DIAL TONE MARKER CIRCUITS
TESTS USING MASTER TEST FRAME
NO. 5 CROSSBAR OFFICES

1. GENERAL

1.01 ▶This section covers a method of testing dial tone marker circuits SD-26001-01, SD-25550-01 using the master test frame (MTF) in No. 5 crossbar offices. Additional tests where the No. 5 crossbar office is arranged with the Electronic Translation System (ETS) are provided in Section 218-120-502.◀

1.02 This section is reissued for the reasons listed below. Revision arrows are used to emphasize the more significant changes. This reissue affects Equipment Tests Lists.

(a) To revise Table F for manual private line (MPL) digit 8 cut through.

(b) To make minor changes as required.

1.03 The tests covered are:

1.04 Test E requires the seizure of trunk link frames. Test F requires that a line link frame junctor switch be made busy.

1.05 Test H requires actions and verifications at the line link frame. Test N and Test AA require action at the marker frame.

1.06 For Tests G and H, junctor grouping frame and junctor distribution information should be obtained from local office records.

1.07 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Parts 3 and 4 of this section, indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

1.08 The manner of selecting some circuits and test conditions at the MTF and its associated circuits varies depending on the apparatus options furnished with these circuits. Therefore, where variable means of selection are provided, precise instructions for the selection of circuits and test conditions are not given. Precise instructions for the use of these variable means are given in Section 218-106-301.

1.09 The location statement, At MTF—, is used to refer to all apparatus located on the four basic bays of the MTF.

1.10 In marker groups with ***four or less*** dial tone markers, all of the markers have full access to all line link and trunk link frames. In marker groups with ***more than four*** dial tone markers, markers 0 and 1 have full access to all line link and trunk link frames, while markers 2 through 5 may have either full or limited access (graded) to the line link and trunk link frame. In marker groups arranged for limited access with ***five*** dial tone markers, markers 0, 1, and 2 have full access to all line link and trunk link frames, while marker 3 has access to only the higher numbered line link and trunk link frames and marker 4 has access to only the lower numbered line link and trunk link frames. In marker groups arranged for limited access with ***six*** dial tone markers, markers 0 and 1 have full access to all line link and trunk link frames, while markers 2 and 3 have access to only the higher numbered line link and trunk link frames and markers 4 and 5 have access to only the lower numbered line link and trunk link frames. Centrex transfer line link and transfer trunk link frames are accessed by dial tone markers 0 through 3 only. The association of dial tone markers having limited access to certain line link and trunk link frames shall be determined from office records.

2. APPARATUS

All Tests

2.01 Master test control circuit, SD-25800-01.

Tests A, E, H, and K

2.02 32A test set.

Tests A, B, C, E, I, J, K; N Through R, X,and AA

2.03 322A (make-busy) plug.

Tests B, C, E, I, K, N, O, AA

2.04 Blocking and insulating tools as required. Use tools and apply, as covered in Section 069-020-801.

Test F

2.05 349A (make-busy) plug.

Test H

2.06 351C (make-busy) plug for 2-wire frames.

2.07 351D (make-busy) plug for 4-wire frames.

Tests K, N

2.08 KS-3008 stopwatch or equivalent.

Test S

2.09 Trunk test circuit, SD-25918-01.

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
	Note: Refer to paragraphs 1.08, 1.09, and 1.10.	
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished. *Note:* Lighted LIT lamp indicates that the line insulation test circuit is off-normal. This may result in a short delay in starting of test call after operating ST key.
3	Select marker under test.	
4	Select DT class of test.	
5	Determine from office records type or types of register groups or transfer trunk groups required by customers served by line link or transfer line link frame having access to marker under test. Also, determine vertical group pattern in case of mixed line link frame.	
6a	If selected line link frame serves 4-wire customers— Operate 4W key.	
7	Select type of register and vertical group pattern as required (Table A).	

4. METHOD

STEP	ACTION	VERIFICATION
A. Vertical Group, Horizontal Group, and Vertical File Identification — Preference and Lockout Features		
	Note 1: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test for all equipped networks having access to marker under test. *Note 2:* Use Table B when testing wire-spring markers; use Table C when testing nonwire-spring markers.	

STEP ACTION VERIFICATION

TABLE A

TYPE OF REGISTER OR TRANSFER TRUNK GROUP	VERTICAL GROUP PATTERN	OPERATE KEYS	OR	SET RG SWITCH
DP	—	—		DP
MF	—	MF		MF
R0	—	RT0		RT0
R1	—	RT1		RT1
R2	—	RT2		RT2
R3	—	RT3		RT3
MLF	—	MLF		MLF
MLF	0	MLF, RT0		VP0
MLF	1	MLF, RT1		VP1
MLF	2	MLF, RT2		VP2

8 Insert make-busy plug into MMB or M-D-MB jack of marker being tested.

9 Select line link or transfer line link frame having access to marker under test and to register group selected (refer to paragraph 1.09).

