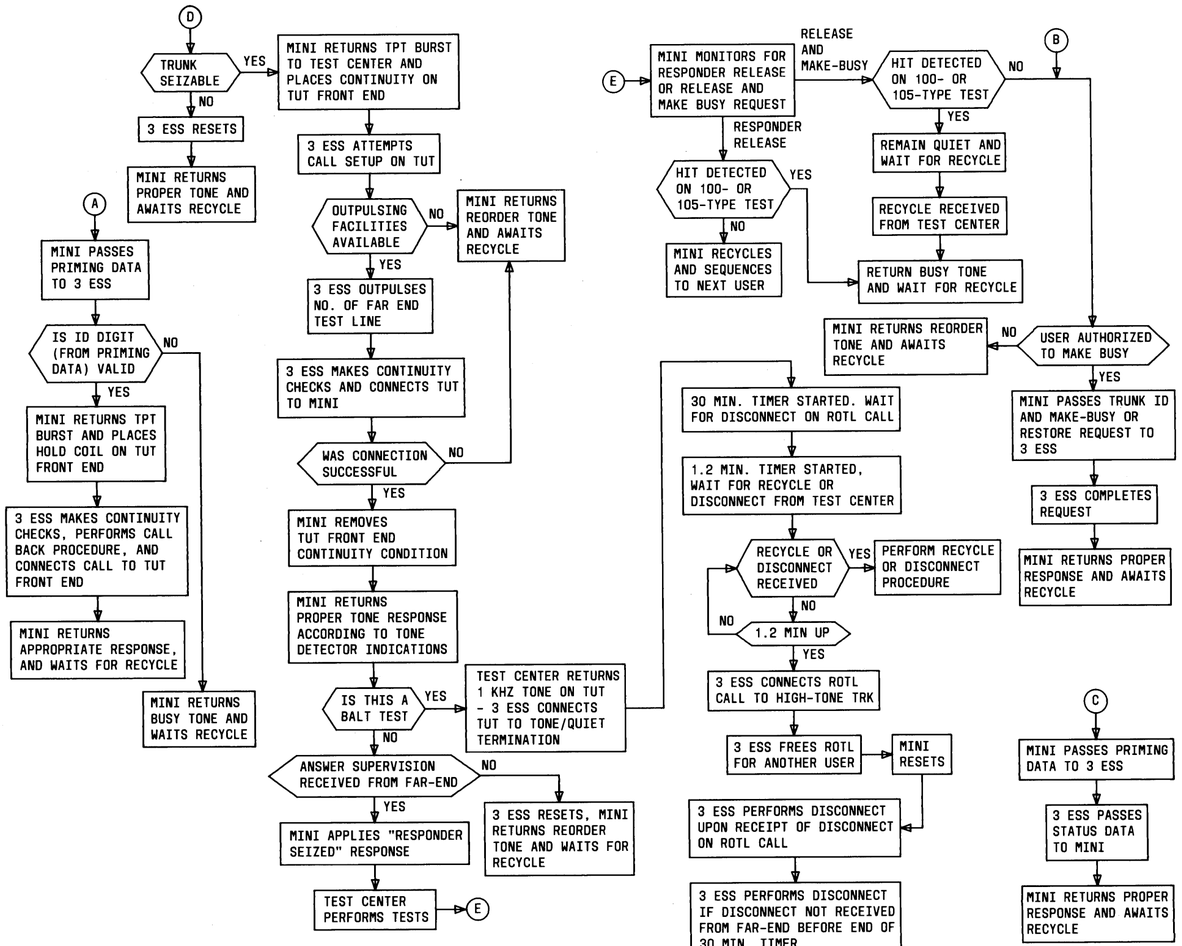


Fig. 3—Flowchart for ROTL Call Setup (Near-End Application) (Sheet 2 of 2)

is desired, the test center must have performed a successful security callback during the time it was connected to ROTL. If the responder is released, the MINI recycles and sequences to the next user.

