

## LINE CHOICE CONNECTOR TEST

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1. GENERAL INFORMATION

1.1 Description of Test: This section describes a method of testing the Line Choice Connector Circuit, SD-25275-01. The marker multiple leads between line choice connector circuits are tested for continuity, crosses and grounds, and a check is made for false continuity at the contacts of the marker connector (MC) relays. The hold magnets on incoming link secondary switches and line link secondary switches (line junctor half) and their associated leads to line choice connectors are verified for continuity, location, crosses and ground. A check is made for false continuity at the contacts of the LJA and LJB relays and also of the CR and the CE relay contacts associated with the LL leads. Operating tests are made on the marker lockout and control circuit and tests are made to verify miscellaneous leads, features and circuits.

1.2 Cabling: The cables between the terminating markers and the marker connector (MC) relays of the line choice connector frames should be left disconnected at the markers until after the marker multiple test per this section has been made.

1.3 Special Test Connections: When circuits under test are equipped with CA6A and similar type wire wrap terminal strips, ITE-4026 multicontact relay T.S. Fixture should not be used for making the connections. Instead, ITE-4085 Push-on Clips should be used at the terminal strip punchings as required and the test cord connected to these clips by means of alligator clips. Test cord must be supported in order to remove weight of cord from terminal strip connections.

1.4 Test Procedure

1.41 The leads to the line link frames which are connected to the marker connector relays on the line choice connector are tested for crosses on the marker multiple test. These leads should be

installed and connected when this test is made. The marker multiple test should be performed before the line link fuses have been installed.

1.42 The test of incoming link secondary hold magnets should be made after the line junctors have been verified as described in the method covering line link circuits.

1.43 During the tests of the terminating markers the regular lockout circuit (MP relays) and the emergency lockout circuit (E relays) of the line choice connectors should be used approximately the same amount as a means of exercising these circuits.

1.44 During the test of the terminating markers block nonoperated relays (CR) A-D and (CE) A-D alternately at regular intervals as a means of checking continuity through contacts of each relay.

**CAUTION:** When using the test receiver as described in this section, do not place the receiver directly over the ear.

2. RECORDS AND REQUIREMENTS2.1 Records

Forms SD-4-1313 and ID-2339 are required for recording the results of these tests. For further information see Section 3 of Handbook 50.

2.2 Requirements

Section 5 of this handbook lists all the tests to be made on line choice connector circuits together with the associated performance requirements.

### 3. TEST EQUIPMENT

#### 3.1 Test Sets Required

Amt	ITE	Description
1 or 2*	4033B	Link Frame Test Set
1	4442	Volt-Ohmmeter

\* 2 Required when office is arranged for LLP.

#### 3.2 Cords Required with ITE-4033B

Amt	ITE	Lgth	Cdrs	One End	Other End	With ITE
1	9547	12'	1	ITE-2455 Plug	ITE-2455 Plug	4033B
1	9598	12'	2	310 Plug	310 Plug	4033B
2	9984	12'	10	Jones Plug	10 ITE- 2461 Plugs	4033B

#### 3.3 Accessories Required

Amt	ITE or Code	Description	With ITE
2	349A	Make Busy Plug	4023
1	ITE-4511 or ITE-4261	Whistler Test Set	4023
As Req.	ITE-8507	Alligator Clips	4023
As Req.	ITE-4085	Clip Push On	4023

4 - Crossbar Test Accessory Set

### 4. FUSING

**NOTE:** Fuse (CR) and (CE) relays after test of marker multiple per Paragraph 6.

4.1 Using a test receiver or volt-ohmmeter check each fuse post for absence of battery and ground.

4.2 Using fuses of correct type as indicated by circuit drawings and fuse panel designations, install the following fuses one at a time. Check at one point in the circuit that each fuse is associated with its proper equipment and is free from crosses with other unfused posts on the fuse panel.

Fuse	Equipment
LC-(A) 0-9	Winding, Relays (MCA) 0-9
LC-(B) 0-9	" , Relays (MCC) 0-9
LC-C	" , Any Relay (TR) 1-6
LC-D	Resistance D
LC-TBS	48V Test Battery Terminal
LJ-(G) A-D	Winding, Relays (CR) A-D
LJ-(H) A-D	" , Relays (CE) A-D
LJ-TBS	48V Test Battery Terminal

### 5. CONTACT PROTECTION

Contact protection tests are required only on job wired equipment and should be applied as described in Handbook 61, Section 0.2.

