DISTRICT JUNCTOR TEST CIRCUIT TEST

OPERATING TESTS

CONTENTS

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1. GENERAL INFORMATION

1.1 Description of Test: This section describes a method of making an operating test of the district junctor test circuit SD-25158-01.

1.2 Test Procedure: These tests should be made before the routine tests are made on the district junctor circuits.

1.3 Cross Connections: Install the cross connections at terminals 08, 18, 28, etc., as shown on Figure 3K of SD-25158-0104. These terminals are provided to permit the use of ITE-4073 for making local timing tests per Section 122 or zone registration tests per Section 129. Therefore, if the ITE-4073 set is to be used, install temporary cross connections for use in testing the test frame and install the permanent cross connections when all tests with ITE-4073 have been completed.

1.4 Lamp Indications: When testing a particular feature of the test circuit, it is necessary to observe only those lamps associated with the feature under test; other lighted lamps may be disregarded at that time.

1.5 Sequence of Tests

1.51 Tests per Paragraphs 3 to 8 shall be made with the test circuit set on a two party district junctor and with REP key operated. If there are no two party circuits use an individual message rate district junctor and omit all of the following tests that are peculiar to two party circuits.

1.52 Tests per Paragraph 9 shall be made with test circuit set on a coin district junctor arranged for timing and with REP key operated.

2. RECORDS AND REQUIREMENTS

2.1 All tests outlined in this section are supplementary tests. Forms ID-1313 and ID-1315 are required for recording the results of these tests. For further information see Section 3 of Handbook 50.

3. LOCAL CHARGE - NON-COIN

3.1 Failure of District Junctor to Maintain Ground on Sleeve: Block S relay in district junctor circuit normal. Operate LC and ST keys to start a test and observe test circuit blocks. Remove block from S relay.

3.2 Check False Battery on BT Lead

3.21 Make a test call. When the DIAL lamp lights connect battery through a test receiver to the BT lead at the 5BF winding terminal of relay BT4. Observe that the test circuit blocks, the TA lamp lights and the alarm sounds.

3.22 Make a local charge (LC) test call. When the BB lamp lights connect battery to the BT lead as described in Paragraph 3.21. Observe that same results are received.

3.3 Failure of TLB Relay to Hold Over S1 Lead of Second Test Line

3.31 Operate the LC and ST keys. When the S lamp lights, insulate 3T and 4T contacts of relay TT to open the hold path for relay TLB. Observe that the test circuit stops, the TA lamp lights and the alarm sounds.

3.32 Remove the insulation and restore the test circuit to normal.

3.4 Check of M1 and M2 Leads

3.41 Operate LC and ST keys. When lamp S lights (S relay in district circuit flashing) momentarily remove ground from M1 lead by opening indicated relay contact in connected district circuit. Check that test circuit stops with lamps TA and MCH lighted and the alarm sounds.

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25020-01	5-6B
25620-02	1-3T
26201-01	6

3.42 Restore the ST key and momentarily operate the CA key to restore the TST selector to normal and to retire the alarm and extinguish the lamps.

3.43 Again operate the ST key and when the S lamp lights break the top 5 and 6 springs of the TP relay of the district junctor circuit for a short interval to remove ground from the M2 lead. Observe that the test circuit stops, the TA and GM lamps light and the alarm sounds.

3.44 Restore the ST key and momentarily operate the CA key to restore the TST selector to normal and to retire the alarm and extinguish the lamps.

3.45 Operate LC and ST keys.

3.46 When the BB lamp lights, manually hold CS relay of the district circuit operated until the CH relay of the district operates.

3.47 Observe that the test blocks with the BB, MCH and TA lamps lighted.

→ 3.48 Operate FV key and repeat 3.45 & 3.46. Observe that test circuit blocks with BB, FVA and TA lamps lighted.

3.5 Check for Crosses on FT and FR Leads

3.51 Cross the top 5 and 6 springs of the T relay of a non-coin district to be used for test. This connects the tip of the test line to battery through the T condenser and the P1 winding of the district S relay.

3.52 Operate the LC key and then the ST key. When the test circuit makes the A.C. test for crosses with battery and ground (position 4 of the TST selector) observe that the test circuit stops, the TA lamp lights and the alarm sounds.

3.53 Restore the ST key and momentarily operate the CA key to restore the test circuit to normal. Remove the cross from the top 5 and 6 springs of the T relay.

3.54 Cross the bottom 5 and 6 springs of the T relay of the district. This connects the ring of the test line to ground through the R condenser and the P2 winding of the S relay of the district.

3.55 Operate the LC key and then the ST key. When the test circuit makes the A.C. test for crosses with battery and ground (position 4 of the TST selector) observe that the test circuit stops, the TA lamp lights and the alarm sounds.