4.12 During transmission tests to new 100-type or 105-type test lines, the occurrence of supervisory hits is detected and noted, but testing is continued until ROTL receives a recycle command. At that time, the ROTL returns a 60-IPM low tone to indicate that a hit was detected.

BALT TEST

4.13 If a BALT test is to be performed, the test center returns a 1-kHz tone to the MINI over the TUT and the No. 3 ESS connects the TUT to a tone/quiet termination. A 30-minute timer is then started and the far-end is supervised for disconnect. A 1.2 minute timer is then started and the test center access is supervised for disconnect. If the test center disconnects or initiates a recycle before the end of the 1.2 minutes, the MINI performs the disconnect or recycle procedure in the usual manner. If recycle or disconnect is not received before the 1.2 minute timer expires, the No. 3 ESS connects the ROTL call to a high-tone trunk and frees the ROTL for another user. The No. 3 ESS then performs the disconnect procedures on both the ROTL call and the TUT upon receipt of disconnect of the ROTL call connection or at the expiration of the 30-minute timer.

Drop Access Trunk (DAT) Command

4.14 The DAT command may be sent by the test center to indicate that all tests have been completed. The No. 3 ESS responds by disconnecting the ROTL call and the MINI then resets all ROTL functions and sequences to the next user. The test center may also initiate the same actions simply by going on-hook.

Recycle Command

4.15 When the MINI detects a recycle command, it determines if a 100-type or 105-type test line setup has just been completed. If one of these two setups was completed, the MINI determines if a hit was detected during testing procedures. If a hit was detected, the MINI returns the appropriate response and waits for a second recycle command before sequencing to the next user. If no hit was detected, no second recycle command is required.

FAR-END APPLICATION

4.16 A flowchart showing the operations performed by the far-end applications is shown in Figure 4. When the No. 3 ESS detects an incoming call to a 105-type test line, a check is made to determine the availability of a 105-type test line. If no test line is available, busy tone is returned to the near-end office and No. 3 ESS supervises for disconnect. If a test line is available, the line is seized and a ringing continuity test is performed on the test line front end. If the test fails, the 105-type test line is released and reorder tone is returned to the test center.

4.17 If the continuity test passes, ringing current is applied toward the 105 test line and audible ringing is returned. The No. 3 ESS then supervises for disconnect and the MINI trips the ringing. The No. 3 ESS then establishes a connection between the calling party and the 105 test line with the network junctor in the talk state. The MINI monitors the loop current from the junctor for supervision. MINI then returns TPT for 1 second or until the responder is connected. The test center is then free to use the responder for the desired tests. When the center has released the responder (upon completion of the desired tests), the MINI releases the 105-type test line and assigns the responder to the next user.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 The ROTL feature is assigned on a per-system basis.

6. LIMITATIONS

6.01 The ROTL office (near-end application) trunks that may be tested are limited to outgoing and 2-way trunks including trunks to TSPS and CAMA ANI, etc. A far-end application tests only incoming and 2-way trunks. Also, ROTL cannot test operator trunks or trunks which require operator number identification (eg, trunks to 3CL boards, CAMA ONI, etc).