### 6. MARKER MULTIPLE TEST

6.1 The marker multiple test using the ITE-4511 or ITE-4261 Whistler Test Set will check the multiple for continuity, reversals, crosses and false battery and ground.

6.2 For further information on the use of the Whistler Test Set, refer to Handbook 61, Section 0.2, Paragraph 5.11 or Handbook 100, TMO 4261 or TMO 4511.

6.3 Touch the test lead of the whistler to the O contact of the first marker MCA relay. A tone should be heard.

6.4 Adjust the volume control for sufficient volume.

6.5 At the next Line Choice Connector circuit, have an installer place ground on the O contact of the first marker MCA (other end of multiple lead). The tone should be silenced.

6.6 Continue the test on each contact of the MCA, MCB, MCC and MCD# relays for each marker between the first two line choice connector circuits as described in the preceding paragraphs. The tone on each lead should be approximately the same pitch. However, if a particular lead should have a different pitch, try the corresponding contact of the MC- relay of a different marker for comparison before deciding if it is a trouble condition. Two crossed leads should lower the tone about half an octave.

# Relay MCD is furnished when office is arranged for LLP and is located on the Auxiliary Line Choice Connector Unit mounted on a Miscellaneous Relay Rack.

6.7 The following leads are either grounded, unequipped or strapped:

	MCA	MCB
Grounded	9	
Unequipped	10* 8,11-13,18,19,9*10*	
Strapped	14	0-7

\* Equipped when office is arranged for LLP.

6.8 Upon completion of the test between the first two line choice connector circuits for all markers, repeat the tests on the second and third circuits and continue in this manner until the complete multiple between all line choice connector circuits has been tested.

### 7. MARKER LOCKOUT AND CONTROL

**NOTE:** (a) Make busy terminating marker 0, block nonoperated relay LK of marker 0 and restore the line link test set keys (A) 0 to (A) 9 as soon as possible after their operation to reduce to a minimum, interference with other terminating traffic through the markers.

(b) Omit connections for leads TMB and disregard the reference to the (S1) key and lamps, if the line choice connector circuits are not equipped with TMB relays.

(c) The tests described in Paragraphs 7.9 and 7.91 are required only when the line choice connector circuits are equipped with TMB relays.

(d) When office is arranged for LLP, locate the second ITE-4033B at the Miscellaneous Relay Rack location of the associated Auxiliary Line Choice Connector Unit. Using the ITE-9984 cord, connect the test set connector (S) leads 0-9, to the marker CK leads 0-9, terminal 01, of MCD T.S. 0-9 respectively, as equipped. Using an ITE-9598 cord patch the test set A jack to the 48V TBS.A jack. Operate test set key SB.

