

VERIFICATION NO TEST TRUNKS
OPERATIONAL TESTS
USING (MODIFIED) INTEGRATED MANUAL TEST FRAME SD-99604-01
NO. 4A TOLL SWITCHING SYSTEM

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1. GENERAL

1.01 This section describes a method of making operational tests of verification no test trunk equipment using the integrated manual test frame (IMTF). The trunks are equipped per PSD-68009-02 and the test frame is modified per PSD-68017-02.

1.02 (Reserved for future use)

1.03 This issue affects the Equipment Test List (ETL).

1.04 The tests covered are:

- A. *Cross-Office Check Failure*: Checks the ability of the trunk to recognize a cross-office check failure and block the call. On an MF, call the trunk will generate a simulated unexpected stop. A DP call will cause a reorder flash.

B. *Busy Line Call (Each Trunk)*: Checks the ability of the trunk to recognize a busy line, connect to it, and return supervision signaling that the end office no test train is cut-through (loop supervision is not provided). The outgoing trunk equipment is tested for cross-office check, scrambling of audible signals, controlled disablement of the scrambler with provision of warning (beep) tone, and ability to transmit audible tone to the far end.

C. *Idle Line Call (Each Trunk)*: Tests the ability of the trunk to recognize an idle line — then cut-through with loop supervision.

D. *Failure to Connect — Common Control End Office (Crossbar Only)*: Tests the ability of the trunk to recognize a busy line, encounter a failure to connect to that line, and provide a signal signifying the failure.

E. *Busy Line Disconnect — Connector Release (Each Trunk)*: Tests the ability of the trunk to connect to a busy line and release when the busy line has released.

F. *Incoming Release*: This tests the ability of the trunk circuit to make itself busy to markers and to properly release. A time span of 6 seconds is used in this test.

G. *Trunk Verification*: Checks the trunk cross-connections and provides a trouble record (card) indicating the outgoing trunk identity. A time span of 6 seconds is used for this test.

1.05 When testing a trunk, a busy test is made on the trunk. If the trunk is service or maintenance busy, the test frame will initiate a 3-second timing interval. Should the trunk remain busy after

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3 seconds, the test frame will be released from the test connector. The test busy (TB) lamp will indicate this condition. The test frame will have to be restored to normal (RN key) and the test call reinitiated. Determine if the trunk is maintenance busy. If maintenance busy, remove MB plug from trunk make busy bay (TMB). Do not operate the maintenance and service busy override key (M&SBOVRD). On a service busy trunk, the test frame will stop the call setup process at the preliminary or final SL check, depending on the supervisory state of the trunk. The test frame may be made to continue to release the access common control circuitry and monitor a service busy trunk by operation of the service busy continue (SB-CONT) key or the force link transfer key (FLTR). The FLTR key releases common equipment in the test frame to be released for the purpose of making transmission tests. This might be done on a trunk held service busy by TSPS for transmission problems.

1.06 The HV key is provided by the PSD-68017-02 modification. When operated, it provides a 95 Hz cross-office tone generator. This tone is required by the outgoing verification no test trunks in order to complete a call.

1.07 RING keys are provided for both the A- and B-ACCESS. When depressed momentarily, a ring forward signal is generated towards the trunk to disable the scrambler and start warning (beep) tone.

1.08 Section 212-570-101 shows some of the progress and trouble indicators that the IMTF might display during testing and probable trouble conditions. The HIT trouble lamp indicates a cross-office check failure in addition to the condition listed in the section.

1.09 Only those lamps that are necessary for the verification of a step are shown in the VERIFICATION column.

1.10 Certain keys and lamps have been duplicated in both the A-ACCESS and the B-ACCESS portions of the IMTF. During the test the A-ACCESS will be assumed to be the portion used, unless otherwise stipulated. If it is necessary to use the ASC lamp in VERIFICATION substitute the BSC for the ASC.

Note: Section 212-570-101 lists these duplicated keys and defines their function.

1.11 *Lettered Steps:* A letter a, b, c, etc, added to a step number in Parts 3 and 4 of this section, indicates an action is conditional depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column. All steps governed by the same conditions are designated by the same letter within a test. When a condition does not apply, all steps designated by that letter should be omitted.

