

VERIFICATION NO-TEST TRUNKS
OPERATIONAL TESTS USING (MODIFIED) MANUAL TEST FRAME SD-68587-01
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 manual test frame (MTF) SD-68587-01. The trunks are equipped per PSD-68009-02 and the test frame is modified per PSD-68015-02.

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

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

D. *Failure To Connect – Common Control End Offices*: 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*: Tests the ability of the trunk to connect to a busy line and release when the busy line has released.

F. *Incoming Release*: 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 These tests may affect no test service and utilization of end office personnel. Coordination with the personnel responsible for these functions is required.

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1.06 Section 212-567-501 shows some of the trouble indicators that the MTF 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.

1.07 Some of the MTF key-lamp assemblies may either light steady or flash upon key operation. A steady lamp indicates the desired operation has taken place. A flashing lamp indicates that the desired operation did not take place. This is usually due to lockout conditions.

1.08 Certain keys have built-in lamps that light when the key is operated and extinguish when the key is released. The circuitry for these lamps is through the contacts of the key. The test steps marked with an asterisk (*) involve this type of key and the lamp status should be observed during the use of the key. Some key lamps might be lighted and extinguished by other means when the key is used. The status of these lamps during the tests will be listed in the VERIFICATION column.

1.09 The HV key is provided by the PSD-68015-02 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.

1.10 The RT key is also provided by the PSD-68015-02 modification. When depressed momentarily, a ring forward signal is generated towards the trunk to disable the scrambler and start warning (beep) tone.

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 location (on the test connector) of the trunk to be tested.	
2	Operate the TTH, TH, H, T, and U sections of the trunk selector switch to correspond to the location (on the test connector) of the trunk to be tested.	
3	Operate the CLASS key* required for the trunk to be tested. The class keys are described in Section 212-517-101.	
4a	If testing CX or LP class trunks which require dial pulsing delay, operate XDD key*.	
5b	If trunk under test is on an intertoll (IT) train, operate the ITT* key.	

STEP	ACTION	VERIFICATION
6c	If trunk under test has been made busy by means of an MB plug, remove before testing. Do not operate M and SB-OVRD (A- or B-ACCESS).	
7	Prepare to operate the OTRK- (A- or B-ACCESS) key* corresponding to an extinguished LA- lamp (idle link). On the majority of tests the OTRK- (A-ACCESS) key will be the only one used. Some tests will use both the A- and B-ACCESS keys.	
8	A Test Number Directory is required. In electromechanical offices, the route verification test number is used as the no-test test number. In ESS offices, the route verification number cannot be reached by no-test, so a standard uniform test number is assigned. (See Part 5.)	

3. METHOD

STEP	ACTION	VERIFICATION
	All Tests – Establishing Test Calls – MF Trunks	
9	Determine from office records the number of digits to be outpulsed.	
10	Momentarily depress ST key.	KP and SUP lamps lighted.
11	Momentarily depress KP key.	
12	Keypulse digits required to reach desired test termination.	
13	Momentarily depress ST-KS key.	KP lamp extinguished. NDS lamp lights momentarily as a distant sender is awaited. ST2 lamp lights. Test call will or will attempt to complete to termination specified by test being made. SUP and ST2 lamps extinguished. ASC or BSC and SV lamps lighted depending on ACCESS section. Refer to individual tests being used for complete verification results.
	All Tests – Establishing Test Calls – DP Trunks	
14	Momentarily depress ST key.	KP and SUP lamps lighted.
15	Operate DT key.	KP lamp extinguished.

STEP	ACTION	VERIFICATION
16	Dial digits required to reach desired test termination.	
17	Momentarily depress ED key.	Test call will, or will attempt to, complete the termination specified by test being made. SUP lamp extinguished. ASC or BSC and SV lamps lighted depending on the ACCESS section being used. Refer to individual tests for complete verification results.
	A. Cross Office Check Failure (Each Trunk)	
18	Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 8).	
19	Operate OTRK- key* (A-ACCESS).	
20	Operate MON key* (A-ACCESS).	
	<i>Note:</i> 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.	
21	Attempt to establish a test call to the verify charge test number (Steps 8 through 17).	ASC lamp lights. Test call is not completed. <i>MF route:</i> HIT lamp lighted an SV (A-ACCESS) lamp flashes at 120 IPM. <i>DP route:</i> SV (A-ACCESS) lamp flashes at 120 IPM.
22	Operate RN key* (A-ACCESS).	ASC and SV (A-ACCESS) lamps extinguished. Trunk under test disconnected from MTF.
23e	If other trunk in trunk group is to be tested, restore the RN key* (A-ACCESS), perform Steps 18, 21, 22, and 24f.	
24f	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.

