

TEST OF COIN SUPERVISORY LINK
 AND A SENDER LINK FRAMES

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1. GENERAL INFORMATION

1.1 This instruction covers the tests of crossbar coin supervisory link and controller circuits and A operator sender link and controller circuits per SD-25029-01.

2. RECORDS AND REQUIREMENTS

2.1 ID-1313 and ID-2205 are required to record the results of these tests. For further information on records see Section 3 of Handbook 50.

2.2 All tests in this section are supplementary and must be completed before start of concentrated load test.

3. TEST EQUIPMENT

3.1 Test Sets

<u>Amt</u>	<u>Code</u>	<u>Description</u>
1	ITE-4033	Link Frame Test Set
1	ITE-2045	Idle Multiple 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>Furn. With ITE</u>
1	9639	12'	3	110 Plug	3 Banana Plugs	4023
1	9598	12'	2	110 Plug	110 Plug	4033
1	9947	12'	10	10 Banana Plugs	Yaxley	4033
As Req.	9404	20"	1	Test Clip	Test Clip	4023
2	9690	12'	4	2-110 Plugs	325A Plug	4023

3.3 Accessories

<u>Amt</u>	<u>Code or ITE</u>	<u>Description</u>	<u>With ITE</u>
10	325C	Switch Make Busy Plug	4023
As Req.	322A	Make Busy Plug	4023
As Req.	298A	Make Busy Plug	4023
As Req.	or 349A ITE-8507	Alligator Clips	4023
1	8253	Contact Protection Test Set	4023
2	4109	Spade Tips	4023

4. FUSING TEST

4.1 With test receiver check for absence of crosses and ground on the several fuse posts.

4.2 Insert fuses of the correct type as shown on the circuit and equipment drawings one at a time and check battery supply at one of the magnets in accordance with the following charts:

4.21 Hold Magnets - A Group Links

<u>Fuse</u>	<u>Pri. Sw.</u>	<u>Battery Supplied to</u>		
		<u>Magnets</u>	<u>Sec. Sw.</u>	<u>Magnets</u>
HD-A-0	Lower	(A) 0 (B) 0	Lower	(C) 0-4 (D) 0-4
HD-A-1	Lower	(A) 1 (B) 1	Upper	(C) 0-4 (D) 0-4
HD-A-2	Upper	(A) 0 (B) 0	Lower	(C) 5-9 (D) 5-9
HD-A-3	Upper	(A) 1 (B) 1	Upper	(C) 5-9 (D) 5-9

4.22 Hold Magnets - B Group Links

The (HD)-(B) 0-3 fuses should supply battery to the B links in the same arrangement as given in the chart for A links.

4.23 Other Fuses

Fuse	Battery Supplied To
(SEL) - A	All PS and SS magnets for A links
(SEL) - B	All PS and SS magnets for B links
LBA	Check battery at PU relay (coin supervisory circuit)
TBS	Check battery at 48V. Test Post on jack panel.
(TRK) O-9 "D"	Check battery at one of the associated (HA) O-9 relays.
(TRK) O-9 "E"	Check battery at one of the associated (HB) O-9 relays.
A	Check battery at (A) resistance-A Group
A B	Check battery at (B) resistance-A Group
C	Check battery at LR relay - A Group
A	Check at similar positions as above in the B Group.
B	
C	

5. CONTACT PROTECTION TEST

5.1 Check the following contact protection circuits according to instructions outlined in Handbook 50, Section 2. The test condition specified refers to Fig. 7 of that section.