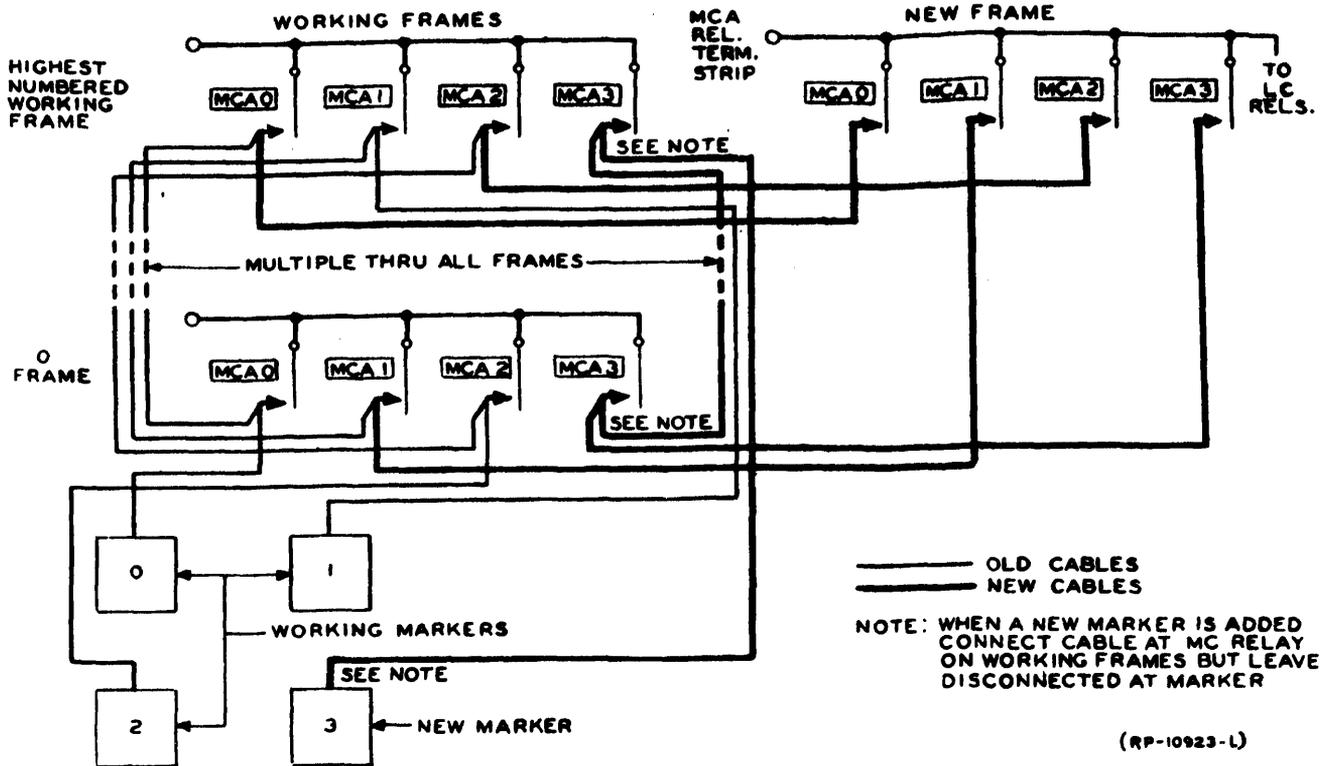


FIG. 1 SCHEMATIC OF MARKER MULTIPLE FOR ADDITIONS

7.1 Equip three ITE-9984 cords with alligator clips, to be used to connect the ITE-4033B, Link Frame Test Set to the ST, CK and the TMB leads.

7.11 Connect the ITE-9984 cords as follows:

(1) Test set connector (A), leads 0-9, to the marker start leads 0-9, as equipped, at the frame MISC. T.S., terminals 00-09, respectively, for the first line choice connector circuit on the frame and terminals 20-29 for the second line choice connector circuit on the frame.

(2) Test set connector (S), leads 0-9, to the marker CK leads 0-9, terminal 14, of MCA T.S. (at the top of frame), 0-9, respectively, as equipped, (see note d).

(3) Test set connector (S1), leads 0-9 to the marker TMB leads 0-9, terminal 11, of MCA T.S. (at the top of frame) 0-9 respectively, as equipped. Connect 48 volt battery and ground to jack A of ITE-4033B, using an ITE-9598 cord.

7.2 Operate keys AB, SB, SIG and (A) 0. Observe that relays MP-0 and MCA-0 operate and that lamp (S) 0 lights. Restore key (A) 0 and observe that relays MP -0 and MCA -0 release and that lamp (S) 0 is extinguished. Repeat this test using keys (A) 1 to (A) 9 for lockout and control relays 1 to 9, as equipped.

7.21 Operate key (A) 0. Observe that relays MP -0 and MCA -0 operate, lamp (S) 0 lights, and that lamp (S) 1 does not light. Operate in numerical order keys (A) 1 to (A) 9. Observe that relays MP -1 to MP -9 operate in the same order, relays MCA -1 to MCA -9 do not operate and that lamps (S) 1 to (S) 9 and (S) 1 to (S) 9 do not light.

7.22 Restore and reoperate key (A) 0. Observe that lamp (S) 0 is extinguished and that lamp (S) 1 lights. Restore and reoperate key (A) 1. Lamp (S) 1 is extinguished and lamp (S) 2 lights. Continue in the same manner until all (A) keys corresponding to equipped relays have been restored and reoperated. When the last (A) key has been restored and reoperated lamp (S) 0 should light. Restore keys (A) 0 to (A) 9.

7.3 Operate the MTR key. Observe that the CH lamp lights and the connector circuit alarm operates. Release the MTR key and operate the SA key. The lamp and alarm are retired, and the emergency lockout circuit (E relays) is now effective.

