

DISTRICT JUNCTOR AND
INCOMING REPEATER

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1. GENERAL

1.1 Description of Test: This section covers the routine and supplementary tests of district junctor SD-25868-01 and its associated incoming repeater circuit SD-95413-01.

1.2 Test Sequence: The following circuits are used in testing district junctors and should be in working condition before the routine tests of the district junctors are started. Subscriber sender link, subscriber sender, marker connector, originating marker, district link, and office link.

1.3 A circuit test is one of the single routine tests (Talking nonoperator class or busy line, etc) applied once to one district junctor circuit.

1.4 Records: ID-1313, 2206 and 1334 trouble records are required to record the results of these tests. For further information on records see Handbook 50, Section 3.

1.5 Requirements: Section 3 lists all the tests to be made on these circuits together with the performance requirements.

2. TEST EQUIPMENT

<u>Amt</u>	<u>Code</u>	<u>Description</u>	<u>With ITE</u>
1	ITE-2580B	Talking Set	Requisition
As req.	298A	Make Busy Plugs	4023
1	ITE-8253	Contact Protection Test Set	4023
1	ITE-4015	Continuity Test Set	4023
#1	ITE-8242	Call Thru Tele-Phone Set	Requisition

Note: Required if used per Paragraph 15.011.

2.2 Cords required with ITE-4015.

<u>Amt</u>	<u>ITE</u>	<u>Length</u>	<u>Cords</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
4	9547	12'	1	ITE-2455 Plug	ITE-2455 Plug	4023

3. FUSING

3.1 This test is made at the time of the fusing test of the subscribers district junctors.

4. CONTACT PROTECTION

4.1 Check the following contact protection circuits using the method described in Section 2 of Handbook 50. The condensers and resistances composing the following contact protection circuits are located on the sender link frame and the interrupter checking circuit associated with the district junctor frame. Insulate the B and F contacts of the CH interrupter while making this test. The following circuits are equivalent circuits and may be checked one against the other, except the B and CS condensers which can be checked against equivalent circuits.

<u>C.P. Cond.</u>	<u>Ckt. Rest.</u>	<u>Type of Circuit</u>	<u>Connect to</u>
OB	160 ^W	Normally Charged	1T & 2T, Relay
EB	160 ^W	"	" " " "
OF	160 ^W	"	" " " "
EF	106 ^W	"	" " " "
B	B	"	4T " "
#CS	-	Discharged	" " A

NOTE: CS contact protection is on the incoming repeater circuit SD-95413-011 with Y option.

5. DISTRICT JUNCTOR INTERRUPTER CHECKING CIRCUIT

NOTE: Perform when Figures 3 and 4 are provided in the district junctor.

5.1 Block the first interrupter relay OB in the nonoperated position to prevent the 1 and 2 bottom springs from making when operate ground is applied to the relay. Observe that the PC lamp lights and the alarm operates. Remove the block and momentarily operate the RL key to extinguish the PC lamp and to retire the alarm.

5.2 Block the first OF relay in the operated position. This prevents the first OB relay from operating and causes the PC lamp to light and the alarm to sound as described in 5.1. Remove the block and retire the alarm.

5.3 All OB relays on a district junctor frame have their 1 and 2 bottom springs wired in a chain checking circuit and their operate paths thru break contacts of similarly numbered OF relay. These circuits should be verified as described in 5.1 and 5.2.

5.4 Repeat the tests per 5.1 and 5.2 on the EB, OF and EF interrupter relays on the district frame. These relays have their 1 and 2 bottom spring wired in a chain checking circuit and the OF relays operate through break contacts of the OB relays, the EB relays through break contacts of EF relays and the EF relays through break contacts of EB relays.

6. AUTOMATIC RELEASE & FALSE AUTOMATIC RELEASE

NOTE: Perform when Figure 2 and Figure D are provided.

6.1 At the subscriber sender link frame insert a make busy plug into the MB jack associated with the group of twenty district junctors to be tested.

6.2 At the unit terminal strip of the associated incoming repeater circuits, temporarily strap terminals 1 and 2. Bare strap wire may be used. Perform this operation on the twenty incoming repeater circuits.

6.3 Insulate the F contact of the RF interrupter in the associated timed release circuit.

6.4 Simultaneously operate the T and SL relays in the associated district junctor circuit. Observe that the LR, T and SL relays lock operated. Verify the ST lead from the district junctor to the associated timed release circuit by momentarily closing 6 & 7 top contacts of the DRI relay and checking that this operation places a ground on spring 1B of relay RLI of the release circuit. Perform these operations on the twenty district junctor circuits, and observe that at no time does the RLI relay operate.

