

TERMINATING MARKER AND

TERMINATING MARKER APPLIQUE TESTS

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| <p>1. <u>GENERAL INFORMATION</u></p> <p>1.1 Refer to Terminating Marker and Terminating Marker and Terminating Marker Applique Tests per Section 225 for General Information, Test Procedure, Records and Requirements, Test Equipment and Test Set Up.</p> <p>2. <u>FUSE VERIFICATION</u></p> <p>2.1 <u>Test Procedure - General</u></p> <p><u>CAUTION: To eliminate a fire hazard, verify that direct ground is not present on the alarm bar or stud on a fuse panel before installing its feeder fuse.</u></p> <p><u>NOTE: Use ITE-4442 Volt-ohmmeter. To avoid damaging the meter, first verify that battery is not present on the alarm bar by using the voltmeter portion of ITE-4442. If clear, switch to the ohmmeter portion for the resistance reading which should be either infinity or approximately 600 ohms.</u></p> <p>2.11 Fuse verification is, ordinarily, only required on fuse panels wired by the installer.</p> <p>2.12 On shop wired and fused fuse panels, inspect the panel for missing or operated fuses. If a fuse is missing or operated, test the fuse terminal for the absence of low resistance ground. Clear any grounded condition and install the proper fuse. At the completion of this test all fuse panels should be fully equipped with proper fuses. These may be either the proper specified type or a dummy.</p> <p>2.13 The operation of relays in circuits when fuses or potentials are applied is normal in some circuits. Oscillation chatter, and signs of overheating should be analyzed and cleared immediately.</p> | <p>2.14 ITE-4442 Volt-ohmmeter should be used to verify all potentials at fused terminals to insure that polarity and voltages are correct. Many errors are caused by the use of the R-9572 Test Receiver on potentials other than -48 Volts. Handbook 100, TMO-4442, provides full instructions for the use of the volt-ohmmeter.</p> <p>2.15 When the R-9572 Test Receiver is used, avoid placing it directly on the ear.</p> <p>2.2 <u>Fusing Tests</u></p> <p>2.21 Using fuses of the correct type, as indicated by the circuit drawing and fuse panel designations, install the fuses listed in Table A one at a time. Verify that each fuse is associated with the correct circuit and is free from cross with other unfused posts on the panel.</p> <p>3. <u>CONTACT PROTECTION</u></p> <p>3.1 For those contact protection networks installed on the job, test in accordance with Handbook 61, Section 0.2.</p> <p>4. <u>CHANNEL SELECTION TEST</u></p> <p><u>NOTE: These tests are based on the assumption channels are selected in the following order: 0,2,1,3-9. If any other order is specified the tests are made in a similar manner and the order should be changed to agree with the OT to IN 0-9 cross-connections.</u></p> <p>4.1 <u>Incoming Link Frame - Leads OR-9R and OL-9L</u></p> <p><u>NOTE: Incoming link frame 0 is specified for this test. If more convenient any other incoming link frame may be used.</u></p> |
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TABLE A

SD DRAWING	FUSE DESIGNATION	TEST LOCATION	
		TERMINAL STRIP	TERMINAL
25283-01	AC-DC AUD or + AUD	MISC.	50
↕	24-48V Positive (Markers 0 & 1) Battery	"	54
	110 V Positive Battery	"	56
25283-01	135 Cycle Current (Markers 0 & 1)	"	59
25055-01	TBS	"	48V Terminal
25055-01	MISC	"	Lamp AL
27819-01	TBS	"	48V Terminal

4.11 Setup for Test

- 4.111 Block operated relay LLB of the marker to connect battery to the windings of relays CHT (0-9).
- 4.112 At Incoming Link Frame 0, connect the Jones 312 CCT receptacle socket plug of one ITE-9984 cord to connector A on Link Frame Test Set ITE-4033B. Connect ITE-2461 sockets 0-9 of this cord to MC terminal strip punchings 10-19 respectively for leads 0L-9L. Similarly, connect another ITE-9984 cord between connector B and MC terminal strip punchings 20-29 respectively for lead 0R-9R.
- 4.113 Using ITE-9598 cord, connect 48V battery and ground to jack A of ITE-4033B. Operate keys AG and BG.

- 4.114 Block operated relay MC associated with the marker under test at Incoming Link Frame 0.

