INCOMING VERIFICATION NO-TEST TRUNK SD-25420-01 TESTS USING THE 312A PORTABLE TEST SET NO. 1 CROSSBAR OFFICES

Contents Page

1. GENERAL

1.01 This section describes a method of testing 2-wire incoming verification no-test trunks from No. 4A toll switching offices using the 312A portable trunk test set (see 6.04).

1.02 (Reserved for future use)

1.03 Test letters A, B, C, D, and E coincide with the test letters of the associated No. 4A Toll Switching System — Operational Test practices. (See 6.03.) Test F coincides with the No. 4A Transmission Tests — Test A.

1.04 The incoming trunks are equipped for delayed (controlled) ringing. The feature is not tested as the Verification No-Test Network does not require it nor can it pass the ringing signal.

1.05 The trunks are optioned to provide MF-Wink Start (see 5.01).

1.06 Features ascribed to the trunks in the test description require the use of special markers.

1.07 This issue affects the Equipment Test List.

1.08 The tests and features covered are:

A. Busy Line Call: Checks the ability of the trunk to recognize a busy line, connect to it, and return supervision signaling that the no-test train is cut-through (loop supervision is not provided).

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

C. Failure To Connect: 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.

D. Connector Busy: Tests the ability of the trunk to recognize a busy no-test connector and provide a signal signifying the condition.

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. 1000 Hz Loss Measurement: Checks the one-way transmission loss of the incoming trunk circuit.

2. APPARATUS

2.01 The apparatus required for each test is shown in Table A. Details for each item are covered in the paragraph indicated by the number in parenthesis.

TABLE A

APPARATUS	TESTS					
	A	B	C	D	E	F
312A (PORTABLE) TEST SET (2.02)	1	1	1	1	1	1
CORD (2.03)	1	1	1	1	1	1
CORD (2.04)	1	1	1	1	1	1
TELEPHONE SET (2.05)	1	1	1	1	1	1
HANDSET (2.06)	1			1	1	
CORD (2.07)	1			1	1	
CORD (2.08)				1		
TOOL (2.09)				1		
TOOL (2.10)				1		
TOOL (2.11)				1		
TOOL (2.12)				1		
ORANGE STICK (2.13)				1		
CORD (2.14)						1
23A TMS (2.15)						1

2.02 Berry Electronics Model 312A Portable Trunk Test Set.

2.03 2P9C Cord, 6 feet long, equipped with two 310 plugs.

2.04 3P7A Cord, 12 feet long, equipped with two 310 plugs.

2.05 Operator Telephone Set.

2.06 1014B Handset, equipped with one 10 inch cord and one 346A plug.

2.07 2W38A Cord, 5 feet long, equipped with one 310 plug and one 471A jack.

2.08 1W13A Cord, 3 feet long, equipped with two 360A tools.

2.09 KS-6278 Tool, connecting clip.

2.10 547A Tool, connector for crossbar switch hold magnet.

2.11 548A Tool, connector for crossbar switch hold magnet.

2.12 548A Armature Blocking Tool.

2.13 KS-6320 Orange Stick, 1-½ inch length cut from end.

2.14 3P12H Cord, 8 feet long, equipped with one 309 plug and one 310 plug.

2.15 J94023A (23A) Transmission Measuring Set.

3. PREPARATION

STEP	ACTION	VERIFICATION
1	Have the incoming trunk to be tested made busy at the originating 4A office. If the trunk is a trouble referral, it is assumed to be made busy.	
2	Required test numbers are obtained from the Test Number Directory and Section 201-010-900PT. *Note:* Once determined, the test numbers may be recorded in the appropriate spaces provided in 6.07.	

4. METHOD

4.01 In performing Tests A, D, and E, it is necessary to establish calls to the route verification test number line appearance. These calls should be originated from the line circuit associated with the D or B jack located on the same supplementary incoming trunk (SIT) frame as the no-test trunk equipment is located. The 1014B handset, equipped with a 2W38A cord is used to access the SIT frame D or B jack for the purpose of originating the required calls.