Condenser or Network	Resistance	Condition	Test At
C	C	1	6B, SG 0-3
E	E	2	12B, TE
J	J	1	2B, CA Relay Block CA Rel. opr.
K	K	2	6T, SS
L	L	1	2B, RL
L1	L	1	8T, SS
M	M	2	8T, S
N	N	2	8T, SG2
N1	N	2	8T, SG3
P	P	2	8T, SGO
P1	P	2	8T, SG1
Q	Q	2	9T, RL
R	R	1	13T, GE
S	S	1	2B, SS
S1	S	1	2T, SS

6. OPERATING TESTS6.01 Test of ST Leads

6.011 Block AR relay normal in each controller alarm circuit to prevent alarm from operating. Also block the PF relays normal. When testing coin supervisory links block normal the PU relay in the link busy alarm circuit. Connect leads 0 to 9 of ITE-9947 (equipped with alligator clips), to (ST) O-9 of trunk group 0 at the trunk group terminal strip. Plug the cord into the A connector of ITE-4033. Patch the A jack to test battery and ground supply.

6.012 At the sender make busy frame make all coin supervisory circuit groups or sender groups busy except group 0 and all circuits in this group busy except circuit 0. At the selector unit on the misc. frames block the SB-0 relay normal.

NOTE: If more than 20 senders or coin supervisory circuits are provided then the A & B controllers will serve different groups and it will be necessary to leave an idle group and one idle circuit within that group for the B controller to seize. Block the SB relay normal for that idle circuit.

6.013 Operate keys (A) 0 to 9 and then operate the AG key. Attempts will be made to connect to the idle circuit but with SB relay normal the test will block supervisory or sender circuit. Observe that (T) 0 locks, SL and DC relays of the A controller operate. After approximately 7 seconds the CB interrupter functions, the controller release relay operates and the test is again started.

6.014 Release key A0 and observe that on the next test T1, SL and DC relays operate. Continue releasing keys A1 to A9 in sequence and note that the T2 to T9 lock in sequence.

6.015 When all ten ST leads have been used, move the test set to the next group and repeat the tests. Trunk groups 0, 2, 4, 6, 8 should seize the A controller while trunk groups 1, 3, 5, 7, 9 should seize the B controller.

6.016 Test all groups.

NOTE: If B controller is seized for even groups it may be due to use of optional M wiring for N wiring. If A controller is seized for odd group it may be due to use of optional N wiring instead of M wiring.

6.02 Trunk Group Test

6.021 Connect leads 0 to 9 of ITE-9947 to an ST lead in each of the trunk groups 0 to 9 respectively as equipped. Plug the MB jack of the A controller and leave block in SBO relay.

6.022 Operate all keys (A) 0 to 9 on the test set and then operate the AG key.

6.023 Observe that G0 to G9 relays operate. Circuit G hold magnets on the primary and secondary switches of B group should operate in sequence beginning with group G0 and ending with group G9. The test cycle should then start over again with group G0. Release the test set AG key and the controller circuit should restore to normal.

6.024 Remove plug from the MB jack of the A controller and insert in the B controller jack. Repeat the tests on the A controller circuit.

6.025 Remove the plug from the MB jack of sender group 2 and insert in sender group 0. Remove make busy plugs from circuits in group 0 and make busy all except 0 circuit in group 2. Remove the blocking tool from the SBO relay in the selector unit associated with sender or coin sup. circuit group 0 and block normal the SBO relay in the selector unit associated with group 2. Operate the test set AG key and observe that GO to G9 relays operate and the circuit 1 hold magnets on the primary and secondary switches of A group are operated in sequence beginning with group GO and ending with group G9. The test should then start over again with group GO. Release the test set AG key and the controller circuit should restore to normal.

6.026 Remove the plug from the MB jack of the B controller and insert in the MB jack of the A controller. Repeat the above tests on the B controller.

6.027 Release the AG key. Insert MB plugs in the trunk group GB jacks. Remove plug from B controller MB jack. Reoperate the AG key and note that no calls are started. Remove any plug and observe that the test starts.

6.028 Remove the plugs from the GB jacks and remove the busy condition from the coin supervisory or sender circuits. Remove the block from the SBO relay.

6.03 Sender or Coin Supervisory Control Group Test

6.031 Insert a plug in the B controller circuit MB jack and leave ITE-4033 connected to an ST lead in each trunk group, as outlined in Paragraph 6.021.

