

AUTOMATIC TRUNK TEST CIRCUIT  
 PANEL AND NO. 1 CROSSBAR

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1. GENERAL INFORMATION

1.1 This section describes the tests to be made on the Automatic Trunk Test Circuit per SD-95889-01.

1.2 This test circuit is used to test automatically, the following Automatic Number Identification Outgoing Trunks used in No. 1 Crossbar and Panel offices:

SD-21972-01	Panel - MV Pulsing
SD-21974-01	Panel - PC1 Pulsing
SD-21981-01	Panel - MF Coin
SD-21982-01	Panel - MF Noncoin
SD-26209-01	No. 1 - Crossbar - MF Pulsing
SD-26210-01	No. 1 - Crossbar - PC1 Pulsing
SD-27554-01	No. 1 - Crossbar - MF Noncoin
SD-27555-01	No. 1 - Crossbar - MF Coin

1.3 Tests of the Outpulser-Identifier Test Circuit per Section 120 of this handbook should be completed prior to start of these tests.

1.4 Tests of the timing circuits for this test frame are contained in Section 127 of this handbook and should be performed prior to the start of Paragraph 11.

1.5 Tests of the traffic registers for this circuit are performed per Section 128 of this handbook.

1.6 All lighted lamps, other than those specified in the particular test, should be disregarded.

2. RECORDS AND REQUIREMENTS

2.1 Records

2.11 Forms ID-1313 and ID-1315 are required for recording the results of these tests. For further information on preparing records, refer to Handbook 50, Section 3.

2.2 Requirements

2.21 Tests of this section conform with performance requirements as contained in BSP's AA633.006, AA632.007 and AA634.008.

3. TEST EQUIPMENT

3.1 Test Sets

<u>Amt</u>	<u>ITE-</u>	<u>Description</u>
1	1883	Wheatstone Bridge
1	4442	Volt-Ohmmeter

3.2 Cords

<u>Amt</u>	<u>ITE-</u>	<u>Cdrs</u>	<u>Lgth</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
1	9447	1	6'	Push-on Clip	Alligator Clip	4023 2367
1	9639	3	12'	310 Plug	3-ITE-2455 Plugs	4023

3.3 Accessories

1	ITE-8507	Alligator Clip (with ITE-4023, 2367)
1	R-9572	Test Receiver

4. RESISTANCE MEASUREMENTS

4.1 Using an ITE-1883, Wheatstone Bridge, as described in Handbook 50, Section 2, verify that the resistances listed in Table A are within the required values.

TABLE A

CONN. TO	CONN. TO	RES. TESTED	INSULATE CONTACTS	RES.	MAX.	MIN.
BOT UT RES.	TOP UT RES.	UT		1330	1343	1317
BOT EC RES.	TOP EC RES.	EC		1330	1343	1317
BOT TP1 RES.	TOP TP1 RES.	TP1		1620	1636	1604
BOT TP0 RES.	TOP TP0 RES.	TP0		920	929	910
FIXED 4 CT0 REL.	MIDDLE CT RES.	CT		920	929	910
TOP CT1 RES.	BOT CT1 RES.	CT1		568	574	562
MIDDLE CT2 RES.	FIXED 6 CT0 REL.	CT2		1670	1687	1653
GRD.	FIXED 4 VAR REL.	CT3.CT5		124.9	126	123.6
MIDDLE CT4 RES.	MAKE 6 CT0 REL.	CT4		770	777.7	762.3
TOP CT6 RES.	BOT CT6 RES.	CT6		100	101	99
N FUSE POST	FIXED 6 SIK1	CS1.CS2		11700	11817	11583
N FUSE POST	FIXED 8 CSR REL.	CS11		466	470.7	461.3
N FUSE POST	FIXED 7 CSR REL.	CS7		2352.8	2376	2329
N FUSE POST	FIXED 12 ET 3B REL.	CS9.CS10		6416	6480	6352
FIXED 7 CSR REL.	FIXED 5 CS0 REL.	CS3-CS6	7 CSR	33253	33586	32920
GRD	FIXED 10 SOA REL.	CS8		113	114.1	111.9
R FUSE POST	MIDDLE EP RES.	EP.EPNO		7165	7237	7093
R FUSE POST	MAKE 8 EPO REL.	EP01.EP02		4483	4528	4438
U WDG. ASK REL.	FIXED 1 AT1 REL.	ARL1-ARL4	7 ACS	7916	7995	7837
R FUSE POST	FIXED 6 EP2 REL.	EPS0		1070	1080	1059
8 FIXED WK1 REL.	MAKE 8 AOP REL.	AOP.AOP1		2650	2676	2623
N FUSE POST	FIXED 9 PNP REL.	CS11.CS12	8 CSR	505466	510470	500466
AA FUSE POST	LOWER WDG SOAK REL.	CS13		955	960	950
Z FUSE POST	BOT CS10 RES.	CS14		10000	10100	9900
AA FUSE POST	MAKE 9 PNP	CS15.CS16	6 CSR	72169	72890	71448
N FUSE POST	FIXED 12 ET3B	CS9.CS10 CS14		16416	16580	16252