2. PREPARATION

STEP	ACTION	VERIFICATION
1	Determine from the office records the 5-digit test connector number assigned to the trunk to be tested.	
2	Operate the TTH, TH, H, T, and U sections of the TRUNK SELECT switch to correspond to the 5-digit test connector number.	
3a	If IMTF is associated with an office using separate test connectors (IT and TC connectors), operate TC or IT Conn. Key for Correct test connector selection.	

STEP	ACTION	VERIFICATION
4	Operate the A/TC or B/IT Trn. Key for correct marker selection.	
5b	If trunk uses MF pulsing, operate the MFI key.	
6c	If the trunk uses DP pulsing, operate the SXD key.	
7d	If trunk (DP) is arranged for delay dial signaling, operate the XDD key.	
8	Operate HV key. (See 1.10.)	
9e	If trunk under test has been made busy by means of an MB plug at the TMB bay, remove MB plug. (See 1.05.)	
10	Ensure that the TEL key is released.	
11	Required test numbers are obtained from the Test Number Directory and Section 201-101-900PT (Issue B or later).	

3. METHOD

STEP	ACTION	VERIFICATION
All Tests – Establishing Test Calls		
12	Determine from office records the number of digits to be outpulsed.	
13	Momentarily depress OTRK key.	SHRT PAIR lighted.
14	Momentarily depress SCT key.	SHRT PAIR lamp extinguished ONH and KP DIAL lamps lighted.
15b	If trunk used MF pulsing, operate KP key. Keypulse digits to reach required test line. Operate ST key.	ASC lamp lighted. KP DIAL lamp extinguished. Test call will or will attempt to complete the termination specified by test being made. Refer to individual tests for complete verification results.

STEP	ACTION	VERIFICATION
16c	If trunk uses DP pulsing, dial digits to reach required test line. Operate EOD key.	ASC lamp lighted. KP DIAL lamp extinguished. Test call will or will attempt to complete the termination specified by test being made. Refer to individual tests for complete verification results.
A. Cross Office Check Failure		
17	<p>Select the no-test trunk to be tested. (Steps 1 through 7c, 9d, and 10.)</p> <p><i>Note:</i> Step 8 is omitted. HV key is <i>not</i> operated. This prevents the 95 Hz cross-office check tone from being transmitted to the outgoing trunk circuit tone detector. The cross-office check failure features of the trunk should function 150 ms after SL check.</p>	
18	Attempt to establish a test call to the verify charge test number (Steps 11 through 16c).	<p>Test call is not completed.</p> <p><i>MF Route:</i> HIT lamp lighted and ONH lamp flashes at 120 IPM.</p> <p><i>DP Route:</i> ONH lamp flashes at 120 IPM.</p>
19	Momentarily depress RN key.	All lamps extinguished.
20d	If other trunk in trunk group is to be tested, perform Steps 16 through 18.	
21e	If no further tests are to be performed, restore all keys and switches.	
B. Busy Line Call (Each Trunk)		
17	<p>Select and operate a COMM TRK- key associated with an idle local station line.</p> <p><i>Note:</i> Extinguished COMM TRK- lamp indicates idle line.</p>	Dial tone heard.
18	Operate DIAL TEL key.	
19	Dial the digits required to establish a call to the no-test test number. (See Step 11.)	Call completes and tone is heard.
20	Restore DIAL TEL key.	

STEP	ACTION	VERIFICATION
21	Operate TRK HOLD- key associated with the selected COMM TRK- key.	TRK HOLD- lamp flashes and tone is removed.
22	Select the no-test trunk to be tested (Steps 1 through 10).	
23	Establish a test call to the no-test test line termination (Steps 11 through 15c).	ASC lamp lights. Call completes to busy no-test test line termination. SV lamp lighted Scrambled (distorted) tone is heard.
24	Momentarily depress RING key.	Scrambler is disabled and undistorted tone is heard. Superimposed intermittent warning (beep) tone is heard.
25	Momentarily depress RN key.	All operational lamps extinguished. Trunk under test disconnected from IMTF.
26d	If other trunk in trunk group is to be tested, perform Steps 21 through 24.	
27e	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
C. Idle Line Call (Each Trunk)		
17	Select the no-test trunk to be tested (Steps 1 through 10).	
18	Establish a test call to the verify charge test number (Steps 11 through 15c). <i>Note:</i> Verify charge test numbers are listed in the Test Number Directory.	ASC lamp lighted. Call completes. SV lamp flashes and interrupted scrambled (distorted) tone is heard.
19	Momentarily depress RING key.	Scrambler is disabled and distorted interrupted tone is heard, with superimposed warning (beep) tone.
20	Momentarily depress RN key.	All operational lamps extinguished. Trunk under test disconnected from IMTF.
21d	If other trunk in trunk group is to be tested, perform Steps 16 through 19.	
22e	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.