3.6 No. Charge

3.61 Insulate 1 and 2B of CH relay in district junctor (7 and 8B of CH relay in district junctor circuit SD-25620-02.)

3.62 Operate LC and ST keys to start a call and note that test circuit blocks with NCH lamp lighted.

3.63 Remove insulation from CH relay.

3.7 Over Charge

3.71 Start a call and when CH relay operates cause more than one message register battery pulse to be sent to the test circuit in one of the following ways:

(a) Fig. D of District Junctor, Fig. C, SD-25620-02 or SD-26201-01 is furnished: When TC relay releases momentarily reoperate it.

(b) Fig. E of the District Junctor Equipped: Momentarily open 1 and 2B contacts of the CH relay. When Fig. D of SD-25620-02 is furnished: Momentarily open 7 and 8B contacts of the CH relay..

(c) Fig. C of the District Junctor Equipped: Operate keys Z, T and SUB DISC. Make a test call. When the initial charge has been received the test circuit advances to position 16 lighting the 2 CHG lamp. When lamp 2 CHG lights momentarily operate the MR relay of the zone registration circuit connected to the district junctor used for test.

3.72 Observe that the test circuit stops. The TA and OCH lamps light and the alarm sounds. Restore the circuits to normal.

3.8 Transmission Test Feature

NOTE: If transmission tests on the district junctors will not be made using the district junctor test frame, make the following tests.

3.81 Insert the plug of an ITE-9601 cord into jack R on the test frame and short the tip and ring of the cord. Insert the plug of another ITE-9601 cord into jack S on the test frame.

3.82 Operate keys LC and ST. Observe that the test circuit stops on position 5 of the TST selector and the S lamp is lighted.

3.83 Verify continuity between the following points: (1) tip of jack S to spring 1B or relay TRA and (2) ring of jack S to spring 4B of relay TRA.

3.84 Remove the cords and restore circuits to normal.

3.9 Miscellaneous Tests

3.91 Tone on T and R of District Junctor When Test Circuit is Connected

Check that the district junctor test frame connects low pitched tone to the district junctor tip and ring leads to indicate to a sender monitor that the test circuit is connected. This tone may be checked on a local charge test call after dialing, by connecting a test receiver across the tip and ring of the district junctor circuit used for test.

3.92 Check of TRL Lead

Connect ground to the TRL lead to the subscriber sender link and control circuit (Punching 03, T.S. MISC on test frame). Originate any class of test call and observe that immediately after the ST key is operated the TA lamp lights and the alarm sounds. The sender link and controller circuit is released from the test circuit. Restore the ST key to return the circuit to normal and silence the alarm. Remove ground from the TRL lead.

4. OPERATOR CLASS

4.1 Check for Crosses in T and R and Continuity

4.11 Short the top 1 and 2 springs of the OT relay of a district junctor circuit to be used for test so that these springs will not break when the OT relay operates. This connects battery through the P1 winding of the S relay and the T condenser to the tip of the district junctor when the district junctor is in the talking position.

4.12 Operate the OPR key and then operate the ST key. Observe that when the test circuit makes a test for false battery or ground (position 15 of TST selector) the test circuit blocks in position 16, the TA and TR lamps light and the alarm sounds.

4.13 Restore the ST key and momentarily operate the CA key to restore the test circuit to normal. Remove the cross from the top 1 and 2 springs of the OT relay.

4.14 Cross the bottom 1 and 2 springs of the OT relay. This connects ground through the P2 winding of the S relay and the R condenser to the ring of district junctor when the district junctor is in the talking position.

4.15 Operate the OPR key and then operate the ST key. Observe that when the test circuit makes a test for false battery or ground (position 15 of TST selector) the test circuit blocks in position 16, the TA and TR lamps light and the alarm sounds.

4.16 Restore the ST key and momentarily operate the CA key to restore the test circuit to normal. Remove the cross from the bottom 1 and 2 springs of the OT relay.

4.17 Insulate the bottom 5 and 6 springs of the OT relay to cause a failure on the continuity test applied by the test circuit.

4.18 Operate the OPR key and then the ST key. Observe that when the test circuit makes the continuity test (position 15 of the TST selector) the test circuit blocks in position 15, and when the test circuit times out the TA lamp lights and the alarm sounds. The call is blocked because the AC relay and in turn the BG relay of the test circuit do not operate to advance the test circuit.

4.19 Remove the insulation from the OT relay and restore the circuits to normal.

4.2 Holding District Junctor from the Test Line Sleeve

4.21 Insulate 1 and 2B contacts of TLS relay.

4.22 Operate OPR and ST keys and note that test circuit blocks and TA lamp lights.

4.23 Remove insulation from the TLS relay.

5. SHORTED OR OPEN T OR R CONDENSER

5.1 Short the T condenser of the district junctor to be used for test.

5.2 Operate the CDR key and make a test call to the district junctor. Observe that when the test circuit applies the D.C. test for shorted condenser (position 13 of the TST selector) the test circuit stops and when the test circuit times out the TA lamp lights and the alarm sounds. The BG relay operates on this test and prevents the test circuit from advancing.

