

17E TESTBOARD

OPERATIONAL TESTS

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A. Busy Test	2	1. GENERAL	
B. Seizure of Circuits	3	1.01 This section describes the methods of performing operational and transmission tests using the 17E testboard and associated equipment. The 17E testboard is used in 2-wire, No. 5 cross-bar offices which are part of a switched services network as described in Section 310-200-100.	
C. Tests toward Drop, Line Link Pulsing Circuits (LLP)	3	1.02 This section is reissued to revise 3.06, Seizure of a Line Link Pulsing Circuit for Tests toward Line, to describe the procedure for testing at the signaling jacks in the circuit patch bay using the signaling test circuits SD-56497-01 located in the testboard.	
D. Tests toward Line, Line Link Pulsing Circuits (LLP)	4	1.03 The following associated sections contain information supplementary to this section.	
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A. Lockout on Line Link Pulsing and Network Trunks	6	1.04 Access lines to step-by-step PBX's employ line link pulsing circuits. When making tests on these lines, follow the instructions for line link pulsing circuits. Access lines to centrex PBX's employ network trunk circuits. When making tests on these lines, follow the instructions for network trunks.	
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1.05 Lettered steps: A letter a, b, c, etc., added to a step number in the procedures of this section, indicates an action which may or may not be required, depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the PROCEDURE column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. REMOVAL OF CIRCUITS FROM SERVICE

2.01 A busy test should be performed as described in 3.05 prior to making other tests. Remove circuits from service during periods in which tests are being performed. Circuits may be seized from the monitoring condition as described in 3.06. Performing busy tests and monitoring will not disturb the circuit. When removing a 2-way circuit from service, the testboardman at the distant end must be notified to remove the circuit from service in order to prevent outgoing call attempts from that office.

3. INITIATION OF TESTS

3.01 The 17E testboard is used in 6-conductor circuitry which requires the use of twin plugs and jacks. The plugs have one knurled edge which is the top edge when the plug is properly inserted into a jack mounted in a vertical jack panel. Some 3-conductor circuits, such as communication trunks and test equipment termina-

tions, appear at the testboard and are connected to the upper jack of the pair. A termination is provided on the lower jack in such cases.

3.02 Where the tip, ring, or sleeve of a cord, or the cord itself, is described as the upper tip, ring, sleeve, or cord, the identification applies to the cord connected as described in 3.01 or to the position of the lead in a cord so connected.

3.03 For each test described, it is assumed that all cords are disconnected and all keys are in their normal position before the tests are started, unless otherwise stated in the procedure. All cords should be disconnected and all keys returned to their normal position following each test. This instruction is not repeated in each procedure.

3.04 Each testboard cord pair consists of a TST cord and a CON cord. Each cord may be associated with the testboard position circuits independently (one at a time) or the two cords of a pair may be associated with each other for patching purposes, such as connecting a circuit to the transmission measuring system. When used independently, the TST cord is used to connect the testboard position circuits to line link pulsing circuits or to network trunks. The CON cord is used to connect the testboard position circuits to various communication trunks and order wires.

A. Busy Test

3.05 A busy test is always made before removing a circuit from service or beginning tests on the circuit, other than monitoring.

STEP	PROCEDURE
1	<p>Busy Test</p> <p>Use either a TST cord or a CON cord. Operate the TALK-MON key, associated with the cord, to the TALK position.</p>
2	<p>Listening in a telephone headset connected to a telephone set jack in the position, touch the lower tip of the cord plug to the lower sleeve of the TST jack of the trunk under test. If the circuit is busy, resistance battery present on lower sleeve causes operation of the BT relay in the testboard. A click is heard at the moment of contact.</p>

B. Seizure of Circuits

3.06 Seizure of a line link pulsing circuit or network will be made using a TST cord or a SIG T cord. A seizure is performed to make a call to the distant office or toward the drop in the local office.