TABLE A (Cont'd)

CONN. TO	CONN. TO	RES. TESTED	INSULATE CONTACTS	RES.	MAX.	MIN.
Z FUSE POST	MAKE 10 NOT	NOT OT		1325	1457	1193
FIXED 9 CA5	FIXED 11 CA5 OPER CLMF.CSX	ID		500	525	475
FIXED 9 CA5	FIXED 11 CA5 RLS CSX OPER RBT,DPX	RBT		1400	1470	1330
FIXED 9 CA5	FIXED 11 CA5 RLS RET OPER AT2,PCN	ARL1-ARL5		6289	6351	6227
FIXED 9 CA5	FIXED 11 CA5 RLS AT2,PCN OPER DISC,LT	LNO		1582	1597	1567
FIXED 9 CA5	FIXED 11 CA5 OPER LOT RLS DISC.LOT, OPX CLMF. LT	LO		775	782	768
FIXED 6 WK1	FIXED 8 WK1 OPER AOP PCN RLS AOP.PCN	CP REL AOP.AOP3		6300 2350	6615 2373	5985 2327

#### 5. FUSING AND LEADS TESTS

5.1 Fusing tests for this circuit are contained in Section 107 of this handbook.

5.2 Leads tests for this circuit are contained in Section 109 of this handbook.

#### 6. TRUNK SEIZURE

6.01 Block relay CK1 operated and relay X nonoperated. Operate key MS on the test frame. Lamps SO, HO, XCO and MS light on the test frame.

6.02 Verify that crosspoint 00 has closed on the trunk connector switch.

6.03 At the trunk frame miscellaneous circuit, verify that relays FRO, FR1 and FR2 have operated, and their relay TT has operated at the trunk assigned to crosspoint 00.

6.04 Operate and release key PSC-S. Observe that hold magnet 0 releases, and then select magnet 1 and hold magnet 0 operate. Select 1 releases and hold 0 remains operated. Verify that the TT relay of the assigned trunk is operated.

6.05 Repeat test in this manner, operating and releasing key PCS-S and observe that each time this key is operated and released, that the select magnet advances one position.

6.06 Continue this operation through position 9 and return to the 0 position.

6.07 Repeat this operation with key PCS-H. Observe that the select magnet remains stationary and that the hold magnet operation advances from 0 through 9. Observe that the H-lamp number coincides with the operated hold magnet number. Return to the 0 position.

6.08 Operate key PCS (X-C). Relay SC-1 operates. Release key PCS (X-C). Relay XC-0 releases.

6.09 Continue operating and releasing key PCS (X-C) and observe that relays XC2 through XC4 operate. Return to 0 position.

6.10 Repeat operation using keys RCR-S, PCR-H and PCR-XC. Observe that as long as the PCR- key is held operated, that the selection advances automatically.

