

ORIGINATING TROUBLE INDICATOR TEST

Replaces: Section 173
 Dated 12-16-48

CONTENTS

- | | |
|------------------------------------|---------------------------------------|
| 1. GENERAL INFORMATION | 6. MISCELLANEOUS CIRCUIT, SD-25063-01 |
| 2. RECORDS AND REQUIREMENTS | 7. MISCELLANEOUS WIRING CHECK |
| 3. TEST EQUIPMENT | 8. DOUBLE CONNECTION TEST |
| 4. FUSE VERIFICATION | 9. MAKE BUSY |
| 5. REFERENCE CHAIN LOCKOUT CIRCUIT | 10. DT KEY CHAIN AND DT RELAY LOCK |

1. GENERAL INFORMATION

- 1.1 The major operating features of the Originating Trouble Indicator Circuit, SD-25018-01, are tested in connection with the tests of the Originating Markers, Originating Marker Connectors, and District Link Frames.
- 1.2 This section describes a method of testing the features which are not checked by those tests but are shown on Originating Trouble Indicator Circuit, SD-25018-01, and Miscellaneous Circuit for Originating Trouble Indicator Circuit, SD-25063-01.

2. RECORDS AND REQUIREMENTS

- 2.1 Records: Forms SD-4-1313, SD-4-1315, and SD-4-1334 are required for recording the results of these tests.
- 2.2 Requirements: The tests of Section 173 must be applied to meet the performance requirements per BSP 816-007-181.

3. TEST EQUIPMENT

3.1 Test Sets Required

<u>Amt</u>	<u>ITE</u>	<u>Description</u>
1	4033B	Link Frame Test Set

3.2 Cords Required

<u>Amt</u>	<u>ITE</u>	<u>Lgth</u>	<u>Cdrs</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
1	9598	12'	2	310 Plug	310 Plug	4033B
1	9984	12'	10	10 Jones P312CCT Sockets	10 Sockets ITE-2461	4033B

3.3 Accessories Required

<u>Amt</u>	<u>Code</u>	<u>Description</u>	<u>With ITE</u>
1	ITE-4442	Volt-Ohmmeter	
1	R-9572	Test Receiver	4023
As Req	322-A	Make-Busy Plug	4023

4. FUSE VERIFICATION

4.1 Test Procedure - General

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. THIS SHOULD BE DONE USING THE 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.

NOTE 1: 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.

NOTE 2: 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.

NOTE 3: When the R-9572 Test Receiver is used, avoid placing it directly on the ear.

NOTE 4: Fuse verification is, ordinarily, only required on fuse panels wired by the installer.

NOTE 5: 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.

4.2 Fusing Tests

4.2.1 Using fuses of the correct type, as indicated by the circuit drawing and fuse panel designations, install the fuses 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.

5. PREFERENCE CHAIN LOCKOUT CIRCUIT

- 5.1 Connect 48V battery and ground to the A jack of the Link Frame Test Set, ITE-4033B, using an ITE-9598 cord.
- 5.2 Connect the Jones P312CCT Socket of an ITE-9984 cord to the A connector of the set. Connect leads 0, 1, 2, etc., of this cord to punchings 08, 18, 28, etc., respectively on terminal strip A. These punchings are the windings of the DS relays and punchings 00, 10, 20, etc., are the associated CIA leads.
- 5.3 Operate the AB key of the set and leave it operated.
- 5.4 Block all DR relays of the trouble indicator in the non-operated position.
- 5.5 Operate key A0 to operate the DS relay in first position in the preference chain. Connect battery to the windings of the other DS relays, one at a time by operating and releasing keys A1, A2, etc. Observe that these DS relays do not operate. Release key A0 to release the first DS relay.

- 5.51 Operate key A1 to operate the DS relay in second position in the preference chain and check that the DS relay in third, fourth, etc., positions do not operate when battery is applied to their windings by operating and releasing key A2, A3, etc. Release key A1 to release the DS relay in second position.
- 5.52 Continuing in this manner, check that DS relays in higher positions will not operate when a DS relay in the lower position is operated.
- 5.6 Operate the DS relay in last position by operating the proper A key. Operate key A0 to apply battery to the winding of the DS relay in first position. Check that it operates. Now check that all intermediate DS relays will operate when battery is applied to their windings. The order in this case does not matter.
- 5.7 With all DS relays operated, check that ground is present on the CIA lead associated with the DS relay in last position and is not present on any other CIA lead. Refer to 4.2 for the association between DS relays and CIA leads.
- 5.71 Release the DS relay in last position and check that ground is present on the CIA lead associated with the DS relay in next to last position but not on any other CIA lead.
- 5.72 Continuing in this manner check that ground is present on only one CIA lead at a time when two or more DS relays are operated and that the grounded lead is associated with the operated DS relay in the highest position.
- 5.8 Remove the blocks from all relays.
6. MISCELLANEOUS CIRCUIT, SD-25063-01
- 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 HBG test terminals for high resistance ground (12000 ohms).