STEP	PROCEDURE
<p align="center">Seizure of a Network Trunk</p>	
1	After making a busy test, connect a TST cord to the TST jack of the trunk to be seized.
2	Operate the associated TALK-MON key to the TALK position.
3	Operate the associated HOLD-CLOSE 3RD key to the CLOSE 3RD position.
4	The circuit is now made busy. Subsequent restoral of either the TALK-MON key or the HOLD-CLOSE 3RD key to its normal position will not affect seizure or a busy condition while the TST cord remains connected.
<p align="center">Seizure of a Line Link Pulsing Circuit</p>	
1a	At the testboard, connect a SIG T cord to the trunk SIG jacks.
2b	If, at the circuit patch bay, the LARGE-SMALL jack conversion circuit (SD-56540-01, Fig. 12) is provided, connect a SIG T cord to the SMALL jack.
3b	Patch the LARGE jack to the trunk SIG jacks in the circuit patch bay using a P3E cord.
4c	If SIG TEST jacks (SD-56497-01, Fig. 5, Option U) are provided in the circuit patch bay, patch the SIG TEST jack to the trunk SIG jacks in the circuit patch bay using a P3E cord.
5	Initiate test as described in 3.08.

C. Tests toward Drop, Line Link Pulsing Circuits (LLP)

3.07 For tests toward the drop on LLP circuits, seizure, pulsing, and supervisory signaling are indicated on the L lamp (line) and D lamp (drop) associated with the SIG T cord. The circuit must be removed from service at the distant end before testing.

STEP	PROCEDURE
<p align="center">Tests toward Drop, LLP Circuit</p>	
1	Seize the circuit as described in 3.06.
2	Operate the TST-MON key, associated with the SIG T cord, to the MON position.
3	If the circuit is idle (both L lamp and D lamp lighted), operate the TST-MON key to the TST position.

STEP	PROCEDURE
4	Operate the TWD L key to the ON-HOOK position.
5	Operate the TWD D key to the OFF-HOOK position. The D lamp is extinguished.
6	Operate the DIAL key to the DIAL DROP position.
7	When the circuit is ready for pulsing, the D lamp, associated with SIG T cord, is lighted.
8	Dial desired station or test line number ; then restore the DIAL key to its normal position.
9	To talk on the circuit, connect a testboard TST cord to the circuit TST jack. Operate the associated TALK-MON key to the TALK position, and operate the associated HOLD-CLOSE 3RD key to the CLOSE 3RD position.

D. Tests toward Line, Line Link Pulsing Circuits (LLP)

3.08 For tests toward the line on LLP circuits, seizure, pulsing, and supervisory signaling

are indicated on the L lamp (line) and D lamp (drop) associated with a SIG T cord in the test-board.

STEP	PROCEDURE
	Tests toward Line, LLP Circuit
1	Seize the circuit as described in 3.06.
2	Operate TST-MON key associated with SIG T cord to MON.
3	If circuit is idle (L lamp and D lamp both lighted), operate the TST-MON key to the TST position.
4	Operate the TWD D key to the ON-HOOK position.
5	Operate the TWD L key to the OFF-HOOK position. The L lamp is extinguished.
6	Operate the DIAL key to the DIAL LINE position.
7	When circuit is ready for pulsing, the L lamp, associated with the SIG T cord, and position DP lamp are lighted.
8	Dial desired station or test line number ; then restore the DIAL key to its normal position.
9	To talk on the circuit, connect a testboard TST cord to the circuit TST jack. Operate the associated TALK-MON key to the TALK position, and operate the associated HOLD-CLOSE 3RD key to the CLOSE 3RD position.

E. Tests toward Drop, Network Trunks

3.09 For tests toward the drop on network trunks and access lines equipped with net-

work trunk circuits, seizure and supervisory signaling are indicated on the L lamp (line) and D lamp (drop) associated with a SIG TST cord in the testboard.

STEP	PROCEDURE
Tests toward Drop, Network Trunks	
1	Seize the trunk as described in 3.06. Connect SIG T cord to SIG jacks of trunk under test. The trunk should be removed from service at the distant end.
2	Operate the TST-MON key, associated with the SIG T cord, to the MON position. If the monitored circuit is idle (L and D lamps are both lighted), operate the TST-MON key to the TST position.
3	Operate the TWD L key to the ON-HOOK position.
4	Operate the TWD D key to the OFF-HOOK position. The D lamp is extinguished.
5	When the circuit is ready for pulsing, the D lamp is lighted.
6	Operate the keyset MF TST key. The TST and S lamps are lighted.
7	Return HOLD-CLOSE 3RD key to the normal position.
8	Pulse required digits using the MF keyset according to procedure described in 4.12.
9	When pulsing has been completed, momentarily operate the ST key to release the keyset. The TST and S lamps are extinguished.
10	To talk on the trunk, operate the HOLD-CLOSE 3RD key to the CLOSE 3RD position.
11	All supervision will now be indicated on the L and D lamps.

