

AUTOMATIC OUTGOING TRUNK TEST FRAME
DESCRIPTION
STEP-BY-STEP OFFICES

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1. GENERAL

1.01 This section describes the functions and the equipment of the automatic outgoing trunk test frame (AOTT) SD-32504-01 used in step-by-step offices.

1.02 This section is reissued for the following reasons:

- (a) To include a description of testing into offices equipped with the modified 100-type test line
- (b) To delete all references to remote office test line (ROTL) through testing
- (c) To include a description of testing into terminating test line numbers within the AOTT office
- (d) To update the section.

1.03 The AOTT provides for automatic transmission and operational testing of the following types of trunks:

- (a) Outgoing local dial trunks from a class 5 office to a class 5 office.
- (b) Intertoll trunks from a class 4 or higher office to a class 4 or higher office.
- (c) Toll connecting trunks from a class 4 or higher office to a class 5 office
- (d) CAMA trunks with the exception of non-ANI trunks to a No. 4 toll office or person-to-person trunks to crossbar tandem. Both of these require operator assistance and therefore cannot be tested.
- (e) Outgoing trunks from step-by-step or No. 5 offices equipped with a remote office test line (ROTL).

(f) Trunks to test lines within the AOTT office.

1.04 Transmission tests are made and recorded using the AOTT, the 28B teletypewriter set, a control tape, and the automatic transmission measuring system (ATMS) director. The types of transmission tests which can be made are dependent upon the test line terminations available in the terminating offices.

1.05 Operational tests are made using the AOTT, the 28B teletypewriter set, and a control tape. The ATMS director is not used for operational tests. The type of operational test, like the transmission tests, is dependent upon the test facilities in the terminating AOTT office.

1.06 Both the transmission tests and the operational tests on dial trunks are controlled by perforated teletypewriter tape. This control tape is the standard 5-level printed chadless tape. All the information necessary to perform tests on outgoing dial trunks is entered on the control tape. This consists of a caption, which serves to identify and describe the test, the priming information, consisting of 23 or 13 priming digits (depending on whether a transmission or an operational test is to be made), the terminating test line number, the trunk location address of the trunk to be tested and the traffic assigned trunk number. When the AOTT is used to test trunks outgoing from a remote office via a remote office test line (ROTL), the trunk location address is replaced by the ROTL directing code on the control tape.

1.07 With the control tape in place, the test can be started from the AOTT by key operation. The test may be started by one of two ways: (1) operation of the ST (start) key which starts the test immediately or (2) operation of the TC (timer control) key which after a desired time delay, will start the AOTT on an automatic basis. Immediately following the test of each trunk, the test results are printed on a page copy and may also be perforated on tape. In addition, a busy retest tape may be perforated which contains the information required to retest trunks which have been found busy. This tape may be used as a control tape for retesting these trunks.

A. Transmission Testing

1.08 As the control tape feeds through the transmitter-distributor, the caption is read

and passed directly to the typing unit and under key control to the reperforator. Next, the first twelve priming digits are read and stored in the AOTT. These digits relate to the type of test and certain testing conditions. The remaining priming digits are read and transmitted to the ATMS director, where they are stored. These digits include the testing parameters. The control tape advances and the terminating test line number is read and registered in the test frame. The trunk location address is then read and the test frame connects to the trunk to be tested. The traffic assigned trunk number is read and registered in the test frame for future use.

1.09 When the AOTT is connected to the trunk to be tested, a busy test is made. If the trunk is busy, the AOTT will camp on the trunk for a key-controlled time interval (0, 3, or 6 minutes). If the trunk remains busy after the camp-on interval, a busy indication is sent to the typing unit and reperforator, an appropriate printout is produced, and the AOTT proceeds to the next trunk. If the trunk is idle, a continuity and polarity check is made which, if unsuccessful, will cause the CPF lamp to light and an operational failure indication to be sent to the typing unit and reperforator where an appropriate printout is produced and the test frame advances to the next trunk.

1.10 After a successful continuity and polarity check, the terminating test line number is outpulsed. If busy tone is returned after the terminating test line number has been outpulsed, a far-end busy will be indicated to the typing unit and reperforator, an appropriate printout is produced, and the test frame will proceed to the next trunk.

1.11 If testing to a milliwatt test line (100- or 102-type) or to a 104-type test line without test progress tone (2225), 1000-Hz tone is returned from the far-end. Recognition of this tone by the tone detector causes the ATMS director to be connected. The ATMS director then measures this same tone to determine the far-to-near loss of the trunk. If testing to a transmission and noise checking circuit (104-type with test progress tone) or to an ATMS responder (105-type), test progress tone (2225-Hz) is returned from a parking circuit for a maximum of 30 seconds. If the far-end equipment is not ready to serve the call within this period, the AOTT notes a far-end busy and proceeds to the next trunk. Removal of the test

progress tone indicates that the far-end equipment has been connected and the ATMS director is then connected. If, after the terminating test line number has been outpulsed, nothing is returned, the AOTT will time out in 10 seconds, send an operational trouble indication to the typing unit and reperforator, and proceed to the next trunk. After the ATMS director is connected, it will test the trunk using the test line in the terminating or AOTT office.

1.12 The results of the test are presented by deviations from the expected measured loss and noise limits stored in the director. The deviations together with cue indications are transmitted by the ATMS to the test frame and on to the typing unit and reperforator. The cues indicate that one or more of the deviations have exceeded the limits stored in the ATMS director. If deviations have been exceeded, the ATMS director under switch control, may retest the trunk if the results of the first trial warrant a retest.

1.13 After the first or second test, the ATMS transmits an end-of-test signal to the test frame which removes the trunk location address from temporary storage and disconnects from the trunk. The tape advances and the traffic assigned trunk number of the first trunk tested is sent to the typing unit and reperforator. The trunk location address of the second trunk to be tested is read. This procedure is repeated for all the trunks to be tested.

1.14 After the last trunk of a group of trunks associated with common priming information has been tested, the ATMS director and the AOTT are cleared of all stored test information. This prepares the ATMS and AOTT for the testing information of the next group of trunks with common priming information to be tested.

1.15 For a group of trunks to be tested using the same priming information, the trunks must have several items in common: termination in the same type of far-end test line, the same expected measured loss, the same loss deviation limit, and the same noise limits.

1.16 In addition to testing trunks outgoing from the office in which the test frame is located, or in the AOTT office, the AOTT and associated ATMS director can perform transmission tests on trunks outgoing from a remote office equipped with

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a remote office test line (ROTL). Testing with a ROTL is accomplished by remote office responder testing. Remote office responder testing requires that an ATMS responder unit be associated with the ROTL at the remote office. Fig. 1 shows how testing via ROTL is accomplished. Office A is the test control office equipped with the AOTT and the ATMS director. Office B is the remote office and is equipped with a ROTL. Office C is the far-end office equipped with a 100-, 102-, or 105-type terminating test line. Tests using the ROTL are controlled by a control tape at the AOTT. The caption and priming digits for ROTL testing are read from the tape and handled as described in 1.07. Following the priming digits, the ROTL access number (telephone number of the ROTL) is read and registered in the AOTT. The ROTL mark in the priming information causes the AOTT to seek a line finder in establishing a connection to Office B. If a line finder is not seized in 10 seconds, an NLFA lamp will light and an alarm will sound indicating no line finders available. The AOTT will wait 3 minutes and attempt a line finder seizure again. This will be repeated until a line finder is seized. After a line finder is seized, the ROTL telephone number is outpulsed to establish a connection to Office B and then to connect the Office B ROTL.

1.17 After the ROTL is connected, the first ROTL directing code is read and outpulsed to the Office B ROTL. The ROTL directing code is a 5-digit number. The Office B ROTL uses the ROTL directing code to seize the trunk under test and to outpulse the Office C terminating test line number. The type of test which can be made using ROTL is dependent on the type of test line at the terminating end. After the terminating test line has been connected, the ATMS director is connected and the first trunk results are recorded, the trunk number of the first trunk is sent to the typing unit and reperforator and 1300-Hz tone is sent to the ROTL. The 1300-Hz tone serves as a disconnect signal for the remote office trunk under test while holding the connection to the ROTL. The control tape moves on to the next ROTL trunk location address which is read. After the last trunk number is recorded, all test connections are dropped.

B. Operational Testing

1.18 For operational tests on trunks, the AOTT uses the 28B teletypewriter set and a control

tape but does not use the ATMS director. The caption is read from the tape and passed directly to the typing unit and reperforator. Following the caption, the first 13 digits of the 23 priming digits are read and used by the AOTT to establish the type of test. The remaining 10 digits consist of colons which are used as fillers to advance the AOTT. Following the priming digits, the terminating test line number is read and registered in the AOTT. The next test information read from the tape is the trunk location address of the first trunk to be tested. Following the trunk location address, the traffic assigned trunk number is read and registered in the AOTT frame. The trunk under test is seized; tested for busy, continuity, and polarity; and connected to the terminating test line as described in 1.09 and 1.10. The AOTT receives the test line signals and determines whether or not the test is satisfactory. A satisfactory test produces no printout. If a busy indication or a unsatisfactory test is encountered, the results are passed on to the typing unit and reperforator and an appropriate printout is produced. The tape advances and the trunk location address of the next trunk to be tested is read.

1.19 The AOTT can perform operational tests on dial trunks to the following types of terminating test lines: (1) synchronous test line, with and without centrex transfer feature, (2) nonsynchronous test line, (3) signal-supervisory test line (103-type), and (4) a busy line test line. The AOTT can perform operational tests into synchronous or nonsynchronous test lines on trunks outgoing from a remote office equipped with a ROTL.

2. TESTS

TRANSMISSION TESTS

A. 100-Type Tests

2.01 The 100-type test is a one-way transmission and noise measurement of a trunk which terminates in a modified 100-type test line. When the terminating test line number is outpulsed by the AOTT, the 100-type test line is seized and 1000-Hz test tone is returned for a 6-second interval. The test tone causes the ATMS director in the AOTT to be connected and a far-to-near loss measurement is made. After the 6-second interval of test tone, the 100-type test line changes to a balance termination and the ATMS director in the AOTT performs a far-to-near noise measurement.