6.11 Restore all keys to normal.

7. CROSS TEST

7.1 At the trunk connector switch, using an ITE-9447 cord or equivalent connect terminal 0 of vertical 0 to terminal 1 of vertical 0.

7.2 Operate key MS on the test frame. Observe that relay XTT operates, and that lamp XTT lights.

7.3 Remove connection between terminals 0 and 1, and return test frame to normal. Lamp XTT is extinguished. Unblock relays CK1 and X.

7.4 Connect ground to contact 1 fixed relay HE3. Observe that lamp X lights.

7.5 Remove ground from contact 1 relay HE3. Lamp X is extinguished.

7.6 Momentarily operate relay S. Observe that lamp X lights momentarily.

7.7 Momentarily operate relay CK1. Observe that lamp X lights momentarily.

7.8 Momentarily operate relay CLX. Observe that lamps CLX and BLK light momentarily.

8. TRUNK BUSY AND PASS BUSY

8.01 Block nonoperated relays XCO and S. Block operated relay STA.

8.02 Observe that lamp SO is lighted and that ground is present on contact 7 fixed relay BT1.

8.03 Block operated relay RV and observe that ground is removed from 7 fixed relay BT1.

8.04 Operate relay CA5 and observe that ground is again present on contact 7 fixed relay BT1.

8.05 Release relays CA5 and RV.

8.06 Connect ground to contact 5 fixed relay CLXB (if provided) or to contact 5 fixed relay CLPN. Observe that relay FR is operated.

8.07 Block operated relay HA. Observe that relay FR is released, relay SR1 is operated and ground is absent from contact 7 fixed relay BT1.

8.08 Remove ground from contact 5 fixed relay CLPN or CLXB.

8.09 Block nonoperated relay BT1 and block operated relay H.

8.10 If crossbar offices are served, block operated relay CLXB, or relay CLPN for panel offices.

8.11 Verify that ground is present on contact 6 fixed relay CA5 (X-BAR) or contact 1 fixed relay CA5 (Panel).

8.12 Block operated relay CA5. Observe that ground is removed from contact 6 fixed CA5 (X Bar) or contact 1 fixed CA5 (Panel).

8.13 Release relays CA5 and CLXB or CLPN.

8.14 Connect ground to contact 11 fixed relay H. Remove block from relays BT1 and HA. Relay BT1 operates and locks.

Lamp BY lights, relay SR1 remains operated and ground is absent from contact 7 fixed relay BT1.

8.15 Block operated relay FR. Operate key PB. Observe that relay PB operates.

8.16 Remove ground from contact 11 fixed relay H. Remove block from relay H. Observe that the PB register scores once. Lamp BY is extinguished.

8.17 Restore PB key, remove blocks from the FR and STA relays. Then remove blocks from relays S and XCO. Observe that lamp SO is extinguished.

9. SELECTOR SWITCH ADVANCE

9.1 Insulate contact 2M relay ON1. Block operated a CL- relay. Observe that the associated CL- lamp is lighted.

9.2 Block operated relay ON1. Momentarily operate relay BLK. Lamp BLK lights.

9.3 Remove block, from relay CL-. The CL- lamp is extinguished. Selector switch A,B,C or D advances through all positions to position 1.

9.4 The selector switch corresponds to the operated CL- relay as follows:

<u>CL- Relay</u>	<u>Selector Switch</u>
CL1.CL2	A
CL3.CL4	B
CL5.CL6	C
CL7.CL8	D
CL9.CL10 (NC) XBR	E
CL11 (C) XBR	F
CL13.CL14(C) PAN	G
CL15.CL18(NC) PAN	H

9.5 Remove block from relay ON1. Lamp BLK is extinguished.

9.6 Repeat Paragraphs 9.1 through 9.5 for all CL- relays. Observe the same results.

9.7 Remove insulation from contact 2M, relay ON1.

10. BLK. AL AND NG RELAY OPERATION

10.01 Using an ITE-9447 or similar cord, connect ground to contact 4 fixed relay TPK. Momentarily operate relay TPK and observe that lamp BLK lights momentarily.

