

REMOTE TESTING FEATURES
NO. 14 LOCAL TEST DESK AND NO. 16 LOCAL TEST DESK
SD-99309-01 AND SD-99310-01 NEAR-END
AND SD-97559-01 NEAR TO FAR-END
TESTS

1. GENERAL		PAGE
<p>1.01 This section describes procedures for testing the basic features used to provide remote testing of subscriber lines in a distant office from a local test desk (LTD).</p> <p>1.02 This section is reissued to</p> <ul style="list-style-type: none"> ● Revise Test H ● Add Tests Q and R ● Revise Table A ● Make minor changes as required <p>This reissue affects the Equipment Test List.</p> <p>1.03 The following tests are covered.</p>	<p>G. <i>Supervision:</i> Checks the return of a supervisory signal when operating relays corresponding to selected keys.</p> <p>H. <i>Dialing:</i> Checks that dialing is completed to the far-end circuit and returned.</p> <p>I. <i>Keys Operating Relays:</i> Checks the operation of relays corresponding to selected keys.</p> <p>J. <i>Plug-Out Oscillator:</i> Checks output frequency of the plug-out oscillator.</p> <p>K. <i>Disconnect Oscillator:</i> Checks output frequency of the disconnect oscillator.</p> <p>L. <i>Pilot Tone Timer:</i> Checks the operation of the pilot tone timer.</p> <p>M. <i>Plug Out Supervision:</i> Checks the ability of detecting the removal of the primary test cord at No. 14 LTD and operation of DIS key at No. 16 LTD.</p> <p>N. <i>Establish Connection (Non-dedicated):</i> Checks the ability of establishing a connection over a nondedicated facility.</p> <p>O. <i>Establish Connection (Dedicated):</i> Checks the ability of establishing a connection over a dedicated facility.</p>	<p>8</p> <p>10</p> <p>11</p> <p>13</p> <p>13</p> <p>14</p> <p>14</p> <p>15</p> <p>16</p>
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<p>A. <i>PTM Timer:</i> Checks the operation of the PTM Timer.</p> <p>B. <i>TMR Timer:</i> Checks the operation of the TMR Timer.</p> <p>C. <i>Multitone Oscillator:</i> Checks for correct frequency output of the oscillator.</p> <p>D. <i>Amplifiers:</i> Checks the output of the amplifiers.</p> <p>E. <i>Detector:</i> Checks the operation of the detector.</p> <p>F. <i>Lockout Circuits:</i> Checks the operation of the lockout circuits.</p>	<p>4</p> <p>4</p> <p>5</p> <p>5</p> <p>7</p> <p>7</p>	

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P. Night Test Coverage (Option ZB): Checks the feature that will allow a test center to transfer control of the far-end remote testing equipment to a night covering office.	17
Q. <i>MDF Telephone and Loudspeaker Circuit (Option YS):</i> Checks the feature that provides communication between the local test desk and the distributing frames in the remote central office.	17
R. Permanent Signal Holding Trunk Identification Crossbar and Step-by-Step Offices: Checks the feature that provides means to identify a particular permanent signal holding trunk associated with a receiver off-hook line in an unattended office.♦	21
1.04 The procedures are all performed at the local test desk and remote testing circuit frame ♦except for Tests Q and R which require action and verification at a far end location.♦	
1.05 Remote testing utilizes the conversion of dc states to ac signals for transmission over facilities such as carrier, repeater, etc, which provide any required degree of amplification. At the local test desk location (near-end), key operations are converted to signals made up of three frequencies which are transmitted to the remote office (far-end). There they are converted back to dc states to control the remote circuitry. Dial pulses are treated similarly. In addition a pilot tone, which prevents release of test connection if the test cord is removed from the jack, and a disconnect signal are transmitted to the remote office.	
1.06 At the remote office, dc currents equivalent to those normally flowing in the meter at the desk are used to control a variable oscillator. Current flow between 0 and 1.2 milliamperes generates a corresponding frequency range of 1100 Hz through 1600 Hz. This signal is transmitted to the near-end where it is reconverted to direct current to activate the desk meter. Additionally, a tone signal which indicates the switchhook state of a called line and, when required, a signal which indicates a test connection to an extended range (unigauge) line are sent to the near-end.	

1.07 In the dedicated mode, the test path is hard-wired and is continuous from the test desk jack or key to the remote testing circuit at the far-end (Section 201-828-501).