6.5 Manually operate the DRI relay in each district junctor circuit and observe that it locks operated.

6.6 Remove the insulation from the F contact of the RF interrupter. The RLI relay will operate and lock when the RF interrupter F contact makes. Observe that the twenty circuits (district junctor circuits) restore to normal when the RB interrupter contact B makes after the operation of the RLI relay. This action will be delayed about 1 minute if the interrupters are equipped per Figure B or about 2 minutes if the interrupters are equipped per Figure A. If one of the interrupters is reversed or the B lead falsely grounded the circuits will release immediately after the operation of RLI relay. If the two interrupters are reversed the circuits will release within 2 to 4 seconds.

6.7 Remove the strap wire at the unit terminal strip and remove the make busy plug at the subscriber sender link.

7. CROSSES AT RELAYS EB, OB, EF AND OF

NOTE: Perform when Figure 4 is provided.

7.1 Test that the relay contacts in the following chart are free from resistance battery. This checks false continuity through the relay contacts to the DR relays. Momentarily ground the contacts as indicated and observe the results. When making TEST 1 observe that the DR relay operates as indicated and that the associated DRI relay does not operate. Also observe that the DR relays do not operate in the other circuits of the subgroup. When making TEST 2 observe that DRI relay operates as indicated and that the DRI relays do not operate in the other circuits of the subgroup.

Momentarily Ground Contact of	TEST 1		TEST 2	
	EB or OB Operated	DR Rel	EB and EF or OB and OF Operated	DRI Rel
12T	0	-	0	0
10T	1	-	1	1
8T	2	-	2	2
6T	3	-	3	3
4T	4	-	4	4
4B	5	-	5	5
6B	6	-	6	6
8B	7	-	7	7
10B	8	-	8	8
12B	9	-	9	9

NOTE: When testing on EB the relays in the even subgroup are operated and when testing on OB the odd subgroup is used.

8. CH INTERRUPTER TEST

NOTE: Perform when Figure 3 is provided.

8.1 Insulate the front and back contacts of the CH interrupters associated with the district junctor frame under test.

8.2 Ground the back contact of the odd interrupter and observe that the OF relays operate. Remove ground.

8.3 Ground the front contact of the odd interrupter and observe that the OF relay operate. Remove ground.

8.4 Repeat operations of Paragraph 8.2 and 8.3 using the back and front contacts of the even interrupter, observing that the EB and EF relays operate respectively.

8.5 Remove insulation from CH interrupters.

9. TRAFFIC REGISTER

9.1 Block operated the SL relay in each district junctor in the group associated with a GB register at the traffic register rack. Observe that the register scores when the last SL relay is operated.

9.2 Release and reoperate each SL relay in turn and observe that the register scores each time.

9.3 The ground for test of Paragraph 3, Section 122, Paragraph 3.4 Section 122.1, or Paragraph 4.4 Section 622 whichever is applicable may be made at this time, (with SL relays blocked operated).

9.4 Release the SL relays.

9.5 Repeat Paragraphs 9.1 to 9.2 using make busy plugs in the MB jacks of the district junctor circuit instead of the SL relays.

10. TRL LEAD

10.1 Connect ground to the TRL lead (No. 1 punching on the T.S. for MCA relays) of the district link frame. Block operated the district link frame LC relay associated with the juncctors under test.

10.2 Momentarily operate each district junctor F relay in turn and check that ground is present at the No. 24 punching of the vertical terminal strip on the district junctor unit.

10.3 Release the LC relay and remove ground from the TRL lead at the district link frame.

11. T AND R LEADS

11.1 Setup for Test

11.11 Locate an ITE-4015 continuity test set at the MDF.

11.12 Using ITE-9547 cords patch the No. 1 terminal of an ITE-4412 connector to the 1T terminal of the test set and the No. 2 terminal to the 1R terminal of the test set.

11.13 Using ITE-9547 cords patch battery and ground to the B and G terminals respectively on the test set.

11.14 Set up a talking line between the MDF and the incoming repeater (SD-95413-01) circuits to be tested, per Figure 1, Section 2, Handbook 50.

11.2 Test Operations

NOTE: The meter readings for ITE-4015 given in this test are approximate and considerable variation is permissible however all circuits should be alike.

11.21 At the repeater circuit block relay A normal.

11.22 If Figure A is furnished in the repeater circuit block the associated district junctor relay RL operated to place ground on the S winding of repeater A relay.

11.23 Attach the test set connector ITE-4412 to the T and R leads of the repeater circuit at the MDF. Make sure that contact No. 1 is attached to the T lead and contact No. 2 is attached to the R lead.

11.24 Observe that the meter reads approximately 50 to the right.

11.25 Insulate contacts 8 & 9T and 4 & 5T of relay D in the repeater circuit. Observe that the test set meter reads approximately 36 to the right.