6.032 Block normal all S relays in the selector unit.

6.033 Operate the AO and AG keys. Observe that the test blocks with SGO, (C) 0 and LLO relays operated. When the CB interrupter functions the test will be repeated. When the above observations have been made, release AO key.

6.034 Operate A1 key and note the same relays operated. Release the (A) 1 key and operate keys as follows: Observe that the relays operate as indicated.

(A) key Operated	Relays Operated	A Controller Test	B Controller Test
0 or 1	SG0, CO, LLO	SG2, C2, LL2	
2 or 3	SG1, C1, LL1	SG3, C3, LL3	
4, 5 or 6	SG2, C2, LL2	SG0, CO, LLO	
7, 8 or 9	SG3, C3, LL3	SG1, C1, LL1	

Make the A controller busy to test the B controller.

6.035 With the B controller made busy, insert 325C plug in the BO vertical of the 0 trunk group. Operate the AO key. Note that SG2 and LL2 relays are operated.

6.036 Insert the 325C plug into the switch verticals, operate keys and observe as follows:

Trk. Grp. Sw.	Vert.	(A) Key Oper.	Relays Operated
1	B0	1	SG2, LL2
2 or 3	B0	2 or 3	SG2, LL2
4, 5 or 6	B1	4, 5 or 6	SG0, LLO
7, 8 or 9	B1	7, 8 or 9	SG0, LLO

6.037 Repeat tests per Paragraphs 6.035 and 6.036 on the B control circuit. Results are as follows:

Trk. Grp.	Vert.	(A) Key Oper.	Relays Operated
0 or 1	B1	0 or 1	SG0, LLO
2 or 3	B1	2 or 3	SG0, LLO
4, 5 or 6	B0	4, 5 or 6	SG2, LL2
7, 8 or 9	B0	7, 8 or 9	SG2, LL2

6.04 Paths Available Test

NOTE: Since the same setup is used for making the link busy alarm test or coin supervisory link the tests per Paragraph 7.4 may be made at the completion of the "paths available" tests.

6.041 Leave the ITE-4033 connected to an ST lead of each trunk group as outlined in Paragraph 6.021. Insert make busy plugs in each coin supervisory or sender group GB jack at the sender make busy frame. Leave all S relays blocked normal. Operate keys (A) 0 to 9 and AG and observe that no tests start. Release all keys except AG.

NOTE: In this and subsequent tests where coin supervisory circuit groups or sender groups are referred to by group number it will be assumed that the groups are multiplied to both A & B controller links. If more than 20 such circuits are served by a frame then this will not be so. Groups 0, 1, 2, 3 served by the A controller will then be numbered 0,3,4,7 respectively and for the B controller will be 1, 2, 5, 6 respectively.

6.042 Remove plugs from the coin supervisory or sender group GBO and GB1 jacks. Make busy the B controller circuit. Insert and remove 325C plug at switch verticals, BO as follows and observe that with a plug inserted there is no start but with a plug removed, the following results: Repeat for the B controller circuit.

(A) Key Operated	Trk. Group Sw.	Relay Operated A Group Test	B Group Test
0 or 1	0 or 1	SG0	SG0
2 or 3	2 or 3	SG1	SG0
4, 5 or 6	4, 5 or 6	SG0	SG0
7, 8 or 9	7, 8 or 9	SG0	SG1

6.043 Remove plugs from GB2 and GB3 jacks and insert in GBO and GB1. Insert and remove 325C plug at B1 switch verticals as follows and observe results. Make the tests on both the A and B controller circuits. Note that there is no start with verticals plugged.