1.08 In the nondedicated mode, the test path is routed through a switching network in order to provide access to trunk groups between the local and remote offices. This mode requires an additional circuit, the far-end test trunk or line circuit (Section 201-828-501). The far-end test trunk or line circuit is assigned a two-party line terminal in the remote office and can be reached by calling either of the two-party line numbers assigned to it. Thus, local test desk A could be assigned the tip party number and desk B could be assigned the ring party number. A call from test desk A to the assigned tip party number would be completed through the local and remote switching networks to the far-end test trunk or line circuit. The call would then be returned to the near-end trunk in the test desk position by a dialing feature of the far-end trunk. Similar action would take place on a call from test desk B to the assigned ring party number.

1.09 Descriptive information and operational procedures using remote testing features at the No. 14 LTD or at the No. 16 LTD are covered in the 662 division.

1.10 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 4 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 series of steps should be made is given in the ACTION 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. APPARATUS

2.01 The apparatus required for each test is shown in Table A. A more descriptive name and additional information on each item are covered in the paragraph indicated by the number in parentheses. Calibration and operating procedures for each set may be found in the section listed with each test set. Determine the testing equipment to be correctly calibrated.

2.02 J64072A (72A) Frequency Meter (Section 103-425-100).

→TABLE A←

APPARATUS	TESTS																	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
72A Meter (2.02)			1	1	1					1	1		1					
Test Set for Timing Tests (2.03)		1																
400-D VTVM (2.04)				1	1								1					
KS-14510 L1 VOM (2.05)						1												
52-Type Headset (2.06)									1					1			1*	1
1014A Handset (2.07)								1										
Patching Cord (2.08)		2																
Patching Cord (2.09)			1	1	1													
Testing Cord (2.10)										1	1		1					
Testing Cord (2.11)			1	1	1	1												
Testing Cord (2.12)								1										
Connecting Clip (2.13)						2												
Contact Connector (2.14)			2	2	2													
Connector Holder (2.15)			1	1	1													
Blocking and insulating Tools (2.16)	√		√	√	√	√	√	√	√	√	√	√	√					

* an additional headset is required at far-end if answering using head telephone set.

√ as required

2.03 J24753A Test Set for Timing Tests (Section 100-130-101).

2.04 Model 400-D Hewlett Packard vacuum tube voltmeter (VTVM) (Section 100-526-101).

2.05 KS-14510 L1 volt-ohm-milliammeter (VOM) (Section 100-520-101).

2.06 52-type headset equipped with 310 plug.

2.07 1014A handset.

2.08 Patching cord, P3K, 6 feet long, equipped with two 310 plugs (3P15A cord).

2.09 Patching cord, P3N, 6 feet long, equipped with one 310 plug and one 241A plug (3P17B cord).

2.10 Testing cord, P2AA, 3 feet long, equipped with one 241A plug and two 120 cord tips (2W3A cord).

2.11 Testing cord, 893, 6 feet long, equipped with two 360A tools (1W13B cord).

2.12 Testing cord, W2CK, 5 feet long, equipped with one 310 plug and one 471A jack (2W38A cord).

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2.13 KS-6278 connecting clip.

2.16 Blocking and insulating tools as required.
Use tools and apply as covered in Section
069-020-801.

2.14 639A relay contact connector.

2.15 651C relay contact connector holder.

3. PREPARATION

STEP	ACTION	VERIFICATION
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Tests A Through F and J Through M and P

- | | | |
|---|--|--|
| 1 | Restore all test desk keys to normal. | |
| 2 | Request that operator make no operations at desk position. | |

4. METHOD

A. PTM Timer

- | | | |
|---|------------------------------|---|
| 3 | Block PC1 relay operated. | PTM relay operated 50-70 seconds later. |
| 4 | Remove block from PC1 relay. | |

B. TMR Timer

- | | | |
|-----|--|----------------------|
| 3 | Using 3P15A cord, connect -48 volts and ground to 48V jack of test set for timing test. | |
| 4 | At test set—
Operate BAT key. | |
| 5 | Set MCF switch at NOR, REC switch at GRD-OC, and MILSEC switch at 0-100. | |
| 6 | Adjust ADJ-0 knob for zero indication. | |
| 7 | Hold TST key operated at CAL, and adjust CAL knob for indication of 50. | |
| 8 | Release TST key. | |
| 9 | Using 3P15A cord, connect TMR jack at SD-99310-01, to TST1 jack of test set. | |
| 10 | At test set—
Operate TST key to OPR, and observe indication. | Indication of 54-56. |
| 11a | If verification of Step 10 is not observed, release TST key and adjust TMR potentiometer in SD-99310-01. | |