10.02 Remove ground from relay TPK.

10.03 Connect ground to contact 4 fixed relay CT1. Momentarily operate relay CT1.

10.04 Observe that lamp BLK lights momentarily. Disconnect ground from contact 4 fixed and connect to contact 6 fixed relay CT1.

10.05 Again momentarily operate relay CT1. Observe that lamp BLK lights momentarily.

10.06 Disconnect ground from relay CT1 and connect to contact 10 fixed relay EPO.

10.07 Momentarily operate relay EPO and observe that lamp BLK lights momentarily.

10.08 Disconnect ground from contact 10 fixed of EPO and connect to contact 8 fixed relay EP.

10.09 Momentarily operate relay EP and observe that lamp BLK lights momentarily. Disconnect ground from contact 8 fixed relay EP.

10.10 If crossbar offices are served, connect ground to contact 12 fixed relay CS.

10.11 Momentarily operate relay CS. Observe that lamp BLK lights momentarily.

10.12 Disconnect ground from contact 12 fixed and connect to contact 7 fixed relay CS. Observe that lamp BLK lights.

10.13 Disconnect ground from contact 7 fixed relay CS and connect to contact 8 fixed relay ONCK. Observe that the BLK lamp lights. Disconnect ground from contact 8 relay ONCK. BLK lamp is extinguished.

10.14 If panel office are served connect ground to contact 6 fixed relay TM. Observe that lamp BLK lights.

10.15 Disconnect ground from contact 6 fixed relay TM and connect to contact 6 fixed relay MG.

10.16 Momentarily operate relay MG. Observe that lamp BLK lights momentarily.

10.17 Disconnect ground from contact 6 fixed relay MG and connect to contact 8 fixed relay SIK1. Observe that lamp BLK lights. Disconnect ground from contact 8 relay SIK1. BLK lamp is extinguished.

10.18 Block operated relays ETM2 and REC. Observe that lamps BLK and IF light.

10.19 Momentarily operate relay IOK. Observe that lamps BLK and IF are momentarily extinguished.

10.20 Remove blocks from relays ETM2 and REC. Observe that lamps BLK and IF are extinguished.

10.21 Block nonoperated relay STA. Operate key ACO.

10.22 Block operated relay ST. Observe that relay STM1 operates.

10.23 Momentarily operate relay ETM1 three times.

10.24 Observe that lamp BLK is lighted, relay AL is operated and relay STM1 releases.

10.25 Remove block from relay ST. Observe that lamp BLK is extinguished and relay AL released.

10.26 Block operated relays BT1 and ST. Observe that relay STM1 operates.

10.27 Momentarily operate relay ETM1 twice. Observe that relay AL operates and relay STM1 releases.

10.28 Block operated relay CA3. Observe that relay AL releases and TMI selector switch restores to normal.

10.29 Remove blocks from relays ST, BT1, CA3 and then STA. Restore ACO key.

10.30 Block operated relays SOA, CSX and HBR relays. Relay MG operates.

10.31 Operate relay SIK. Relay MG releases.

10.32 Release relays SIK, SOA, CSX and HBR.

10.33 Manually operate relays AL and ST. Verify that the alarm sounds and the aisle pilot lamps light.

10.34 Remove block from relays AL and ST. Alarm is silenced and the lamps extinguished.

## 11. OPERATION TESTS

NOTE 1: Timing tests must be performed per Section 127 prior to start of the tests of this Paragraph.

NOTE 2: For tests of this Paragraph, select a trunk which will be used for test in conjunction with the test frame. Operate REP key on test frame. Use this one trunk for performance of all tests on that particular type of trunk. If all four types of trunks are available for test by the test frame, that is, Crossbar and Panel MF trunks, and Crossbar and Panel PCI trunks, start test using a Crossbar MF Trunk and perform tests in the order listed in the column entitled "X-Bar MF". (Refer to Table B). When tests have been completed on this type of trunk, choose the next available type of trunk, and perform the tests in the order listed in the column associated with that type of trunk.