(A) Key Operated	Trk. Grp. Sw.	Relay Operated	
		A Controller Test	B Controller Test
0 or 1	0 or 1	SG2	SG2
2 or 3	2 or 3	SG2	SG3
4,5 or 6	4,5 or 6	SG2	SG2
7,8 or 9	7,8 or 9	SG3	SG2

Check of P and S Cross-Connections

6.044 Connect leads 0 to 9 of ITE-9947 to the 10 ST leads of trunk group O. Make busy all coin supervisory or sender groups except the first. Make busy B controller circuit. Block all SB relays normal. Remove blocks from S relays. Perform the following tests and observe that the proper S relay or select magnet on the secondary switch operates. Refer to the job wiring list to determine the S relays cross-connected to each punching.

(A) Key Operated	P Cross-Connection Used
0 or 1	P0
2 or 3	P1
4 or 5	P2
6 or 7	P3
8 or 9	P4

6.045 Repeat the tests per Paragraph 6.044 with each coin supervisory or sender group.

6.046 Repeat for B controller.

6.05 Connection to Coin Supervisory or Sender Circuit

6.051 Remove blocks from SB relays and make busy plugs from controllers. Leave ITE-4033 connected as in Paragraph 6.044 and operate the AG key. Operate and release in turn keys 0, 2, 4 and 7. Observe that connection is made to the supervisory or sender circuit as indicated by immediate release of the controller.

6.06 Reserve Test

NOTE: If RS wiring is specified, perform tests of Paragraphs 6.065 and 6.067 only. If RS wiring is not specified, perform tests of Paragraphs 6.061 thru 6.066 only.

6.061 Make busy all except one circuit in each sender or coin supervisory group. Make busy the B controller circuit. Connect ITE-4033 to an ST lead in the 0, 2, 4 and 8 trunk groups, using ITE-9947 in A jack.

6.062 Start a test in the O group by operating the AO and AG test set keys. When the RS relay operates hold it operated manually and check that connection is not made to a sender. After a delay of about ten seconds allow the RS relay to release and check that a connection is made to a sender. Release the AO as soon as the SGO relay operates to prevent another test from starting in the same group.

6.063 Repeat the test from each of the trunk groups 2, 4 and 8 and note that connection is made to SG1, SG2 and SG3 respectively.

6.064 Repeat the tests on B controller in which case the order of selection will be SG2, SG3, SGO and SG1.

6.065 Make all senders in a group busy. The associated SB- relays and SGB relay should operate. Momentarily remove the MB plugs one at a time from each sender. The associated SB relay should release causing the SGB relay to release.

6.066 Check that contact 1B of the SGB relay is not grounded when one SB relay is released and that it is grounded when two SB relays are released. Make the test with SBO and SB1 relays released, SB1 and SB2 relays released, etc., including the last and first SB- relay. Remove all make busy plugs when the test is complete.

6.067 Check that contact 1B of the SGB relay is not grounded when all SB relays are operated and is grounded when one SB relay is released. Remove all busy plugs when the test is complete.

6.07 Test of LL Relay Chains

6.071 Block the RL relay normal in each of the link and controller circuits. Connect the 1B of each RL relay to 2T contact of the SGO relay in the same circuit, using an ITE-9409.

6.072 Manually operate the SGO relay in the last link and controller unit in the chain associated with the same group of supervisory or sender circuits. The LLO operates and SGO locks. Manually operate in sequence the SGO relay of each of the preceding link and controller circuits. Note that the associated LLO operates but SGO does not lock. Block the SGO relays operated, except the one that is locked operated.

6.073 Release the LLO relay of the last circuit. The associated SGO releases. Remove the block from the SGO relay in the next lower numbered link and note that it is locked operated.

6.074 Continue the operations per Paragraph 6.073 until the entire chain has been checked.

6.075 Operate the first SGO. It locks. Operate and release the next SGO relay and note that the LLO does not operate. Release the first and operate the second SGO in the chain. It locks and LLO operates.

6.076 Continue the tests per Paragraph 6.075 until the chain path for operating the LLO relays has been checked.

6.077 Repeat the test on the LL1, LL2 and LL3 chains.

6.078 Remove ITE-9404 cords and block from RL relays.

6.08 Test of SGE Relays

6.081 Block PT and SGB relays normal and block LA and LB relays operated. SGO to SG3 relays operate. Manually operate and release each S relay in the first sub-group. Note that the SGE relay operates and SGO releases as each S relay is operated.