10b If P&LO key is not provided—
Select two vertical groups as indicated in the VERTICAL GROUPS PROVIDED column for Test Call 1 (Table B or C).

11b Select two associated horizontal groups, vertical files.

12c If P&LO key is provided—
Operate P&LO key.

13c Select top vertical group as indicated in VERTICAL GROUPS PROVIDED column for Test Call 1 (Table B or C).

14c Select associated horizontal group, vertical file.

15 Operate TR2 key.

STEP	ACTION	VERIFICATION
16d	If transfer line link frame is selected— Operate DTF key.	
17	At marker frame— Insert plug of 32A test set into RC jack.	
18	Momentarily operate white (ST) button.	For wire-spring-relay type markers— JSQ0, SQ0 relays operated. For nonwire-spring-relay type markers— SQ0 relay operated. ***Note:*** If, after first operation of white (ST) button the above relays are not operated, momentarily operate red (RL) button and repeat this step until these relays are operated. At MTF— TC1, MRL lamps lighted.
19	Momentarily operate RL key.	All lamps extinguished.
20	Operate REC key.	
21	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. FT_, FU_ designations perforated corresponding to ten and unit digits of selected line link or transfer line link frame. FUT_ designation perforated corresponding to FU_ (unit digit) designation perforated. For wire-spring-relay type markers— For 2-wire line link, designations perforated for TR2 or 2TR, VG0, HG5, VF0, 2W or none. For 4-wire line link, designations perforated for 2TR, VG0, HG5, VF0, and 4W. For transfer line link, designations perforated for 2TR, VGT0, HGT5, VFT0, 2W, DTF. For nonwire-spring-relay type markers— Designations perforated for TR2, VG0, HG0, VF0.
22	Momentarily operate RL key.	All lamps extinguished.
23	Repeat Steps 7, 9 through 14c, 21, 22 for vertical group, horizontal group, and vertical file as required for each test call shown in Table B or C until at least one test call has been completed for each line link and transfer line link frame having access to marker under test, until each combination of JSQ_, SQ0 relays have been tested.	FT_, FU_ designations perforated corresponding to ten and unit digits of selected line link or transfer line link frame. FUT_ designation perforated corresponding to FU_ (unit digit) designation perforated. For 2-wire line link frames, designations perforated for VG_, HG_, VF_ corresponding to operated keys for each test call in row indicated by arrow in Table B or C as required,

STEP	ACTION	VERIFICATION
		TR2 or 2TR and 2W or none. For 4-wire line link frames, designations perforated for VG_, HG_, VF_ corresponding to operated keys for each test call in row indicated by arrow in Table B as required, 2TR, 4W. For transfer line link frames, designations perforated for VGT_, HGT_, VFT_ corresponding to operated keys for each test call in row indicated by arrow in Table B as required, 2TR, 2W, DTF.
24	Restore TR2 key.	
25	Restore vertical group, horizontal group, vertical file selected.	
26b	If P&LO key is not provided— Operate VG0, VG2, HG6, VF3 keys.	
27c	If P&LO key is provided— Set VGU0, HG6, VF3 switches.	
28	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. If 2-wire or 4-wire line link is used in test— VG2 designation perforated. If transfer line link is used in test— VGT2 designation perforated.
29	Momentarily operate RL key.	All lamps extinguished.
30	Restore all keys and switches not required in next test.	
31	At marker frame— Remove plug of 32A test set from RC jack.	
32	At MTF— Remove make-busy plug from MMB or M-D-MB jack of marker being tested.	
B. Service Observing Feature		
8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Operate OBS, NTC, REC keys.	
10b	If office is arranged for range extension for unigauge cabling— Select line location for long loop line for	