NOTE 3: Operate keys OFF0, TH01, H02, T03, U04, THN05, HN06, TN07 and UN08. Leave these keys operated for the duration of tests per Paragraph 11.

### 11.01 TP Nonoperate (2 Party Trunks)

11.011 Operate keys TP and TT on the trunk test circuit. Using an ITE-9447 or similar cord, connect contact 8 make relay TPO to contact 8 break relay TPO.

TABLE B

Test	Paragraph	Type of Trunk			
		X-Bar MF	Panel MF	X-Bar PCI	Panel PCI
TP Non-Operate (2 Pty Trks)	11.01	1		1	
TP Operate	11.02	2		2	
CT Relay Test	11.03	3		3	
CS Relay Test	11.04	4	2		
ORIG. C/P Test	11.05	5	3		
A Relay Test	11.06	6	4		
RV Relay Test	11.07	7	5		
SI Relay Test	11.08	8	6		
CT1 and SPL Tests	11.09	9	7	5	4
Identification Check	11.10	10	9	6	6
A Soak and Release	11.11	11	10		
ON Release	11.12	12	12	10	10
High Bridge Test	11.13	13	13		
Timed Release	11.14	14	14		
Return to Normal	11.15	15	15	12	12
EP Relay Test	11.16			4	2
CS Relay Test	11.17			7	3
A Soak and Release	11.18			8	7
A Operate	11.19			9	8
Party Test	11.20		8		5
Ground Removal	11.21		11		9
Transmission Meas.	11.22	16	16	13	13
CT Relay and Var. Test	11.23		1		1
Thru C/P Test	11.24			11	11

11.012 To choose a trunk which will be used for test, operate keys MS, PCS-S, PCS-H and PCS-XC.

11.013 Operate key ST on the test frame. Observe that the trunk is seized and blocks with lamps TPNO, TPF and BLK lighted.

11.014 Operate key REP, release key ST and then operate key CA on the test frame. Test frame returns to normal, and lamps are extinguished.

11.015 Remove connections from contacts 8 make and 8 break relay TPO.

#### 11.02 TP Operate

11.021 Insulate contact 8 make relay TPO, and connect an ITE-9447 or similar cord from contact 8 fixed to contact 8 break relay TPO.

11.022 Operate ST key of test frame. Observe that call proceeds to operation of TPO relay. Lamp TPNO lights and is extinguished, and the call blocks with lamp TPO lighted. Lamps TPF and BLK light after timeout. (3 min.).

11.023 Release key ST and operate key CA to return test frame to normal. Lamps are extinguished.

#### 11.03 CT Relay Test

11.031 Insulate contact 4 break relay CT0. Connect an ITE-9447 or similar cord from contact 4 fixed to contact 4 make relay CT0.

11.032 Operate test frame ST key. Observe that call progresses to the operation of CT3 relay.

11.033 Verify that the call blocks with lamps CTNO, CT2, CTF and BLK lighted.

11.034 Operate CA key to return circuit to normal.

11.035 Remove insulation from contact 4 break and insulate contact 4 make.

11.036 Remove connection from contact 4 make and connect to contact 4 break relay CT0.

11.037 Operate ST key. Observe that test proceeds to operation of CT0 relay.

11.038 Test blocks with lamps CT0 and CT2 lighted. Lamps CTF and BLK light after timeout (3 min.).

11.039 Release ST key and operate CA key to return frame to normal. Remove insulation and connections from CT0 relay.

#### 11.04 CS Relay Test (MF Trunks)

11.041 At the trunk chosen for test, insulate contact 7 make relay ON for Crossbar MF-OGT trunks per SD-26209-01. Insulate contact 2 make on ON relay for Panel MF-OGT trunks per SD-21972-01.

