

PANEL OUTGOING TRUNKS MF AND PC1

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1. GENERAL INFORMATION

1.1 This section describes the supplementary and operation test to be made on the following ANI outgoing trunks associated with panel office equipment.

<u>CIRCUIT</u>	<u>TITLE</u>	<u>PARAGRAPH</u>
SD-21972-01	MF Pulsing	7, 8, 9
SD-21974-01	PC1 Pulsing	7, 8, 10
SD-21981-01	MF Pulsing Coin	8, 9, 10
SD-21982-01	MF Pulsing Noncoin	7, 8, 9, 10
SD-21991-01	MF Pulsing Coin	8, 9
SD-21992-01	MF Pulsing Noncoin	7, 8, 9, 10
SD-95821-01	Miscellaneous Ckt	6

1.2 This section also describes the tests to be performed on the common systems miscellaneous circuit per SD-95821-01.

1.3 Operation tests on the trunks are to be performed using the Automatic Trunk Test Circuits per SD-95889-01 and the Outpulser Identifier Test Circuit per SD-95815-01.

1.4 Test of the oscillator circuits per Section 113 shall be completed prior to tests of paragraph 5.

2. RECORDS AND REQUIREMENTS

2.1 Records

2.11 Forms SD-4-1313 and SD-4-1315 are required for recording the results of these tests. For further information on preparing records, refer to Handbook 91, Section 3.

2.2 Requirements

2.21 Tests of this section agree with performance requirements contained in BSP's 815-015-180, 814-200-180 and 816-200-180.

3. TEST EQUIPMENT

3.1 Test Accessories

<u>Amt</u>	<u>ITE or Code</u>	<u>Description</u>	<u>With</u>
1	R-3314	Stop Watch	*ITE-4023
1	R-9572	Receiver and Cords	*ITE-4023
1	ITE-4442A	Volt-Ohmmeter and leads	
		*Test Accessory Set	

4. FUSING

4.1 Using a Volt-Ohmmeter, check each fuse post for the absence of battery and ground. Using fuses of correct type as indicated by circuit drawing and fuse panel designations, install the fuses one at a time. As the fuses are installed, check for the voltage reading at the proper circuit and that it is not crossed with other unfused circuits.

5. FREQUENCY VERIFICATION

5.1 Connect one end of a test receiver to ground.

5.2 Block operated the OSC relay of one of the oscillator circuits that serve the frame.

5.3 Touch the test probe of the test receiver to terminal 8 of the B terminal strip of the trunk unit.

5.4 Verify that high tone (5800 cycles) is heard in the test receiver.

5.5 Repeat this test on each trunk of the frame.

5.6 Remove block from OSC relay in the oscillator.

6. MISCELLANEOUS CIRCUIT TESTS -
(SD-95821-01)
- 6.1 Fuse Alarms
- 6.11 Using a test receiver, short the fuse alarm terminal of the associated 20A fuse with the feeder terminal. Lamp FA lights and the office audible alarm functions.
- 6.12 Check that the alarm will function with the FA lamp removed.
- 6.13 Using a test receiver, short the fuse alarm terminal of one of the 1.1/3 ampere fuses with the feeder terminal. Lamp FA lights and the audible alarm functions.
- 6.14 Check that the alarm functions with the FA lamp removed.
- 6.2 Timeout Control Relays
- 6.21 At the trunk under test, block operated relays ON, ON1.
- 6.22 Connect ground to terminal 30 of the A terminal strip on the trunk unit.
- 6.23 Observe that relay TM operates when relay B- of the miscellaneous circuit operates. Using the stop watch, verify that within a 2 to 5 second interval, relay SP operates and locks.
- 6.24 Remove ground from terminal 30. Unblock relays ON, ON1 and manually release relay ON.
- 6.25 Repeat test on each trunk on the trunk frame.
- 6.3 Talking Battery Filter
- NOTE: Do not insert these fuses until the 48V power plant is maintained on a 24 hour basis. (1 filter per 2 adjacent frames).
- 6.31 Before inserting the 20 ampere fuses of the filter circuit, check the fuse posts for absence of crosses and ground.
- 6.32 Connect a 25 or 60 watt, 110 volt lamp across the FC1 fuse posts associated with the FC1 lamp.
- 6.33 When the lamp dims appreciably, disconnect the lamp and install the 20 ampere fuse.
- 6.34 Repeat Paragraphs 6.32 and 6.33 for the FC2 fuse posts and lamp.
- 6.35 Using a test receiver, short the fuse alarm terminal of the FC1 lamp circuit with the feeder terminal. Lamp FC1 lights and audible alarm functions.
- 6.36 Check that the alarm functions with the FC1 lamp removed.
- 6.37 Repeat Paragraphs 6.35 and 6.36 on the circuit associated with the FC2 lamp.
- 6.4 Test Battery Jack and Supply
- 6.41 Check 48V test battery terminals and tip of the A jack for presence of 48 volts.
- 6.42 Check the G test terminals for direct ground.
- 6.43 Check the HRG test terminals for high resistance ground (12000 ohms).
- 6.44 Check for direct ground on the A jack sleeve.
- 6.5 Miscellaneous Jacks
- 6.51 Spare B Jack
- 6.511 Make a continuity test of the B jack to all associated outgoing trunk frames, and also to the MDF.
- 6.52 Remote Control RC Jack
- 6.521 Check for ground on the sleeve of the RC jack. Make a continuity test of the tip and ring of the RC jack to all associated RC jacks and to the Output - Identifier - Trunk Test Circuit.
- 6.53 Frame Line Jacks
- 6.531 Make a continuity and cross test of the tip and sleeve leads of the TEL (A1 and B1) jacks to all associated TEL jack appearances and to the MDF.
- 6.6 Ground Removal Timeout Alarm
- 6.61 On trunks equipped for 2 party service (Z option) momentarily connect ground to terminal 25 of the A terminal strip. On SD-21992-01 and SD-21982-01 connect ground to terminal 47 of the A terminal strip.
- 6.62 Observe that the AL lamp lights, the alarm sounds and the aisle pilot lamp lights.
- 6.63 Momentarily operate the AR key to retire the alarm and extinguish the AL and aisle pilot lamps.