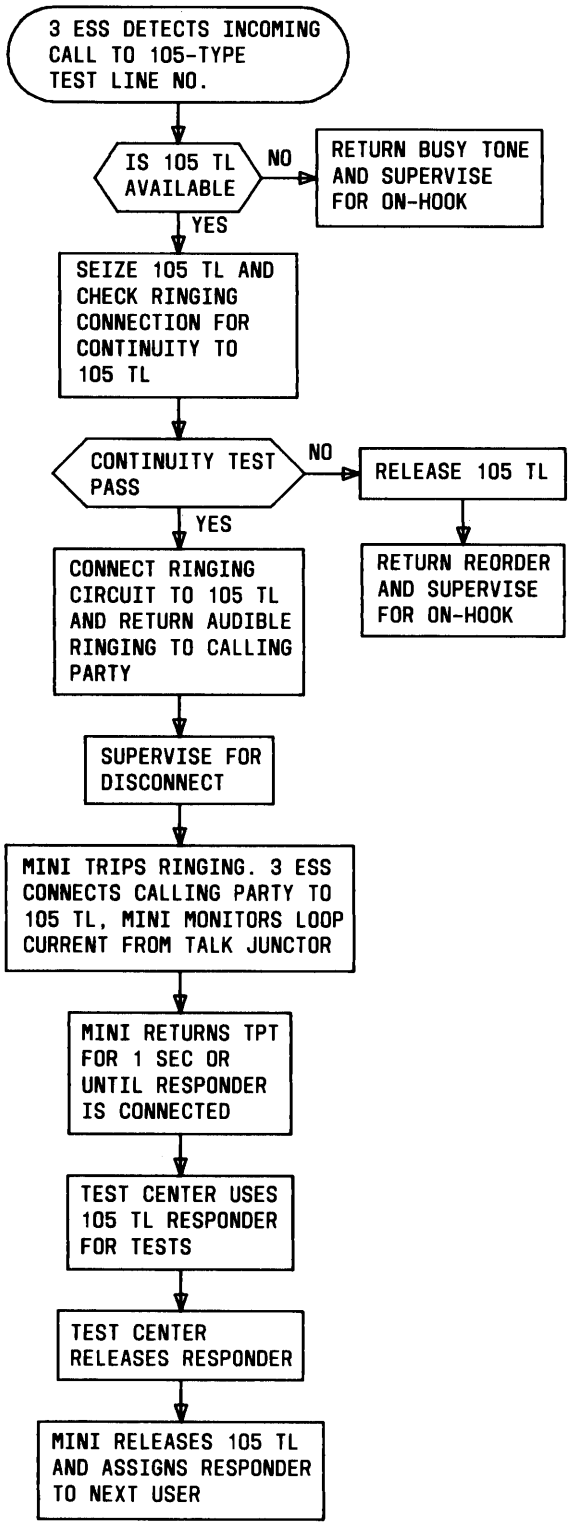


Fig. 4—Flowchart for Call to 105-Type Test Line

7. INTERACTIONS

7.01 This feature does not interact with other features.

8. RESTRICTION CAPABILITY

8.01 Make-busy and restore requests on ROTL office trunks are restricted via the security callback mechanism. Only the test centers authorized (maximum of six) will be allowed to affect the condition of trunks. Also, only manual test centers are allowed to exceed the AML.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 The ROTL equipment should be installed by Western Electric Company (WECo) installation personnel in accordance with the Installation Engineering Handbook. An office data administration (ODA) run (in the case of the initial installation) or recent change messages may be necessary to define the network terminal assignments.

10. HARDWARE REQUIREMENTS

10.01 Hardware required to provide the ROTL feature include one MINI-ROTL (J94055A) and a TTY controller. The TTY controller may be shared with other users (repair service bureau, traffic measurements, etc). A transmission rate of 110 or 300 baud is required. A switch on the MINI-ROTL circuit pack CP17 must be set for the proper speed.

10.02 The MINI-ROTL requires five network terminal appearances and a link to a single port of the TTY controller. One network appearance is used by the control location to gain access to the MINI. Another network appearance is required to allow the MINI to gain access to the TUT. A third network appearance is required to perform connection appraisal tests from the MINI. The remaining two are required to provide the 105-type terminating test line functions. Terminal equipment numbers are required for all network appearances. The link to the TTY controller is used to exchange commands and data between the MINI and the No. 3 ESS. This link is assigned a TEN which is not electrically connected.

10.03 The 100- and 102-type test line functions are provided by the peripheral test frame (SD-3H520). The circuits providing these functions (FB505, FB506, and FB507) are utilized for other testing applications and are provided as standard hardware for the No. 3 ESS. The 105-type test line functions are provided by the MINI and therefore require no additional hardware.

11. SOFTWARE REQUIREMENTS

11.01 No real-time or CCS calculations are required for the ROTL feature, since this feature is intended to be used primarily during light traffic hours.