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STEP	ACTION	VERIFICATION
D. Failure to Connect – Common Control Offices (Cross-Bar only)		
17	Select the no-test trunk to be tested (Steps 1 through 10).	
18	Attempt to establish test call to the permanent busy line test number (Steps 11 through 15c).	ASC and SV lamps lighted. Test call identifies called line as busy and fails on attempt to connect, using no-test train. Scrambled (distorted) 60 IPM tone is heard. <i>Note:</i> Common control offices (cross-bar) require a busy line to have an established path through the line link network in order to establish a no test connection. A line that is busy without a line link path or has a line link path that the marker or processor cannot identify will fail a no test connection. The trunk is then connected to 60 IPM tone to provide the operator a "failure to connect" signal.
19	Momentarily depress RING key.	Scrambler is disabled and undistorted 60 IPM tone is heard with warning (beep) tone.
20	Momentarily depress RN key.	All operational lamps extinguished. Trunk under test disconnected from IMTF.
21d	If other trunk in trunk group is to be tested, perform Steps 16 through 19.	
22c	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
E. Busy Line Disconnect – Connector Release (Each Trunk)		
17	Select and operate a COMM TRK-key* associated with an idle (lamp not lit) local station line.	Dial tone is heard.
18	Dial the digits required to reach the no-test test number for the end office of the no test trunk to be tested. (See Step 11.)	Call completes and tone is heard.

STEP	ACTION	VERIFICATION
19	Operate TRK HOLD- key associated with the selected COMM TRK- key.	TRK HOLD- lamp flashes and tone is removed.
20	Establish a test call to the no-test test line termination (Steps 11 through 15c).	ASC lamp lights. Call completes to busy no-test test line termination. SV lamp extinguished. Scrambled (distorted) tone is heard.
21	Momentarily depress RING key.	Scrambler is disabled and undistorted tone is heard.
22	Release TRK HOLD- and COMM TRK- key.	SV lamp lights. COMM TRK- and TRK HOLD- lamps extinguished. Tone is not heard.
23	Momentarily depress RN key.	ASC lamp extinguished. Trunk under test disconnected from IMTF.
24d	If other trunk in trunk group is to be tested, perform Steps 19 through 24.	
25e	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
F. Incoming Release		
17	Select the no test trunk to be tested (Steps 1 through 10).	
18	Establish a test call to the charge verification test number (Steps 11 through 15c).	ASC lamp lighted. Call completes to test termination. SV lamp flashes. Interrupted scrambled (distorted) tone is heard.
19	Momentarily depress RING key.	Scrambler is disabled and nondistorted interrupted tone is heard.
20	Momentarily depress IR key.	IR lamp lighted.
<p><i>Note:</i> Operation of IR key will seize trunk connector and ground the MS lead to the MTF. The TM6 timer is started and 6 seconds are allowed for the reception of MS ground, release of the office links, removal of MS ground, and release of the trunk test connector.</p>		
<p>Test is satisfactory — ASC lamp extinguished. MSG or IRF lamps not lighted -- Trunk under test disconnected from IMTF. IR and OTRK lamps extinguished. MSG and IRF lamps not lighted. All progress lamps extinguished.</p>		

STEP	ACTION	VERIFICATION
		<p><i>MSG Lamp Lighted:</i> Failure to receive MS ground within 6 seconds.</p> <p><i>IRF Lamp Lighted:</i> Failure of office links to release within 6 seconds when the MS ground was received.</p>
21f	If MSG or IRF lamp lighted, momentarily depress RN key. Corrective action required.	MSG or IRF lamp extinguished. ASC lamp extinguished. Trunk under test disconnected from IMTF.
22g	If test was satisfactory, momentarily depress RN key.	Trunk under test disconnected from IMTF.
23e	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
G. Trunk Verification		
17	Select the no-test trunk to be tested (Steps 1 through 10).	
18	Establish a test call to the verify charge test termination (Steps 11 through 15c).	ASC lamp lighted. Call completes. SV lamp flashes at varying rate. Interrupted scrambled (distorted) tone is heard.
19	Momentarily depress RING key.	Scrambler is disabled and nondistorted interrupted tone is heard.
20	Momentarily depress TVT key.	TVT lamp lighted. Trouble record perforated within 6 seconds. 10K lamp lighted and TVT lamp extinguished as indication of satisfactory test.
		If test is not completed satisfactorily within 6 seconds:
		10K lamp not lighted.
		TVT lamp extinguished. (XG option.)
		TVT lamp extinguished. (XH option.)
		10F lamp lighted. (XH option.)
21	Verify outgoing trunk identification (OGTI) punches on trouble record.	Trunk identification is correct.
22d	If other trunk in trunk group is to be tested, perform Steps 16 through 20.	
23e	If no other tests are to be performed, restore all keys and switches.	All lamps extinguished.