- 6.64 Repeat test for all trunks equipped for 2 party service.
- 6.7 Trunk Make Busy
- 6.71 At the OGT test board, insert a make busy plug into the MB jack of the make busy jack circuit associated with the trunk under test.
- 6.72 Verify that ground is present on terminal 30 of the trunk unit B terminal strip. On SD-21981-01, SD-21982-01, SD-21991-01 and SD-21992-01, verify that ground is present on terminal 38 of the B terminal strip.
- 6.73 Remove make busy plug from MB jack, and verify that ground is removed from terminal 30 or 38 of the B terminal strip.
- 6.74 Repeat tests for each trunk or frame.
7. TRUNK LOCK-UP LEAD
- 7.1 At the Trouble Ticketer Miscellaneous Circuit, operate key TKL. Observe that TKL lamp lights. At the trunk circuit under test, block operated relay SP and momentarily operate relay TM. Relay TM should lock operated over the LU lead to the miscellaneous circuit.
- 7.2 Since the LU lead is common to all trunks on a frame, tests may be performed on all the trunks at once, or one at a time, depending on trouble indications. To test remaining trunks on the frame, block operated SP relay and momentarily operate the TM relay in each trunk circuit on the frame. All TM relays should lock operated.
- 7.3 Release TKL key at the Trouble Ticketer Miscellaneous Circuit. Observe that all TM relays release. Then remove blocks from all SP relays.
- 7.4 If trouble is encountered in testing the trunk lock-up lead, check that relays LU0, LU1, and LU2 (if furnished) are operated when key TKL is operated in the Tbl. Ticketer Misc. Ckt. The LU lead is terminated at T.S. 8-16 on each trunk unit.

8. OPERATION TESTS8.1 Test Frame Operation

- 8.11 Operation test of the Panel Outgoing Trunks are made using the Automatic Trunk Test Circuit (SD-95889-01) and Output Identifier Test Circuit (SD-95815).
- 8.111 When the Automatic Trunk Test Circuit per SD-95889-01 has not been modified per options YI, YK, YL and YO for testing the Automatic Return of Initial Deposit feature for coin trunks per SD-21981-01, take the following steps before starting the tests per paragraph 8.12:
- (A) After modification of the SD-21981-01 Coin Trunk, strapping from 4 fixed to 4 make of the AR relay and insulate 2 fixed of the CNP1 relay. Proceed with tests per paragraph 8.12.
- 8.12 To select the desired trunk to be tested, operate key MS of the test circuit, and then operate and release keys XC, S and H until the position of the desired trunk is reached. Operate key REP. Observe lamps XC-, S- and H- are lighted.
- 8.13 When performing operation tests on Panel PC1 trunks per SD-21974-01, the test circuit requires that battery and ground be furnished on the outgoing tip and ring of the trunk. If cross connections or terminations to distant CANA trunk are not installed, it will be necessary to connect temporary ground to the outgoing ring lead (R1 lead on Unit T.S. 28) and -48V battery on the outgoing tip lead (T1 lead on Unit T.S. 29). Connections may be made on the corresponding leads at the distributing frame, if convenient. Disconnect these temporary jumper after completing operation test of the trunk.
- 8.14 Operate keys as indicated in Table A. Operate the ST key.
- 8.15 The Automatic Trunk Test Circuit will test all ring party functions of the trunk and when test has been completed, will repeat test on the trunk until the ST key is returned to the normal position.
- 8.16 When testing PC1 trunks per SD-21974-01, the Automatic Trunk Test Circuit must be provided with the features of Issue 5AR (or later) of SD-95889-01. Unless this feature is furnished, the test will block at the operate test of the trunk CT relay.