STEP	ACTION	VERIFICATION
	All Tests	
3	Test set switch should be ON HOOK.	
4	Turn SPEAKER LEVEL control ¼ position clockwise. Thereafter, adjust to desired sound level.	
5	At the SIT frame, using the 2P9C cord, connect the test set -48V jack to the frame A jack.	
	Operate switch to OFF HOOK.	POWER lamp lights.
	Restore switch to ON HOOK.	POWER lamp extinguished.
	Notes: *1.* To avoid possible grounding of the battery supply lead, connect the 2P9C cord to the test set first. When disconnecting, remove this cord from the test set last. *2.* The test set may be equipped with an internal battery power supply. If so equipped, the POWER lamp will light when the test set is operated to the OFF HOOK position without the cord plugged into the -48V jack. To conserve the battery, the office battery connection is recommended. When a plug is inserted in the test set -48V jack, the internal battery is disconnected.	
6	Using the 3P7A cord, connect the test set TRUNK jack to the T jack of the trunk to be tested.	

STEP	ACTION	VERIFICATION
7	Operate switch to OFF HOOK.	POWER lamp lights. NORMAL lamp lights momentarily — Trunk normal. REVERSE lamp lights momentarily — Sender seized. NORMAL lamp lights — Sender ready for pulsing.
8	Momentarily depress the KPI key.	KP tone is heard.
9	Key test number on MF key set ensuring that each key is fully depressed. *Note:* If the trunk serves a multi-office terminating units, the test number must be prefaced with the appropriate ABC or C digit(s).	
10	Momentarily depress ST key.	Test call will, or will attempt to, complete termination specified by test being made.
	A. Busy Line Call	
11	Using the 1014B handset and D or B jack, establish a call to the route verification test number termination.	Call completes and tone is heard.
12	Using the test set, establish a test call to the now busy route verification test number. (Steps 7 through 10).	Call completes to busy route verification line termination. NORMAL lamp extinguished. REVERSE lamp lights. Tone is heard.
13	Operate switch to ON HOOK.	POWER, NORMAL, and REVERSE lamps extinguished. Tone not heard.
14	Unless other tests are to be made on the same trunk, remove the cord from the T jack of the trunk being tested. Remove the cord from the SIT frame A jack and the 1014B handset from the D or B jack.	

STEP	ACTION	VERIFICATION
	B. Idle Line Call	
11	Using the test set, establish a call to the charge verification test number. (Steps 7 through 10)	Call completes. NORMAL lamp flashes. REVERSE lamp flashes. Interrupted tone is heard.
12	Operate switch to ON HOOK.	POWER, NORMAL, and REVERSE lamps extinguished. Tone not heard.
13	Unless other tests are to be made on the same trunk, remove the cord from the T jack of trunk being tested. Remove the cord from the SIT frame A jack.	
	C. Failure to Connect	
11	Using the test set, attempt to establish a call to the busy line test number (Steps 7 through 10)	NORMAL lamp lights. Test call identifies called line as busy and fails on attempt to connect using no-test train. 60 IPM tone is heard. *Note:* No. 1 Crossbar requires a busy line to have an established path through the line link frame 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 terminating special marker cannot identify will fail a no-test connection. The trunk is then connected to 60 IPM tone to provide the operator with a "failure to connect" signal. The Number Group Block Relay Frame cross-connection field for the busy line test number must be cross-connected as NF=RO and NC=AO.