11.02 Translation data requirements for the ROTL feature are as follows:

MINI-ROTL access port

- Three words of line translations for the telephone number associated with the ROTL access port
- Two words of route index expansion for the route index associated with the ROTL input terminal telephone number
- Four words of group data for ROTL front end
- Two words of member list data
- Five words of data in selection status block (temporary storage).

ROTL security (trunk under test front end port)

- Seven words of line translation for the telephone number associated with the TUT front end
- Nine words of line translation if TUT is to be used for security callback
- Seven words in callback translator for first security callback telephone number
- Nine words for each additional callback telephone number (five maximum); these nine words break down into seven for the callback translator and two words of line translations
- One word in TUTTL data word for the TEN.

Connection appraisal front end

- Seven words in line translations.

105-type test lines (two required)

- Nine words each in line translations
- One word each in FETL data words for the TEN.

TTY channel

- Fifteen words in line translations
- Seven words in the callback translator
- Three words in the message class table.

Dedicated TTY controller (if applicable)

- Four words in TTY controller parameter block table.

A simplified translation layout for the ROTL feature is shown in Figure 5.

12. DATA ASSIGNMENTS AND RECORDS

12.01 If the ROTL feature is to be incorporated at the time of the initial No. 3 ESS installation, the following forms must be completed and submitted to the WECo Regional Data Center as a part of the ODA run.

ROTL OFFICE

- ***3100 Telephone Number Table:*** This form is used to make the following assignments:

  (a) Assign a directory number, line class code (LCC), and terminal equipment number (TEN) for ROTL input terminal. A route index using entry type 37 must be specified for routing calls to ROTL.

  (b) Assign a directory number and TEN for use by the TUT front end. Specify

a line class code that indicates autoconnect. Also, entry type 10 is required on Form 3107-2.

(c) Assign a directory number and TEN for the connection appraisal front end. Specify dial pulsing only and a line class code to deny termination.

(d) Assign a directory number and TEN for the ROTL DATA (message channel). Specify an autoconnect line class code and ground start.

The above lines must be arranged to inhibit the ALIT routines. (This indicator is located on Form 3107-2 Supplementary Information Table.)

- ***3201-2 Trunk Assignment Table:*** Assign a TEN for the ROTL front end. This circuit is assigned as if it were a tone circuit group with one member. Trunk group 103 is specified.

- Up to six directory numbers may be assigned as security callback numbers. To define these telephone numbers, use the 3100 and 3107-2 forms with the TEN of the TUT front end and specify entry type 10, the member number, and the return telephone number. Also, optionally specify the ROTL Automatic Maintenance Limit (RAML).

- ***3303-2 Route Index Expansion Table:*** This form is used to define a route index to be used for routing incoming ROTL calls to the ROTL access port. Entry type 37 must be specified.

- ***3500-3 General Information Table:*** Assign a TTY controller and port for use by the ROTL feature if ROTL has a dedicated TTY controller and port.

NO. 3 ESS SERVING AS A FAR-END OFFICE

- ***3100 Telephone Number Table:*** This form is used to specify two directory numbers and TENs for the far-end 105-type test lines. Series completion should be specified, and a line class code must be specified which will deny origination on these lines. Also the 3107-2 form is used to specify the entry type of 34 and 35 for the two directory numbers. These entry types do not apply when an office is using the MINI-ROTL hardware and a generic prior to 3E3 to provide the far-end test line (105) functions.

12.02 When the ROTL feature is to be incorporated in an existing No. 3 ESS, the following recent change and reallocation messages must be used to make the necessary software assignments.

RC:LINE This message is used to make the following assignments:

(a) ROTL input terminal—A ROTL route index must be specified.

(b) TUT front end—directory number and TEN—A line class code must be specified to deny termination to this line (ETYP=10).

(c) Connection appraisal front end—directory number and TEN—Specify dial pulsing and a line class code to deny termination.

(d) 105-type test lines—Specify two directory numbers and TENs for the two far-end 105-type test lines. These lines should be arranged for series completion. A line class code must be specified to deny originaton (ETYP= 34 and 35 for the far-end office).