TABLE A

TEST CALL	OPERATE KEYS											
	TT	OFF O	THO O	HO O	TO O	UO O	TP	TMD	AB1	CR	CC	ARID
RING PARTY	X	X	X	X	X	X	-	-	-	-	-	-
TIP PARTY	X	X	X	X	X	X	X	-	-	-	-	-
TIMED RELEASE	X	X	X	X	X	X	-	X	-	-	-	-
ABANDONED CALL	X	X	X	X	X	X	-	-	X	-	-	-
COIN RETURN	X	X	X	X	X	X	-	-	-	X	-	-
COIN COLLECT	X	X	X	X	X	X	-	-	-	-	X	-
AUTOMATIC RETURN ID.	X	X	X	X	X	X	-	-	-	X	-	X

- 8.2 Timed Release Test 8.52 Operate the ARID key if provided. (The ARID key is not required if all the coin trunks in the office are required to be tested for Automatic Return of Initial Coin Deposit).
- 8.21 The function of this test is to check the ability of the trunk to function correctly on a call on which the called party disconnects and the calling party holds. 8.53 Operate the ST key.
- 8.22 Prior to the start of test, operate the TMD key on the Output-pulser-Identifier test circuit. 8.54 The test circuit will check for the correct coin return battery and Automatic Return of Initial Coin Deposit features of the trunk and repeat the test until the ST key is released.
- 8.23 Operate the TT and ST keys on the Output-pulser-Identifier test circuit. 8.55 Release the ST key. The Trunk and Test Circuit return to normal.
- 8.24 Call should proceed in the normal manner until the release of the CS relay in the trunk. 8.56 Repeat paragraphs 8.51 through 8.55 for all trunks arranged for Automatic Return of Initial Coin Deposit.
- 8.25 Trunk should time out, and test circuit restore to normal. Release the ST key. 8.6 Abandoned Call
- 8.3 Tip Party Test 8.61 Operate AB1 (abandoned call panel) key.
- 8.31 Operate key TP on the test frame. 8.62 Operate ST key.
- 8.32 Operate ST key. 8.63 Test circuit checks that the trunk holds busy then restores to normal.
- 8.33 Test circuit will test all tip party functions of the trunk and return to normal. Release the ST key. 9. ANI TRUNK LOCK-UP
- 8.4 Coin Test 9.1 To prevent these trunks from being locked off normal to the corresponding incoming trunk at the CAMA office as a result of certain trouble or traffic overload conditions. The following options are provided.
- 8.41 Operate CC (coin collect) key. 9.11 Trunk SD-21972-01 (N OPT). Block operated relay SI or SP and observe relay RV will operate and lockup after a delay of approximately 1 second. Unblock relay SI or SP and release relay RV.
- 8.42 Operate ST key.
- 8.43 Test will check for correct application of coin battery and advance to next position.
- 8.44 Repeat using CR (coin return) key. Release the ST key.
- 8.5 Automatic Return of Initial Deposit Test - Coin Trunks
- 8.51 Operate keys CR and REP.

- 9.12 Trunk SD-21982-01 (K OPT) or Trunk SD-21992-01 (K OPT). Block operated relay SI or SP and observe relay RV will operate and lockup after a delay of approximately 1 second. Unblock relay SI or SP and release relay RV.
- 9.13 Trunk SD-21981-01 (N OPT). Block operated relay SI and observe relay CNR will operate and lockup after a delay of approximately 1 second. Unblock relay SI and release relay CNR, if straps were installed on the AR relays and insulation on the CNR 1 relays per paragraph 8.111 and (A) Remove the straps and insulation at this time and make call through tests as required to test the A.R.I.D. feature.
- 9.14 Trunk SD-21991-01. Block the SI relay operated and observe that after a delay of approximately 3 seconds the TO relay operates. Unblock relay SI. Relays SI and TO release.

10. TRUNK CONDUCTOR LOOP RESISTANCE TEST
- 10.1 Outgoing trunk circuit.
 - 10.11 In the following tests with the VOM (ITE-4442A) select the most convenient scale, which would place the needle at midrange on the scale, for the following resistance checks.
 - 10.12 Connect one of the meter leads to terminal 4 of the Transformer. Connect the other lead to 5 fix of the TT1 relay.
 - 10.13 These connections will check the resistance of CRO and CR1 on SD-21982 and SD-21992 or CR1 and CR2 on SD-21981 depending on what options are furnished as shown in Table B (see NOTE below).
- NOTE: This trunk circuit must be normal with all relays non-operated before proceeding.

TABLE B

Furnished Option	Approximate Meter Reading In OHMS
Q	2000
Q, S	1500
R	1000
R, S	500
Q, R, S	0

→ Arrowed lines not indicated due to extensive changes.

Manager, Engineering, Switching Equipment and SXS P.E.C.C.

Reason for Reissue:

To add E & M signaling trunks to the Section, to include T.I. 110, dated 1-12-72 in the Section, and to include a test for A.R.I.D. feature of trunks.