STEP	ACTION	VERIFICATION
		This directs the terminating special marker to attempt to find a path using the busy line test number at line link 00, primary switch 0 (HG-0). It is the intention of this test for the attempt to fail.
12	Operate switch to ON HOOK.	POWER and NORMAL lamps extinguished. Tone not heard.
13	Unless other tests are to be made on the same trunk, remove the cord from the T jack of the trunk being tested. Remove the cord from the SIT frame A jack and the 1014B handset from the D or B jack.	
	D. Connector Busy	
	Note: This test causes a denial of no-test access to one half of the line link frame containing the line equipment (Col. Sw. Vert.) of the route verification test number.	
11	Determine the line link and primary switch (horizontal group) containing the line equipment associated with the route verification test number (see 6.06).	
12	Locate the no-test connector frame and the appearance of the desired line link access verticals (there are two). The connector is usually located on a miscellaneous frame (MF) at the no-test connector.	
13	Determine which of the two no-test connector verticals provide special no-test channel access to the route verification line equipment. The even numbered vertical provides access to line link horizontal groups (primary switches 0-4) and the odd number vertical provides access to horizontal group (primary switches 5-9). ***Complete Steps 14 through 21 as quickly as possible.***	

STEP	ACTION	VERIFICATION
14	Block nonoperated the vertical hold magnet using the 548A Armature blocking tool or 1-½ inch length of KS-6320 orange stick, depending on the type of crossbar switch (Section 069-020-801). *Note:* This action prevents the operation of 5 line link no-test vertical magnets and possible false entrapment of crosspoints.	
15	Make the no-test connector channel busy by connecting ground to the winding of the vertical hold magnet. Use the 1W13A Cord with KS-6278 connecting clip and 547A or 548A connector attached. The use of the 547A or 548A depends on the type of crossbar switch (Section 069-131-811).	
16	Using the 1014B handset and D or B jack, establish a call to the route verification test number.	Call completes and tone is heard. Route verification test number is now busy.
17	Using the test set, attempt to establish a call to the route verification test number. (Steps 7 through 10)	NORMAL lamp lights. Test call identified called line as busy and no-test connector access is determined to be busy. 120 IPM tone is heard.
18	At the no-test connector, remove the blocking tools and make-busy ground cord.	
19	Using the test set, establish a test call to the still busy route verification test number. (Steps 7 through 10) *Note:* The purpose of this step and the next four steps is to verify the operation of the no-test connector access after the test procedures at the connector have been removed.	Call completes to busy route verification line termination. NORMAL lamp extinguished. REVERSE lamp lights. Tone is heard.
20	Using the test set, establish a test call to the now busy route verification test number. (Steps 7 through 10)	Call completes to busy route verification line termination. NORMAL lamp extinguished. REVERSE lamp lights. Tone is heard.

STEP	ACTION	VERIFICATION
21	Disconnect call established by 1014B handset by operating its switch to the MON position.	REVERSE lamp extinguished. NORMAL lamp lights.
22	Operate 1014B handset key to TALK position.	Dial tone is heard. NORMAL lamp remains lighted.
23	Operate 1014B handset key to MON position.	Dial tone is not heard.
24	Operate switch to ON HOOK.	POWER, NORMAL, and REVERSE lamps extinguished.
25	Unless other tests are to be made on the same trunk, remove the cord from the T jack of the trunk being tested. Remove the cord from the SIT frame A jack and the 1014B handset from the D or B jack.	
	E. Busy Line Disconnect – Connector Release	
11	Using the 1014B handset and D or B jack, establish a call to the route verification test number termination.	Call completes and tone is heard.
12	Using the test set, establish a test call to the now busy route verification test number.	Call completes to busy route verification line termination. NORMAL lamp extinguished.
13	Using the test set, establish a test call to the now busy route verification test number. (Steps 7 through 10)	Call completes to busy route verification line termination. NORMAL lamp extinguished. REVERSE lamp lights. Tone is heard.
14	Disconnect call established by 1014B handset by operating its switch to the MON position.	REVERSE lamp extinguished. NORMAL lamp lights.
15	Operate 1014B handset key to TALK position.	Dial tone is heard. NORMAL lamp remains lighted.
16	Operate 1014B handset key to MON position.	Dial tone is not heard.
17	Operate switch to ON HOOK.	POWER, NORMAL, and REVERSE lamps extinguished.