11.042 Operate key ST on test frame.

11.043 Test will progress to operation of SOA relay in the test circuit.

11.044 Test will block with lamp CSO lighted. Lamps CSF and BLK light after timeout (3 min.).

11.045 Operate key CA to return test frame to normal and remove insulation from relay ON.

11.046 Using an ITE-9447 or similar cord, connect contact 8 fixed to contact 8 break relay CSR in the test frame.

11.047 Operate ST key. Test proceeds until the operation of relay ET3B.

11.048 Test frame blocks with lamp CRS lighted. Lamps CSF and BLK light after timeout (3 min.).

11.049 Release ST key and operate CA key to return test frame to normal and remove connections from relay CSR.

#### 11.05 Originating C/P Test

11.051 Insulate contacts 9 and 10 relay CLMF.

11.052 Using ITE-9447 or similar cords, connect contact 10 fixed relay CLMF to contact 9 make CLMF. Also connect contact 9 fixed relay CLMF to contact 10 make CLMF.

11.053 Operate ST key. Observe that test progresses to the operation of relay OPX.

11.054 Test blocks with lamp OPT lighted. Lamp BLK lights after timeout (3 min.).

11.055 Release ST key and operate CA key to return test frame to normal and remove insulation and connections from relay CLMF.

#### 11.06 A Relay Test

11.061 At the trunk used for test, block normal relay A.

11.062 Operate key ST on the test frame.

11.063 Observe that the test frame progresses to the operation of relay AOP.

11.064 Test frame blocks with lamp AOP lighted.

11.065 Operate CA key to return test frame to normal, and remove block from relay A.

11.066 Block normal relay WK. Operate ST key on test frame.

11.067 Test frame should block with lamp RV lighted. Relay A of the trunk should be operated.

11.068 Remove block from WK relay, release ST key and operate CA key to return test frame to normal.

#### 11.07 RV Relay Check

11.071 Block normal relay SI in the trunk test frame and block normal relay SI in the trunk under test.

11.072 Operate key ST. Observe that the test blocks with lamps SI and CPK lighted on the test frame.

11.073 Release ST key and operate CA key to return test frame to normal, and remove block from test frame SI relay.

#### 11.08 SI Relay Test

11.081 With the trunk SI relay blocked normal from previous test, operate test frame ST key.

11.082 Observe that test progresses to operation of test frame SI relay.

11.083 Test frame blocks with lamp SI and CPK lighted. Lamps SIF and BLK light after timeout (3 min.).

11.084 Release ST key and operate CA key to return test frame to normal, and remove block from trunk SI relay.

#### 11.09 CT1 and SPI Relay Tests

11.091 Operate test frame ST key. At the trunk used for test, block relay CT normal after it has operated and released once.

11.092 Verify that the frame blocks with lamp IDY lighted.

11.093 Release ST key and operate CA key to return test frame to normal and remove block from relay CT in the trunk.

11.094 At the trunk under test, insulate contact 1 make relay SI.

11.095 Operate key ST on test frame. Observe that call progresses to the operation of relay IDY in the test circuit.

11.096 Test frame will block with lamps TTO and IDY lighted. Lamp BLK lights after timeout (3 min.).

11.097 Release ST key and operate CA key to return test frame to normal and remove insulation from SI relay.

#### 11.10 Identification Check

11.101 Block normal relay IOK at the trunk test circuit.

11.102 Operate ST key on test frame. Observe that test proceeds to the operation of relay SIK.

11.103 Test frame blocks with lamp IDY lighted. Lamp IF lights after timeout (8-14.7 sec.).

11.104 Release ST key and operate CA key to return test frame to normal and remove block from relay IOK.

#### 11.11 A Relay Soak and Release (MF Trunks)

11.111 At the trunk test frame, block normal relay ACS.

11.112 Operate test frame ST key. Verify that the call progresses to the ARLS relay.

11.113 Operate test frame ST key. Observe that test progresses to operation of ARLS relay.

11.114 Test blocks with lamp ARLS lighted. Lamps AF and BLK light after timeout (3 min.).

11.115 Observe that the office digit and line number displayed correspond to the TH0-, HO-, TO- and UO- keys operated. Release ST key and operate key CA to return test frame to normal and remove block from relay ACS.