5.3 Operate the CA key to restore the test circuit to normal, remove the short from the T condenser and short the R condenser. Repeat the above test call and observe that the same results are obtained.

5.4 Operate the CA key to restore the circuits to normal and remove the short from the R condenser.

5.5 Simulate an open condenser by insulating the 1 and 2 top springs of the OT relay of the district junctor.

5.6 Again make a test call with the CDR key operated. Observe that when the test circuit applies the A.C. continuity test through the T and R condenser (position 15 of the TST selector) the test circuit stops and when the test circuit times out the TA lamp lights and the alarm sounds. The insulated springs of the OT relay prevents the AC relay of the test circuit from operating thereby preventing the circuit from stepping from position 15.

5.7 Remove the insulation from the OT relay and restore the circuits to normal.

6. AUTOMATIC RELEASE AND FALSE AUTOMATIC RELEASE

NOTE: When Figure O of the test circuit is furnished see Note 130 SD-25158-0109.

6.1 Time Failure on Automatic Release

6.11 Operate the AR key and then the ST key. When the AR lamp lights indicating the test circuit is timing the automatic release feature of the district

junctor circuit, momentarily operate the MR2 relay of the test circuit to simulate the condition of the district not releasing in less than the time specified for the Automatic release circuit of the district junctor circuit. Observe that the test circuit blocks, the TA lamp lights and the alarm sounds.

6.12 Restore the circuits to normal.

6.2 False Automatic Release

6.21 Operate keys AR, FAR and then ST. The AR lamp lights in position 16 of the TST selector and should stay lighted for 5 minutes. At the end of the 5 minute interval the TST switch is advanced out of position 16. This test verifies that a false ground is not present on the B lead of the automatic release circuit associated with the district junctor circuit used for test.

6.22 Restore the circuits to normal.

6.23 Connect ground to the B lead spring 2T of relay RL (when SD-25620-02 is furnished connect ground to the BR lead at 3B of relay R) of the automatic release circuit associated with the district junctor to be used for test. Operate keys AR, FAR and then ST. Observe that the test circuit is blocked, the TA lamp lights and the alarm sounds.

6.24 Remove the ground and restore the circuits to normal.

7. FREE CALL

7.1 Block CR relay normal.

7.2 Operate FC and ST keys. Test circuit blocks with NCH lamp lighted.

7.3 Remove block from relay CR.

8. BUSY AND TROUBLE TIMING, AND ALARMS

8.1 Busy Timing

8.11 Simulate a busy district in service by blocking operated the T and S1 relays of a non-coin district or the S1 relay of a coin district.

8.12 Operate the LC and ST keys. The BD lamp lights. Approximately 4-1/2 minutes after the BD lamp lights the alarm sounds and the TA lamp lights.

8.13 Operate the ACO key and observe that the alarm is silenced but the BD, TA and aisle pilot lamps remain lighted.

8.14 Operate and release the TA key. The TA selector restores to normal and starts timing again with the BD lamp relighted. Before the 4-1/2 minute interval remove busy condition from the district junctor and observe that the BD lamp is extinguished and the test circuit proceeds to test the district junctor circuit.

8.15 Restore the test circuit to normal when the BD lamp is extinguished and the S lamp lights indicating a test of the supervisory relay.

8.2 Trouble Timing

8.21 Operate the LC and ST keys. Insulate the 5 and 6 top contacts of the BLK relay when the S lamp lights to open the advance path for the TST selector. Observe that approximately 1-1/2 minutes after the test was started the TA lamp lights and the alarm sounds. Remove the insulation from the BLK relay contacts.

8.22 Operate the TA key and observe that the alarm is silenced, the TA lamp remains lighted and the TA switch restores to normal. Restore the TA key and then momentarily operate the CA key to restore the TST switch to normal, to extinguish the TA lamp and to silence the alarm which reoperates when the TA key is restored.

9. COIN TESTS

9.1 Coin Return on OPR Call

9.11 Insulate the 7 and 8B and the 8 and 9T springs of the SP relay of a coin district junctor circuit. This will cause a failure of coin return potential.

9.12 Operate the OPR key and then the ST key. Observe that the TST selector blocks in position 19, and when the test circuit times out the TA lamp lights and the alarm sounds.

9.13 Remove the insulators from the SP relay.

9.2 Check M1 Lead on Coin Junctors

9.21 Insulate the top 1 and 2 springs of the CC relay of a coin district junctor. This prevents the MR battery from being applied to the test circuit by the coin district junctor.

9.22 Operate the LC, and ST keys. Observe that the TST selector blocks in position 19, and the TA lamp lights and the alarm sounds.