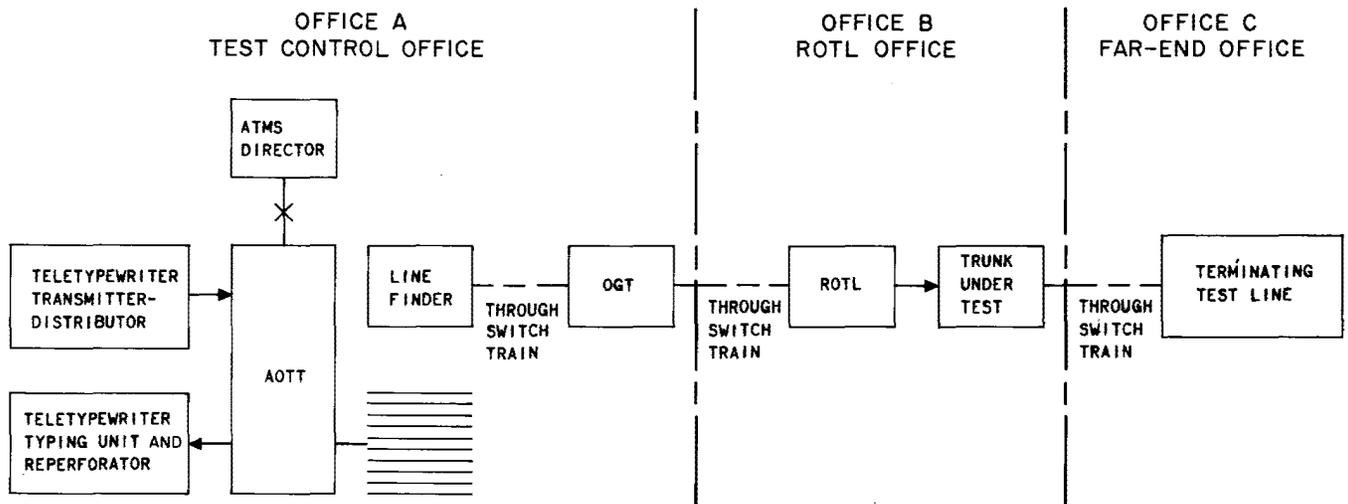


Fig. 1—ROTL Testing

2.02 Before the first trunk is tested, the ATMS director in the AOTT performs a self-check. If the director is out-of-limits on the first self-check, a second self-check is made. If the second self-check fails, the AOTT stops progressing and a minor alarm sounds. The 100-type test line *can* be seized over trunks outgoing from a remote office equipped with ROTL under control of the AOTT.♦

B. 102-Type Tests

2.03 The 102-type test is a one-way transmission measurement of a trunk terminating in a 1 MW test line. When the terminating test line number is outpulsed by the AOTT and 102-type test line is seized, 1000-Hz tone is returned to the AOTT over the trunk under test. The 1000-Hz test tone causes the ATMS director to be connected. The ATMS director makes a far-to-near loss measurement.

2.04 A noise test is not possible using a 102-type test line. Before the first trunk is tested, the ATMS director performs a self-check. If the director is out of limits on the first self-check, a repeat of the self-check will be made. If the director is out of limits on the repeat test, the AOTT will stop and a minor office alarm will sound. The 102-type test line *can* be seized over trunks outgoing from a remote office equipped with a ROTL under control of the AOTT.

C. 104-Type Test

2.05 The 104-type test is a 2-way transmission measurement and a 1-way noise measurement to a transmission measuring and noise checking circuit (TMANC). A park-on feature is provided to wait for the TMANC to become available since it may be servicing other calls. After the 104-type test line number has been outpulsed, the test control office is notified by either a change in supervision or by the use of test progress tone (depending on the vintage of the terminating test line) that the TMANC is available and connected. Upon cut-through the ATMS sends 1000-Hz test tone to the test line which measures and stores the near-to-far loss. The test line then transmits test tone twice: (1) 1000-Hz test tone from which the far-to-near loss is determined and (2) 1000-Hz test tone padded with the amount of the near-to-far loss. The ATMS determines the near-to-far loss by taking the difference between the received levels of the two test tone transmissions. The test line also provides a termination for making a near-end noise measurement. An optional arrangement provides for a signal from the test line if the far-end noise has exceeded a preset limit.

2.06 The printout of the test results gives far-to-near and near-to-far loss deviations and near-end noise deviations. If the option mentioned above has been exercised, an indication will be printed. If the far-end noise exceeds 41 dBnc, the printout will indicate +++ symbols,

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and if the far-end noise is less than 41 dBrnc, the printout will indicate --- symbols. No ATMS self-check is made and the 104-type test line *cannot* be seized over trunks outgoing from a remote office under control of the AOTT.

D. 105-Type Test

2.07 The 105-type test is a 2-way transmission and noise measurement to an ATMS responder. As in the 104-type test, the park-on circuit is seized and test progress tone is returned. Removal of tone indicates that the ATMS responder has been connected. The 105-type test line is capable of performing far-to-near and near-to-far transmission loss measurements and far-end and near-end noise measurements.

2.08 The test results printout gives the ATMS director self-check, ATMS responder self-check, far-to-near and near-to-far loss deviation, and far-end and near-end noise deviation. If either of the self-checks is out of limits on the first test, the self-check will be repeated. If the responder is out of limits, on the repeat test it will cause a printout of responder trouble and the AOTT will bypass the entire trunk group under test. However, if the director is out of limits on the repeat test, the AOTT will stop and a minor alarm will sound. The ATMS responder *can* be seized over trunks outgoing from a remote office equipped with a ROTL under control of the AOTT.

2.09 The type of test and the testing parameters are included in the priming information on the control tape. Table A shows the 23 priming digits used for transmission testing. The digit in tape line 11 indicates the type of transmission test to be performed (100-, 102-, 104-, or 105-type).

OPERATIONAL TESTS

2.10 The printout for all operational tests consists only of troubles or trunks that are busy. No printout is provided for a trunk that meets test requirements. All of the operational tests with the exception of the 103-type test and busy line test *can* be performed from a remote office equipped with a ROTL under control of the AOTT. There are no loss or noise limits to be placed in the priming digits for operational tests.

A. Test Into Synchronous Test Line Without Centrex Transfer Feature

2.11 Test into a synchronous test line is a supervisory test which checks the tripping and supervisory relays of incoming trunks in distant No. 5 crossbar offices. The test frame follows and times the synchronizing, soak, and operate pulses from the test line. If the SRLS key is operated prior to the beginning of testing, the AOTT checks that the trunk sleeve is released within the required time when the trunk is dropped. If the trunk sleeve is not released in the required time, an operational mark 2 is printed to indicate the trouble. To indicate a test into a synchronous test line, a digit "1" is placed in line 9 of the priming digits. (See Table B.)

B. Testing Into Synchronous Test Line With Centrex Transfer Feature

2.12 This test is a supervisory test made into the synchronous test line with centrex transfer feature which allows testing of the centrex transfer feature of centrex trunks as well as testing the tripping and supervisory relays and trunk sleeve release as covered in 2.11. This test simulates the completion of an incoming call to a centrex station, a bid by the centrex station for transfer of the call to another centrex station, and the connection of the call to the second centrex station. The AOTT follows the signaling from the test line and determines when a failure, if any, occurs. The test is under control of an AOTT control tape and is indicated on the control tape as a digit 1 in lines 9 and 12 of the priming digits. (See Table B.)

C. Test Into Nonsynchronous Test Line

2.13 This is a supervisory test which checks the ringing and ring trip, after which an interrupter is connected to tip and ring to give flashing supervision back over the trunk under test. The AOTT follows the test line signaling and sends an indication to the typing unit and reperforator if a failure occurs. The trunk sleeve release can be checked as covered in 2.11. To indicate a test into a nonsynchronous test line, a digit 1 is placed in line 10 of the priming digits. (See Table B.)

→TABLE A←

TRANSMISSION TEST PRIMING DIGITS

TAPE LINE	FUNCTION	PERFORATE TAPE CHARACTER	
		IF YES	IF NO
1	Transmission test	/	.
2	Test via ROTL	1	0
3	If entry 2 = 1	0	:
4	If entry 2 = 1 and digit "1" prefix is reg.	1	0
	If entry 2 = 0	:	
5	If entry 2 = 1	:	0
6	Far-end office is common control	1	0
7	Trunks require MF pulsing	1	0
8	Trunk group uses simplex supervision	1	0
9	Score deviation registers	1	0
		As appropriate	
10	If entry 2 = 1	:	
	If entry 2 = 0	Measured at 600 ohms	6
		Measured at 900 ohms	9
11	Far-end equipment — Combined milliwatt and balance termination — 100-type	0	
	Far-end equipment — Milliwatt supply — 102-type	2	
	Far-end equipment — Transmission and noise checking circuit — 104-type	4	
	Far-end equipment — Automatic Transmission Measuring System — 105-type	5	
12	No Test pad needed	0	
	2-DB test pad needed	2	

TABLE A (Cont)

TAPE LINE	FUNCTION	AS APPROPRIATE
13	Expected measured loss — Tens*	In .1 dB steps from 00.0 to 11.3
14	Expected measured loss — Units*	
15	Expected measured loss — Tenths	
16	Loss deviation limit — Units. Refer to maintenance guides in Section 660-402-300 or as directed.	LOSS DEVIATION
		UNITS TENTHS OF UNITS
		0 4
		0 6
		0 8
17	Loss deviation limit — Tenth of units Refer to maintenance guides in Section 660-402-300 or as directed.	1 0
		1 2
		1 5
		2 0
		2 5
18	Noise maintenance limits — Tens**	2 through 4
		0 through 8
19	Noise maintenance limits — Units**	0 through 8
20	Noise deviation limits — Always 0	0
21	Noise immediate action limit — Tens†	3, 4
22	Noise immediate action limit — Units†	0, 2, 4, 6, 8
23	Selector rest position	

* Information for tape lines 13-15 is taken from circuit layout record.