#### 11.12 ON Relay Release Test

11.121 Block normal relay ONK.

11.122 Operate test frame ST key.

11.123 Observe that test advances to operation of relay ET3A. Test frame blocks with lamps ONR, ONF and BLK lighted.

11.124 Release ST key and operate CA key to return test frame to normal. Remove block from relay ONK.

#### 11.13 High Bridge Test

11.131 At the trunk test frame, connect the upper winding relay HBR to the upper winding relay MG using an ITE-9447 or similar cord.

11.132 Operate key ST on test frame. Observe that test frame proceeds to operation of relay HBR.

11.133 Verify that test blocks with lamps HBR, HBF and BLK lighted.

11.134 Release ST key and operate CA key to return test frame to normal. Remove connection between relay HBR and MG.

#### 11.14 Timed Release

11.141 Operate key TMD on test frame.

11.142 Using an ITE-9447 or equivalent cord, connect contact 7 fixed relay TMDA to contact 7 break relay TMDA.

11.143 Operate key ST on test frame.

11.144 Observe that test progresses to operation of TMDA relay.

11.145 Test blocks due to trunk ON relay not releasing. Lamps TRLF and BLK light on test frame after timeout (3 min.).

11.146 Release ST key and operate CA key to return test frame to normal.

11.147 Remove connections from relay TMDA.

#### 11.15 Return to Normal

11.151 Operate ST key. Observe that call progresses through a complete test and that frame returns to normal and repeats test on same trunk.

11.152 When testing Panel or Crossbar PCI trunks (SD-21974-01, SD-26210-01), a temporary battery and ground connection is required on the outgoing tip and ring to complete a testing path for the Automatic Trunk Test Circuit as described in Paragraph 9 of CD-95889-01. Before starting test, connect ground to the R1 lead at the distributing frame or unit T.S. terminal 28. Connect -48V battery to the T1 lead at the distributing frame or at the unit T.S. terminal 29. Disconnect leads after completing tests.

11.153 Release REP key and operate CA key. Observe that test frame returns to normal and seizes the next trunk.

11.154 Release ST key and operate CA key to return test frame to normal.

#### 11.16 EP Relay Tests

11.161 Using an ITE-9447 or similar cord, connect the upper winding relay EPT to the upper winding relay EPO.

11.162 Operate key ST on the test frame.

11.163 Observe that test progresses to the operation of relay EPT, and blocks with lamps EPNO, EPF and BLK lighted.

11.164 Release ST key, operate CA key to return test frame to normal.

11.165 Remove connections between the EPT and EPO relays.

11.166 Block normal relay EP of the test frame. Operate ST key. Observe that the test progresses to operation of EPT relay.

11.167 Observe that test blocks with lamps EPO, EPF and BLK lighted.

11.168 Release ST key, and operate CA key to return test frame to normal. Remove block from relay EPO.

#### 11.17 CS Relay Test (PCI Trunks)

11.171 At the trunk test frame, block normal relay SOA.

11.172 Operate the ST key of the test frame, and observe that the test progresses to the operation of the test frame CS relay.

11.173 Observe that test blocks with the CS0, CSF and BLK lamps lighted.

11.174 Release ST key and operate CA key to return test frame to normal.

11.175 Remove block from relay SOA.

11.176 Block normal relay CSR of the test frame. Operate ST key and observe that test progresses to operation of SIK1 relay of the test circuit.