4.12 Test Operations

- 4.121 Block operated relay LIL of the marker to close leads 0L-9L to the incoming link frame.
- 4.122 Ground punchings S on cross-connection terminal strip F of the marker under test and observe that relay CH0 operates. Remove the ground. Relay CH0 releases.
- 4.123 Operate key A0 on the test set. Ground punching S and observe that relay CH2 operates. Remove the ground. Relay CH2 releases.
- 4.124 With key A0 still operated, operate key A2. Ground punching S momentarily and observe that relay CH1 operates while ground is connected.

- 4.125 Continue in a similar manner as described in the preceding paragraphs until all ten channels have been tested. Observe that relay PCT operates when ground is connected to punching S with relays CHT(0-9) operated. The following chart shows in sequence, the operated keys and relays.

Operated Keys	Operated Relays	
A	CHT	CH
None	None	0
0	0	2
0,2	0,2	1
0-2	0-2	3
0-3	0-3	4
0-4	0-4	5
0-5	0-5	6
0-6	0-6	7
0-7	0-7	8
0-8	0-8	9
0-9	0-9	None

NOTE: Relays CHT(0-9) are the 316 type sealed contact relays. Their proper operation is verified by the proper operation of relays CH(0-9).

- 4.126 Release relay LIL and block operated relay RIL. Operate and release keys B(0-9) and observe that relays CHT(0-9) respectively operate and release. Release keys AG and BG. Release relays MC and RIL. Release relay LLB unless following test is made at this time.

4.2 Line Choice Connector - Leads (LJ)0-9

NOTE: Line Choice Connector 0 is specified for this test. If more convenient any other line choice connector may be used.

- 4.21 Block operated relay LLB of the marker to connect battery to the windings of relays CHT(0-9).

- 4.22 Block operated relay JPN of the marker and relay MCC of Line Choice Connector 0.
- 4.23 Connect ground to contact 5 of relay CHT0. Verify relay CHO operates.
NOTE: The next preferred channel relay will also operate but should have no affect on this test.
- 4.24 At the terminal strip for MCC relays on Line Choice Connector 0, momentarily ground punching 30 and observe that relay CHO releases while ground is connected.
- 4.25 Repeat the tests of Paragraph 4.23 for relays CHT(1-9) and CH(1-9) respectively.
- 4.26 Repeat the tests of Paragraph 4.24 for terminal strip punchings 31-39 and relays CH(1-9) respectively.
- 4.27 Release relay JPN. Remove and release all test connections unless the following test is made at this time.
- 4.3 Line Choice Connector - Leads (LL)0-9
NOTE: Line Choice Connector 0 is specified for this test. If more convenient any other Line Choice Connector may be used.
- 4.31 Setup for Test
- 4.311 Block operated relay LLB of the marker to connect battery to the windings of relays CHT(0-9).
- 4.312 At Line Choice Connector 0, connect the Jones 312 CCT receptacle socket plug of one ITE-9984 cord to connector A on Link Frame Test Set ITE-4033B. Connect ITE-2461 sockets 0-9 of this cord to MCC terminal strip punchings 0-9 respectively for LL 0-9.
- 4.313 Using ITE-9598 cord, connect 48V battery and ground to jack A of ITE-4033B. Operate key AG.
- 4.314 Block operated relay MCC associated with the marker under test at line choice connector 0.
- 4.32 Test Operations
- 4.321 Operate key A0 on the test set. Ground punchings S on cross connection terminal strip F and observe that relay CH2 operates. Remove the ground. Relay CH2 releases.

- 4.322 With key A0 operated, operate key A2. Ground punching S momentarily and observe that relay CH1 operates while ground is connected.
- 4.323 Continue in a similar manner as described in the preceding paragraphs until all ten channels have been tested. Observe that relay PGT operates when punching S is grounded with relays CHT (0-9) operated. The following chart shows, in sequence, the operated keys and relays.

Operated Keys	Operated Relays	
	CHT&LL	CH
A	None	0
None	None	0
0	0	2
0,2	0,2	1
0-2	0-2	3
0-3	0-3	4
0-4	0-4	5
0-5	0-5	6
0-6	0-6	7
0-7	0-7	8
0-8	0-8	9
0-9	0-9	None

NOTE: Relays CHT(0-9) are the 316 type sealed contact relays. Their proper operation is verified by the proper operation of relays CH(0-9).

Relays LL(0-9) are the 326 type sealed contact relays. Although they operate on the above test, their proper operation is verified by the Line Link Per Cent Load tests of Handbook 62, Section 225.7.