STEP	ACTION	VERIFICATION
12a	Repeat Steps 10 and 11a until proper indication is observed.	Same as Step 10.
13	Remove all cords.	
C. Multitone Oscillator		
3	Set selector of 72A meter at MEAS.	
4	At SD-99310-01— Using 3P17B cord, connect 72A meter to CAL jack.	
5	Using 1W13B cord, 651C holder, and two 639A connectors, short circuit contacts 12B and 12F of TM relay.	
6	Release all ST relays.	
7	Block relays PC and TM operated.	
8	Block relays TM1 and PTM nonoperated.	
9a	If at No. 14 LTD— Connect primary cord into remote TST jack.	
10b	If at No.16 LTD— Operate incoming trunk key associated with remote testing and PR1(C) key.	
11	At SD-99310-01— Check that ST16 relay is released and perform operations outlined in Table B.	Frequency indications as listed in Table B.
12c	If frequency indications are not within ± 4 Hz of values given, adjust the respective transformer or inductor listed in Table B.	Same as Step 11.
	Note: Since one adjustment affects more than one frequency, all frequencies listed in Table B having the same adjustment transformer or inductor must be checked when any one is adjusted.	
13	Remove all short circuits and remove blocks from all relays.	
D. Amplifiers		
3	Set 72A meter at 1100 Hz and turn OSC OUT control to extreme counterclockwise position.	

STEP	ACTION	VERIFICATION
11	Disconnect meters, release all operated relays, and remove short on TM relay.	
E. Detector		
3	Set 72A meter at 1100 Hz and turn OSC OUT control to extreme counterclockwise position.	
4	At SD-99310-01— Using 3P17B cord, connect OSC OUT jack of the 72A meter to CAL jack of circuit.	
5	Using 1W13B cord, 651C holder, and two 639A connectors, short circuit contacts 12B and 12F of TM relay.	
6	Connect 400-type VTVM to LEV pin of jack and ground.	
7	Adjust OSC OUT control of 72A meter.	0.094V rms indication on VTVM (ungrounded) (−22 dBm, 900 ohms).
8	At SD-95612-01 or SD-1C379-01— Block RT1 relay operated.	
9	At desk position— Adjust zero potentiometer.	Desk meter indicates 0 ma.
10	At 72A meter— Set meter for 1517 Hz output.	
11	At desk position— Adjust zero potentiometer.	Desk meter indicates 1 ma or 100 on the 120 scale.
12	Repeat adjustments until 0 ma and 1 ma indications are observed.	
13	Disconnect meter and remove short from TM relay.	
F. Lockout Circuits		
3	At SD-99310-01— Block L01 relay nonoperated.	
4	Block PC1 relay operated.	
5	Using 1W13B cord and two KS-6278 clips, ground terminal 58 (ST1) of terminal strip on unit.	ST1 relay operated.

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STEP	ACTION	VERIFICATION
6	Remove block from L01 relay.	L01 relay operated. ST1 relay released.
7	Remove ground lead from terminal 58 (ST1).	RL, ST1 relays momentarily operated. L01 relay released.
8	Repeat test (Steps 5 through 7) using data in Table C.	
9	Remove block from PC1 relay.	

G. Supervision

1a	If at No.14 LTD— Connect primary cord to T jack associated with remote testing.	BSY lamp flashes (if nondedicated). At SD-99310-01— SL and SL1 relays momentarily operated. At SD-95612-01— RT and RT1 relays operated.
2b	If at No. 16 LTD— Operate PRI KEY.	BSY lamp flashes (if nondedicated). At SD-99310-01— SL and SL1 relays momentarily operated. At SD-95612-01— RT and RT1 relays operated.
3	At SD-99309-01— Momentarily operate S relay.	At SD-99310-01— S relay momentarily operated.
4	At SD-99309-01— Block S relay operated.	
5	At SD-99310-01— Operate DL relay.	At desk position— P lamp lighted (No. 14 LTD). PRI lamp lighted (No. 16 LTD).
6	At SD-99310-01— Release DL relay.	At desk position— P lamp extinguished (No. 14 LTD). PRI lamp extinguished (No. 16 LTD).
7	At SD-99310-01— Operate RC relay.	At desk position— P lamp lighted (No. 14 LTD). PRI lamp lighted (No. 16 LTD).
8	At SD-99310-01— Release RC relay.	At desk position— P lamp extinguished (No. 14 LTD). PRI lamp extinguished (No. 16 LTD).
9	At SD-99310-01— Operate H relay.	At desk position— P lamp lighted (No. 14 LTD). PRI lamp lighted (No. 16 LTD).