STEP	ACTION	VERIFICATION
18	Unless other tests are to be made on the same trunk, remove the cord from the T jack of the trunk being tested. Remove the cord from the SIT frame A jack and the 1014B handset from the D or B jack.	
	F. 1000 Hz Loss Measurement	
11	Using 23A TMS and 3P12H cord, connect DIAL jack to TRUNK jack of test set.	
12	Using 3P7A Cord, connect MEAS jack to T jack of trunk under test at SIT frame.	
13	Operate DIAL key.	
14	Using the test set, establish a call to the first appearance (PORT A) of the 106-Type loop around test line (Steps 7 through 10)	Call completes. NORMAL lamp extinguished. REVERSE lamp lights. 1000 Hz tone heard in receiver.
15	Operate MEAS key.	Loss measurement is registered on TMS meter.
16	Record TMS meter reading.	Loss is within ±0.5 of maximum allowable circuit loss per SD-25420-011 -0.5 dB.
17	Unless other tests are to be made on the same trunk, remove the plug from the T jack of the trunk being tested. Remove the cord from the SIT frame A jack.	

5. MAINTENANCE CONSIDERATIONS

5.01 The SD-24520-01 incoming trunk circuit is furnished with E, ZH, and ZG wiring options. These options equip the trunk for incoming service from a 4A toll switching machine using MF-pulsing. Wink signaling is provided with the provision of battery towards the originating office on the T or R conductors for the following conditions:

TRK NORM	SDR SEIZED	SDR READY FOR PULSING	CALLED SUBS ANS
R	T	R	T

5.02 The AT&T Standard documentation (SD- and CD-25420-01) for the trunk do not provide references to the E, ZH, and ZG combination of wiring options. The trunk is referred to as

"Incoming From Central A Switchboard". This nomenclature is obsolete when the trunk is integrated into the Verification No-Test Switched Network.

5.03 For the reasons covered in 5.01 and 5.02, SD-24520-01, Notes 103 and 106, are superseded only in the provision of the E, ZH, and ZG wiring option combination.

5.04 CD-25420-01 shall be considered amended as follows:

Title – **CROSSBAR SYSTEMS**
NO. 1
INCOMING TRUNK CIRCUIT
FROM 4A TOLL SWITCHING SYSTEM
FOR OPERATOR VERIFICATION
NO TEST

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Options ZG, ZH, and E provide wink start and battery on ring conductor-trunk normal.

1. PURPOSE OF CIRCUIT

Paragraph 1.1 is changed as follows:

1.1 This is a trunk circuit from a 4A Toll Switching System designed to give TSPS or residual switchboard operators access to subscribers lines in a local No. 1 crossbar office by way of a dedicated, secure and protected switched network. It is arranged to connect to the called line on a "no-test" basis (ie, regardless of whether the line is idle or busy).

DESCRIPTION OF OPERATION-CHANGES

5. GENERAL

The second and third paragraphs are changed to read as follows:

The wink start signal provided for MF operation requires that when the trunk is normal battery and ground on the trunk conductors be poled as though the called subscriber were "on-hook". When the sender is connected, the trunk conductors are poled off-hook. With the sender ready to receive MF pulses, conductors are poled "on-hook". When the subscriber answers, the condition is of course "off-hook".

The answer condition for a line that is found busy is not an indication of the "off-hook" or "on-hook" condition of the subscriber lines loop. "Off-hook" means that the no-test switching access is "cut-through".

7. SEIZURE

The first paragraph is changed to read as follows:

When this circuit is seized by sender closure at the 4A office, the (A) relay operates.