STEP	ACTION	VERIFICATION
	B. Busy Line Call (Each Trunk)	
18	Select and operate a COMM TRK-key* associated with an idle local station line.	Dial tone heard.
	<i>Note:</i> Extinguished COMM-TRK-lamp indicates idle line.	
19	Dial the digits required to establish a call to the no-test test number. (See Step 8.)	Call completes and tone is heard.
20	Operate TRK HOLD- key associated with the selected COMM TRK- key.	TRK HOLD- lamp flashes and tone is removed.
21	Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 7).	
22	Operate an OTRK- key* (A-ACCESS).	
23	Operate HV key*.	
24	Operate MON key* (A-ACCESS).	
25	Establish a test call to the no-test test line termination (Steps 8 through 17).	ASC lamp lights. Call completes to busy no-test test line termination. SV (A-ACCESS) lamp extinguished. Scrambled (distorted) tone is heard.
26	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and undistorted tone is heard.
		Superimposed intermittent warning (beep) tone is heard.
27	Operate RN key* (A-ACCESS).	ASC lamp extinguished. Trunk under test disconnected from MTF.
28e	If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 21, 25, 26, 27, and 29f.	
29f	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
	C. Idle Line Call	
18	Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 7).	

STEP	ACTION	VERIFICATION
19	Operate OTRK- key* (A-ACCESS).	
20	Operate HV key*.	
21	Operate MON key* (A-ACCESS).	
22	<p>Establish a test call to the charge verification test number (Steps 8 through 17).</p> <p><i>Note:</i> Charge verification test numbers are listed in the Test Number Directory.</p>	<p>ASC lamp lights. Call completes. SV (A-ACCESS) lamp flashes and interrupted scrambled (distorted) tone is heard.</p>
23	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and undistorted interrupted tone is heard, with superimposed warning (beep) tone.
24	Operate RN key* (A-ACCESS).	<p>ASC and SV (A-ACCESS) lamps extinguished. Trunk under test disconnected from MTF.</p>
25e	If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 18, 22, 23, 24, and 26f.	
26f	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
D. Failure to Connect – Common Control End Offices (Crossbar Offices Only)		
18	Select the no-test trunk to be tested (Steps 1 through 7).	
19	Operate OTRK- key* (A-ACCESS).	
20	Operate HV key*.	
21	Operate MON key*.	
22	Attempt to establish a test call to the busy line test number (Steps 8 through 17).	<p>ASC and SV (A-ACCESS) 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.</p>

STEP	ACTION	VERIFICATION
		<p><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.</p>
23	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and undistorted 60 IPM tone is heard.
24	Operate RN key* (A-ACCESS).	ASC lamp extinguished. Trunk under test disconnected from MTF.
25e	If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 18, 22, 23, 26, and 26f.	
26f	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
	E. Busy Line Disconnect – Connector Release (Each Trunk)	
18	Select and operate a COMM TRK- key* associated with an idle (lamp not lit) local station line.	Dial tone is heard.
19	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 8.)	Call completes and tone is heard.
20	Operate the TRK HOLD- key associated with the selected COMM TRK- key.	TRK HOLD- lamp flashes and tone is removed.
21	Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 8).	
22	Operate OTRK- key* (A-ACCESS).	
23	Operate HV key*.	
24	Operate MON key* (A-ACCESS).	

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STEP	ACTION	VERIFICATION
25	Establish a test call to the no-test test line termination (Steps 9 through 17).	ASC lamp lights. Call completes to busy no-test test line termination. SV (A-ACCESS) lamp extinguished. Scrambled (distorted) tone is heard.
26	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and undistorted tone is heard.
27	Release TRK HOLD- and COMM TRK- key.	SV (A-ACCESS) lamp lights. COMM TRK- and TRK HLD- lamps extinguished. Tone is not heard.
28	Operate RN key* (A-ACCESS).	ASC lamp extinguished. Trunk under test disconnected from MTF.
29e	If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 18 through 21, 25 through 28, and 30f.	All lamps extinguished.
30f	If no further tests are to be performed, restore all keys and switches.	All lamps extinguished.
F. Incoming Release		
18	Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 7).	
19	Operate OTRK- key* (A-ACCESS).	
20	Operate HV key*.	
21	Operate MON key* (A-ACCESS).	
22	Establish a test call to the charge verification test number (Steps 8 through 17).	ASC lamp lights. Call completes to test termination. SV (A-ACCESS) lamp flashes. Interrupted scrambled (distorted) tone is heard.
23	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and nondistorted interrupted tone is heard.