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STEP	ACTION	VERIFICATION
10	At SD-99310-01— Release H relay.	At desk position— P lamp extinguished (No. 14 LTD). PRI lamp extinguished (No. 16 LTD).
11	At SD-99310-01— Operate PR relay.	At desk position— P lamp lighted (No. 14 LTD). PRI lamp lighted (No. 16 LTD).
12	At SD-99310-01— Release PR relay.	At desk position— P lamp extinguished (No. 14 LTD). PRI lamp extinguished (No. 16 LTD).
13	At SD-99309-01— Release S relay.	
14	Repeat Steps 5 through 12.	At desk position— P lamp or PRI lamp extinguished in Steps 5 through 12.
15a	If at No. 14 LTD— Remove primary cord from T jack and Momentarily operate DISC key.	
16b	If at No. 16 LTD— Momentarily operate DIS key.	

H. Dialing

1	At SD-99310-01— ◆Connect 1014A handset equipped with 2W38A cord to CAL jack.◆	
2	At SD-99309-01 Block S relay nonoperated.	
3a	If at No. 14 LTD— Connect primary cord into T jack associated with remote testing.	At SD-99310-01— SL and SL1 relays momentarily operated. At SD-95612-01— RT and RT1 relays operated.
4b	If at No. 16 LTD— Operate (IC_) key associated with remote testing and operate PRI(C) key.	At SD-99310-01— SL and SL1 relays momentarily operated. At SD-1C379-01— RT and RT1 relays operated.
5	At desk position— Operate DIAL key.	P lamp lighted. At SD-99310-01— DL relay operated. ◆Three tones present at handset.◆
6	At desk position— Dial the number 2.	◆At handset— Two interruptions in one of three tones.◆

STEP	ACTION	VERIFICATION
7	At desk position— Release DIAL key.	Tone absent at handset. P lamp extinguished.
8	At SD-99310-01— Remove block from S relay.	
9a	If at No. 14 LTD— Remove primary cord from T jack and momentarily operate DISC key.	
10b	If at No. 16 LTD— Momentarily operate DIS key.	
I. Keys Operating Relays		
1a	If a No. 14 LTD— Connect primary cord to T jack associated with remote testing.	BSY lamp flashes (if nondedicated). At SD-99310-01— SL and SL1 relays momentarily operated.
2b	If at No. 16 LTD— Operate (IC_) key associated with remote testing and operate PRI(C) key.	BSY lamp flashes (nondedicated). At SD-99310-01— SL and SL1 relays momentarily operated.
3	At desk position— Connect 52 type headset to TEL jack.	
4	At SD-99310-01— Short contacts 10 break and 10 fixed of TM relay.	
5	Short contacts 8 break and 8 fixed of TM relay.	
6	Block TM relay operated.	
7	At desk position— Operate T key.	Multifrequency tone present at headset.
8	Release T key.	Tone absent at headset.
9	Operate M key.	Multifrequency tone present at headset.
10	Release TM relay.	Tone absent at headset.
11	Release M key.	
12	Remove shorts from TM relay.	
13	Operate RCCI key.	At SD-99310-01— RC relay operated.

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STEP	ACTION	VERIFICATION
14	At desk position— Release RCCI key.	At SD-99310-01— RC relay released.
15c	If TOUCH-TONE® is provided— At desk position— Operate TT key.	TTB lamp lighted.♦(Option B).♦ At SD-99310-01— TT relay operated.
16c	At desk position— Release TT key.	TTB lamp extinguished ♦(Option B).♦ At SD-99310-01— TT relay released.
17	At desk position— Operate PS-RLS key.	At SD-99310-01— PR relay operated.
18	At desk position— Release PS-RLS key.	At SD-99310-01— PR relay released.
19	At desk position— Momentarily operate H key.	At SD-99310-01— H relay operated. At SD-95612-01— SR1 relay operated. At desk position— H lamp flashes approximately 60 seconds and then lighted steadily.
20	At desk position— Reoperate H key.	
21	At SD-99310-01— Operate S relay.	H lamp lighted steadily.
22d	If night test coverage (option ZB) is provided— At desk position— Operate an out trunk key and dial telephone number assigned to remote testing circuit in distant office.	SUPV lamp flashes.
23d	Momentarily operate NC key.	At SD-99309-01— NC and NC1 relays operated. In approximately 6 seconds— S and TF relays operated. At desk position— SUPV lamp lighted. BSY lamp extinguished.
24	At desk position— Reoperate NC key.	At SD-99309-01— NC and NC2 relays operated. In approximately 6 seconds— S relay operated. TF relay released. At desk position—