7.4 With the E relay circuit effective, perform the tests per 7.2, 7.21 and 7.22 on this circuit. The results in this case are the same as per 7.2, 7.21 and 7.22 except that the E relays instead of the MP relays are operated causing in turn the MC relays to operate.

7.5 Operate the MTR key. Observe that the CH lamp lights and the connector circuit alarm operates. Release the MTR key and then release the SA key. The lamp and alarm are retired and the MP relay circuit is effective.

7.6 If R wiring and apparatus is furnished repeat the test in Paragraph 7.5 first removing the CH lamp. The audible and visual alarm should operate as before. Replace the CH lamp.

7.7 Block the TR1 relay in the nonoperated position to prevent a throwover and to block the alarm. Break the 2 and 3 top contacts of the (MP) 0 relay and observe that the CH relay operates. Allow the 2 and 3 top contacts to remake and observe that the CH relay releases. Break the Bot. 1 and 3 contacts of the (MP) 0 relay and observe that the CH relay operates. Allow the 1 and 3 Bot. contacts to remake and observe that the CH relay releases. Repeat this test on all other MP relays.

7.8 Remove the block from relay TR1. Make the E relay circuit effective by means of the manual throwover as described in Paragraph 7.3 and then block the TR1 relay in the operated position.

7.9 Break the top 2 and 3 contacts and the Bot. 1 and 3 contacts on each E relay in a similar manner to that described in Paragraph 7.6 for the MP relays and observe that in each case the CH relay operates and releases. Remove the blocks from the TR1 relay and the marker LK relay and remove the make busy plug from the DB jack for marker 0.

7.91 Insert a 349A make busy plug into the TMB jack of the line choice connector circuit under test. Observe that the corresponding TMB lamp on the line choice connector frame lights and that the CFB lamp on the floor alarm frame or cabinet lights.

7.92 Operate keys (A) 0 to (A) 9 in numerical order. Observe that lamps (S1) 0 to (S1) 9 light in the same order and that none of the relays (E) 1 to (E) 9 operate. Restore keys (A) 0-9 and observe that lamps (S1) 0-9 are extinguished. Remove the make busy plug from the TMB jack and check that lamps TMB and CFB are extinguished.

**8. INCOMING LINK SECONDARY HOLD MAGNETS**

**NOTE:** (a) This test should be made after the line junctors have been connected and tested for continuity.

(b) If the line choice connectors are not equipped with TMB relays, insulate contacts 15 and 16 on relays MCA of the line choice connector under test.

**8.1 Setup for Test**

8.11 Connect 48 volt battery and ground to the A jack of ITE-4033B link frame test set using an ITE-9598 cord. Insert a 349A make busy plug into jack TMB of the line choice connector circuit under test.

8.12 On the terminal strip for the MCC relays on the line choice connector frame, connect the ITE-4033B test set using cords ITE-9984, to obtain the following association. (See Par. 1.3.)

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
0-9	10-19	(JA) 0-9	B
0-9	30-39	(LJ) 0-9	A

**NOTE:** To associate keys (B) 0-9 of test set ITE-4033B with line junctor connector relays (LJA or LJB) 0-9, respectively, connect plugs 0-9 of the ITE-9984 cord associated with test set connector B, to terminals 10-19 or 20-29, in accordance with the following chart, as required, for the particular equipment arrangement under test. Dash (-) means no connection.

No. of Inc. Frs.	Line Choice #	MCC TERMINALS										T-25 275 -18 Fig.
		10	11	12	13	14	15	16	17	18	19	
8	4,5,6,7	0	1	2	3	4	5	6	7	9	8	16
7	4,5,6	0	1	2	3	4	5	6	7	9	8	16
6	1	0	1	2	3	4	5	-	7	8	9	2
6	2,3	0	1	2	3	4	5	-	9	7	8	14
6	4,5	0	1	2	3	4	5	-	8	9	7	15
5	1	0	1	2	3	4	9	5	6	7	8	10
5	2	0	1	2	3	4	8	9	5	6	7	11
5	3	0	1	2	3	4	7	8	9	5	6	12
5	4	0	1	2	3	4	6	7	8	9	5	13
4	1	0	1	2	3	-	9	5	6	-	8	7
4	2	0	1	2	3	-	8	9	5	-	7	8
4	3	0	1	2	3	-	7	8	9	-	6	9
3	1	0	1	2	-	6	9	5	4	7	8	5
3	2	0	1	2	-	5	8	9	3	6	4	7
2	1	0	1	-	5	6	9	-	4	3	8	4