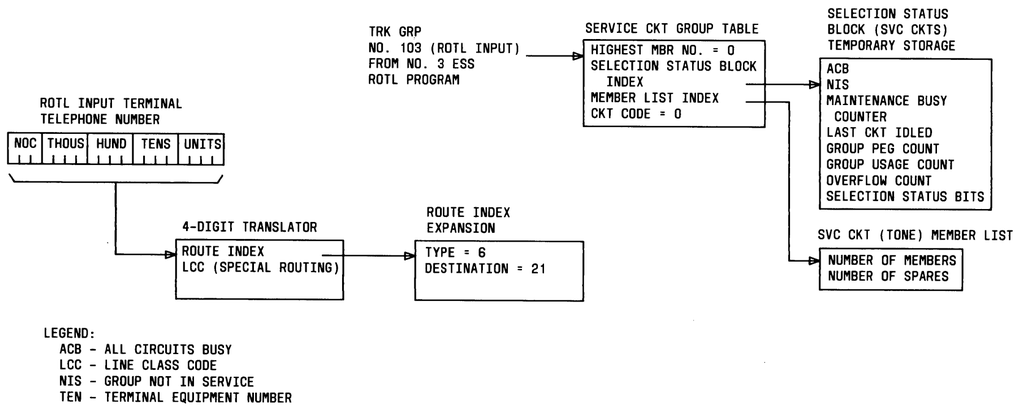
(e) ROTL DATA (message channel)—Assign a telephone number and specify an autoconnect line class code and ground start.

(f) ROTL security callback—Assign up to six directory numbers with ETYP 10 and the TEN of the TUT front end.

RC:GRP This message is used to assign a TEN for the ROTL front end. The circuit is assigned as if it were a tone circuit group containing one member. Trunk group 103 is specified.

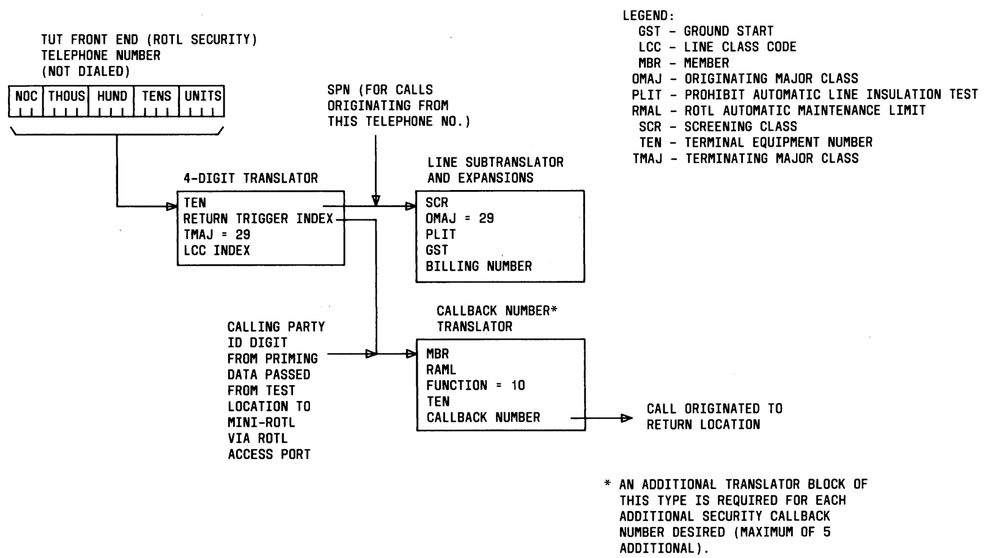
RC:RTI This message is used to assign a route index (ETYP 37) for routing incoming calls to the ROTL access port.

RC:TTY This message is used to assign a TTY controller and port for use by the ROTL feature when a dedicated controller and port is utilized.