STEP ACTION VERIFICATION

TABLE B – WIRE-SPRING-RELAY TYPE MARKER TEST

TEST CALL	JSQ_ RELAY OPERATED	SQ_ RELAY OPERATED	TROUBLE RECORDER CARD INDICATION	KEYS OPERATED — VERTICAL GROUPS PROVIDED									HG_ HORIZONTAL GROUP	VF_ VERTICAL FILE
				4	5	6	7	8	9	10	11	12		
1	JSQ0	X	→	0	0	0	0	0	0	0	0	0	5	0
				2	2	2	2	2	2	2	2	2	6	3
2	JSQ1	X	→	0	0	0	6	7	7	7	7	7	6	1
				2	2	2	0	6	6	6	6	6	7	2
3	JSQ2	X	→	1	1	5	5	5	8	8	8	8	7	2
				0	0	1	1	1	5	5	5	5	8	4
4	JSQ3	X	→	3	4	4	4	4	4	9	9	9	8	3
				1	3	3	3	3	3	4	4	4	9	1
5	JSQ4	X	→	3	3	3	3	3	3	3	10	10	9	4
				1	1	5	5	5	8	8	3	3	0	0
6	JSQ5	X	→	1	1	1	1	1	1	1	1	11	5	3
				0	0	0	6	7	7	7	7	1	6	1
7	JSQ0		→	0	0	0	0	0	0	0	0	0	0	0
				2	2	2	2	2	2	2	2	2	1	3
8	JSQ1		→	1	1	1	1	1	1	1	1	1	1	1
				0	0	0	7	7	7	7	7	7	2	2
9	JSQ2		→	3	3	3	3	3	3	3	3	3	2	2
				1	1	5	5	5	8	8	8	8	3	4
10	JSQ3		→	3	4	4	4	4	4	4	4	4	3	3
				1	3	3	3	3	3	3	10	10	4	1
11	JSQ4		→	1	1	5	5	5	5	5	5	5	4	4
				0	0	1	1	1	1	1	1	11	5	0
12	JSQ5		→	0	0	0	6	6	6	6	6	6	0	2
				2	2	2	0	0	0	0	0	0	1	4

2-wire network having access to marker under test and to register group selected (refer to paragraph 1.10).

11b Momentarily operate ST key. CK, TC1, MRL lamps lighted. Trouble record taken. LOLL, OBS1, OBS2 designations perforated.

12b Momentarily operate RL key. All lamps extinguished.

STEP	ACTION	VERIFICATION

TABLE C – NONWIRE-SPRING-RELAY TYPE MARKER TEST

TEST CALL	SQ_ RELAY OPERATED	TROUBLE RECORDER CARD INDICATION	VERTICAL GROUPS PROVIDED							HG_ HORIZONTAL GROUP	VF_ VERTICAL FILE
			6	7	8	9	10	11	12		
1	SQ0	→	0	0	0	0	0	0	0	0	0
			5	5	5	5	5	5	5	9	4
2	SQ1	→	1	1	1	1	1	1	1	1	1
			5	5	5	5	5	5	5	0	4
3	SQ2	→	3	3	3	3	3	3	3	2	2
			5	5	5	5	5	5	5	1	4
4	SQ3	→	4	4	4	4	4	4	4	3	3
			5	5	5	5	5	5	5	2	4
5	SQ4	→	5	6	6	6	6	6	6	4	4
			2	5	5	5	5	5	5	3	0
6	SQ5	→	5	5	5	5	5	5	5	5	0
			2	2	2	2	2	10	11	4	4
7	SQ6	→	2	2	2	2	2	10	10	6	1
			5	5	5	5	5	5	5	5	4
8	SQ7	→	1	1	7	7	7	7	7	7	2
			5	5	5	5	5	5	5	6	4
9	SQ8	→	3	3	3	8	8	8	8	8	3
			5	5	5	5	5	5	5	7	4
10	SQ9	→	4	4	4	4	9	9	9	9	4
			5	5	5	5	5	5	5	8	0
11	SQ0	→							11	9	4
									10		

13	Select line location for non-long loop line for 2-wire or 4-wire network having access to marker under test and to register group selected (refer to paragraph 1.10).	
14	Momentarily operate ST key.	CK, TC1, MRL lamps lighted. Trouble record taken. OBS1, OBS2 designations perforated.
15	Momentarily operate RL key.	All lamps extinguished.
16	At marker frame— Block nonoperated OBS2 relay.	

STEP	ACTION	VERIFICATION
17	At MTF— Restore REC key.	
18	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. OBS2 designation not perforated.
19	Momentarily operate RL key.	All lamps extinguished.
20	Operate TR2, REC keys.	
21	Momentarily operate ST key.	CK, TC1 MRL lamps lighted. Trouble record taken. TR2 designation perforated.
22	Momentarily operate RL key.	All lamps extinguished.
23	Restore all keys and switches not required in next test.	
24	At marker frame— Remove blocking tool from OBS2 relay.	
25	At MTF— Remove make-busy plug from MMB or M-D-MB jack.	

C. Crossed Line Hold Magnet Check Feature—XLH Relay

Note: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test on all equipped networks having access to marker under test.