** Information for tape lines 18 and 19 are taken from circuit layout record. AOTT permissible values is 15 through 49 in 1dB steps (refer to Section 660-403-500).

† AOTT permissible values 30 through 48 in 2dBrnc steps (refer to Section 660-403-500).

D. 103-Type Test

2.14 The signal supervisory 103-type test provides a connection to a supervisory and signaling circuit for overall testing for these features on intertoll trunks equipped with rering features. The AOTT performs the test with the test line and

sends an indication of trunk trouble to the typing unit and reperforator. The AOTT performs the test with the test line, and sends an indication of trunk trouble to the typing unit and reperforator. To indicate a 103-type test to the AOTT, a digit 1 is placed in line 11 of the priming digits. (See Table B.)

→TABLE B←

OPERATIONAL TEST PRIMING DIGITS

TAPE LINE	FUNCTION	PERFORATE TAPE CHARACTER	
		IF YES	IF NO
1	Operational test	.	/
2	Test via ROTL	1	0
3	If entry 2 = 1	0	:
4	If entry 2 = 1 and digit "1" prefix is reg.	1	0
	If entry 2 = 0	:	
5	If entry 2 = 1	:	0
6	Terminating office is common control	1	0
7	Trunks require MF pulsing	1	0
8	Trunk group uses simplex supervision	1	0
9	Synchronous line test	1	0
10	Nonsynchronous line test	1	0
11	103-type test	1	0
12	Centrex line test	1	0
13	Busy line test	1	0
14 through 23	Advances selector switch to terminal 22 (rest position)	10 Colons (:)	

E. Busy Line Test

2.15 The busy line test is a supervisory test made into a permanently busy test line. Receipt of far-end busy indicates that the trunk under test can connect to the far-end. The AOTT recognizes the far-end busy as a valid test and does not reflect an operational far-end busy indication to the typing unit and reperforator. The busy line test is indicated on the control tape as a digit 1 in line 13 of the priming digits. (See Table B.)

3. EQUIPMENT FEATURES**GENERAL**

3.01 The AOTT consists of three 2- by 11-foot 6 inch bays, a 28B teletypewriter set and the trunk connectors which must be mounted in separate equipment racks. The amount of equipment rack space needed for the trunk connector will depend on the number of trunks to be tested.

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3.02 The first two bays are designated the AOTT test control bay (AUTO OGT TST CONT) and the third bay of framework is designated the AOTT transmission measuring bay (AUTO OGT TST TM). The AUTO OGT TST CONT bay contains the control circuits for the AOTT including the jack, key, and lamp panel, the make-busy jack field, the synchronous and nonsynchronous supervisory test unit, the 103 supervisory test unit, the control switch, and other control units as shown in Fig. 2.

3.03 The AUTO OGT TST TM bay contains the circuits necessary for transmission testing. This bay contains the control connector, the tone detector, the ATMS director, and other circuits as shown in Fig. 3.

AUTOMATIC OUTGOING TRUNK TEST FRAME CONTROL BAY

A. Jack, Key, and Lamp Panel

3.04 The jack, key, and lamp panel of the AOTT is located on the AUTO OGT TST CONT bay just above the writing shelf and pigeon holes. (Fig. 4.) The jacks, keys, and lamps of the AOTT panel are grouped according to their functions (Fig. 4 and 5) as follows:

LAMPS

CLASS—Indicate class of test being performed.

SUPV—Supervisory—Indicate progress and trouble for operational (supervisory) tests.

PROGRESS—Indicate progress of frame in test call procedure.

TBL—Trouble—Indicate trouble conditions.

TTY—Teletypewriter—Indicate progress and operating status of teletypewriter equipment.

KEYS

TST CONT—Test Control—Condition the AOTT timing, camp-on, starting, and other functions.

TTY—Teletypewriter—Provide control of the teletypewriter functions.

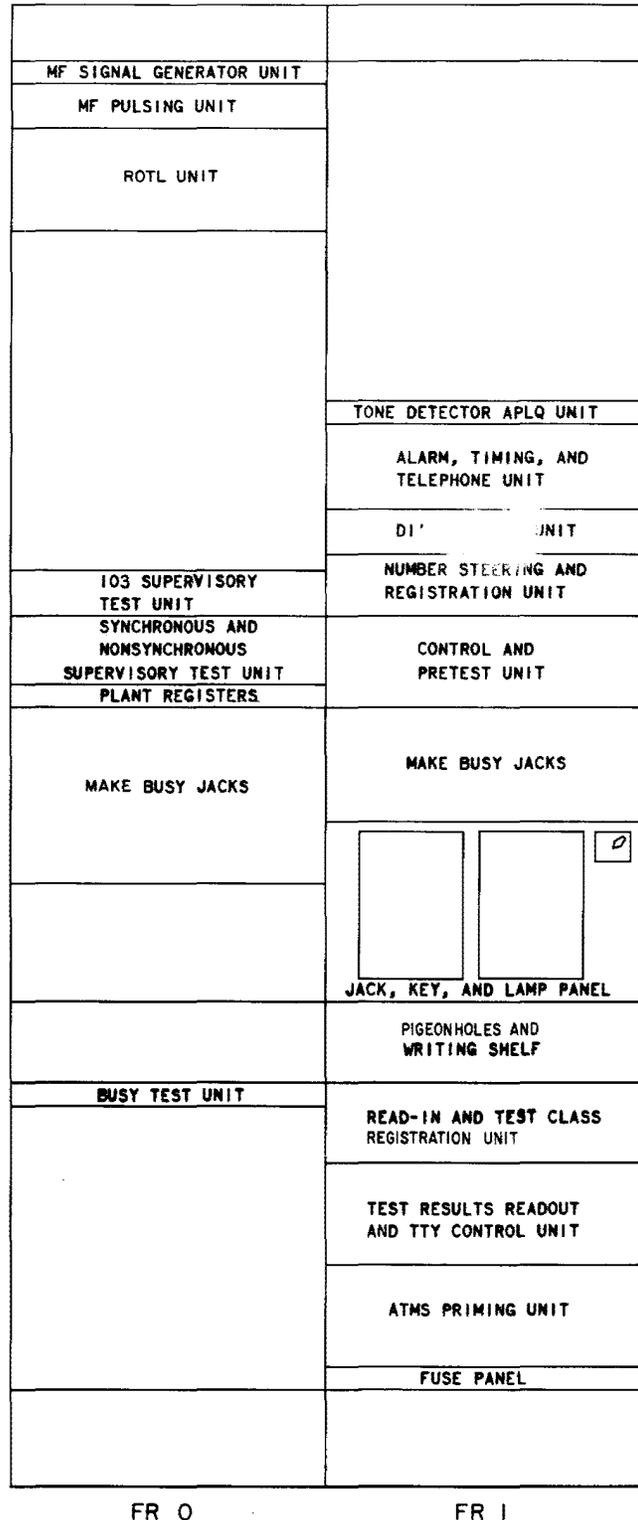


Fig. 2—Automatic Outgoing Trunk Test Control Frame

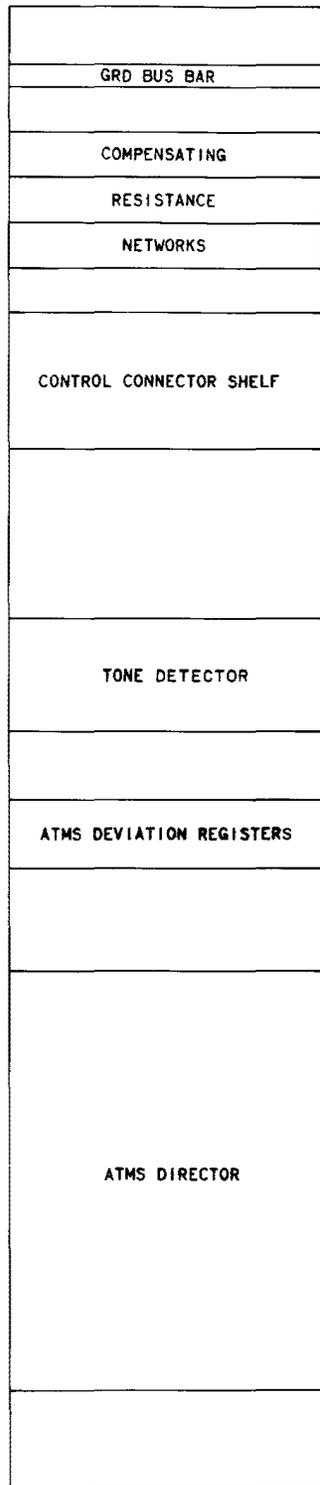


Fig. 3—Automatic Outgoing Trunk Test Transmission Measuring Frame

TEL & ALM—Telephone & Alarm—Condition the telephone set and the alarm circuits.

JACKS

LINE—Provide connection for TMS during testing of AOTT frame and for teletypewriter maintenance.

Table C gives the individual function of each jack, key, and lamp.