No. of Inc. Frs.	Line Choice #	MCC TERMINALS										T-25 275 -18 Fig.
		10	11	12	13	14	15	16	17	18	19	
8	8-15	0	1	2	3	4	5	6	7	9	8	16
7	8-13	0	1	2	3	4	5	6	7	9	8	16
6	1-3	0	1	2	3	4	5	-	7	8	9	2
6	4-7	0	1	2	3	4	5	-	9	7	8	14
6	8-11	0	1	2	3	4	5	-	8	9	7	15
5	2,3	0	1	2	3	4	9	5	6	7	8	10
5	4,5	0	1	2	3	4	8	9	5	6	7	11
5	6,7	0	1	2	3	4	7	8	9	5	6	12
5	8,9	0	1	2	3	4	6	7	8	9	5	13
4	1	0	1	2	3	-	5	6	7	-	9	1
4	2,3	0	1	2	3	-	9	5	6	-	8	7
4	4,5	0	1	2	3	-	8	9	5	-	7	8
4	6,7	0	1	2	3	-	7	8	9	-	6	9
3	1	0	1	2	-	4	5	6	7	8	9	7
3	2,3	0	1	2	-	6	9	5	4	7	8	5
3	4,5	0	1	2	-	5	8	9	6	4	7	6
2	1	0	1	-	3	4	5	-	7	8	9	18
	2,3	0	1	-	5	6	9	-	4	3	8	4

**8.2 Test Operations**

8.21 Operate key T3 when incoming link build-out frames are not provided; operate key T2 when incoming link build-out frames are provided. Operate keys IG, BB, and X. Leave these keys operated. Key IG operated starts the interrupter circuit of the test set.

8.22 Operate key B0. This operates relay LJA0. Now operate key A0 and observe that the proper hold magnet, or hold magnets in case of build-out frames, operate and release. Assuming the test connections are to line choice connector 0, magnet SH-OL on incoming link frame 0, secondary switch 0, should operate and release if build-out frames are not provided or magnets SH-OL on incoming group 0 (frames 0 and 1), secondary switch 0, should operate and release if build-out frames are provided. Refer to the line junctor assignment chart to determine which magnet or magnets should operate on these tests.

8.23 If a magnet is falsely grounded it will not release and if two or more magnets are crossed when build-out frames are not provided, or four or more magnets are crossed when build-out frames are provided, the X lamp on the test set lights. In order to check that the X lamp will light on a cross, momentarily cross magnets by operating keys A0 and A1 at the same time. Note that the X lamp lights. Release keys A0 and A1.

8.24 With key B0 and relay LJA0 still operated, operate key A1 and observe that magnet SH-OL or magnets SH-OL on switch 1, same frame or frames as described in 8.22, operate and release. Release key A1.

8.25 Continuing as described in the preceding paragraphs operate in turn keys A2 to A9 and check that magnets SH-OL on switches 2 to 9 respectively, operate and release. Release key B0 and operate key B1 to operate relay LJA1. Check magnets SH-OL on incoming link frame 1 or incoming group 1, switches 0 to 9 by operating in turn key A0 to A9 respectively. Continuing in this manner, check the incoming link secondary hold magnets associated with all LJA relays.

8.26 Make the following connections and check the incoming link secondary hold magnets associated with the LJB relays in a similar manner to that described for the LJA relays described in the preceding paragraphs.

On the terminal strip for the MCC relays on the line choice connector frame, connect to the ITE-4033B test set using cords ITE-9984, to obtain the following association:

Leads	T.S. - MCC		Connector
	Pchgs.	Leads	
% 0-9	20-29	(JB) 0-9	B
0-9	30-39	(LJ) 0-9	A

% Refer to the note under Paragraph 8.12.

8.27 Remove the make busy plug from jack TMB and the insulators from the MCA relay contacts if the following test is not to be performed at this time.

9. LINE LINK SECONDARY HOLD MAGNETS

9.1 Setup for Test of Magnets on Even Frame of Half Choice A

NOTE: If the line choice connectors are not equipped with TMB relays, insulate contacts 15 and 16 on relays MCA of the line choice connector under test.

9.11 Connect 48 volt battery and ground to the A jack of ITE-4033B, link frame test set using an ITE-9598 cord. Insert a 349A make busy plug into jack TMB of the line choice connector under test.