F. Tests toward Line, Network Trunks

3.10 For tests toward the line on network trunks, seizure and supervision are indicated on the cord lamp associated with the TST

cord being used. The lamps associated with a connected SIG T cord will be effective only in the monitoring condition of that cord.

STEP	PROCEDURE
Outgoing Tests, Network Trunks	
1	Seize the trunk as described in 3.06.
2	Operate the HOLD-CLOSE 3RD key, associated with the TST cord, to the CLOSE 3RD position.

STEP	PROCEDURE
3	When an on-hook condition is indicated by a lighted cord lamp, proceed with MF key pulsing procedure described in 4.12.
4	To talk on the trunk after pulsing is completed and the keyset is released, operate the TALK-MON key to the TALK position.

4. POSITION AND CORD CIRCUIT FUNCTIONS

4.01 The following tests and operations can be performed with the position and cord circuits.

4.02 A seizure on a communication trunk will be made or answering connections estab-

lished when a CON cord is connected to the trunk jack with associated keys in their normal positions.

A. Lockout on Line Link Pulsing and Network Trunks

4.03 Lockout on line link pulsing and network trunks appearing at the testboard can be accomplished using a TST cord. The circuit is made busy to outgoing traffic only. A 2-way trunk should be locked out *at each end*.

STEP	PROCEDURE
	Lockout on Line Link Pulsing Circuits and Network Trunks
1	Seize the circuit or trunk as described in 3.06.
2	Operate the associated TALK-MON key to the TALK position.
3	Depress the LO key momentarily, observing that the LO lamp associated with the trunk jack is lighted.
4	Observe that the LO lamp remains lighted when the LO key is released and when the TST cord is disconnected.
5	Shield the LO lamp with a 19-type shield while the trunk is removed from service, according to local instructions.
6	Insert a 371B splitting plug into the trunk SIG L/D jacks.

B. Lockout across Office

4.04 Trunks appearing at the testboard may, in turn, be connected through switches to

a second trunk on which a lockout is desired. Under certain conditions, this may be accomplished from the testboard, but not on all trunk configurations.

STEP	PROCEDURE
	<p>Lockout across Office</p> <p>1 After making a busy test, connect a TST cord to the TST jack of the trunk which is connected to the across-office trunk.</p> <p>2 Operate the associated TALK-MON key to the TALK position.</p> <p>3 Depress the LOX key momentarily. No visible indication of lockout is provided for the trunk originating the lockout.</p>

C. Restoring Circuit after Lockout

- 4.05 A line link pulsing or network trunk previously removed from service by direct or across-office lockout is restored to service from the testboard using a TST cord.

STEP	PROCEDURE
	<p>Restore Circuit after Lockout</p> <p>1 Connect a TST cord to the TST jack of the trunk which is to be restored to service.</p> <p>2 Operate the associated TALK-MON key to the TALK position.</p> <p>3 Depress the RST key momentarily. The LO lamp, if previously lighted on direct lockout, is extinguished.</p> <p>4 Remove the 19-type shield covering the LO lamp and remove the 371B splitting plug from the SIG L/D jacks, if used.</p> <p>5 Request the distant end attendant to restore the trunk to service.</p>

D. Monitoring

- 4.06 Either a TST or a CON cord associated with the monitoring circuits through a TALK-MON key can be connected to a trunk without disturbing the circuit. If while monitoring it is desired to seize the circuit, the seizure is made by the procedure described in 4.03.

STEP	PROCEDURE
	<p>Monitoring</p> <p>1 Check that no TALK-MON keys are in TALK position and operate the TALK-MON key, associated with the cord being used, to the MON position.</p>

STEP	PROCEDURE
2	Connect the TST or CON cord of the cord pair, as appropriate, to the trunk jack of the circuit to be monitored.
3	The monitoring condition is established on this cord. If, while this cord is in the monitoring condition, the TALK-MON key, associated with a second cord, is operated to TALK, the monitoring condition will be removed from the first cord.

4.07 A TST cord is also placed in the monitoring condition if its associated TALK-MON key is in the TALK position and the cord is connected to a trunk which has been seized from another position (upper ring of trunk jack is grounded).

E. Talking on Cord Circuits

4.08 Talking may be done on either a TST or CON cord; however, the procedures differ slightly. Although the TALK position of only one TALK-MON key is effective at one time, more than one cord circuit can be mutually associated with the talking circuit, as will be described.