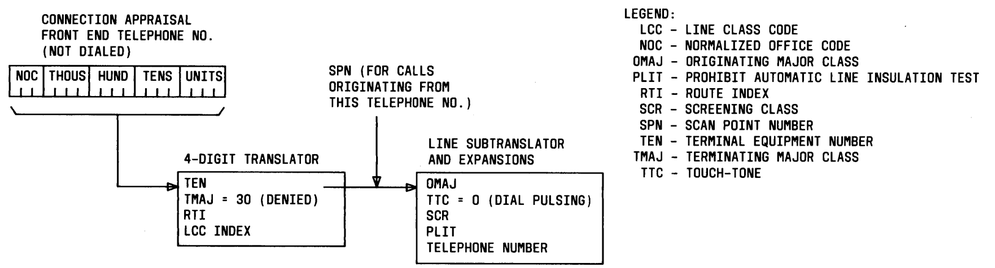
A. ROTL ACCESS PORT

Fig. 5—Translation Layout for ROTL Feature (Sheet 1 of 5)



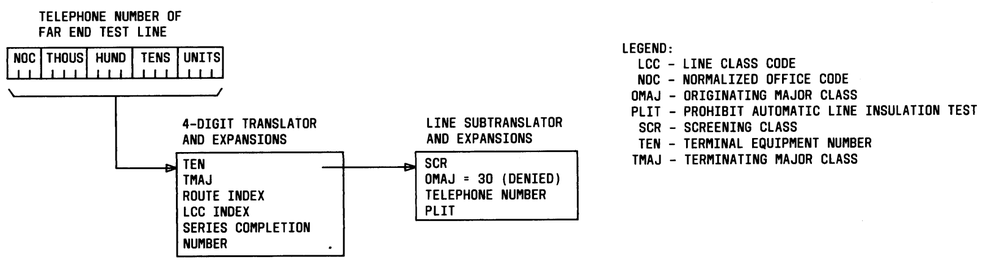
B. ROTL TUT FRONT END

Fig. 5—Translation Layout for ROTL Feature (Sheet 2 of 5)