- 6.114 Check for direct ground on the A jack sleeve.
- 6.12 Spare Jack B to MDF
- 6.121 Make a continuity test of Jack B to the MDF.
- 6.13 Frame Line Jacks
- 6.131 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.
- 6.14 Remote Control Jack
- 6.141 Make a continuity test of Remote Control Jack F to the OTI.
- 6.15 Fuse Alarm
- 6.151 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.
- 6.152 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.
- 6.153 To check the 20A resistance shunt, remove lamp 20A and repeat the test described in Paragraphs 6.151 and 6.152. Replace the lamp at the completion of the test.
- 6.154 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.
- 6.155 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.
- 6.156 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.
- 6.2 Dynamic Overload Control
- NOTE: This test is required only when the Originating Trouble Indicator is equipped for operation with Dynamic Overload Control.
- 6.21 Momentarily apply ground to Punching 100 of terminal strip MISC. on the Dynamic Overload Route Transfer Control Unit. Verify that the major alarm sounds and lamp RTCX lights.
- 6.211 Operate key RT-AR. Verify that the major alarm is silenced and lamp RTCX is extinguished.
- 6.212 Restore key RT-AR to normal.
- 6.22 Make-busy Marker 0 by inserting a 322A make-busy plug into its DB jack.
- 6.23 Momentarily apply ground to Punching 00 of terminal strip RT on the Dynamic Overload Route Transfer Control Unit. Verify that the major alarm sounds and lamp RTX0 lights.
- 6.231 Operate key RT-AR. Verify that the major alarm is silenced and lamp RTX0 is extinguished.
- 6.232 Restore key RT-AR to normal.
- 6.24 Repeat the tests of Paragraph 6.23 for Punchings 01 through 19 of terminal strip RT.
- 6.25 Remove make-busy plug from jack DB of Marker 0.
- 6.26 Repeat the tests of Paragraph's 6.22 through 6.25 for Markers 1 through 7. Observe the same results except lamp indications should correspond to the marker under test.
- 6.27 Refer to Handbook 61, Section 172.4 for operational tests of Dynamic Overload Control.
7. MISCELLANEOUS WIRING CHECK
- 7.1 On the test of the CF, CN and SN leads and relays per the originating marker connector test method and the LC leads to SW relays and M leads to M relays per the district link frame test method, the locking ground for these relays was not supplied in order that a check for crosses could be made on the leads. With the GD1 relay operated to supply locking ground, check the locking paths for these relays.

- 7.2 Manually operate a DR relay. Observe that relay EC operates and lamp EC does not light. Momentarily operate key RL to release relays DR and EC. Repeat this test by manually operating relay RL1. Observe that lamp EC lights. Momentarily operate key RL to release relay RL1 and extinguish lamp EC.
- 7.3 Block operated the CIF relay of an originating marker. Ground the 3 and 6 bottom contacts (one at a time) of the DMT relay of the marker and observe that the TR relay of the trouble indicator operates. Repeat test on all markers.
8. DOUBLE CONNECTION TEST
- 8.1 Block an originating marker in the busy position (ground on the TM lead), cross of the 1 and 2T contacts of ST1 relay.
- 8.2 Set up and originate a test call to the busy marker as outlined in Section 172, Paragraph 4. Observe that the trouble indicator will not connect to the busy marker and the test call is blocked. Remove the busy condition from the marker. Observe that the trouble indicator now connects to the marker and the call is completed as keyed.
9. MAKE BUSY
- 9.1 Operate the RM relay, and RM1 relay if provided, and check that the TIB relay in each originating marker is operated. Check that the RM relay and RM1 if provided, operates from the make of each DT relay, make of the DC relay and make of the RD relay.
- 9.2 Insert a make busy plug in the TIB jack associated with the originating marker. Check that the TIB relay of the marker operates. Make this test on each originating marker.
10. DT KEY CHAIN AND DT RELAY LOCK
- 10.1 Start a marker test call using key DT-0. Before the test call is completed, restore key DT-0 and operate key DT-1. Observe that the DT-2 key is ineffective until the test call is completed. Repeat the test using DT keys 1 and 2, 2 and 3 etc., until all equipped DT keys have been used.

No changes are indicated due to extensive revision

Manager, Crossbar Product Engineering
Control Center

Reason for Reissue:

Make a general revision to update to current engineering standards.