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location having access to marker under test and to selected register or transfer trunk group (refer to paragraph 1.10).	
10	Operate XLH key.	
11b	If transfer line link frame is selected— Operate DTF key.	
12	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. XLH designation perforated.

STEP	ACTION	VERIFICATION
13	Momentarily operate RL key.	All lamps extinguished.
14c	If HTR key is provided— Operate HTR key.	
15d	If HTR key is not provided— At marker frame— Block nonoperated HTT relay.	
16d	Block operated HTR relay.	
17	At MTF— Operate REC key.	
18	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. HTR designation perforated. XLH designation not perforated.
19	Momentarily operate RL key.	All lamps extinguished.
20	Restore all keys and switches not required in next test.	
21d	If HTR key is not provided— At marker frame— Remove blocking tools from HTT, HTR relays.	
22	At MTF— Remove plug from MMB or M-D-MB jack of marker being tested.	

D. Manual Originating Feature

Test Deleted

E. Trunk Link or Transfer Trunk Link Frame—Preference and Lockout Feature

Note 1: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, select a register or transfer trunk group associated with the highest number of trunk link frames or transfer trunk link switches in any network having access to marker under test.

Note 2: When transfer network operation is provided, each transfer trunk link switch appears to the marker as a trunk link frame. (Refer to Table D)

STEP	ACTION	VERIFICATION
8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location having access to marker under test and to register or transfer trunk group selected (refer to paragraph 1.10).	
10b	If transfer line link frame is selected— Operate DTF key.	
11	At marker frame— Insert plug of 32A test set into RC jack of marker being tested.	
12	Block operated all FB_ relays for trunk link frames equipped with registers of group selected for test, except FB_ relay for highest numbered trunk link frame having access to marker under test.	
13	Momentarily operate white (ST) button.	FS_, FM_, FMG_ relays operated for highest numbered trunk link or transfer trunk link frame equipped with registers of group selected for test.
14	Momentarily operate red (RL) button.	
15	Remove blocking tools from FB_ relays.	
16	Block nonoperated BC0, BC10, BC20, BCA0, BCA10 relays, if provided.	
17	At MTF— Operate REC key.	
18	Momentarily operate white (ST) button.	FS_, FM_, FMG_ relays operated for lowest numbered trunk link or transfer trunk link frame equipped with registers or transfer trunks in group selected. Trouble record taken.
19	Momentarily operate red (RL) button.	
20	Repeat Steps 18 and 19 until all FS_, FM_, FMG_ relays associated with trunk link frames equipped with registers of group selected for test have operated in proper sequence having access to marker under test.	FS_ relays operated in following sequence: For wire-spring-relay type markers— FS0, FS2, FS4, etc, corresponding to even-numbered trunk link or transfer trunk link frames provided; then FS1, FS3, FS5, etc, corresponding to odd-numbered trunk link or transfer trunk link frames equipped with registers of group selected for test provided. For nonwire-spring-relay type markers—

STEP	ACTION	VERIFICATION
		FS0 through FS_ corresponding to highest numbered trunk link frame equipped with registers of group selected for test provided. Trouble records taken in Steps 18 and 20 indicated that trunk link or transfer trunk link frames were selected in proper sequence.
21	Repeat Steps 7, 9, 10b, 18 through 20 until all trunk link frames or transfer trunk frames have been seized in proper sequence having access to marker under test.	
22	Remove plug of 32A test set from RC jack.	
23	At MTF— Restore all keys and switches not required in next test.	
24	Remove make-busy plug from MMB or M-D-MB jack of marker being tested.	

F. Failure-to-Match Feature

Note: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test on all equipped networks having access to marker under test.

8 Select line location on lowest numbered line link or transfer line link frame having access to marker under test and to register or transfer trunk group selected (refer to paragraph 1.10).

TABLE D – TTL FRAME SWITCH NO. TO EQUIVALENT TL FRAME NO.

TTL FRAME 0		TTL FRAME 1		TTL FRAME 2		TTL FRAME 3	
SWITCH	EQUIVALENT FRAME NO.	SWITCH	EQUIVALENT FRAME NO.	SWITCH	EQUIVALENT FRAME NO.	SWITCH	EQUIVALENT FRAME NO.
4	4	4	9	4	14	4	19
3	3	3	8	3	13	3	18
2	2	2	7	2	12	2	17
1	1	1	6	1	11	1	16
0	0	0	5	0	10	0	15

STEP	ACTION	VERIFICATION
9b	If transfer line link frame is selected— Operate DTF key.	
10	Select junctor sequence 0.	
11	Operate STP1 key.	
12	Select channel 0.	
13	At line link or transfer line link frame— Insert make-busy plug into JS0 jack.	
14	At MTF— Momentarily operate ST key.	TC1, MRL, RA1 lamps lighted.
15	Momentarily operate RL key.	All lamps extinguished.
16	At line link or transfer line link frame— Remove make-busy plug.	
17	Repeat Steps 12 through 16 for channels and junctor switches 1 through 9.	
18	Restore all keys and switches not required in next test.	