STEP	PROCEDURE
	Talking on Cord Circuits
1	After testing for busy, connect a TST or CON cord, as appropriate, to the trunk jack of the circuit on which talking will be done.
2a	If the connected cord is a TST cord, operate the associated TALK-MON key to the TALK position and operate the associated HOLD-CLOSE 3RD key to the CLOSE 3RD position.
3b	If the connected cord is a CON cord, operate the associated TALK-MON key to the TALK position only.
4	If it is desired to mutually associate a second cord circuit with the talking circuit, operate the TALK-MON key associated with the <i>second</i> cord to MON and operate the HOLD-CLOSE 3RD key associated with the <i>second</i> cord to CLOSE 3RD. Other testboard functions normally available to a cord with its TALK-MON key in the TALK position will be available to the first cord but not to the second cord.

F. Holding

4.09 The HOLD-CLOSE 3RD key, when operated to HOLD, may be used to terminate the two ends of a cord pair by connecting each cord

to a terminating network. Connected circuits are held busy during testing procedures and in condition to receive supervisory signals.

STEP	PROCEDURE
1	<p>Holding</p> <p>If, during a testing procedure, it is desired to hold the connected circuit busy, operate HOLD-CLOSE 3RD key associated with connected cord to HOLD. Either or both associated cords may be used for holding.</p>
2	<p>Operation of the TALK-MON key, associated with a CON cord, to TALK will place the connected circuit in the talking condition. For the TST cord, both the TALK and the CLOSE 3RD key must be operated for the talking condition. When the TALK key is returned to normal, the holding condition will be restored.</p>
3	<p>Circuits being held cannot be monitored but will receive supervisory signals.</p>

G. Splitting

4.10 The splitting function permits two circuits which are connected together through a test cord circuit to be split apart at the testboard. Tests may then be conducted in either direction. One cord is connected to a terminating network while the second cord is connected to the testboard position circuits.

STEP	PROCEDURE
1	<p>Splitting</p> <p>Operate the TALK-MON key, associated with the connecting cord pair, to the TALK position and operate the HOLD-CLOSE 3RD key to the CLOSE 3RD position.</p>
2	<p>To test the circuit connected to the TST cord while holding the circuit connected to the CON cord, operate the SPLIT key to the forward position (TST).</p>
3	<p>To test the circuit connected to the CON cord while holding the circuit connected to the TST cord, operate the SPLIT key to the rear position (CON).</p>

H. Ringing

4.11 The RING key associates the ringing function with either a TST or a CON cord. The resistance battery is connected to the lower tip of the associated cord with the TALK-MON key in TALK position.

STEP	PROCEDURE
1	<p>Ringing</p> <p>Connect a TST or CON cord, as appropriate, to trunk jack of circuit on which ringing will be done.</p>

STEP	PROCEDURE
2	Operate the TALK-MON key, associated with connected cord, to the TALK position.
3a	To apply ringing pulses to a connected TST cord, operate the RING key to the forward position (TST).
4	To apply ringing pulses to a connected CON cord, operate the RING key to the rear position (CON).

I. MF Key pulsing

4.12 The keyset may be associated with either a TST or a CON cord, as appropriate. Key pulsing is done on the voice path of the connected trunk. Key pulsing on network trunks is a continuation of initiation-of-tests procedures described in 3.09 and 3.10.

STEP	PROCEDURE
	MF Key pulsing
1	If pulsing is to be done over a communication trunk, test for busy using a CON cord and connect the cord to trunk jack. Operate the associated TALK-MON key to the TALK position.
2	If pulsing is to be done over a network trunk using a TST cord, the appropriate initiation-of-tests procedure described in 3.09 or 3.10 should be completed. For tests toward the line, the associated TALK-MON key should be in the TALK position and the associated HOLD-CLOSE 3RD key should be in the CLOSE 3RD position. For tests toward the drop, the associated TALK-MON key should be operated to the TALK position, but operation of the HOLD-CLOSE 3RD key must be delayed until after pulsing (Step 7).
3	Depress MF TST key momentarily (if TST cord is being used) or depress the MF CON key momentarily (if a CON cord is being used). Observe that the (MF) TST or (MF) CON lamp, as appropriate, is lighted.
4	When keyset S lamp and cord supervisory lamp are lighted, the trunk is ready for pulsing.
5	Using keyset, pulse forward the digits required to reach the desired station or test line.
6	When pulsing is completed, operate the keyset ST key momentarily. Observe that the keyset S lamp and the (MF) TST or (MF) CON lamp, as appropriate, are extinguished indicating that the keyset is released.
7	For calls on communication trunks or for calls toward the line on network trunks, the circuit is ready for talking. For calls toward the drop on network trunks, operate the HOLD-CLOSE 3RD key, associated with the TST cord, to the CLOSE 3RD position.
8	Observe cord lamp for supervision.