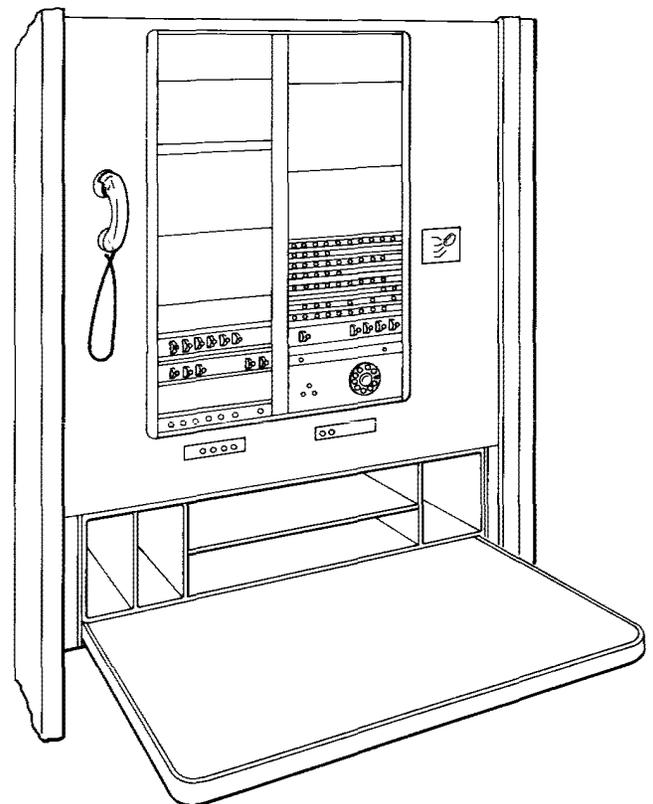


Fig. 4—Jack, Key, and Lamp Panel Showing Writing Shelf and Pigeon Holes

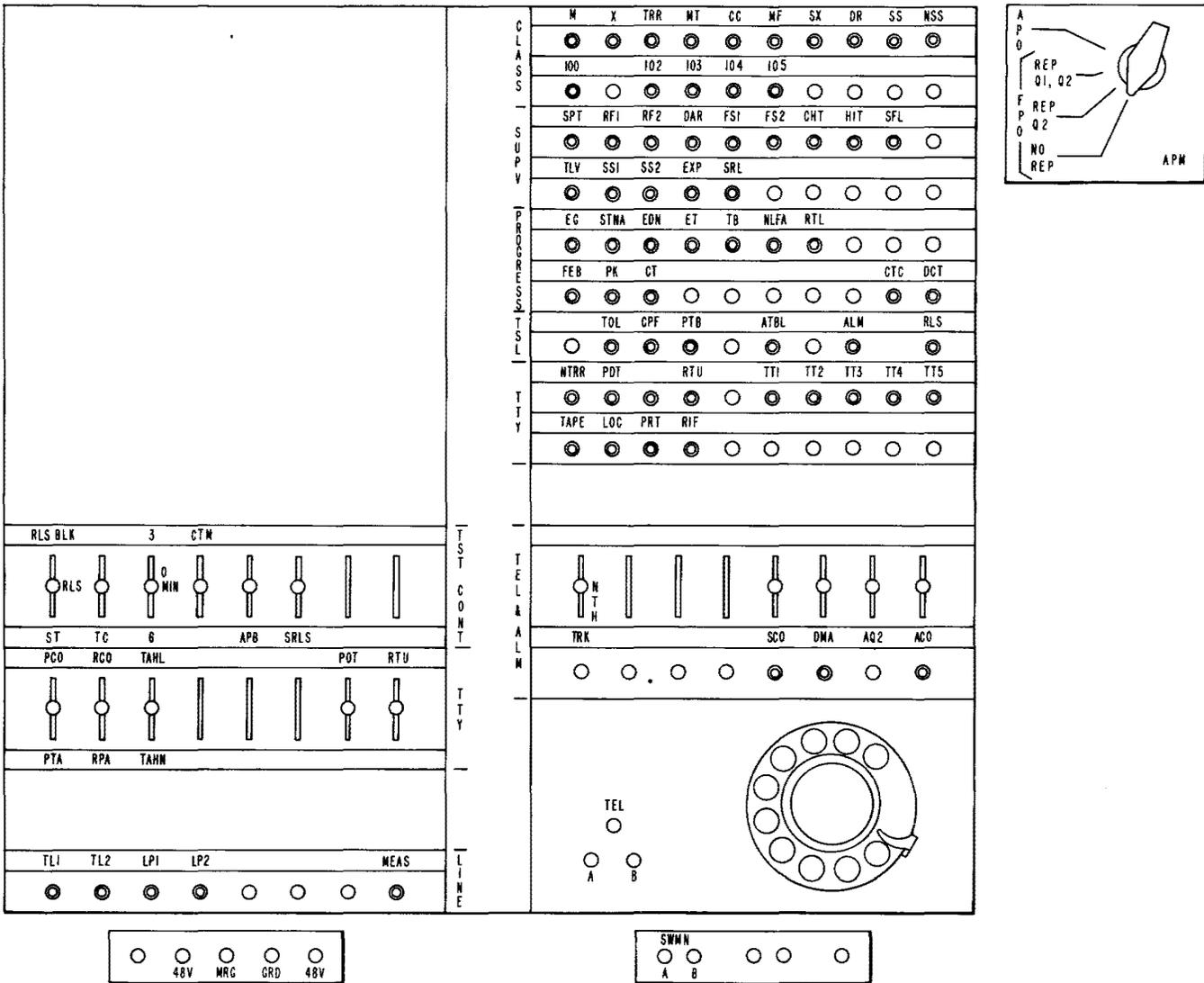


Fig. 5—Jack, Key, and Lamp Panel—Plan View

B. Control Switch

3.05 The ATMS print mode (APM) switch which is associated with the jack, key, and lamp panel must be set to the desired position before any transmission tests are performed. The APM switch setting should not be changed while the control tape is in the transmitter-distributor. The APM switch can be set to four modes of operation, one of which provides an abbreviated printout

(APO), and three of which provide a full printout (FPO). The four modes of operation are:

APO (abbreviated printout)—The AOTT is conditioned to print out transmission measurements which result in cue 1 or cue 2 indications with no printout of trunks within deviation limits.

FPO REP Q1, Q2 (full printout repeat Q1 and Q2)—The AOTT is conditioned to print

→TABLE C←

JACKS, KEYS, AND LAMPS

	LAMP	FUNCTION
CLASS LAMPS	M	The M lamp indicates operational testing.
	X	The X lamp indicates transmission testing.
	TRR	The TRR lamp indicates that a test is being made via a ROTL.
	CC	The common control lamp indicates test performed into common control office.
	MF	The multifrequency lamp indicates testing a trunk that requires multifrequency outpulsing.
	SX	The simplex lamp indicates testing a trunk that requires simplex supervision.
	DR	The deviation register lamp indicates that deviation registers will be scored during testing.
	SS	The synchronous lamp indicates synchronous test being performed.
	NSS	The nonsynchronous lamp indicates nonsynchronous test being performed.
	100	The 100 lamp indicates 100-type test being performed.
	102	The 102 lamp indicates 102-type test being performed.
	103	The 103 lamp indicates code 103 test being performed.
	104	The 104 lamp indicates 104-type test being performed.
105	The 105 lamp indicates 105-type test being performed.	
SUPV LAMPS	SPT	The SPT lamp follows supervision in 103-type tests.
	RF1	The Ringforward 1 lamp indicates first ring-forward signal during 103-type test.
	RF2	The Ringforward 2 lamp indicates second ring-forward signal during 103-type test.
	DAR	The Disconnect After Ring lamp indicates disconnection after ringing during 103-type test.
	FS1	The Flash-Short 1 lamp indicates the first supervisory flash-short during 103-type test.
	FS2	The Flash-Short 2 lamp indicates the second supervisory flash-short during 103-type test.
	CHT	The Chatter lamp indicates chatter during 103-type test.

TABLE C (Cont)

	LAMP	FUNCTION
SUPV LAMPS (Cont)	HIT	The HIT lamp indicates a premature supervisory reversal from the trunk.
	SFL	The Supervisory Flash lamp indicates that the supervisory flash failed to synchronize in a 102-type test line.
	TLV	The test line verified lamp indicates a test line verification failure during synchronous and nonsynchronous tests.
	SS1	The Short Sync 1 lamp indicates first short synchronous pulse in a synchronous test.
	SS2	The Short Sync 2 lamp indicates second short synchronous pulse in a synchronous test.
	EXP	The Extra Pulse lamp indicates an extra pulse has been received from the terminating test line.
	SRL	The SRL lamp indicates premature release of test line relays during the test to synchronous or nonsynchronous test line.
PROGRESS LAMPS	EG	The End-of-Group lamp indicates the end of the test for one group of trunks.
	STNA	The STNA lamp indicates the start of number registration in the group store.
	EDN	The End-of-Number lamp indicates the end-of-number registration in the group store.
	ET	The End-of-Test lamp indicates end of test indication has been received from tape.
	TB	The Trunk Busy lamp indicates that trunk is busy during trunk sleeve test. The AOTT will wait for the trunk to become idle for 0, 3, or 6 minutes depending on the position of the MIN key.
	NLFA	The No Line Finder Available lamp indicates that no line finder is available when trying to establish a connection to the ROTL office.
	RTL	The ROTL lamp indicates that the ROTL has been seized.
	FEB	The Far-end Busy lamp indicates that the far-end terminating test line or the ROTL is busy or an announcement has been reached.
	PK	The Park lamp indicates that the trunk is parked on the far-end test line waiting for the ATMS responder or transmission measuring and noise checking circuit to become idle.

TABLE C (Cont)

	LAMP	FUNCTION
PROGRESS LAMPS (Cont)	CT	The Cut-Through lamp indicates that ATMS director has been connected and that the terminating test line has cut through to the ATMS responder or the transmission measuring and noise checking circuit.
	CTC	The Connection-of-Test-Circuit lamp indicates connection of the AOTT to the transmitter-distributor.
	DTC	The Disconnect-Test-Circuit lamp indicates disconnection of the AOTT from the transmitter-distributor.
TBL LAMPS	TOL	The Trunk-Out-of-Limits lamp indicates that the trunk under test is beyond loss or noise deviation limit.
	CPF	The Continuity or Polarity Failure lamp indicates that the trunk under test did not pass the continuity and polarity check.
	PTB	The Print Troubles or Busies lamps indicates that the teletypewriter is printing troubles or busies.
	ATBL	The ATMS Trouble lamp indicates trouble with the ATMS director.
	ALM	The Alarm lamp indicates an alarm.
	RLS	The Release lamp indicates that the release magnet in the release switch has been energized to release the AOTT.
TTY LAMPS	NTRR	The No Tape Remote Reperforator lamp indicates that the remote reperforator is out of tape.
	PDT	The Print Data Tape lamp indicates the PDT key has been operated to connect the remote reperforator which only produces a data tape.
	RTU	The Remote Typing Unit lamp indicates that the remote typing unit is on.
	TT1 thru TT5	The TT1 through TT5 lamps indicate what teletypewriter code is being read.
	TAPE	The Tape lamp indicates no tape is in transmitter-distributor or reperforator.
	LOC	The local lamp indicates that the local key at teletypewriter is operated.
	PRT	The PRT lamp indicates that the teletypewriter reperforator is suppressed.