11.26 Manually operate relay D at the repeater. Observe that the test set meter reads approximately 17 to the right.

11.27 Remove the test set from the T and R leads at the MDF. Release relays A and D at the repeater circuit and remove insulation from the D relay. Release relay RL at the district junctor circuit if operated.

12. MAKE BUSY

12.1 Z option on SD-25868-01 and Figure A on SD-95413.

12.11 At the repeater circuit SD-95413 block relay A normal.

12.12 Using ground thru a test receiver check that resistance battery is present on terminal 1 of jack T on the repeater unit.

12.13 Check that ground or battery is not present on terminal 2 of jack T.

12.14 Insulate contact 6 of repeater relay D and check that battery is no longer present on terminal 1 of jack T.

12.15 Insert a make busy plug into the MB jack of the district junctor.

12.16 Check that resistance battery is present on terminal 1 and direct ground is present on terminal 2 of jack T at the repeater unit.

12.17 Block relay SL operated at the district unit and check that battery and ground are removed from jack T terminals 1 and 2 respectively.

12.18 Remove the plug from the MB jack, release relay A and remove insulation from relay D.

12.2 Y option on SD-25868-01 and Figure B on SD-95413-01.

12.21 Block relay A normal in the repeater circuit.

12.22 Using ground thru a test receiver check that resistance battery is present on terminal 1 of jack T on the repeater unit.

12.23 Using battery thru a test receiver check that resistance ground is present on terminal 2 of jack T on the repeater unit.

12.24 Insert a make busy plug into the MB jack of the district junctor circuit.

12.25 Check that direct ground is present at terminal 1 of jack T and neither ground nor battery is present on terminal 2.

12.26 Remove the block from relay A and the MB plug from the MB jack.

13. REORDER

13.1 Block relay ST normal at the district junctor.

13.2 Attach an ITE-2580B set to the T jack of the repeater circuit with the MON-TALK key operated to MON.

13.3 Operate the test set MON-TALK key to TALK. Observe that repeater circuit relay A operates.

13.4 Manually operate district junctor RL relay and observe that it locks and interrupted tone is heard in the test set at the repeater circuit.

13.5 At the associated sender link controller circuit crossbar switch (A) vertical attach ground thru test receiver to the district junctor TR lead (contact 3). Observe that district junctor relay T1 operates and interrupted tone continues at the test set.

13.6 Manually operate district junctor relay OT and observe that relay T operates and interrupted tone is cut off at the test set.

13.7 Remove the test set at the repeater circuit. Remove ground from the sender link switch vertical TR lead. Remove the MB plug at the district junctor and release the ST relay.

14. MISCELLANEOUS CIRCUITS

14.1 Check miscellaneous circuits not checked on other tests as follows: (1) test battery supply, (2) fuse alarm. Check that the fuse alarm is not stopped when the FA, FC1, FC2 or 20A lamps are burned out or removed, (3) spare jack to MDF, and (4) frame line circuit.

→ Arrowed lines indicate new or changed information.

15. ROUTINE TESTS

15.1 Talking (nonoperator class)

15.011 Arrange to have an assistant stationed at a convenient telephone location in the office to receive the call or have the call received at an ITE-8242 call thru test set patched to an unassigned line vertical at a line link frame. If the call thru set is used all necessary cross-connections must be installed for test to receive the call.

15.012 At the incoming repeater circuit associated with the district junctor under test remove the relay cover so that relay D may be observed.

15.013 Insert a make busy plug into the T1 jack of the repeater circuit and with repeater Figure A insert a plug into the district MB jack.

5.014 Attach the ITE-2580B set with the TALK-MON key operated to MON to repeater T jack. Make sure that the top two contacts on the 240F plug (with the top cord detail down) make contact with the top two contacts of the T jack.

15.015 Operate the test set cord switch red bottom or the switch to OFF position as provided.

15.016 Operate the test set key to TALK and observe that dial tone is received.

15.017 Dial the number at which the observer is stationed to receive the call. Observe that ringing occurs.

15.018 When the called number answers observe that the D relay operates at the incoming repeater.

15.019 Make a talking test to check that transmission is of good quality.

15.020 Have the called party hang up. Observe that relay D releases at the repeater circuit.

15.021 Operate the MON key to release the circuits.

15.022 Remove the test set and make busy plugs.

15.2 Talking (Operator Class)

15.21 Originate a call to an operator's position (if necessary have a tester answer the calls at a vacant position) and observe that the incoming repeater D relay does not operate when the call is answered. Make a talking test to check quality of transmission.

15.3 Busy Line

15.32 Originate a call to the office busy line. Observe that busy tone is received and that the repeater D relay does not operate.

15.33 Remove the test set to release the call.

R. E. RAHMES

Engineer of Installation

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To modify tests in Paragraph 6.

Replaces Section 126 dated 8-16-51.