J. Dial Pulsing

4.13 When dial pulsing on a dial communication trunk, the trunk is connected with a CON cord. When dial pulsing over trunk E/M signaling leads, the dial is connected by the DIAL key through a SIG T cord. When dialing on an SS1 order-wire circuit, the dial is automatically asso-

ciated with the circuit for a predetermined time when a connection is made.

4.14 When dialing on E/M signaling leads of a line link pulsing circuit, the dialing procedure is a continuation of initiation-of-tests procedures described in 3.07 and 3.08.

STEP	PROCEDURE
	<p>Dial Pulsing</p> <p>1 For dialing on a communication trunk, test for busy, connect to the trunk using a CON cord, and operate the associated TALK-MON key to TALK.</p> <p>2 Depress the DP key momentarily, connecting the dialing circuit to the cord circuit. Observe that the red DP lamp is lighted, indicating connection is made.</p> <p>3 Proceed with dialing. If dialing is done too slowly, the DP lamp may become extinguished in intervals between digits. Relight the DP lamp by depressing the DP key and continue dialing.</p> <p>4 If an error is made in dialing, disconnect the cord associated with the dial; then reconnect and start dialing procedure from Step 2.</p> <p>5 Dialing on a busy trunk is indicated by both the DP lamp and the cord supervisory lamp flashing at 60 or 120 ipm. Disconnect the cord associated with the dial and, after an interval, reconnect and start dialing procedure from Step 2.</p> <p>6 When dialing has been satisfactorily completed, depress the ST key momentarily, disconnecting the dial.</p> <p>7 The talking condition should be established on the cord connected to the trunk jack as described in 4.08.</p>

5. TESTS WITH TRANSMISSION MEASURING SYSTEM, SD-95900-01

5.01 The measuring circuits of the transmission measuring system, when properly adjusted, will automatically compensate for losses in office wiring between the testboard position and the switching system equipment. No corrections are required to measurements made with the transmission measuring system.

5.02 The system includes both transmission measuring and noise measuring circuits. The NM key switches the input from the trans-

mission measuring circuit to the noise measuring circuit.

5.03 Before making measurements on either the transmission measuring or noise measuring circuit, the circuit should be checked for calibration and adjusted according to Section 103-231-500.

A. Keys and Lamps

5.04 The MEAS jack provides access to the measuring system, for both transmitting tone and for receiving tone or measuring noise, under control of the SEND-RCV key.

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5.05 The B+10 and B+20 keys are sensitivity controls extending the range of the meter B scale used in making transmission measurements.

5.06 The A+15, A+20, and A+25 keys are sensitivity controls extending the range of meter A scale used in making noise measurements.

5.07 A lighted MB lamp indicates that the measuring system meter is being used from another position.

5.08 A lighted TMB lamp indicates that the transmission measuring circuit is busy from another position.

5.09 A lighted NMB lamp indicates that the noise measuring circuit is busy from another position.

5.10 The MS key, when provided, is used to switch the measuring circuits from the primary meter to a secondary meter at another location.

5.11 Operation of the GND key grounds the midpoint of the input circuit to the measuring system. A difference in meter readings, when this key is in its normal position and when it is in its

operated position, indicates an imbalance in the circuit under test.

5.12 Operation of the CAL key applies 1-milliwatt 1000-cycle calibrating tone or, with input to the VF IN jack, connects variable-frequency tone from an external source to the transmission measuring circuit.

5.13 Operation of the NM CAL CK key applies test tone to the noise measuring circuit for calibrating purposes.

5.14 Operation of the FLT key inserts a high-pass filter into the measuring circuit for use in making measurements in circuits connected to open-wire transmission lines. A lighted FLT lamp indicates the presence of the filter in the measuring circuit. The filter should not be used in making measurements of test tones having frequencies under 1000 cycles.

B. Transmission Measurements

5.15 The measuring circuits are calibrated against the office milliwatt supply which itself has been checked with a 22A milliwatt reference meter or equivalent. The measuring circuit is never used to check the milliwatt supply output. The output is checked at the 1000/0/600 jack in each position.