TABLE C (Cont)

	LAMP	FUNCTION	
TEL & ALM LAMPS	RPF	The RPF lamp indicates that the teletypewriter typing unit is suppressed.	
	TRK	The Trunk lamp indicates incoming calls to the AOTT.	
	AQ2	The Alarm Q2 lamp indicates that a deviation causing a cue 2 has been encountered.	
	KEY	POSITION	FUNCTION (WHEN OPERATED)
TST CONT KEYS	RLS BLK-RLS-ST	RLS BLK	The Release Block position releases AOTT after a blocked condition occurs and is multiplied at teletypewriter by RLS BLK 1 key position.
		RLS	The Release position releases AOTT and is multiplied at teletypewriter by RLS 1 key position.
		ST	The Start position starts the trunk tests and is multiplied at teletypewriter by ST 1 key position.
	TC	TC	The Timer Control key starts the timer which in turn will start the trunk tests at a preset time.
	3-0-6 MIN	3	The 3 position conditions the AOTT to camp-on a busy trunk under test for 3 minutes before recording a busy.
		0 MIN	The 0 MIN position conditions the AOTT for no-busy trunk camp-on; a busy is recorded immediately.
		6	The 6 position conditions the AOTT to park on a busy trunk under test for 6 minutes before recording a busy.
	CTM	CTM	The Cancel Timing key cancels AOTT timing.
	APB	APB	The Pass Busy key conditions the AOTT to pass busy trunks without printing or perforating.
SRLS	SRLS	The Sleeve Release key conditions the AOTT to check that ground is removed from the trunk sleeve and releases within the required time on tests into synchronous or nonsynchronous test lines.	

TABLE C (Cont)

	KEY	POSITION	FUNCTION (WHEN OPERATED)	
TTY KEYS	PCO-PTA	PCO	The Printer Cut-Off position cuts off the teletypewriter typing unit regardless of other circuit conditions.	
		Normal	The normal position conditions the teletypewriter typing unit to print all test results but not test frame instructions.	
		PTA	The Print All position conditions the teletypewriter typing unit to print all test results and test frame instructions.	
	RCO-RPA	RCO	The Reperforator Cut-Off position cuts off the teletypewriter reperforator regardless of other circuit conditions.	
		Normal	The normal position conditions the teletypewriter reperforator to produce a busy retest tape.	
		RPA	The Reperforate All position conditions the teletypewriter reperforator to produce a data tape.	
	TAHL- TAHN	TAHL	The Tape Hold Locking key stops the AOTT and the teletypewriter equipment locks in position and is multiplied to the TAH key on the teletypewriter.	
		TAHN	The Tape Hold Nonlocking key stops the AOTT and the teletypewriter equipment must be held in position, and is multiplied to the TAH key on the teletypewriter.	
		PDT	PDT	The Print Data Tape key conditions the second reperforator to produce data tape.
		RTU	RTU	The Remote Typing Unit key conditions the remote typing unit to produce the same printout as the local typing unit.
TEL & ALM KEYS	TRK	T	The talk position connects AOTT handset and dial to tie lines or local station line circuit for the purposes of making a call or answering a call.	
		H	The hold position holds established call on tie line or local station line while releasing tel set.	

TABLE C (Cont)

	KEY	POSITION	FUNCTION (WHEN OPERATED)
TEL & ALM KEYS (Cont)	SCO	SCO	The Secondary Cut-Off key disables transmitter circuit from the telephone set so tel set can be used for monitoring.
	OMA	OMA	The Operational Mark Alarm key conditions the AOTT to initiate a minor alarm on operation mark 1 indications.
	AQ2	AQ2	The Alarm Q2 key conditions the AOTT to initiate a minor alarm on cue 2 indications.
	ACO	ACO	The Alarm Cut-Off key retires all alarms initiated from the AOTT.
JACKS		JACK	FUNCTION
	TEL JACKS	TEL A B	The Telephone jack is multiplied to the AOTT telephone handset and provides for connecting a telephone headset.
		SWMN A B	The SWMN jack is part of the talk line office multiple and is provided to allow communications from the AOTT to other test facilities throughout the office.
		HRG	The High Resistance Ground jack provides high resistance ground.
	LINE JACKS	TL1, 2 LP1, 2	TL1, 2 — Teletypewriter Line 1 & 2 and LP1, 2 Teletypewriter Loop 1 & 2 jacks are provided for line relay current adjustment.
MEAS		The Measure jack provides access to trunk under test. The MEAS jack may be externally connected to a TMS.	

out all trunk results with tests repeated on cue 1 and cue 2 indications.

FPO REP Q2 (repeat Q2)—The AOTT is conditioned to print out all trunk results with tests repeated on cue 2 indications.

FPO NO REP (no repeat)—The AOTT is conditioned to print out all trunk results with no test repeat on cue indications.

See Section 103-250-100 for a more detailed explanation of APM switch and ATMS functions.

C. Make-Busy Jack Field

3.06 The make-busy jack field provides for making busy those trunks which are to be removed from service. The AUTO OGT TST CONT bay has a maximum capacity for 3000 trunk sleeve terminations at the MB jack field in increments of 600 terminations. Additional terminations over 3000 can be made in increments of 600 terminations on supplementary frames.

3.07 Each trunk sleeve termination appears on two jacks, a make-busy (MB) jack and a busy test (BT) jack. Two lamps, a test (T) jack, a BT cord, and a WAIT key are also provided near the jack field. Before a trunk is made busy, a busy test must be made on the trunk. The busy test is made by connecting the T jack to the BT jack of the trunk to be made busy using a P1W cord. If the trunk is idle, there is no lamp indication and the P1W cord is disconnected from the T and BT jacks and a KS-20269 L2 or L3 pin inserted in the MB jack. If the trunk is busy, the service busy (SB) lamp will light. To make the trunk busy when it becomes idle, the P1W cord is left connected to T and BT jacks and the WAIT key is operated. When the trunk becomes idle, reseizure of the trunk is prohibited and the MB lamp lights. To free the make-busy circuit after the MB lamp lights, insert a KS-20269 L2 or L3 pin into the MB jack of the trunk under test, then remove the P1W cord from the T and BT jacks.

D. Synchronous and Nonsynchronous Supervisory Test Unit

3.08 The synchronous and nonsynchronous supervisory test unit in the AOTT frame operates in conjunction with the applicable far-end test lines for performing synchronous and

nonsynchronous operational tests. This unit is connected by the AOTT to the trunk under test which in turn is connected to the synchronous or nonsynchronous test line at the far-end office. This unit follows the signaling from the far-end test line. If the trunk meets test requirements, no indication is sent to the typing unit or the reperforator through the AOTT. If the trunk is in trouble or cannot be tested, an operational mark is sent via the AOTT to the typing unit and reperforator to indicate the trouble.

E. 103 Supervisory Test Unit

3.09 The 103 supervisory test unit in the AOTT permits the 103-type test of intertoll trunks. This test unit is connected by the AOTT to the 103-type test line at the far-end over the trunk under test and performs signaling and supervisory tests with the far-end test line. If the trunk meets test requirements, no indication is sent to the typing unit or the reperforator through the AOTT. If the trunk is in trouble or cannot be tested, an operational mark is sent via the AOTT to the typing unit and reperforator to indicate the trouble.

F. Other Control Units

3.10 The plant registers are provided to record total busies, total operational marks and total tests. The MF signal generator unit and the MF pulsing unit are optional. They permit outpulsing on a MF basis. The DP pulsing unit permits outpulsing on a dial pulse basis. The ROTL control unit enables the AOTT to make tests via a ROTL in a remote office. The tone detector applique unit serves as interface between the control bay and the tone detector.

3.11 The alarm, timing, and telephone unit is a multipurpose control unit. It controls such alarms as those caused by a failure. This unit controls such timing as busy trunk camp-on. It also provides the telephone circuit. The number steering and registration unit records the terminating test line number and directs it to the proper part of the circuit for outpulsing when required. The control and pretest unit provides for continuity, polarity, and busy tests on each trunk under test. This unit also houses the delayed-start timer which may be set to any hour of the day, and any day of the week. Operation of the TC key at the jack, key, and lamp panel starts the timer which in turn starts the tests at the time set on the timer.

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3.12 The read-in and test class registration unit receives input directly from the control tape and stores and routes it as required. The ATMS priming unit receives the transmission priming information directly from the control tape and passes it to the ATMS director. The test results readout and TTY control unit direct the test results to the typing unit and reperforator.

AUTOMATIC OUTGOING TRUNK TEST FRAME TRANSMISSION MEASURING BAY

A. Control Connector

3.13 The control connector is a 197-type step-by-step switch having a bank of 100, 6-wire terminals and is located on the AUTO OGT TST TM bay. This switch serves as a directing switch for a maximum of 100 trunk connectors of 100-trunk capacity each. Four terminals of the control connector are dedicated for connecting to trunk connectors for loop around tests. The first two digits of the 4-digit trunk location address step the control connector to the terminal connecting to the correct trunk connector. The last two digits of the trunk location address step the trunk connector to the correct terminal connecting to the trunk to be tested.

3.14 Compensating resistance networks are provided in the AOTT to build out the transmission losses of the office cabling to compensate for the difference in level between the ATMS director and the trunk selector appearances of the trunks to be tested. These compensating networks are inserted between the bank terminals of the control connector and the switch jacks of the trunk connectors.

B. Tone Detector

3.15 The tone detector recognizes various ac signals or conditions on the trunk under test. The tone detector monitors the following signals on the trunk under test:

- (a) Tone at 60 ipm (busy)
- (b) Tone at 120 ipm (reorder)
- (c) Voice announcement
- (d) 2225-Hz (test progress tone)
- (e) 1000-Hz (test power)

(f) Audible ringing.