STEP	ACTION	VERIFICATION
		BSY lamp lighted. SUPV lamp extinguished.
25	At desk position— Remove headset.	
26a	If at No. 14 LTD— Remove primary cord from T jack and momentarily operate DISC key.	
27b	If at No. 16 LTD— Operate DIS key.	

J. Plug-out Oscillator

3	Set 72A meter at MEAS (allow 15 minutes warmup time).	
4	At SD-99309-01— Using 2W3A cord, connect 72A meter to terminals 44 and 54 of unit terminal strip (A).	
5	Block relay PD operated.	
6	Block relays TC and D nonoperated.	
7	Perform operations outlined in Table D.	Frequency indications as listed in Table D.
8a	If frequency indications are not within ± 4 Hz of values given, adjust respective transformer and inductor listed in Table D.	Same as Step 7.
9	Remove blocks from all relays, disconnect 72A meter, and remove shorts from all capacitors.	

K. Disconnect Oscillator

3	Set 72A meter to MEAS (allow 15 minutes warmup time).
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TABLE D

SHORT CIRCUIT CAPACITOR	NORMAL FREQUENCY (Hz)	ADJUST TRANSFORMER	FINE TUNE WITH INDUCTOR
CB, CC	941	TA	LA
CA, CC	1633	TB	LB
CA, CB	2250	TC	LC

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STEP	ACTION	VERIFICATION
4	At SD-99309-01— Using 2W3A cord, connect 72A meter to terminals 44 and 54 of unit terminal strip (A).	
5	Block relay D operated.	
6	Block relay TC nonoperated.	
7	Perform operations outlined in Table E.	Frequency indications as listed in Table E.
8a	If frequency indications are not within ± 4 Hz of values given, adjust respective transformer and inductor listed in Table E.	Same as Step 7.
9	Remove blocks from all relays, disconnect 72A meter, and remove shorts from all capacitors.	

L. Pilot Tone Timer

3	AT SD-99309-01— Block H relay operated.	50-70 seconds later P relay operated.
4	Remove block from H relay and manually operate D relay.	P relay released.

M. Plug Out Supervision

3	At SD-99309-01— Remove all cross-connections of T and R leads going to far end office.
4	Release S relay.
5	At 72A meter— Turn HORIZ GAIN knob of 72A meter to extreme counterclockwise position and set frequency at 1017 Hz.

TABLE E

SHORT CIRCUIT CAPACITOR	NORMAL FREQUENCY (Hz)	ADJUST TRANSFORMER	FINE TUNE WITH INDUCTOR
CB1, CC1	941	TA1	LA1
CA1, CC1	1477	TB1	LB1
CA1, CB1	2250	TC1	LC1

STEP	ACTION	VERIFICATION
6	Connect VTVM across OSC OUT jack of 72A meter.	
7	At SD-99309-01— Using 2W3A cord, connect OSC OUT jack of 72A meter to terminals 44 and 54 (T and R leads) of terminal strip (A).	
8	Block SL relay operated.	S relay operated.
9	Adjust HORIZ GAIN until VTVM indicates -34 dBm.	S relay released.
10	Adjust HORIZ GAIN until VTVM indicates -22 dBm.	S relay operated.
11	Vary frequency of 72A meter from 985 Hz to 1050 Hz.	S relay remains operated.
12	Adjust frequency of 72A meter 950 Hz and to 1090 Hz.	S relays released at each frequency.
13	Remove all meter leads and blocks from relays.	
N. Establish Connection (Nondedicated)		
1a	If at No. 14 LTD— Insert headset and operate outgoing trunk key.	Lamp associated with outgoing trunk key lighted. Tone present at headset.
2a	Dial number assigned to far-end circuit (SD-99308-01).	Ringing present at headset. At SD-99308-01 dialed— Automatic dialer will dial back to SD-99309-01 under test. At desk position— SUPV lamp flashes at 60 ipm. At SD-99309-01— SL and TR relays operated.
3a	At No. 14 LTD desk position— Restore outgoing trunk key.	
4a	Insert primary test cord into T jack associated with remote testing.	SUPV lamp extinguished. BSY lamp lighted. Voltmeter indicates 100 volts. At SD-99309-01— RT relay momentarily operated. TC, H, PD, PO, and P relays operated. TR relay released. At SD-95612-01— RT and RT1 relays operated.