6.082 Repeat the test with the S relays in each sub-group. Then repeat on the other link and controller circuit. Release all relays and remove relay blocking tools.

6.09 LR Relay Test

6.091 Place make busy plugs in each (D) O-9 vertical on secondary switch of the O switch in the A group. Note that as each plug is inserted the C and D secondary hold magnets and the associated A and B primary hold magnets operate. Observe that no other magnets operate.

6.092 Block PF and PT relays normal and TA and SL relays operated. Operate and release SGO relay. Note that LRO relay operates and locks and that all hold magnets release.

6.093 Release LRO relay. The magnets reoperate. Operate and release SG1 relay. LRO operates and locks and the magnets release. Release LRO. Operate and release SG2 and SG3 and note no action.

6.094 Repeat the tests of Paragraphs 6.091 to 6.093 with the make busy plugs inserted in the No. 1 secondary switch and operating relays SG2 and SG3 instead of SGO and SG1. The LR1 relay will operate to release the magnets.

6.095 Perform the tests of Paragraphs 6.091 to 6.094 on the B links.

6.096 Remove blocks from relays.

6.10 Double Connection Test

6.101 Make busy the B controller.

6.102 Connect a temporary ground to the S lead of a junctor circuit. This will ground the S of the primary switch horizontal multiple. Block the associated primary select magnet operated in the A group of links.

6.103 Ground an ST lead in the same junctor group. Observe that the call is blocked and that the associated LR relay operates and releases the hold magnets in approximately 10 seconds.

6.104 Repeat the test on the B link group.

6.105 Remove ground from S lead and block from select magnet.

6.11 Sleeve Continuity Failure

6.111 Make busy the B controller.

6.112 Block the SL relay normal in the A controller. Ground an ST lead to start a call. The test will block, the alarm will function and operate the RL relay to release the controller.

6.113 Repeat for B controller.

6.114 Remove blocks from SL relays.

6.12 Test of M Leads

6.121 Block the TE relay operated in controller A. Manually operate and release the T0 to T9 relays one at a time and observe that the associated primary select magnet operates and releases.

6.122 Remove the blocking tool from the TE relay.

6.123 Block the TE relay operated in controller B and repeat the above tests. After test has been completed remove the blocking tool from TE relay.

6.13 Test of S Leads

6.131 Connect direct ground to terminal 70(S) of KP sender or coin supervisory circuit unit terminal strip in group O of controller A. Observe that the SO relay operates.

6.132 Insulate CG lead, contact 54 or 59 of the CO relay. Block operated the CO relay.

6.133 The operated SO relay should operate the SSO select magnet on the A secondary switch O.

6.134 Block the SBO relay operated and the SO relay and SSO select magnet should release. The S4 relay and SS4 select magnet should operate.

6.135 Continue the test by blocking the SB4 (or highest SB- relay equipped) to SB1 relays in turn and observing that the associated S- relay and the SS- select magnet release and the next lower S- relay and SS- select magnet in the chain operate.

6.136 When the test on group O is complete remove the blocking tool and insulator from the CO relay.

6.137 Continue the test by blocking the C- relay and insulating its contact 54 or 59 in the remaining groups in the A and B controller. The S5 to S9 relays and associated select magnets operate in turn when the odd C- relays are used.

6.138 When all groups have been tested remove all blocking tools and insulator from relays.

7. ALARMS AND REGISTER TESTS

7.1 Call Blocked Alarm

7.11 Check reading of TR register at the Sender Make busy frame. Block CB relay normal. PT relay operates and after about 6 seconds relay TA operates. If the B and F interrupter leads are reversed, TA relay will operate in about 1 second. Relays AR and AL operate. AR relay locks under control of AR key. The AL lamp lights. The WHITE aisle pilot lamp lights. Note that the TR register scores.