C. ATMS Director

3.16 The ATMS director is used by the AOTT to perform transmission loss and noise tests. The ATMS director is described in Section 103-250-100.

D. Other Circuits

3.17 The ATMS deviation registers give a visual indication of test results. These registers are arranged to score on loss or noise deviations which are out of limits. The deviation registers are scored under control of priming digits on the control tape. These registers are described in detail in Section 103-250-100.

28B TELETYPEWRITER SET

3.18 The 28B teletypewriter set serves as the input and output of the AOTT. The input to the AOTT is from a printed chadless, perforated control tape which contains the priming information and the trunks to be tested. The output from the AOTT takes the form of page printout and perforated tape containing the test results. The principal parts of the 28B teletypewriter set are the transmitter-distributor, the typing unit, the reperforator, and the keyboard. These units are housed as shown in Fig. 6.

A. Transmitter-Distributor

3.19 The 28B transmitter-distributor is the tape reading component of the 28B teletypewriter set. As each line of data is read from the control tape, it is passed to the AOTT. A line of data consists of perforations, varying from no perforation to five perforations. These perforations are read by sensing devices above the tape. Perforations and the lack of them convey intelligence to the teletypewriter and to the AOTT. A "tape out" pin detects the end of the tape and stops the teletypewriter. A "taut-tape" device stops the teletypewriter when slack in the tape is taken up; this prevents tearing the control tape.

B. Typing Unit

3.20 The 28B typing unit produces the page printout of test results from the AOTT. Under direction of control characters punched in the control tape, the typing unit can reproduce

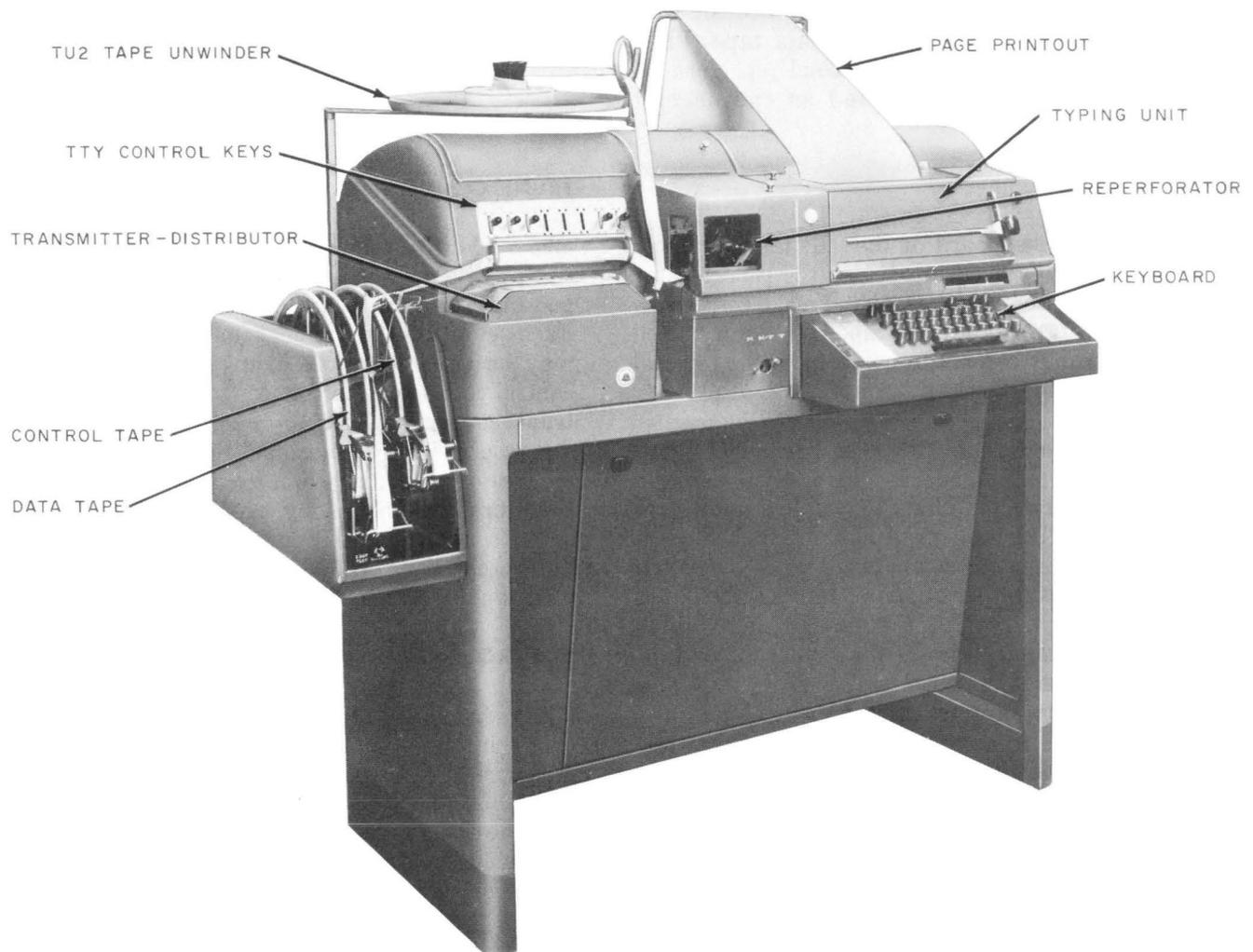


Fig. 6—28B Teletypewriter Set

information directly from the control tape. In addition to the typing unit provided with the 28B teletypewriter set, the AOTT has provision for the connection of a remote typing unit located within the same building. Operation of the remote typing unit (RTU) key at the AOTT connects the remote typing unit in series with the 28B typing

unit. A 28 receive-only (RO) typing unit is used as the remote typing unit.

C. Reperforator

3.21 The reperforator provides the results of the tests (data tape) or information on busy

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trunks encountered (busy retest tape) on perforated 5-level chadless paper tape (Fig. 7). The busy retest tape may be used as a control tape to reattempt to test the trunks which were found busy. The data tape contains all of the test results that are printed on the page copy and cannot be used for retesting.

3.22 A second reperforator produces data tape only and can be operated simultaneously with the 28B reperforator. The print data tape (PDT) key at the AOTT operates the second reperforator. A 28 RO reperforator is used as the second reperforator.

D. Keyboard

3.23 The 28B keyboard of the 28B teletypewriter set may be used to operate the reperforator when preparing control tapes, and to make corrections to existing control tapes. A tape containing added or deleted trunks can be prepared from the original control tape using the keyboard.

E. 5C Tape Winder and TU2 Tape Unwinder

3.24 To facilitate tape handling, a 5C tape winder and a TU2 tape unwinder are provided at the 28B teletypewriter set. As the tape comes out of the transmitter-distributor or reperforator, it is threaded onto a reel of the tape winder which takes up the tape. Fig. 6 shows a control tape feeding from the unwinder through the transmitter-distributor to the tape winder and also a busy retest or data tape feeding from the reperforator over to the tape winder.

F. Teletypewriter Control Panel

3.25 A control panel is provided at the 28B teletypewriter set and is located above the transmitter-distributor as shown in Fig. 6. The keys have the following functions:

KEY/POSITION	FUNCTION (WHEN OPERATED)
RLS BLK1	The release block position releases AOTT after a blocked condition occurs and is a multiple of RLS BLK key position at AOTT.
RLS1	The release position releases AOTT and is a multiple of RLS key position at AOTT.

ST1	The start position starts the trunk tests and is a multiple of ST key position at AOTT.
TTY	The teletypewriter key energizes the 28B teletypewriter set.
LOC	The local key controls the transmitter-distributor.
TAH	The tape hold key stops the AOTT and the teletypewriter equipment and is multiplied to the TAHL-TAHN key at the AOTT.

TRUNK CONNECTORS

3.26 A trunk connector is a 197-type step-by-step switch having a bank of 100 4-wire terminals and must be located on supplementary relay racks. Each set of the 100 terminals on the trunk connector may be connected to a trunk to be tested. The control connector can connect to a maximum of 100 trunk connectors. Since 4 of the trunk connectors are reserved for loop around tests, and each trunk connector can connect to a maximum of 100 trunks; therefore the full testing capacity of the AOTT is 9600 trunks. The test capacity of the AOTT can be increased from 100 trunks to a maximum of 9600 trunks in increments of 100 trunks.

CONTROL TAPE

3.27 A control tape contains three types of information, the testing information, the test frame instructions, and the teletypewriter instructions. The testing information provides the data necessary for the AOTT to perform the tests. The test frame instructions prime the AOTT for various frame operations. The teletypewriter instructions control the teletypewriter typing unit.

A. Testing Information

3.28 The testing information of a control tape is divided into four main parts: the caption and subcaptions (if required), the priming information, the trunk location addresses, and the traffic assigned trunk numbers. If desired, a preamble may be used at the start of the tape describing the tests and giving the required key operations for the particular test to be performed. This information is passed directly to the typing unit and reperforator. When testing trunks via a ROTL, the trunk location

address is replaced with a ROTL directing code. The caption or subcaption contains information which helps to identify the test and the group of trunks to be tested and is passed directly from the transmitter-distributor to the typing unit and reperforator. The priming information and trunk location addresses are passed from the transmitter-distributor to the AOTT and are used in testing. Table A gives the transmission test priming digits. Table B gives the operational test priming digits.

3.29 A possible caption is shown in Fig. 7. The priming information for a trunk group consists of the 23 priming digits and the terminating test line number which is the telephone number or code of the test line in the distant office. The trunk location address of the trunk to be tested is a 4-digit number used by the AOTT to gain access to the trunk to be tested through the control and trunk connectors. The traffic assigned trunk number of the trunk to be tested follows the trunk location address on the tape and is passed directly from the transmitter-distributor to the typing unit and reperforator.