9.12 On the terminal strip for the MCC relays on the line choice connector frame and connect to the ITE-4033B test set using cords ITE-9984, to obtain the following association. (See Par. 1.3.)

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
% 0-9	10-19	(JA) 0-9	B
0-9	40-49	(EH) 0-9	A

% Refer to the note under Paragraph 8.12.

9.2 Test Operations for Magnets on Even Frame of Half Choice A

9.21 Operate key T2 when incoming link build-out frames are not provided; operate key T1 when incoming link build-out frames are provided. Operate keys IG, BB and X. Leave these keys operated.

9.22 Operate key A0 to connect interrupted ground to lead EHO. Operate key B0 to operate relay LJA0 and observe that magnet SHO, switch 0, even line link frame of half choice A, operates and releases.

NOTE: The associated incoming link secondary hold magnet or magnets will also operate and release but need not be observed.

9.23 If a magnet is falsely grounded it will not release and if four or more magnets are crossed when incoming link build-out frames are not provided, or six or more magnets are crossed when build-out frames are provided, the X lamp on the test set lights. In order to check that the X lamp will light on a cross, momentarily cross magnets by operating key B1 while key B0 is operated. Note that the X lamp lights. Release keys B0 and B1.

9.24 With key A0 still operated, operate key B1 to operate relay LJA1 and observe that magnet SH1, switch 0, even frame of half choice A, operates and releases. Release key B1.

9.25 Operate key B2 to operate relay LJA2 and observe that magnet SH2, switch 0, even frame of half choice A, operates and releases. Release key B2.

9.26 Continuing as described in the preceding paragraphs check magnets (SH) 3-9 on the same switch while keys (B) 3-9 are operated.

9.27 When all magnets on switch 0 have been checked, release key A0 and operate key A1 to connect interrupted ground to lead EH1. Check magnets (SH) 0-9, switch 1, even frame of half choice A, by operating keys (B) 0-9 in turn.

9.28 When all magnets on switch 1 have been checked, release key A1 and operate key A2 to connect interrupted ground to lead EH2. Check magnets on switch 2 by operating keys (B) 0-9 in turn.

9.29 Continuing as described in the preceding paragraph, check all SH magnets on the even frame of the half choice A under test.

9.3 Setup for Test of Magnets on Odd Frame of Half Choice A

9.31 Connect 48 volt battery and ground to the A Jack of ITE-4033B, link frame test set using an ITE-9598 cord.

9.32 On the terminal strip for the MCC relays on the line choice connector frame and connect to the ITE-4033B test set using cords ITE-9984, to obtain the following association. (See Par. 1.3.)

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
% 0-9	10-19	(JA) 0-9	B

% Refer to the note under Paragraph 8.12.

9.33 Connect the receptacle plug of an ITE-9984 cord to the A connector on the ITE-4033B test set. Connect lead 0 of this cord to lead (OH) 0, punching 50 on the terminal strip for MCC relays on the line choice connector frame.

**NOTE:** Equip lead 0 of cord ITE 9984 with an alligator clip for connecting to punchings 50-59, as required.

9.4 Test Operations for Magnets on Odd Frame of Half Choice A

Same as for even frame of half choice A, except that key A0 is not released; instead, lead 0 of the associated cord ITE-9984 is connected to terminals 50-59, leads OH-0 to OH-9, respectively, as required.

9.5 Setup for Test of Magnets on Even Frame of Half Choice B

Same as for even frame of half choice A except the following association should be obtained. (See Par. 1.3.)

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
% 0-9	20-29	(JB) 0-9	B
0-9	40-49	(EH) 0-9	A

% Refer to the note under Paragraph 8.12.

9.6 Test Operations for Magnets on Even Frame of Half Choice B

Same as for even frame of half choice A.

9.7 Setup for Test of Magnets on Odd Frame of Half Choice B

Same as for even frame of half choice B except the following association should be obtained:

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
% 0-9	20-29	(JB) 0-9	B
0-9	50-59	(OH) 0-9	A

% Refer to the note under Paragraph 8.12.

9.8 Test of Operations for Magnets on Frame of Half Choice B

Same as for even frame of half choice A. Remove the insulators from the MCA relay contacts at the completion of this test.