STEP	PROCEDURE
1	<p>Calibration Check, Transmission Measuring Circuit</p> <p>Operate the CAL key, applying 1-milliwatt calibrating power to the measuring circuit.</p>
2	<p>Observe that the reading on the associated meter is 0 db. If not, arrange to have the circuit calibrated. Refer to 5.03.</p>

5.16 A measurement of received test tone is made either upon request from the distant end or following a request from the testboard for

a connection to a source of test tone at the distant end. The procedures for measuring received test tone follow.

STEP	PROCEDURE
	<p>Measurement, Received Test Tone at TST Jack</p> <p><i>Note:</i> The transmission measuring circuit should have been checked for calibration before beginning a transmission measurement.</p> <p>1 The appropriate initiation-of-tests procedure described in 3.07, 3.08, 3.09, or 3.10 should be completed. Digits required to reach the distant testboard or the code required to gain access to the distant milliwatt test line should be pulsed according to the appropriate procedure described in 4.12 or 4.13. If the call was placed to a testboard, request that 1-milliwatt 1000-cycle test tone be connected to the circuit.</p> <p>2 Operate the associated TALK-MON key to the MON position (or it may be returned to the normal position).</p> <p>3 Connect the associated CON cord to the MEAS jack of measuring system.</p> <p>4 Operate SEND-RCV key to RCV.</p> <p>5 Transmission loss is indicated by the associated measuring circuit meter.</p>

STEP	PROCEDURE
	<p>Measurement, Received Test Tone at 101 Jack</p> <p><i>Note:</i> The transmission measuring circuit should have been checked for calibration before beginning a transmission measurement.</p> <p>1 When a request for a tone measurement originates at the distant end, the call is received on a 101 trunk. Answer by connecting a CON cord to the 101 trunk jack and operating the TALK-MON key associated with the CON cord to the TALK position.</p> <p>2 When it has been determined that a measurement is desired, operate the associated TALK-MON key to the MON position (or it may be returned to the normal position).</p> <p>3 Connect the TST cord, associated with the connected CON cord, to the MEAS jack of the transmission measuring system.</p> <p>4 Operate the SEND-RCV key to RCV.</p> <p>5 Transmission loss is indicated by the associated measuring circuit meter.</p> <p>6 Return the associated TALK-MON key to the TALK position. Meet the distant testboardman on the circuit and give test results.</p>

5.17 A near- to far-end tone transmission test may be originated from either end. The procedures for transmitting 1000-cycle test tone follow.

STEP	PROCEDURE
Transmission, 1000-Cycle Test Tone at TST Jack	
1	If the test is initiated at the near end, the proper initiation-of-tests procedures described in 3.07, 3.08, 3.09, or 3.10 should be completed.
2	Establish the talking condition on the cord connected to trunk jack of the circuit under test and arrange for a far-end measurement.
3	On completion of arrangements with the far-end testboardman, operate the associated TALK-MON key to the MON position (or it may be returned to the normal position).
4	A TST cord is connected to the trunk jack of the circuit under test. Connect the associated CON cord to the MEAS jack of the transmission measuring circuit.
5	Operate SEND-RCV key to SEND.
6	Transmission loss is measured at the far end.
7	Return the TALK-MON key to the TALK position and obtain test results from the test-boardman at the distant end.

STEP	PROCEDURE
Transmission, 1000-Cycle Test Tone at 101 Jack	
1	When a request for a test tone transmission originates at the distant end, the call will be received on a 101 trunk. Answer by connecting a CON cord to the appropriate 101 trunk jack with the associated TALK-MON key in the TALK position.
2	When it has been determined that a tone transmission is desired, return the TALK-MON key to the normal position.
3	Connect the TST cord, associated with the connected CON cord, to the MEAS jack of the transmission measuring system.
4	Operate the SEND-RCV key to SEND. A 1-milliwatt test tone is sent to the connected trunk. Transmission loss is measured at the distant end.

5.18 The procedures for transmitting variable-frequency test tone follow.

STEP	PROCEDURE
Transmission, Variable-Frequency Test Tone at TST Jack	
1	The proper initiation-of-tests procedure described in 3.07, 3.08, 3.09, or 3.10 should be completed.