3.30 When testing via a ROTL, the caption may be expanded to identify the remote office. The priming information for a trunk group includes the 23 priming digits, the ROTL access number (the telephone number of the ROTL), and the ROTL directing code. The ROTL directing code consists of a 5-digit number, in which the first digit identifies the type of test (transmission or operational), the next three digits are the address of the trunk at the remote office, and the fifth digit depends on the type of remote office. If it is a No. 5 crossbar office, the fifth digit identifies the type of far-end test line. If it is a step-by-step office, the fifth digit is arbitrary. The directing code is used by the ROTL to seize the desired trunk and outpulse the appropriate far-end test line number or code.

B. Test Frame Instructions

3.31 Test frame instructions prime the AOTT for various frame operations. Table D lists the keyboard letter corresponding to each symbol, the tape symbol for each instruction, and the frame operation caused by each instruction.

C. Teletypewriter Instructions

3.32 Teletypewriter instructions are used to control the teletypewriter typing unit and reperforator. Table E lists the keyboard indication, the tape symbol, and the teletypewriter function involved.

PRINTOUT

3.33 The page printout is a standard teletypewriter page copy. As the caption and priming information are read by the transmitter-distributor from the control tape, they are passed on to the typing unit to be printed on the page copy. The test results of each trunk under test are passed on to the typing unit after the test of that trunk. With PCO-PTA key in PTA position, the test frame instructions are printed with all test results.

3.34 To aid in identifying trunk operation trouble, operational marks are provided on the printout and are placed to the right of the transmission results. The printout on operational trouble consists of the trunk location address of the trunk under test, the operational mark, and the traffic assigned trunk number. The eight operational marks are as follows:

0	Trunk busy at near-end
1	Trunk in trouble
2	Trunk sleeve release failure
3	Trunk not available because of simultaneous manual testing
4	Reorder tone at the far-end
5	Far-end test line busy
7	Centrex transfer feature failure
8	Recorded announcement reached at far-end.

3.35 During transmission testing, cues are provided to indicate when loss or noise deviations have exceeded the predetermined limits. The transmission cues are provided on the printout following the results of the measurements. The four transmission cues are as follows:

0	Successful ATMS self-check
---	----------------------------

TABLE D
TEST FRAME INSTRUCTIONS

KEYBOARD LETTER	TAPE SYMBOL	TEST FRAME OPERATION INITIATED BY INSTRUCTION
Uppercase D	\$	Connects the test frame to the output of the transmitter-distributor.
Uppercase F	!	Clears memory store of the test frame and ATMS director.
Uppercase G	&	Clears memory store of the test frame and ATMS director following testing via ROTL.
Uppercase H	#	Prepares the test frame for outpulsing the trunk location address.
Uppercase N	,	Primes the test frame for number registration of the terminating test line number (ROTL access number when testing via ROTL).
Uppercase S	Ⓜ	Primes the test frame to end number registration.
FIGS.	^	Primes for connection of the test frame. Also primes teletypewriter to print and perforate numbers or symbols instead of the corresponding letters.
LTRS	v	Primes teletypewriter to print and perforate letters.
FIGS-LTRS	^ v	Disconnects the test frame.

TABLE E
TELETYPEWRITER INSTRUCTIONS

KEYBOARD SYMBOL	TAPE SYMBOL	TELETYPEWRITER FUNCTION
Blank	⌀	Produces blank spaces on printout.
LTRS	∨	Primes the teletypewriter to print and perforate letters.
FIGS-LTRS	∧ ∨	Disconnects the test frame.
FIGS	∧	Primes the teletypewriter to print and perforate numbers or symbols instead of the corresponding letters. Also primes for connection of test frame.
Space bar	■	Allows spacing on tape and on printout.
CAR RET	<	Brings the typing box of the typing unit back to the left margin.
LINE FEED	≈	Advances typing unit to next line on page printout.
Uppercase	;	Operational mark tabbing feature.

- 1 Loss or noise measurement which exceeded the deviation limit

- 2 Loss or noise measurement which exceeded the immediate action limit

- 9 ATMS self-check failure.

3.36 The teletypewriter printout of transmission tests is dependent on the operation of the APM switch. Tables F through I show the printouts with various APM switch positions on 105-type tests. The explanation of Table F explains in detail the various parts of the printout. The printout for 104-type transmission tests is illustrated by Table J. The printout for 102-type transmission tests is illustrated by Table K. The printout for 100-type transmission tests is illustrated in Table L. Operational tests printout is illustrated by Table M.

TEST RESULTS PERFORATION

3.37 Two types of perforated tape may be produced depending on key operations previously described: a busy retest tape, and a data tape. Busy retest tape contains caption and priming information and trunk numbers of trunks that are found busy. The busy retest tape may be used as a control tape to retest those trunks found busy on the first test. The data tape is a duplicate of the page printout which may or may not contain the test frame instructions.

REMOTE OFFICE TEST LINE (ROTL)

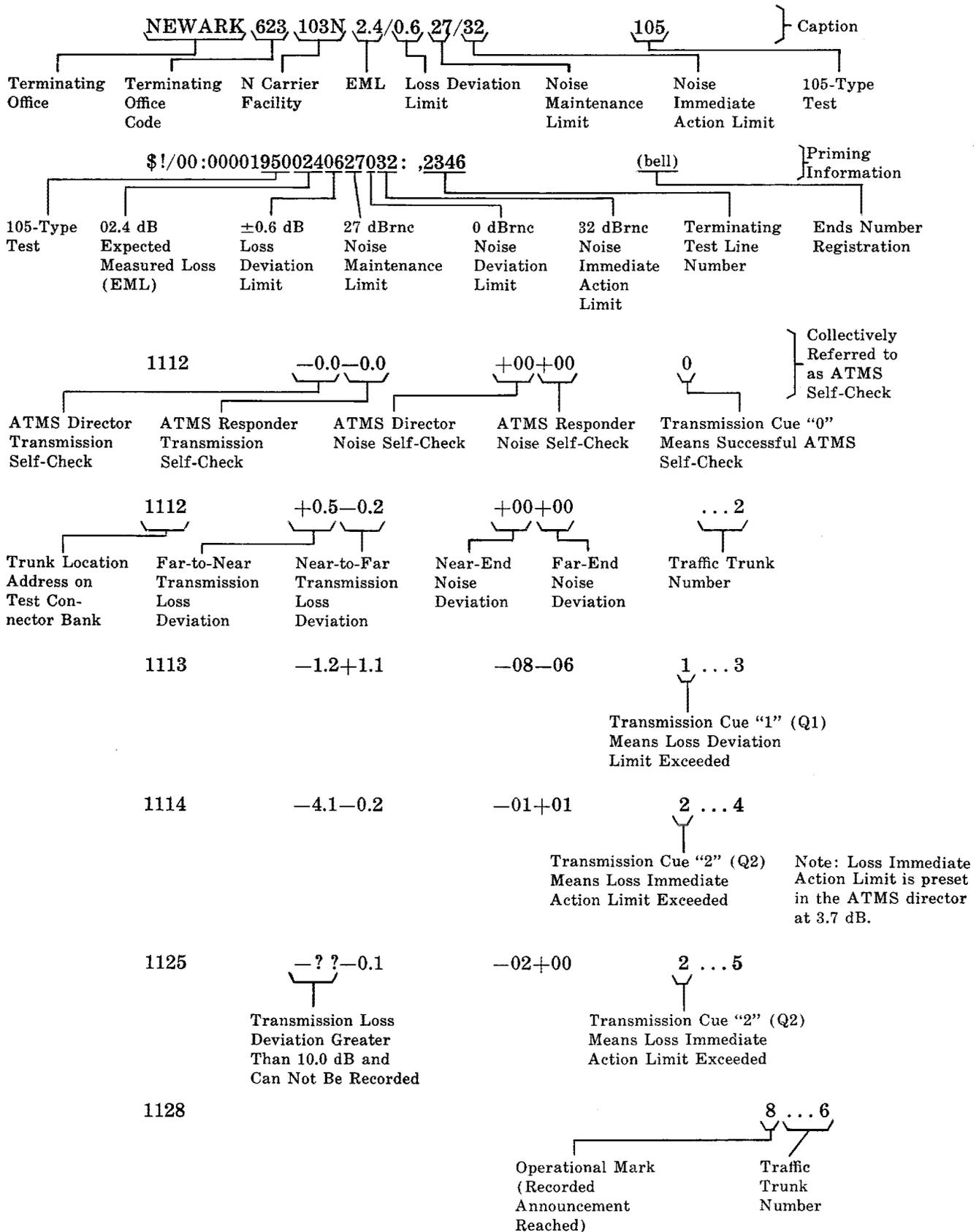
3.38 The remote office test line in a remote office allows the AOTT to test the trunks outgoing from the remote office. The ROTL receives the ROTL directing code from the AOTT, seizes the trunk to be tested, and outpulses the number of the far-end terminating test line. Tests are then made, the results are transmitted to the ATMS director at the AOTT, and an appropriate printout is produced.

TABLE F

EXAMPLE OF COMPLETE PRINTOUT FOR 105-TYPE TEST
 WITH NO REPEAT ON Q1 AND Q2 INDICATIONS—
 APM SWITCH IN FPO NO REP POSITION

NEWARK 623 103N 2.4/0.6 27/32			105
\$!/00:000019500240627032: ,2346			(bell)
1112	-0.0-0.0	+00+00	
1112	+0.5-0.2	+00+00	... 2
1113	-1.2+1.1	-08-06	1 ... 3
1114	-4.1-0.2	-01+01	2 ... 4
1125	-? ?-0.1	-02+00	2 ... 5
1128			8 ... 6
BAYONNE 556 2.4/0.6 27/32			105
103N UNION			
\$!/00:000019500240627032: ,3468			(bell)
1126	-0.0-0.0	+00+02	
1126	-0.0-0.0	+00+02	9
SUMMIT TO NEWARK 677 105N 2.4/0.6 27/32			105
\$!/10:000019500240627032: ,3468541			(bell)
11272	-0.0-0.0	+00+00	0
11272	-0.1+0.1	+00+00	... 1
11282	-0.2+0.0	+00+00	... 2

EXPLANATION OF TABLE F



EXPLANATION OF TABLE F (Cont)

BAYONNE 556 2.4/0.6 27/32

105

} Caption for Second Group of Trunks

103N UNION
 Facility Facility Terminating Office

} First Sub-Caption

\$!/00:000019500240627032: ,3468 (bell)
 Transmission Test Terminating Test End of
 Priming Digits Line Number Registration
 (Refer to Table A)

} Priming Information

1126 -0.0-0.0

+00+02

} ATMS 1st Self-Check

1126 -0.0-0.0

+00+02

9

} ATMS 2nd Self-Check Made When 1st Self-Check Fails.