7.12 Observe that the RL relay operates and releases in 7 second cycles. Insert plug in HD jack and note that RL stops operating.

7.13 Block operated SA relay. Momentarily operate AR key. Observe that AR releases and AL remains operated. the White GUARD lamp lights at the floor alarm board. Remove block from CB and release SA relay. The circuits restore to normal.

7.14 Block PT relay normal. Connect test receiver through battery to 5B of RL relay: Operate and release relays as indicated and note clicks in receiver.

(a) DO to D9 (See Note), GO to G9, GE, SS, RS, RT, SA and SL.

NOTE: Operate odd numbered D relays when the receiver is connected to contact 5B of the RL relay of the A controller circuit and when the receiver is connected to contact 5B of the B controller RL relay operate even numbered D relays.

(b) Move the test receiver connection to 9T of RL relay. Operate and release relays HAO to HA9 and note clicks as each relay is operated and released. Remove block from PT.

7.15 Repeat 7.11 to 7.14 for the other controller.

7.2 Release on False Start

7.21 Block operated GO relay. The associated AG and HA relays operate. The FS interrupter functions operating RL relay and scoring the LF register at the sender make busy frame in approximately 1 second cycles, (.895 second).

7.22 Release GO relay. Operate G1 relay. Observe that it locks and is released approximately one second later when FS interrupter functions. Check the false start feature from each trunk group by operating relays G2 to G9 in succession.

7.23 Repeat for other controller.

7.3 Coin Supervisory or Sender Make Busy

7.31 At the sender make busy frame busy all groups except O. (The GB lamps will light.) Operate all SB relays in sub-group O. Note that SGB operates. The GB lamp at the Sender Make Busy frame lights. The associated traffic register at the register rack scores.

7.32 The CB or SB lamp at the sender busy frame lights. The "senders busy" alarm functions.

7.33 Perform only on coin supervisory circuits where the coin supervisory release circuit is provided. Operate and release ASB key. CC lamp lights. CB lamp and alarm remain unchanged.

7.34 Remove the make busy plug from one of the group jacks. The associated GB is extinguished. Observe that the CB or SB lamp is still lighted. The CC lamp (see Paragraph 7.33) remains lighted until the coin supervisory release circuit restores to normal. Momentarily operate ASB key to retire the alarm.

7.35 Repeat the tests on all coin supervisory or sender sub-groups.

7.4 Link Busy Alarm (Coin Supervisory Controller Circuit)

7.41 Make busy all coin supervisory groups. Connect the A connector to an ST lead in each trunk group O to 9, using cord ITE-9947, equipped with alligator clips.

7.42 Remove block from PU relay. Operate AG and A (O) keys. Observe that GPO relay operates and locks when the PU relay operates and that 5 seconds later the CA relay operates and GO lamp lights. The minor alarm sounds.

7.43 Release the A (O) key. GO lamp remains lighted. Operate GR key momentarily. GO lamp is extinguished.

7.44 Repeat the tests using keys A (1) to A (9) to test relays GP1 to GP9, lighting lamps G1 to G9 respectively.

7.5 Busy Guard

7.51 Insert make busy plug in the MB jack of the A controller circuit. Relay GE operates.

7.52 Insert make busy plug in the MB jack of the associated B controller circuit. Relay BA operates and lamps AL of the A and B circuits light. Minor alarm sounds and aisle pilot lights. Relay GE of the A controller releases.

7.53 Repeat for the B controller.

8. TEST OF FRAME LEADS

NOTE: This test is made on A sender link and controller circuits.

8.1 Make busy the O sub-group of senders. Block operated the SC and SC1 relays in one sender of the group and block operated the CO relay of the controller connector circuit.

8.2 Observe that none of the frame relays in the sender operate.

8.3 Manually operate and release each HA and HB relay in turn and observe that the proper F00 or F10 and FO to F9 relays operate and release. Observe that no other F relays operate.