10. TEST OF SM LEADS

10.1 Leads to A line Link Frame of Choice

10.11 Connect 48 volt battery and ground to the A jack of ITE-4033B using an ITE-9598 cord. Insert a 349A make busy plug into jack TMB.

10.12 On the terminal strip for the MCB relays on the line choice connector frame connect to the ITE-4033 test set using cords ITE-9984, to obtain the following association. (See Par. 1.3.)

Leads	T.S. - MCB		ITE-4033B Connector
	Pchgs.	Leads	
0-9	20-29	(SM) 0-9 Frame LLA	A

10.13 Insert a plug of an ITE-9547 cord into jack C5. Equip the other plug of this cord with an alligator clip and connect it to punching 25 (lead H5 to frame LLA) on the terminal strip for MCA relays. This connection is used to operate relay HG5 on the A line link frame of the choice.

10.14 Operate keys AG and CG.

10.15 Operate key C5 to operate relay HG5 on the A line link frame of the choice.

10.16 Operate and release two or three times key A0 and observe that the 0 select magnet or magnets on primary switch 5 of the A line link frame operate and release. Also observe that other primary select magnets do not operate and release.

10.17 Operate and release two or three times, in turn, keys A1 to A9 and observe that select magnets 1 to 9, respectively, on primary switch 5 operate and release. Also observe that other primary select magnets do not operate and release.

**10.2 Leads to B Line Link Frame of Choice**

Same as 10.1 except connections are made to punchings 30 to 39, on terminal strip for MCB relays and to punching 35 on terminal strip for MCA relays. In this case observe select magnets on primary switch 5 of the B line link frame.

**10.3 Leads to C Line Link Frame of Choice**

Same as 10.1 except connections are made to punchings 40 to 49 on the terminal strip for MCB relays and to punching 45 on the terminal strip for MCA relays. In this case observe select magnets on primary switch 5 of the C line link frame.

**10.4 Leads to D Line Link Frame of Choice**

Same as 10.1 except connections are made to punchings 50 to 59 on terminal strip for MCB relays and to punching 55 on terminal strip for MCA relays. In this case observe select magnets on primary switch 5 of the D line link frame.

**11. TEST OF LL LEADS**

11.1 Insert a 349A make busy plug into jack TMB.

11.11 On the terminal strip for the MCC relays on the line choice connector frame connect to the ITE-4033B test set using cords ITE-9984, to obtain the following association. (See Par. 1.3.)

Leads	T.S. - MCC		ITE-4033B Connector
	Pchgs.	Leads	
0-9	0-9	(LL) 0-9	S

11.2 On the terminal strip for the MCB relays on the line choice connector frame connect to the ITE-4033B test set using cords ITE-9984, to obtain the following association:

Leads	T.S. - MCB		ITE-4033B Connector
	Pchgs.	Leads	
0	0	CR-A	A
1	1	CE-A	A
2	2	CR-B	A
3	3	CE-B	A
4	4	CR-C	A
5	5	CE-C	A
6	6	CR-D	A
7	7	CE-D	A

11.3 Operate keys SB and AG.

11.4 Operate key A0 to operate relay CRA to connect the LL leads to the A line link frame of the choice.

11.5 Insert and remove a make busy plug in jacks SS0 to SS9, in turn, on the A line link frame of the line choice connector under test and observe that lamps S0 to S9, respectively, light when the plug is inserted and are extinguished when the plug is removed.

11.6 Release key A0 and operate key A1 to operate relay CEA. Again insert and remove a make busy plug in jacks

SS0 to SS9 on the A frame and observe that lamps S0 to S9, respectively, light when the plug is inserted and are extinguished when the plug is removed. These test verify the parallel paths of the LL leads through relays CRA and CEA. Restore key A1. Again insert and remove a make busy plug in jacks SS0 to SS9 on the A frame and observe that none of lamps S0 to S9 light.

11.7 Verify the LL leads to the B, C and D line link frames and through relays CRB, CEB, CRC, CEC, CRD and CED. The test operations are the same as described in the preceding paragraphs. As indicated in the chart under 11.2 key A2 is operated to operate relay CRB and key A3 is operated to operate relay CEB when testing to the B line link frame; key A4 is operated to operate relay CRC and key A5 is operated to operate relay CEC when testing to the C line link frame; and key A6 is operated to operate relay CRD and key A7 is operated to operate relay CED when testing to the D line link frame.