If ATMS director self-check fails, test frame will stop and minor office alarm sounds.

Transmission Cue "9" (Q9) Indicates ATMS Responder Self-Check Failure.

* A Q9 indication indicates an ATMS responder self-check failure. When this condition occurs the entire trunk group under test is by-passed and the control tape advances to the next trunk group.

SUMMIT TO NEWARK 677 105N 2.4/0.6 27/32

105

} Caption

ROTL Office Terminating Office

\$!/10:000019500240627032: ,3468541 (bell)
 Test Frame Instruction to Connect Test Frame Instruction to Clear Indicates Transmission Test Indicates Test Via ROTL Indicates Remote Office Responder Testing Space Filler Test Frame Instruction to Prime Number Registration Circuit (Refer to Table D) ROTL Access Number End of Number Registration

} Priming Information

11272 -0.0-0.0

+00+00

0

} ATMS Self-Check

11272 }
 11282 } -0.1+0.1
 -0.2+0.0

+00+00
 +00+00

... 1
 ... 2

} Trunks Within Limits

Indicates Trunk Always
 Transmission Location Digit 2
 Test Address
 ROTL Directing Code

TABLE G
EXAMPLE OF COMPLETE PRINTOUT FOR 105-TYPE TEST
WITH REPEAT ON Q2 INDICATIONS—
APM SWITCH IN FPO REP Q2 POSITION

NEWARK 623 103N 2.4/0.6 27/32			105
\$/!00:000019500240627032: ,2346			(bell)
1116	-0.0-0.0	+00+00	0
1116			8 ... 1
1117	+0.5-0.2	+00+00	... 7
1118	-1.2+1.1	-08-06	1 ... 8
1119	-4.1-0.2	-01+01	
1119	-4.1-0.2	-01+01	2 ... 9
BAYONNE 556 2.4/0.6 27/32			105
103N UNION			
\$/!00:000019500240627032: ,3468			(bell)
1124	-0.0-0.0	+00+00	
1124	-0.0-0.0	+00+01	0
1124	-0.0+0.1	+??-03	
1124	-0.0+0.1	+??-03	2 ... 2
105N SUMMIT \$			
1125	-0.0+0.1	+00+00	... 3
1126	+0.1+0.0	+00+00	... 4
SUMMIT TO NEWARK 677 105N 2.4/0.6 27/32			105
\$/!10:000019500240627032: ,346854			(bell)
1127	-0.0-0.0	+00+00	0
1127	-0.1+0.1	+00+00	... 1
1128	-0.2+0.0	+00+00	... 2
BUENA TO MILLVILLE 768 103N 2.4/0.6 27/32			105
\$/!10:000019500240627032: ,2345671			(bell)
12765	-0.1+0.1	+00+00	... 1
12785	-0.1-6.2	+00+01	
12785	-0.1-6.2	+00+01	2 ... 2

EXPLANATION OF TABLE G

Test results are the same as in Table F except with APM switch in FPO REP Q2 position, tests with Q2 indications are repeated.

TABLE H
EXAMPLE OF COMPLETE PRINTOUT FOR 105-TYPE TEST
WITH REPEAT ON Q1 AND Q2 INDICATIONS—
APM SWITCH IN FPO REP Q1, Q2 POSITION

NEWARK 623 103N 2.4/0.6 27/32			105
\$/!00:000019500240627032: ,2346			(bell)
1117	-0.0-0.0	+00+00	0
1117	+0.5-0.2	+00+00	
1118	-1.2+1.1	-08-06	... 7
1118	-1.2+1.1	-08-06	1 ... 8
1119	-4.1-0.2	-01+01	
1119	-4.1-0.2	-01+01	2 ... 9
1120			1 ... 6
BAYONNE 556 2.4/0.6 27/32			105
103N UNION			
\$/!00:000019500240627032: ,3468			(bell)
1124	-0.0-0.0	+00+01	
1124	-0.0-0.0	+00+02	9
1124	-0.0+0.1	+??-03	
1124	-0.0+0.1	+??-03	2 ... 2
105N SUMMIT \$			
1125	-0.0+0.1	+00+00	... 4
1126	+0.1+0.0	+00+00	... 5
SUMMIT TO NEWARK 667 105N 2.4/0.6 27/32			105
\$/!10:000019500240627032: ,346854			(bell)
1127	-0.0-0.0	+00+00	0
1127	-0.1+0.1	+00+00	... 1
1128	-0.2+0.0	+00+00	... 2
BUENA TO MILLVILLE 768 103N 2.4/0.6 27/32/05			
\$/!10:000019500240627032: ,234567			(bell)
12765	-0.0-0.0	+00+00	
12765	-0.1+0.1	+00+00	... 1
12775	-8.1+0.0	+00+03	
12775	-8.1+0.0	+00+03	2 ... 2

EXPLANATION OF TABLE H

Test results are the same as in Table F, except with APM switch in FPO REP Q1, Q2 position, tests with Q1 and Q2 indications are repeated.

TABLE I
EXAMPLE OF ABBREVIATED PRINTOUT FOR 105-TYPE TEST
APM SWITCH IN APO POSITION

NEWARK 623 103N 2.4/0.6 27/32			105
\$/!00:000019500240627032: ,2346 (bell)			
1116	-0.0-0.0	+00+00	0
1117			8 ... 6
1118	-1.2+1.1	-08-06	1 ... 8
1119	-4.1-0.2	-01+01	2 ... 9
1120	- ? ?-0.1	-02+00	2 ... 10
1121	+1.1-0.2	+??+00	2 ... 11
1122	-9.6+1.3	-01+02	2 ... 12
BAYONNE 556 2.4/0.6 27/32			105
103N UNION			
\$/!00:000019500240627032: ,3468 (bell)			
	-1.2*-0.0	+00+01	
	-1.2*-0.0	+00+01	9
1124	-0.0 +0.1	+??+00	2 ... 2
105N SUMMIT			
SUMMIT TO NEWARK 677 105N 2.4/0.6 27/32			105
\$/!10:000019500240627032: ,2345671 (bell)			
BUENA TO MILLVILLE 768 103N 2.4/0.6 27/32			105
\$/!10:000019500240627032: ,3468541 (bell)			
12765	-0.1+0.0	+00+03	1 ... 2

EXPLANATION OF TABLE I

Test results are the same as in Table F, except that the APM switch is in the APO position. Only busies, troubles, and results of transmission measurements with Q1 and Q2 indications are printed.

*Test frame stops and minor alarm sounds.

**TABLE K
EXAMPLE OF PRINTOUT FOR 102-TYPE TEST**

ORANGE 788 103N 2.7/0.6		102
\$!/00:0000192002706::: ,4567		(bell)
1123	-0.0	0
1123	-0.8	1 .165
1124		0 .166
1125		1 .167
1126	-0.5	.168
1127	-0.8	1 .169
1128	-4.1	2 .170

EXPLANATION OF TABLE K

ORANGE 788 103N 2.7/0.6

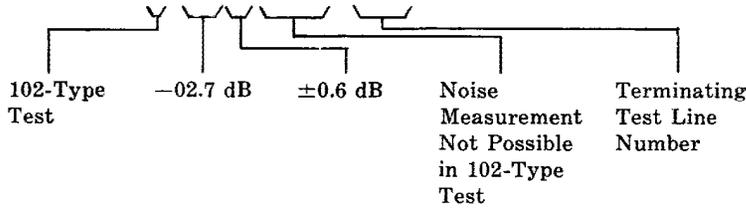
102

} Caption

\$!/00:0000192002706::: ,4567

(bell)

} Priming Information



1123

-0.0

0

ATMS Director
Transmission
Self-Check

1123

-0.8

1 .165

1124

0 .166

1125

1 .167

Operational Marks
0 - Indicates Trunk
Busy at Near-End
1 - Indicates Trunk
in Trouble

Traffic
Trunk
Number

1126

-0.5

.168

1127

-0.8

1 .169

1128

-4.1

2 .170

Far-to-Near
Transmission
Loss Deviation

→TABLE L←
EXAMPLE OF PRINTOUT FOR 100-TYPE TEST

SANTA ANA 540 102N 2.7/0.6 27/32				100
\$!/00:000019000270627032: ,1646		(bell)		
2222	-0.0	-00	0	
2222	-0.5	-00		... 2
2223	-1.2	-08	1	... 3
2224	-4.1	-01	2	... 4
2225	-?.?	-02	2	... 5

EXPLANATION OF TABLE L

SANTA ANA 540 102N 2.7/0.6 27/32 } Caption

\$!/00:000019000270627032: ,1646 (bell) } Priming Information

2222
└───┘
Trunk
Location
Address

-0.0
└───┘
ATMS Director
Transmission
Self-Check

-00
└───┘
ATMS Director
Noise Self-
Check

0
└───┘
Cue-indicates ATMS
Self-Check was
Successful

2222
2223
2224
2225
└───┘
Trunk
Location
Address

-0.5
-1.2
-4.1
-?.?
└───┘
Far-to-Near
Loss
Deviation

-00
-08
-01
-02
└───┘
Far-to-Near
Noise
Deviation

1
2
2
└───┘
Trans-
mission
Cues

... 2
... 3
... 4
... 5
└───┘
Traffic
Assigned
Trunk
Number

TABLE M
EXAMPLE OF PRINTOUT FOR OPERATIONAL TESTS

RED BANK 755 103N SS	
\$!0::0000100::: ,7551	(bell)
1011	0 1101
1012	1 1102

EXPLANATION OF TABLE M