9.23 Remove insulator from the 1 and 2 top springs of the CC relay of the coin distict junctor.

9.3 No Charge at 4-1/2 Minutes

9.31 Operate the T, LC and ST keys. Insulate the 4-1/2 minute springs of the timer on the district used for test in order to prevent coin collection at the end of 4-1/2 minutes.

9.32 The 1CHG lamp lights. 4-1/2 minutes later observe that the NCH and TA lamps light, the alarm sounds and the progress of the test circuit is stopped.

9.33 Remove the insulation from the 4-1/2 minute springs and restore the circuits to normal.

9.4 Over Charge at 4-1/2 Minutes

9.41 Operate the T, LC and ST keys.

9.42 After the 1CHG lamp lights and before the 4-1/2 minute interval is reached, short the 4-1/2 minute springs of the timer on the district junctor circuit to simulate an overcharge condition. Observe that the test circuit stops, the TA and OCH lamps light and the alarm sounds.

9.43 Remove the cross and return the test circuit to normal by releasing the ST key and momentarily operating the CA key.

9.44 Make another test call to the same district with the T and LC keys operated.

9.45 Immediately after the 2CHG lamp lights (position 16 of TST selector) and relay CO of district releases, reoperate the CH relay and CC relay of the district to simulate an overcharge condition. Observe that the test circuit stops, the TA and OCH lamps light and the alarm sounds.

9.46 Remove the short and restore the circuits to normal.

10. TIMING FEATURE (FIG. C)

10.1 Set up the test circuit for making a local charge test call. Operate the REP key.

10.2 Direct the test circuit to a district junctor whose relays have met their electrical requirements. Use the particular circuit feature if necessary.

10.3 Operate the ST key and the test circuit should proceed to test the district junctor using the timing feature Figure C as described in the circuit description Section -0107, Paragraph 19 for the S and S1 relays and the circuit description Section -0109, Paragraph 5.04 for TC relays.

10.4 During a repeat test manually slow up the release of the district junctor S1 relay. The test frame should block in position 18 of the test switch and light the RS lamp indicating a failure of the S or S1 relay in the district junctor to release properly. Repeat the test by slowing up the release of the S relay in the district junctor. The district test circuit functions as before.

10.5 During a repeat test manually slow up the release of the TC relay in the district junctor. The test circuit should block in position 13 of the test switch and light the TCF lamp indicating a failure of the district junctor TC relay to release properly.

11. PRELIMINARY CIRCUIT OPERATION (FIG. C)

11.01 Block the TC relay operated and the TC1 relay should operate. Operate and hold the SC key, the MR3 relay should operate lighting the TCF lamp.

11.02 Remove the blocking tool from the TC relay and it should release extinguishing the TCF lamp. Release the SC key and the MR3 relay should release.

11.03 At G1 resistance check for the presence of resistance battery through the TRS relay winding. Insert a 258C plug into the TRS jack and this battery should be removed. Remove the 258C plug.

11.04 Insulate 2-3T and 2-3B of relay TC1. Check for presence of resistance battery on 2T and 3B of relay TC1 and the sleeve of jack TRS. Insert a 258C plug into jack TRS and the battery is removed.

11.05 Connect ground to 1T of the TC relay and the TM2 relay should operate. Remove the ground and it should release.

11.06 Operate and hold the SC key. Check for the presence of direct ground on 1T of the Y relay. Release the SC key and this ground should be removed.

11.07 Insert a 258C plug into the SL and TCL jacks. Check for the presence of direct ground on 6T of TC1 relay, 3T of MR3 relay, 6B of TC relay, 7 of TRS relay, 6B and 2T of X relay and 1T of MR3 relay. Remove the plug from the TCL jack and the ground on 6B of the X relay and 1T of MR3 relay should be removed. Remove the plug from the SL jack and the ground should be removed from 6T of TC1 relay, 3T of MR3 relay, 6B of TC relay, 7 of TRS relay and 2T of X relay.

11.08 Operate and hold the SC key and the MR3 relay should operate. Connect ground to 2B of Y relay and then release the SC key. The MR3 relay should remain operated. Remove the ground from the

Y relay and the MR3 relay should release. Operate and hold the SC key and connect ground to 3 of the TRS relay and release the SC key. The MR3 relay should remain operated. Remove the ground and the MR3 relay should release.

11.09 Momentarily connect ground to 5B of the CB relay and the TM2 relay should operate and release.

11.10 Manually move the armature of TM1 relay to its back contact. Connect ground to the bottom of the C resistance and relay TM1 operates. Remove ground from C resistance TM1 relay releases.

→ Arrowed lines indicate new or changed information.

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Reason for Reissue:
Add Paragraph 3.48.

Replaces Section 121.2 dated 1- 5-56.