- 4.324 Remove all test connections. Verify all relays are restored to normal.
- 4.4 Locking Path Relays (CH) 0-9
- 4.41 Block operated relay NK.
- 4.42 Manually operate relay CHO and check that it locks.
- 4.43 Manually operate relay CH1 and observe that it locks and that relay CHO releases.
- 4.44 Manually operate relay CH2 and observe that it locks and relay CH1 releases.
- 4.45 Continue as described in the preceding paragraphs to the end of the chain. Restore to normal relay NK.

5. MISCELLANEOUS CIRCUIT, SD-25055-01

- 5.1 Verify the below listed features of the Miscellaneous Circuit, not checked on other tests, as follows:
- 5.11 Test Battery Jack and Supply
- 5.111 Check 48V test battery terminals and tip of the A jack for presence of 48 Volts.
- 5.112 Check the G test terminals for direct ground.
- 5.113 Check the HBG test terminals for high resistance ground (12000 ohms).
- 5.114 Check for direct ground on the A jack sleeve.
- 5.12 Spare Jack B to MDF
- 5.121 Make a continuity test of Jack B to the MDF.
- 5.13 Frame Line Jacks
- 5.131 Make a continuity and cross test of the tip and sleeve leads of Jacks TEL (A and B) to all associated TEL jack appearances and to the MDF.
- 5.14 Remote Control Jack
- 5.141 Make a continuity test of Remote Control Jack F to the TTI.
- 5.15 Fuse Alarm
- 5.151 Connect 48V battery through test receiver R-9572 to the alarm bar for the 20 ampere frame fuse. Observe that the major alarm sounds and that lamps 20A, and the associated red aisle pilot light. Lamps FA and AL do not light.
- 5.1511 Disconnect the battery from the alarm bar and observe that the alarm is silenced, the lighted lamps extinguished, and lamp AL lights. Momentarily operate key AR to extinguish lamp AL.
- 5.1512 To check the 20A resistance shunt, remove lamp 20A and repeat the test described in Paragraphs 5.151 and 5.1511. Replace the lamp at the completion of the test.
- 5.1513 To verify the presence of the 350 ohm resistance between the 20 ampere alarm bar and the 20A lamp, proceed as follows: Connect 48V battery through test receiver R-9572 to the alarm bar for the 20A fuse, using another test receiver,

R-9572, connect to the same point and the fuse mounting side of the 20A lamp. Check for an appreciable receiver click in both receivers.

- 5.152 Connect 48V through test receiver R-9572 to the frame fuse panel alarm bar. Observe that the major alarm sounds, and that lamp FA and the associated red aisle pilot light. Lamps 20A and AL do not light.
- 5.1521 Remove the battery and observe that the alarm is silenced, the aisle pilot and FA lamps are extinguished and lamp AL lights. Momentarily operate key AR.
6. MISCELLANEOUS CIRCUIT, SD-27819-01
- 6.1 Verify the below listed features of the Miscellaneous Circuit, not checked on other tests, as follows:
- 6.11 Test Battery Jack and Supply
- 6.111 Check 48V test battery terminals and tip of the A jack for presence of 48 Volts.
- 6.112 Check the G test terminals for direct ground.
- 6.113 Check the HRG test terminals for high resistance ground (12000 ohms).
- 6.114 Check for direct ground on the A jack sleeve.
- 6.12 Frame Line Jack
- 6.121 Make a continuity and cross test of the tip and sleeve leads of Jacks TEL (A and B) to all associated TEL jack appearances and to the MDF.
- 6.13 Remote Control Jack
- 6.131 Make a continuity test of Remote Control Jack F to the TTI.
- 6.14 Fuse Alarm
- 6.141 Connect 48V battery through test receiver R-9572 to the alarm bar for the 20 ampere frame fuse. Observe that the major alarm sounds and that lamps 20A, and the associated red aisle pilot light. Lamps FA and AL do not light.
- 6.1411 Disconnect the battery from the alarm bar and observe that the alarm is silenced, the lighted lamps extinguished, and lamp AL lights. Momentarily operate key AR to extinguish lamp AL.

6.142 Connect 48V through test receiver R-9572 to the frame fuse panel alarm bar. Observe that the major alarm sounds, and that lamp FA and the associated red aisle pilot light. Lamps 20A and AL do not light.

6.1421 Remove the battery and observe that the alarm is silenced, the aisle pilot and FA lamps are extinguished and lamp AL lights. Momentarily operate key AR.

No Changes Indicated Due
To Extensive Revision

Manager, Crossbar Product Engineering
Control Center

Reason for Reissue:

- 1) Add information required for Marker Speedup
- 2) Make a general revision to update current Engineering Standards.