**12. TEST OF LEADS LO, LE, LR AND (H) 0-9**

12.1 Momentarily ground LO and LE leads, one at a time, and check that LA and LB relays operate while ground is applied as indicated below.

T.S. for MCA Relays Pchg.	Lead	Relay Operated	Line Link Frame of Choice
18	LE	LB	A
19	LO	LA	A
1	LE	LB	B
2	LO	LA	B
4	LE	LB	C
5	LO	LA	C
7	LE	LB	D
8	LO	LA	D

12.2 Check the LR leads for continuity and location between points indicated below.

Pchg.	17, T.S. for MCA Rel.	2T, Rel. TRL, L.L. Fr.	A	B	C	D
" 0, "	" " " "	" " " "	"	"	"	"
" 3, "	" " " "	" " " "	"	"	"	"
" 6, "	" " " "	" " " "	"	"	"	"

12.3 Momentarily ground H leads and observe that the associated HG relay on the line link frame operates while ground is applied, as indicated below:

Grd. Pchg. on T.S. for MCA Relays	Lead	Operated Relay
20-29	(H) 0-9	(HG) 0-9 of LLA
30-39	(H) 0-9	(HG) 0-9 of LLB
40-49	(H) 0-9	(HG) 0-9 of LLC
50-59	(H) 0-9	(HG) 0-9 of LLD

**13. TEST OF K RESISTANCES**

**NOTE:** This test should not be made until after the BK leads have been connected at the line link frames and the line junctor connector frame.

13.1 Connect one lead of the ohmmeter ITE-4442 to punching 5 on the terminal strip for LJA or LJB relays.

13.2 Connect the other lead of the ohm-meter to punchings 0 to 9 in turn, on the BKB terminal strip at rear of LJB relays. Observe that in each case the ohm-meter reads minimum 940 ohms - maximum 1060 ohms.

#### 14. MISCELLANEOUS FEATURES

##### 14.1 Trouble Make Busy

14.11 Check that solid ground is present at LOB of TMB relays.

14.12 Insert a 349A plug into the TMB jack. Check that the TMB relays operate, the TMB lamp lights and the CFB lamp at the floor alarm frame lights.

14.13 At the trouble indicator frame, using the line assignment list, set up a number located in the line choice under test. Observe that the trouble indicator lamps TC, RV, RC, CON, GT2 and RL followed by TRL light.

14.14 Momentarily operate RL key to restore circuit to normal.

14.15 Repeat test 14.13 on all markers.

14.16 Remove 349A plug from TMB jack.

##### 14.2 Traffic Registers

14.21 Peg Count Registers: Operate the LK key on the traffic register rack to the LINE LINK FRAME position. Momentarily operate relay CRA and check that the peg count (PC) register for the A line link frame of the line choice connector under test operates. Momentarily operate relay CEA and check that the same register operates. Repeat these operations on relays CRB and CEB, CRC and CEC, CRD and CED, and check that the peg count register for the B, C and D line link frames, respectively, operates as each relay is operated and

released. The peg count registers for line subgroups are checked on the line link test method.

14.22 Overflow Registers: Connect ground to punching 17 (lead OF) on the terminal strip for MCB relays. Momentarily operate, one at a time, relays (CR) A-D and (CE) A-D of the line choice connector under test and observe that the associated line overflow register (OFL) operated when each relay is operated and released. Relays (CR) A-B and (CE) A-B should operate the same register. Relay (CR) C-D and (CE) C-D should operate the same register. Remove the ground from punching 17.

14.23 Load Registers: Connect ground to punching 16 (Lead PL) on the terminal strip for MCB relays. Momentarily operate, one at a time, relay (CR) A-D and (CE) A-D and observe that the associated load (LD) operates when each relay is operated. Relays CRA and CEA operate the same register. Relays CRB and CEB operate the same register. Relays CRC and CEC operate the same register. Relays CRD and CED operate the same register. Remove ground from punching 16.

#### 15. MISCELLANEOUS CIRCUITS

Check miscellaneous circuits on the line choice connector and line junctor connector frames 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 lamp is burned out or removed; (3) spare jack to MDF, and (4) frame line circuit.

**NOTE:** The remote control jack (F) on the line choice connector frame is checked on the test of the terminating trouble indicator.

No arrows are shown due to extensive changes

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#### Reason for Reissue:

To include provisions for LLP and to make minor corrections throughout to update to current engineering standards.