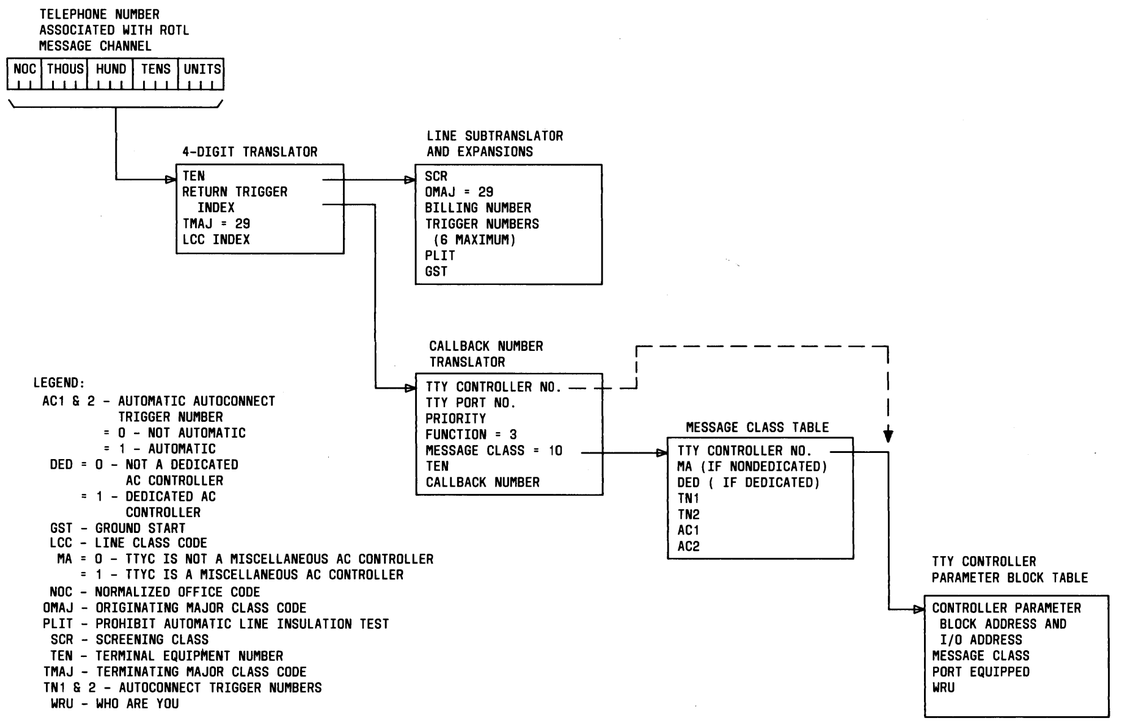
C. CONNECTION APPRAISAL FRONT END

Fig. 5—Translation Layout for ROTL Feature (Sheet 3 of 5)



D. FAR END TEST LINE (105)

Fig. 5—Translation Layout for ROTL Feature (Sheet 4 of 5)



E. ROTL MESSAGE CHANNEL

Fig. 5—Translation Layout for ROTL Feature (Sheet 5 of 5)

DIST:GRP This reallocation message is used to generate a service circuit group for the ROTL access port including member list and selection status block.

13. TESTING

13.01 The MINI-ROTL unit contains resident diagnostic routines which are accessible via remote call-up or via on-site connections to the appropriate test equipment (an EIA 110-baud data terminal). After the No. 3 ESS connects an incoming ROTL call to the MINI-ROTL and the MINI-ROTL detects that it is a diagnostic request, the MINI-ROTL notifies the No. 3 ESS. The No. 3 ESS then makes the two 105-type test lines busy to incoming traffic until the diagnostics are completed and the diagnostic user has disconnected. If a 105-type test line call is parked at the time of the diagnostic request, No. 3 ESS waits for the call to disconnect before making the test line busy to incoming calls. A connector is also provided on the MINI-ROTL which allows a direct connection of a data terminal using an EIA interface for exercising the MINI-ROTL diagnostic sequence. A direct connection diagnostic request is recognized only when there are no incoming calls connected (ROTL or 105-type test line).

13.02 An additional test is provided to allow testing of the MF receiver at the MINI. This test allows a predesignated string of priming information to be transmitted to the MINI (see MF RECEIVER TEST in the priming information of Table A). If the string is received correctly, the MINI returns 0.5 seconds of TPT; however, if the string is received incorrectly, the MINI returns 4 seconds of 120 IPM low tone and waits for a recycle command.

13.03 Additional information concerning testing to be performed with the RSTS or the 92A control unit can be found by referring to Sections 100-175-101 and 103-251-112, respectively.

14. OTHER PLANNING TOPICS

14.01 All planning and service dates should be coordinated with the CAROT system to be associated with this office.

ADMINISTRATION

15. MEASUREMENTS

15.01 Not available.

16. CHARGING

16.01 Not applicable.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 The following list identifies terms used in this section which may be unfamiliar to the reader.

- ***ALIT***—Automatic Line Insulation Test
- ***AML***—Automatic Maintenance Limit
- ***BALT***—Balance and Long Term Tests
- ***CAROT***—Centralized Automatic Reporting On Trunks
- ***EIA***—Electronic Industries Association
- ***FETL***—Far End Test Line
- ***IPM***—Interruptions Per Minute
- ***MF***—Multifrequency
- ***RSTS***—ROTL System Test Set
- ***TPT***—Test Progress Tone
- ***TUT***—Trunk Under Test.

18. REFERENCES

18.01 The following documents may be referred to for more details related to the ROTL feature.

- Section 100-175-101—ROTL System Test Set Description and Operation
- Section 103-251-112—92A Control Unit Description and Operation

- Section 233-135-110—Remote Office Test Line (ROTL) Description and Theory of Operation, No. 3 Electronic Switching System
- Section 233-190-033—Autoconnect Feature—No. 3 ESS
- CD and SD-99392-01 MINI-ROTL Circuit
- Translation Guide—TG-3
- Translation Layout Specification—PA-3H300
- Input Message Manual—IM-3H300
- Output Message Manual—OM-3H300