STEP	ACTION	VERIFICATION
24	<p>Momentarily depress IR key (A-ACCESS).</p> <p><i>Note:</i> IR key must be depressed for a duration of at least 51 ms to ensure proper sequence of operations.</p>	<p>ST2 lamp lighted.</p> <p><i>Note:</i> Operation of IR key will seize trunk connector and ground the MS lead to the MTF. The TM6 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>ST2 lamp lights. ASC lamp extinguished. <i>MSG or IRF lamps not lighted:</i> Test is satisfactory.</p> <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>
25g	<p>If MSG or IRF lamp lighted, operate RN key. Corrective action required.</p>	<p>MSG or IRF lamp extinguished. ASC lamp extinguished. Trunk under test disconnected from MTF.</p>
26e	<p>If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 18, 22, 23, 24, 25g, and 27.</p>	
27	<p>Restore all keys and switches.</p> <p>G. Trunk Verification</p>	<p>All lamps extinguished.</p>
18	<p>Using the A-ACCESS section, select the no-test trunk to be tested (Steps 1 through 7).</p>	
19	<p>Operate OTRK- key* (A-ACCESS).</p>	
20	<p>Operate HV key*.</p>	
21	<p>Operate MON* key (A-ACCESS).</p>	
22	<p>Establish a test call to the verify charge test termination (Steps 8 through 17.)</p>	<p>ASC lamp lighted. Call completes. SV lamp (A-ACCESS) flashes at varying rate. Interrupted scrambled (distorted) tone is heard.</p>

STEP	ACTION	VERIFICATION
23	Momentarily depress RT key (A-ACCESS).	Scrambler is disabled and nondistorted interrupted tone is heard.
24	Momentarily depress TVT key (A-ACCESS). <i>Note:</i> Key must be depressed for a duration of at least 51 ms to ensure proper sequence of operations.	TVT (A-ACCESS) and ST2 lamps lighted momentarily. Trouble record perforated within 6 seconds. IOK lamp lighted and both TVT and ST2 extinguished as indication of satisfactory test. If test is not completed satisfactorily within 6 seconds: IOK lamp not lighted. TVT lamp not extinguished. ST2 lamp extinguished.
25	Verify outgoing trunk identification punches on trouble record (card).	Trunk identification is correct.
26	Operate RN key* (A-ACCESS).	ASC lamp extinguished. Trunk under test disconnected from MTF.
27e	If other trunk in trunk group is to be tested, restore RN key* (A-ACCESS) and perform Steps 18, 22, 24 through 26, and 27f.	
27f	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 No. 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 practice 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 No. 4 crossbar office's manually tested 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 supportive Bell System Practices are provided. These practices augment existing practices both of which are listed as follows:

SECTION	TITLE
201-010-900	Standard Test Numbers for 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

SECTION	TITLE	SECTION	TITLE
212-517-901PT	Manual Test Frame SD-68587-01 — Tests of Verification No-Test Features	212-571-903PT	Verification No-Test Intertoll Trunks — Transmission Tests using Integrated Manual Test Frame SD-99604-01
212-530-501	Incoming (One-Way) Intertoll Trunk Circuit — Tests using Test Circuit SD-68359-01	212-502-900PT	Verification No-Test Trunks — Test using Trunk Test Set SD-68597-01
212-534-501	Incoming Toll Tandem Trunk Circuits — Test using Test Circuit SD-68359-01	216-736-900PT	No. 1 Crossbar — Incoming Verification No-Test Trunks — Tests
212-560-501	Outgoing (One-Way) Intertoll Trunk Circuit — Tests using Test Circuit SD-68359-01	218-252-900PT	No. 5 Crossbar — Incoming Verification No-Test Trunks — Tests
212-567-902PT	Verification No-Test — Transmission Tests using Manual Test Frame SD-68587-01	250-103-501	Delayed Call Trunk and Operator Service Trunk — Operational and Transmission Tests
212-570-101	Intertoll or Integrated Manual Test Frame SD-99601-01 — Description — No. 4A Toll Switching System	331-100-100	Message Circuit Noise — General Information
212-570-102	Outgoing Trunk Test Connector Frame SD-68748-01 — Description	660-402-010	Forms for Recording Transmission Measurements and Measurement Schedules
212-570-501	Intertoll or Integrated Manual Test Frame SD-99604-01 — Tests	660-402-300	Transmission Maintenance — Overall 1000-Hz Loss Measurements on Message Trunks
212-570-900PT	Integrated Manual Test Frame SD-99604-01 — Tests of Verification No-Test — Test Features — 4A Switching Systems	660-430-012	Control of 1 KHz Trunk Loss Deviations
212-571-900PT	Verification No-Test Trunks — Operational Tests using Integrated Manual Test Frame SD-99604-01	660-440-010	Codes — Test Line Circuits and Communication Trunks Nationwide Distance Dialing Plan
212-571-901PT	Verification No-Test Trunks — Transmission Tests using Integrated Manual Test Frame SD-99604-01	660-450-301	Circuit Order or Trunk Order Tests — All Types of Message Trunks
212-571-902PT	Verification No-Test Intertoll Trunks — Operational Tests using Integrated Manual Test Frame SD-99604-01	664-500-900PT	No. 17C Testboard (Modified) — No. 4-Type Switching System — Operating and Testing Methods for Verification No-Test Intertoll Trunks