8. CONNECTION TO A SENDER

Paragraph 8.4 is changed as follows:

When an MF terminating sender is attached, the (T) relay is operated to remove the battery and ground supplied by the (A) relay which releases. The sender then provides reverse battery and ground from that provided by the (A) relay winding with the (T) relay nonoperated. When the sender is ready to receive MF pulses, it reverses the battery and ground to the same polarity as when the trunk was normal. The 4A sender "seeing" this reversal sends the MF pulses for the desired telephone number. When registration is completed, the sender operates the (D) relay and releases the (T) relay. The (T) relay released and the (D) relay operated, connects battery and ground to the "T" and "R" leads with the same polarity as the new disconnected sender. The (A) relay reoperates when the (T) relay releases and holds the slow release D operated.

5.05 SD-25420-01 should be marked "See BSP 216-736-901PT paragraphs 5.01, 5.02, and 5.03".

5.06 CD-25420-01 should be marked "See BSP 216-736-901PT paragraphs 5.02 and 5.04".

6. REFERENCES

6.01 With the implementation of the Verification No-Test Networks into No. 4A Toll System and Class 5 end offices supportive documentation is provided.

6.02 Existing documentation for No. 1 Crossbar operator accessed no-test trunks was partly obsolete. Refer to Part 5 for updated information on this subject.

6.03 The following list provides a reference index of Bell System Practices associated with the testing of No. 1 crossbar verification no-test incoming trunks.

SECTION	TITLE
069-020-801	Apparatus — Method of Blocking Apparatus and Insulating Contracts
069-131-811	Apparatus — Method of Making Test Connections
201-010-900PT	Standard Test Numbers for Plant Test and Administrative Circuits
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
212-571-900PT	Verification No-Test Trunks — Operational Tests using Integrated Manual Test Frame SD-99604-01
212-571-901PT	Verification No-Test Trunks — Transmission Tests using Integrated Manual Test Frame SD-99604-01
216-736-900PT	No. 1 Crossbar — Incoming Verification No-Test Trunks — Tests

6.04 The 312A Portable MF and DP Trunk Test Set is Pacific Company Standard. Order test set direct from the manufacturer:

Berry Electronics
c/o CSS
2680 Bayshore Frontage Road
Mountain View, CA 94047

6.05 When ordering this test set from Berry Electronics, use the Purchase Order form (GTP-2) as specified in SI 70, Section 2. Master Agreement *#75-68* must be entered on all orders for this test set.

Classification Information is as follows:

ACCT CODE	EQPT CAT	CPR NO.	EQPT CODE
7C	010	93102	1986

Note: Additional ordering information is contained in the GTP Catalog and GAEL 1749.

6.06 Send the blue copy of the Purchase Order as follows:

- For Northern California and Nevada —

  ROPSAC
  221 W. Winton Avenue, Room 140
  Hayward, CA 94544

- For Southern California —

  ROPSAC
  2420 Yates Avenue, Room 210
  Commerce, CA 90040

6.07 Test numbers for the various tests, once determined (Part 3, Step 2) may be recorded below.

Common Language Listing Identification (CLLI)_____

TESTS		A,D,E,	B	C	F
CODE OR PREFIX	EQPT ENTITY	VERIFY ROUTE	VERIFY CHARGE	PERM BUSY LINE	106-TYPE LOOP AROUND PORT A
_____ _____	UO	_____	_____	_____	_____
_____ _____	U1	_____	_____	_____	_____
_____ _____	U2	_____	_____	_____	_____

6.08 The Line Link, Horizontal Group (primary switch), No-Test Connector (NTC) Frame, NTC Line Link Access, and NTC Line HG access verticals for the verify route test lines — once determined, may be recorded below.

CODE OR PREFIX	EQPT ENTITY	LINE LINK FRAME	HOR GR/PVT SWG	NTC FRAME	NTC LL ACCESS	NTC LL-HG ACCESS
_____ _____	UO	_____	_____	M_____	Sw____	Vert ___
_____ _____	U1	_____	_____	M_____	Sw____	Vert ___
_____ _____	U2	_____	_____	M_____	Sw____	Vert ___

6.09 Exhibit 1 illustrates the front panel of the Berry Electronics 312A Portable MF and DP Trunk Test Set.

MODEL 312A

Exhibit 1