STEP	PROCEDURE
2	Establish the talking condition on the cord connected to the trunk jack of the circuit under test and arrange for a far-end measurement.
3	On completion of arrangements with the distant testboardman, return the associated TALK-MON key to the normal position.
4	A TST cord is connected to the trunk jack of the circuit under test. Connect the associated CON cord to the MEAS jack of transmission measuring circuit.
5	With the oscillator turned on and stabilized at the desired frequency, connect a patch cord between the OSC jack and the VF IN jack.
6	Operate the CAL key and adjust the output of oscillator to read 0 dbm on the measuring circuit meter. Release the CAL key.
7	Operate the SEND-RCV key to the SEND position.
8	Transmission loss is measured at the far end.
9	Repeat Steps 6 and 8 for each frequency of test signal transmitted.

STEP	PROCEDURE
	<p data-bbox="391 1157 1068 1184">Transmission, Variable-Frequency Test Tone at 101 Jack</p> <p data-bbox="277 1209 1536 1304">1 When a request for transmission of variable-frequency test tone originates at the distant end, the call will be received on a 101 trunk. Answer by connecting a CON cord to the 101 trunk jack with the associated TALK-MON key in the TALK position.</p> <p data-bbox="277 1331 1536 1392">2 When it has been determined that a tone transmission is desired, operate the TALK-MON key to the normal position.</p> <p data-bbox="277 1419 1536 1480">3 Connect the TST cord, associated with the connected CON cord, to the MEAS jack of the transmission measuring system.</p> <p data-bbox="277 1507 1536 1568">4 With the oscillator turned on and stabilized at the desired frequency, connect a patch cord between the OSC jack and the VF IN jack.</p> <p data-bbox="277 1596 1536 1656">5 Operate the CAL key and adjust the output of the oscillator to read 0 dbm on the measuring circuit meter. Release the CAL key.</p> <p data-bbox="277 1684 1081 1711">6 Operate the SEND-RCV key to the SEND position.</p> <p data-bbox="277 1738 1024 1766">7 Transmission loss is measured at the distant end.</p> <p data-bbox="277 1793 1536 1854">8 If a frequency run is being made, repeat Steps 5 and 7 for each frequency of test signal transmitted.</p>

C. Noise Measurements

5.19 Since the measuring system provides compensation for office wiring losses, noise measurements made with the testboard are more accurate than those made with older systems.

5.20 A check of the calibration of the noise measuring circuit should be made before making a noise measurement.

STEP	PROCEDURE
1	<p>Calibration Check, Noise Measuring Circuit</p> <p>Operate the NM key to associate the noise measuring circuit with the input and meter circuits.</p>
2	Operate the NM CAL CK key.
3	With all A sensitivity keys in normal positions, a meter reading of 15 should be indicated on the meter A scale.

5.21 Measurements of message circuit-type noise using the SD-95900-01 circuit are made by the following procedure.

STEP	PROCEDURE
1	<p>Noise Measurement Using SD-95900-01 Circuit</p> <p>Operate the NM CAL CK key. The meter should read 15 on the A scale.</p>
2	Make the proper initiation-of-tests procedure described in 3.07, 3.08, 3.09, or 3.10.
3	Pulse digits required to reach the distant station or to gain access to a distant code 100 test line by appropriate procedure described in 4.14 or 4.15. If code 100 test line is not used, arrange for termination of circuit to be tested.
4	A testboard TST cord will have been previously connected to the trunk jack of the circuit under test. Operate the associated TALK-MON key to MON to monitor the test.
5	A TST cord is connected to the trunk jack of the circuit under test. Connect the associated CON cord to the MEAS jack of the noise measuring system.
6	Operate the NM key.
7	Operate the SEND-RCV key to the RCV position.
8	The noise level is indicated by the measuring circuit meter. With no A sensitivity key operated, add 30 to the A-scale reading to obtain the noise level in dbrnC. If necessary to obtain a suitable meter deflection, operate A sensitivity keys as required. The noise level, in dbrn C, is the sum of the meter indication and the designation of the operated key.

6. TESTS WITH 3B NOISE MEASURING SET**A. Calibration**

- 6.01** After being installed and connected to the office battery supply, the measuring set should be calibrated by connecting its input to the 1000/0/600 jack.

STEP	PROCEDURE
Interval Calibration, 3B Noise Measuring Set (NMS)	
1	Set the FUNCTION switch to OFF and adjust NMS meter to 0 with the mechanical adjustment.
2	Insert the appropriate weighting network, C497A or C497B, into front panel receptacle.
3	Set the DBRN dial to 85.
4	Set the FUNCTION switch to NM 600.
5	Patch the NMS IN jack to the testboard 1000/0/600 jack.
6	Adjust the CAL control to obtain NMS meter reading of 5. The screwdriver-type adjustment is reached through a hole in the front panel.