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STEP	ACTION	VERIFICATION
5b	If at No. 16 LTD— Insert headset and operate talk trunk key.	Associated lamp of talk trunk key lighted. Dial tone present at headset.
6b	Dial number assigned to far-end circuit (SD-99308-01).	Ringling present at headset. At SD-99308-01 dialed— Automatic dialer will dial back to SD-99309-01 under test. At desk position— SUPV lamp flashes at 60 ipm. At SD-99309-01— SL and TR relays operated.
7b	At No. 16 LTD desk position— Restore talk trunk key.	
8b	Operate (IC_) key associated with remote testing and operate PRI(C) key.	BY lamp lighted. INC and PRI(C) lamps lighted steadily. Voltmeter indicates 100 volts.
9a	If at No. 14 LTD— Disconnect primary test cord and momentarily operate DISC key.	BSY lamp extinguished. At SD-99309-01— D, D1 relays momentarily operated. TC, H, SL, PD, PO relays released.
10b	If at No. 16 LTD— Operate DIS key in C control group.	BY lamp extinguished. At SD-99309-01— D, D1 relays momentarily operated. TC, H, SL, PD, PO, relays released.

O. Establish Connection (Dedicated)

1a	If at No. 14 LTD— Connect primary cord into T jack.	BSY lamp lighted. At SD-99309-01— RT relay momentarily operated. TC, H, SL, PD, PO relays operated.
2b	If at No. 16 LTD— Operate IC_ key.	BY lamp lighted. At SD-99309-01— RT relay momentarily operated. TC, H, SL, PD, PO relays operated.
3a	If at No. 14 LTD— Remove primary cord from T jack and momentarily operate DISC key.	BSY lamp extinguished. At SD-99309-01— D, D1 relays momentarily operated. TC, H, SL, PD, PO relays released.
4b	If at No. 16 LTD— Operate DIS key in C control group.	BY lamp extinguished. At SD-99309-01— D, D1 relays momentarily operated. TC, H, SL, PD, PO relays released.

STEP	ACTION	VERIFICATION
P. Night Test Coverage (Option ZB)		
<i>Seizure</i>		
3	At SD-99309-01— Block relay H operated.	
4	Momentarily operate NC relay.	NC1 relay locked operated.
5	Momentarily operate S relay.	TF relay operated. NC1 relay released. When provided with No. 14 LTD— BSY lamp extinguished. SUPV lamp lighted. When provided with No. 16 LTD— BY lamp extinguished. SP lamp lighted.
<i>Disconnect</i>		
6	Momentarily operate NC relay.	NC2 relay locked operated.
7	Momentarily operate S relay.	TF and NC2 relays released. When provided with No. 14 LTD— SUPV lamp extinguished. BSY lamp lighted. When provided with No. 16 LTD— SP lamp extinguished. BY lamp lighted.
8	Remove block from H relay.	
Q. ▶MDF Telephone and Loudspeaker Circuit (Option YS)		
<i>Testing From No. 14 LTD</i>		
1a	If provided with No. 14 LTD associated with nondedicated facilities— Insert headset and operate any available outgoing trunk key.	Lamp associated with outgoing trunk key lighted. Tone present at headset.
2a	Dial number assigned to far-end circuit (SD-99308-01).	Ringing present at headset. At SD-99308-01 dialed— Automatic dialer will dial back to SD-99309-01 under test. At desk position— SUPV lamp flashes at 60 ipm. At SD-99309-01— SL and TR relay operated.
3a	At No. 14 LTD desk position— Restore outgoing trunk key.	