8.4 Repeat the tests on each sender group, blocking operated the C relays as required.

9. CROSS POINT AND LINK TESTS

NOTE: Cross point tests should start at top level of top switch.

9.1 Primary Cross Points. Block LR relays operated.

9.11 Key Pulsing District Junctors. Block non-operated each TR and LC relay of the last group of 10 district junctors.

(a) Coin District Junctors. Block operated the SP relay and insulate the 3T contact of the CH relay, Fig. F or 5B, Fig. E, in each district junctor circuit of the last group of 10 district junctors.

9.12 Short the H1 plugs of the ITE-9690 cords by removing shell and wrapping bare wire around plug to short R to sleeve.

(a) Plug H and H1 plugs of one cord into M and L jacks respectively of ITE-2045 and the H and H1 plugs of the other cord into the M1 and L1 jacks.

(b) With the ITE-9639 Cord and Spade Tips supply battery and ground connections to test set and operate 4W and LLR keys.

NOTE: If ITE-2045 is not converted to 48 Volt operation it may be used on 48 volts with a resistance of approximately 120 ohms connected in series with the 24 volt terminal.

(c) Connect other ends of ITE-9690 cords to verticals A0 and A1 of the 9 group primary switch for the A links.

9.13 Manually operate primary select magnet 9 and hold magnets A0 and A1.

9.14 The test set checks the R, LR, T and DC crosspoints (in that order) for continuity, crosses and grounds. Release the magnets.

9.15 Operate select magnet 8 and again operate hold magnets A0 and A1. Repeat in this manner until all 10 pairs of crosspoints have been checked.

9.16 Move shoes to verticals B0 and B1 of same switches and repeat 9.13 to 9.15 but using hold magnets B0 and B1 each time. This checks FR, TR, FT and S crosspoints in that order.

9.17 Repeat on the primary switch serving the B group of links. Remove blocks and insulation from district junctor relays.

9.18 Repeat 9.11 to 9.17 for remaining district junctor group.

NOTE: If all district junctors are blocks at one time instead of in groups of 10, then the test can proceed straight across the switches instead of shifting between A and B groups of links.

9.2 Secondary Cross Points and Link Test. Block LR relays operated.

9.21 For use with coin supervisory circuits insulate 8T of SC relay of each coin supervisory circuit.

(a) For use with KP sender circuit insulate 9T of the CT relay, 1T and 1B of the CO relay in each sender circuit.

9.22 Connect ITE-2045 as in Paragraph 9.12 except connect to verticals A0 of A link primary switches 9 and 8.

9.23 Manually operate secondary select magnet 9 and hold magnets 8 and 9 of secondary switch CO for the A links. When the test set indicates satisfactory test release magnets.

9.24 Operate select magnet 8 and same hold magnets. Continue in this way and check all crosspoints on the 8 and 9 verticals.

9.25 Move test set shoes to the A0 verticals of primary switches 6 and 7 to repeat checking secondary verticals 6 and 7 of the CO switch. Similarly check the remaining verticals of secondary switch CO.

9.26 Move shoes to A1 verticals of primary switches 9 and 8 to start testing of secondary C1 switch. Continue as in 9.22 to 9.25 connecting to the 1 primary verticals each time.

9.27 Repeat 9.22 to 9.26 connecting to the primary verticals B and testing secondary switches D.

9.28 Repeat 9.22 to 9.27 for the B group of links.

9.29 Remove insulator if any, from SC relay and the blocks from LR relays.

10. MISCELLANEOUS CIRCUIT TESTS

Check miscellaneous features that are not checked on other tests such as the following.

(a) Test battery supply.

(b) Telephone circuit and associated tie lines and trunk.

(c) Fuse Alarms. Check that the fuse alarm is not stopped when the FA lamp is removed. Repeat the test with the 20A lamp removed.

→ Arrowed lines indicate new or changed information.

R. E. RAHMES

Engineer of Installation