- 11.177 Test blocks with lamps CSR, CSF and BLK lighted.
- 11.178 Release ST key and operate CA key to return test frame to normal. Remove block from relay CSR.
- 11.18 A Soak and Release (PCI Trunks)
- 11.181 Using an ITE-9447 or similar cord, connect contact 7 fixed relay ACS to contact 7 break ACS.
- 11.182 Operate ST key on test frame.
- 11.183 Observe that test progresses to operation of ACS relay.
- 11.184 Frame blocks with lamp ARLS lighted. Lamps AF and BLK light after timeout (3 min.).
- 11.185 Release ST key and operate CA key to return test frame to normal.
- 11.186 Remove connections from relay ACS.
- 11.19 A Operate
- 11.191 Block normal relay AOP of the trunk test circuit.
- 11.192 Operate key ST of the test frame. Observe that frame blocks with lamps AOP and CPK lighted.
- 11.193 Release ST key and operate CA key to return frame to normal.
- 11.194 Remove block from relay AOP.
- 11.20 Party Test
- 11.201 This test is to be performed only on trunks which serve 2 party lines.
- 11.202 Operate key TP at the test frame.
- 11.203 Block normal relay TPK in the test frame.
- 11.204 Operate the ST key on the test frame.
- 11.205 Observe that the test progresses to the operation of relay TP in the trunk being tested.
- 11.206 Test frame blocks with lamp PTY lighted. Lamps TPIF and BLK light after timeout (3 min.).
- 11.207 Release ST key, and operate CA key to return test frame to normal.
- 11.208 Remove block from relay TPK.
- 11.21 Ground Removal
- 11.211 At the test frame, block normal relays TG and RG.
- 11.212 Operate test frame ST key. Observe that test frame progresses to operation of GRT relay.

11.213 Test frame blocks with lamps GRT and SPI lighted. Verify that relay GTK of the test frame is normal.

11.214 Release key ST and operate key CA to return test frame to normal. Remove blocks from relays TG and RG.

#### 11.22 Transmission Measuring Verification

11.221 Using an ITE-9639 or equivalent cord, connect the alligator clip of a test receiver to the tip conductor banana plug.

11.222 Connect the ring conductor banana plug of the ITE-9639 equipped with an alligator clip to the test probe of the test receiver.

11.223 Insulate the sleeve conductor of the ITE-9639 cord with friction tape.

11.224 With all keys normal on the test frame, insert the 310 plug of the ITE-9639 cord into the TM CAL jack of the test frame. Verify that tone (1000 cycle) is heard in the test receiver.

11.225 Remove the cord from the TM CAL jack and insert into the TM IN jack. Verify that no tone is heard.

11.226 Operate the TRMS key of the test frame and then the ST key.

11.227 When S1MW lamp lights, verify that tone is received in the headset.

11.228 Release ST and TRMS keys and operate CA key to return test frame to normal.

11.229 Remove cord from TM IN jack and disconnect test receiver.

#### 11.23 CT Relay and Varistor Test

11.231 At the trunk test frame, insulate contact 6 break relay CT0. Using an ITE-9447 or equivalent cord, connect contact 6 fixed relay CT0 to contact 6 make relay CT0.

11.232 Operate test frame ST key. Observe that relay CT of the trunk operates and that the test blocks with lamps CTN0, BLK and CTF lighted.

11.233 Remove insulator and connections from relay CT0 of the test circuit.

11.234 Release ST key and operate CA key to return test frame to normal.

11.235 Using an ITE-9447 or equivalent cord, connect the ends of this cord to the two terminals of the trunk CT varistor.

11.236 Operate test frame ST key. Observe that the test frame blocks with lamps VAR, BLK and CTF lighted.

11.237 Release ST key and operate CA key to return test frame to normal. Remove connections from CT varistor.

11.238 At the trunk under test, block normal relay CT1. Operate ST key and observe that the test blocks with lamps CTO lighted. Lamps BLK and CTF light after timeout (3 min.).

11.239 Release ST key and operate CA key to return test frame to normal. Remove block from trunk CT1 relay.

11.24 Through Continuity and Polarity Check

11.241 At the test frame, block normal relay RV.

11.242 Operate test frame ST key. Observe that test proceeds until lamp TCP lights.

11.243 Test blocks with test frame CP and CP1 relays normal.

11.244 Release ST key and operate CA key to return frame to normal. Remove block from relay RV.

→ Arrowed lines indicate new or changed information.

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