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STEP	ACTION	VERIFICATION
4a	Insert primary cord into jack associated with flashing supervisory lamp.	SUPV lamp extinguished. BSY lamp lighted. Voltmeter indicates 100 volts. At SD-99309-01— RT relay momentarily operated. TC, H, PD, PO, and P relays operated. TR relay released. At SD-95612-01— RT and RT1 relays operated.
5b	If provided with the No. 14 LTD associated with dedicated facilities— Insert headset.	
6b	Insert primary cord into jack associated with far-end test trunk (SD-99308-01).	BSY lamp lighted. Voltmeter indicates 100 volts. At SD-99309-01— RT relay momentarily operated. TC, H, PD, PO, and P relays operated. TR relay released. At SD-95612-01— RT and RT1 relays operated.
7c	If loudspeaker circuit (SD-97559-01) is located at extended remote office— At No. 14 LTD— Operate ERT key.	
8c	Operate DIAL Key.	
9c	Dial digit associated with extended remote office to be accessed.	
10	At No. 14 LTD— Operate RTLS key.	RTLS lamp lighted. At SD-99311-01— TK and LS relay operated. At SD-97557-01— LS relay operated. At 97559-01— LS relay operated. When station lamps are provided (Option Y)— All corresponding station lamps at far-end flash at 120 ipm.
11	Speak over loudspeaker to alert personnel at far-end to answer.	

Testing From No. 16 LTD

12d	If provided with No. 16 LTD associated with nondedicated facilities—	Lamp associated with talk trunk key lighted. Tone present at headset.
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STEP	ACTION	VERIFICATION
	Insert headset and operate any available talk trunk key.	
13d	Dial number assigned to far-end circuit (SD-99308-01).	Ringing present at headset. At SD-99308-01 dialed— Automatic dialer will dial back to SD-99309-01 under test. At desk position— SP lamp flashes at 60 ipm. At SD-99309-01— SL and TR relays operated.
14d	At No. 16 LTD desk position— Restore talk trunk key.	
15d	Operate (IC_) key associated with flashing SP lamp and operated PRI (c) key.	SD lamp extinguished. BY lamp lighted. IC_ and PRI (c) lamps lighted steadily. Voltmeter indicates 100 volts.
16e	If provided with No. 16 LTD associated with dedicated facilities— Insert headset.	
17e	Operate IC_ key associated with remote testing and operate PRI (c) key.	BY lamp lighted. IC_ and PRI (c) lamps lighted steadily. Voltmeter indicates 100 volts.
18f	If loudspeaker circuit (SD-97559-01) is located at extended remote office— At No. 16 LTD— Operate ERT key.	
19f	Operate DIAL key.	
20f	Dial digit associated with extended remote office to be accessed.	
21	At No. 16 LTD— Operate RTLS key.	RTLS lamp lighted. At SD-99311-01— TK and LS relay operated. At SD-97557-01— TK and LS relay operated. At SD-97559-01— LS relay operated. When station lamps are provided (Option Y)— All corresponding station lamps at far-end flash at 120 ipm.
22	Speak over loudspeaker to alert personnel at far-end to answer.	

SECTION 201-828-502

STEP	ACTION	VERIFICATION
<i>Answering at Far End or Extended Remote Office Using Head Telephone Set</i>		
23	At far end— Connect head telephone set into A and B telephone jacks at first station to be tested.	At SD-97559-01— HDA relay operated. C relay operated. When station lamps are provided (Option Y)— All station lamps at far-end lighted steadily. Talking path established between test desk and connected station.
24	Remove headset from station jacks.	When station lamps are provided (Option Y)— All station lamps at far-end flash at 120 ipm.
25	Connect headset to next station to be tested.	When station lamps provided (Option Y)— All corresponding station lamps at far-end flash at 120 ipm. Talking path established between test desk and connected station.
26g	If additional stations are to be tested— Repeat Steps 24 and 25 as required for all equipped stations to be tested.	Same as Steps 24 and 25.
27	Remove headset from station jacks of last station tested.	At SD-97559-01— HDA relay released.
28	At No. 14 or 16 LTD desk position— Release RTLS key.	RTLS lamp extinguished. At SD-99311-01— TK and LS relay released. At SD-97557-01— TK and LS relay released. At SD-97559-01— LS relay released. When station lamps are provided (Option Y)— All corresponding station lamps at far-end extinguished.
29	At No. 14 or 16 LTD desk position— Remove primary cord from jack.	
30	Operate DISC key.	All circuits restored to normal.