B. Noise Measurements

- 6.02** When the 3B NMS is used, it is connected to the trunk at a level point approximately 2 db lower than that to which the SD-95900-01 transmission and noise measuring system is connected. No compensation is provided for office wiring losses when using the 3B NMS.

STEP	PROCEDURE
Noise Measurement Using the 3B NMS	
1	Calibrate the 3B NMS according to the procedure described in 6.01.
2	Make the proper initiation-of-tests procedure described in 3.07, 3.08, 3.09, or 3.10.
3	Pulse digits required to reach the distant station or to gain access to a code 100 test line by the appropriate procedure described in 4.12 or 4.13. If an automatic test line is not used, arrange for termination of the circuit to be tested.
4	On the NMS, set the DBRN dial to 85.
5	A TST cord is connected to the test jack of the circuit being tested. Connect the associated CON cord to the 3B NMS IN jack and operate the associated TALK-MON key to MON. Monitor the test.

STEP	PROCEDURE
6	Set the FUNCTION switch to NM 600.
7	Adjust the DBRN dial in the counterclockwise direction to bring the meter reading into the +7 range, if possible.
8	The noise level measured is the sum of the DBRN dial setting and the meter reading.
9	<p>If wide fluctuations occur in the meter reading, operate the DAMP switch to obtain an easier-to-read indication.</p> <p><i>Note:</i> Since the point of measurement when using the 3B NMS is not the normal point for measurements from the testboard, adjustment of the meter reading is required for comparison with stated requirements. Add 2 db from the 3B NMS meter reading for comparison.</p>

7. TESTS WITH 6E IMPULSE COUNTER

A. Calibration

7.01 The 6E impulse counter is used in making impulse noise measurements. A calibration adjustment shall be made initially and on a regular

schedule. The set is removed from its case for the adjustment.

STEP	PROCEDURE
	<p>Calibration of 6E Impulse Counter</p>
1	With instrument case removed, turn BAL ADJ control fully counterclockwise.
2	Turn CAL control fully clockwise.
3	Set REF LEV DBRN switches S1 and S2 to ADD 30 and ADD 60, respectively.
4	Set MINUTES timer to HOLD.
5	Set WTG switch to FLAT.
6	Apply calibrating signal by connecting patch cord between 1000-0-900 jack and 6E IMP CTR IN jack.
7	Turn CAL control counterclockwise until counter just ceases to count.
8	Turn BAL ADJ control clockwise until register starts counting; turn counterclockwise until register just ceases to count.
9	Restore instrument to its case.

B. Impulse Noise Measurements

7.02 A warmup time of 1 minute is required before placing the 6E impulse counter into use. Impulse noise measurements are made by the following procedure.

STEP	PROCEDURE
	<p data-bbox="380 541 732 569">Impulse Noise Measurements</p> <p data-bbox="266 600 1523 630">1 Complete the proper initiation-of-tests procedure described in 3.07, 3.08, 3.09, or 3.10.</p> <p data-bbox="266 661 1523 722">2 Pulse digits required to reach distant station or to gain access to code-100 test line by appropriate procedure described in 4.12 or 4.13.</p> <p data-bbox="266 753 1523 814">3 When the circuit is properly terminated at the distant end, return keys associated with the TST cord to their normal position.</p> <p data-bbox="266 846 1114 875">4 Connect associated CON cord to 6E IMP CTR IN jack.</p> <p data-bbox="266 907 935 936">5 Set WTG switch to desired weighting filter.</p> <p data-bbox="266 968 1523 1029">6 Set REF LEV DBRN switches S1 and S2 to desired triggering level. Impulses of greater amplitude will be registered.</p> <p data-bbox="380 1060 1523 1199"><i>Note:</i> Since the point of measurement is not the normal point for measurements from the testboard, the trigger level setting will require adjustment when the reading is to be compared with a requirement stated for the testboard. Lower the trigger level by 2 db minus the value of the measuring pad in the SD-95900-01 noise measuring circuit.</p> <p data-bbox="266 1230 1000 1260">7 Set MINUTES timer to desired measuring time.</p> <p data-bbox="266 1291 675 1320">8 Depress RESET lever.</p> <p data-bbox="266 1352 1062 1381">9 Read impulse register when preset time has elapsed.</p>