4. MAINTENANCE CONSIDERATIONS

4.01 Maintenance testing of the outgoing verification no test trunks should be incorporated into and administered under the 4 Crossbar Switching System Controlled Maintenance Plan; Section 212-001-010.

4.02 Test results are fully documented according to the Plan. Since the trunks are plug-in units, the serial number of plug-in units determined defective should be recorded in the test results.

4.03 Every test covered in this section is classified TF (Test Frame) and must be scheduled according to a test frame program developed locally. The test frequency for each test, as specified in each 4 crossbar office's manual testing program is posted in the "FREQ" column on Form E-5450 of the ETL.

5. REFERENCES

5.01 With the implementation of the verification no-test networks into No. 4A/4M toll systems and Class 5 end office, supporting Bell System Practices are provided as follows:

SECTION	TITLE
201-010-900	Standard Test Numbers for (Issue B or later) Plant Test and Administrative Circuits
212-517-101	Manual Test Frame SD-68587-01 — Description
212-517-501	Manual Test Frame SD-68587-01 — Tests
212-517-901PT	Manual Test Frame SD-68587-01 — Tests of Verification No-Test Features
212-530-501	Incoming (One-Way) Intertoll Trunk Circuit — Tests using Test Circuit SD-68359-01
212-534-501	Incoming Toll Tandem Trunk Circuits — Test using Test Circuit SD-68359-01

SECTION

TITLE

212-560-501	Outgoing (One-Way) Intertoll Trunk Circuit — Tests using Test Circuit SD-68359-01
212-567-901PT	Verification No-Test — Operational Tests using Manual Test Frame SD-68587-01
212-567-902PT	Verification No-Test — Transmission Tests using Manual Test Frame SD-68587-01
212-570-101	Intertoll or Integrated Manual Test Frame SD-99601-01 — Description — No. 4A Toll Switching System
212-570-102	Outgoing Trunk Test Connector Frame SD-68748-01 — Description
212-570-501	Intertoll or Integrated Manual Test Frame SD-99604-01 — Tests
212-570-900PT	Integrated Manual Test Frame SD-99604-01 — Tests of Verification No-Test — Test Features — 4A Switching Systems
212-571-901PT	Verification No-Test Trunks — Transmission Tests using Integrated Manual Test Frame SD-99604-01
212-571-902PT	Verification No-Test Intertoll Trunks — Operational Tests using Integrated Manual Test Frame SD-99604-01
212-571-903PT	Verification No-Test Intertoll Trunks — Transmission Tests using Integrated Manual Test Frame SD-99604-01
212-502-900PT	Verification No-Test Trunks — Test using Trunk Test Set SD-68597-01
216-736-900PT	No. 1 Crossbar — Incoming Verification No-Test Trunks — Tests

SECTION	TITLE
218-252-900PT	No. 5 Crossbar — Incoming Verification No-Test Trunks — Tests
250-103-501	Delayed Call Trunk and Operator Service Trunk — Operational and Transmission Tests
331-100-100	Message Circuit Noise — General Information
660-402-010	Forms for Recording Transmission Measurements and Measurement Schedules
660-402-300	Transmission Maintenance — Overall 1000-Hz Loss Measurements on Message Trunks

SECTION	TITLE
660-430-012	Control of 1 KHz Trunk Loss Deviations
660-440-010	Codes — Test Line Circuits and Communication Trunks Nationwide Distance Dialing Plan
660-450-301	Circuit Order or Trunk Order Tests — All Types of Message Trunks
664-500-900PT	No. 17C Testboard (Modified) — No. 4-Type Switching System — Operating and Testing Methods for Verification No-Test Intertoll Trunks