Answering at Far End or Extended Remote Office Using Speakerphone (Option Y)

31	Operate pull switch or pushbutton key at first station to be checked.	At SD-97559-01— CT relay operated. C relay operated. All station lamps steadily lighted except the connected station lamp which flashes at 60 ipm.
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STEP	ACTION	VERIFICATION
		Talking path established between test desk and connected station.
		Note: It may be necessary to adjust R5 potentiometer on SD-97559-01 to provide a suitable volume level for the loudspeaker without feedback. Should feedback occur, it will be necessary to reduce the loudspeaker volume. This arrangement should be tested with each talking station to prevent possible feedback condition.
32	Operate pull switch or pushbutton key at next station to be tested. Note: See Note, Step 31.	Associated CT relay operated. Preceding or succeeding talking station released. All station lamps steadily lighted except the connected station lamp which flashes at 60 ipm. Talking path established between test desk and connected station.
33g	If additional stations are to be tested— Repeat Step 32 as required for all equipped stations to be tested.	Same as Step 32.
34	At No. 14 or 16 LTD desk position— Release RTLS key.	RTLS lamp extinguished. At SD-99311-01— TK and LS relays released. At SD-9755701-01— TK and LS relays released. At SD-97559-01— LS relay released. CT relay released. All corresponding station lamps at far-end extinguished.
35c	If loudspeaker circuit (SD-97559-01) is located at extended remote office— At No. 14 or 16 LTD desk position— Release ERT key.	
36	At No. 14 or 16 LTD desk position— Remove primary cord from jack.	
37	Operate DISC key.	All circuits restored to normal.◀
R. ▶Permanent Signal Holding Trunk Identification Crossbar and Step-by-Step Offices		
1	Insert headset and operate any available outgoing trunk key.	Lamp associated with outgoing trunk key lighted. Tone present at headset.

SECTION 201-828-502

STEP	ACTION	VERIFICATION
2	Select a telephone number at far end office to call.	
<i>For Dial Pulse Calling</i>		
3a	If number is in extra number series— Operate REV key.	
4	Operate DIAL key.	When No. 14 LTD provided— P lamp lighted. When No. 16 LTD provided— PRI lamp lighted.
5	When P or PRI lamp extinguished— Dial selected telephone number.	
6	Operate T and RCCI keys.	
7	Ring party dialed by operating either +T, -T, +R or -R key, whichever is correct.	
8	Talk to called party when answer occurs.	Voltmeter indicates 100 volts. Voice transmission path established between desk position and called number. <i>Note:</i> If a sharp burst of tone occurred when called number answered, it is necessary to operate the REX key (if provided) to increase transmission level.

For MF Key Pulse Calling

9a	If number is in extra number series— Operate REV key.	
10	Operate KP key.	S lamp lighted.
11	Key selected telephone number.	
12	Operate T and RCCI keys.	
13	Ring party dialed by operating either +T, -T, +R or -R key, whichever is correct.	
14	Talk to called party when answer occurs.	Voltmeter indicates 100 volts. Voice transmission path established between desk position and called number. <i>Note:</i> If a sharp burst of tone occurred when called number answered, it is necessary to operate the REX key (if provided) to increase transmission level.

STEP	ACTION	VERIFICATION
<i>Permanent Signal Release (SXS Only)</i>		
15	Instruct called number at far end to hang-up telephone, lift phone off-hook and listen for permanent signal tone (1000-Hz) which will occur. Hang-up when permanent signal (1000-Hz) tone is removed.	
16	In approximately 1 minute after performing Step 15— Repeat Steps 1 through 5 (dial pulsing) or Steps 1, 2, and 9a through 11 (MF pulsing). Note: Do not ring called number.	
17	Operate M key.	Permanent signal tone heard.
18	Operate PS RLS key.	Permanent signal tone removed.
19	Release M key.	
20	Operate T and RCCI key.	
21	Verify far end called has heard permanent signal tone.	
Permanent Signal Release (Crossbar Offices—Option YV)		
22	Instruct called number at far end to hang-up telephone, lift phone off-hook, and listen for permanent signal tone (1000-Hz) which will occur. Hang-up when permanent signal (1000-Hz) tone is removed.	
23	In approximately 1 minute after performing Step 22— Operate NT key.	
24	Repeat Steps 1 through 5 (dial pulsing) or Steps 1, 2, and 9a through 11 (MF pulsing). Note: Do not ring called number.	
25	Operate M key.	Permanent signal tone heard.
26	Operate TTS key.	
27	Operate DIAL key.	
28	Dial to access first permanent signal trunk.	

SECTION 201-828-502

STEP	ACTION	VERIFICATION
29	Release DIAL key.	Permanent signal tone is removed if this is proper holding trunk.
30b	If verification of Step 29 does not occur— Operate DIAL key.	
31b	Dial "1" to access next permanent signal trunk.	
32b	Release DIAL key.	
33b	Repeat Steps 30b through 32b as required until permanent signal tone is removed.	
34	Release all keys.	
35	Verify far end called has heard permanent signal tone.◆	