G. Junctor Subgroup Selection Feature

Note: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test for all equipped networks having access to marker under test.

8	Select line location having access to marker under test and to register or transfer trunk group (refer to paragraph 1.10).	
9	Select trunk link frame group associated with register or transfer trunk group having access to marker under test (refer to paragraph 1.10).	
10	Select trunk link frame associated with register or transfer trunk group having access to marker under test (refer to paragraph 1.10).	
11	Select junctor sequence 0.	
12	Operate STP1 key.	
13	Operate FS, REC keys.	

STEP	ACTION	VERIFICATION
14b	If transfer line link frame is selected— Operate DTF key.	
15	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. JG0, STP1 designations perforated. ***Note:*** Determine from Table E that correct JG_ designations are perforated for junctor step position 1 with JSQ0 marker relay operated.
16	Momentarily operate RL key.	All lamps extinguished.
17	Determine from office records the office frame size indication for particular trunk link frame selected. ***Note:*** When an office is in a process of expansion, more than one office frame size may be available. All frame sizes shall be tested.	
18	Repeat Steps 7, 11, 12, 15, 16 selecting junctor sequence and STP1, STP2 keys until all JSQ— relays have been operated with both the STP1 and STP2 keys operated.	Verification is same except J, G, 0 through 4 and STP1, STP2 designations perforated as indicated in Table E.
19	Restore all keys and switches not required in next test.	

H. Channel Preference and Selection Feature

Note 1: Generally, channel preference for first trial is in numerical sequence 0 through 9, for second trial, 5 through 9, and then 0 through 4. However, if marker cross-connections for this preference are not used, channel preference for first trial is 5 through 9, then 0 through 4, and for second trial, 0 through 9.

Note 2: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test for all equipped networks having access to marker under test.

8	Select line location of lowest numbered line link or transfer line link frame having access to marker under test and to register or transfer trunk group selected (refer to paragraph 1.10).	

STEP **ACTION** **VERIFICATION**

TABLE E – JUNCTOR SUBGROUP SELECTION

NUMBER OF TRUNK LINK FRAMES			STP1 OR STP2 RELAY OPERATED	JUNCTOR SEQUENCE AND ASSOCIATED JG RELAY OPERATED						
SINGLE	PAIRED	TRIPLED		0	1	2	3	4	5	JUNCTOR SEQUENCE OR JSQ_RELAY
2*	4	6	STP1	0	1	2	0	1	2	
2*	4	6	STP2	3	4	3	4	3	4	
2-3	4-6	6-9	STP1	0	1	2	0	1	2	
2-3	4-6	6-9	STP2	1	2	0	1	2	0	
3	6	9	STP1	0	1	2	0	1	2	
3	6	9	STP2	3	3	3	3	3	3	
4*	8	12	STP1	0	1	0	1	0	1	
4*	8	12	STP2	2	2	2	2	2	2	JG-RELAY OPERATED (Junctor Subgroup Selected)
5	10	15	STP1	0	1	0	1	0	1	
5	10	15	STP2	1	0	1	0	1	0	
6	12	18	STP1	0	0	0 or 1†	0	0	0 or 1†	
6	12	18	STP2	1	1 or 2‡	0 or 1‡	1 or 2‡	1	0 or 2‡	
7	14	21	STP1	0	0	0	0	0	0 or 1†	
7	14	21	STP2	1	1 or 2‡	1	1 or 2‡	1	0 or 2‡	
8	16	24	STP1	0	0	0	0	0	0	
8	16	24	STP2	1	1	1	1	1	1	
9	18	27	STP1	0	0	0	0	0	0	
9	18	27	STP2	1	1	1	1	1	1	
10	20	30	STP1	0	0	0	0	0	0	

* Junctor subgroup selection between line link and trunk link or transfer line link and transfer trunk link.

† JG0 operated if three junctor subgroups exist between line link and trunk link.
JG1 operated if two junctor subgroups exist between line link and trunk link.

‡ Higher numbered JG_relay operated if three junctor subgroups exist between line link and trunk link.
Lower numbered JG_relay operated if two junctor subgroups exist between line link and trunk link.

9 Select trunk link or transfer trunk link frame group having access to marker under test associated with register or transfer trunk group (refer to paragraph 1.10).

10 Select trunk link or transfer link frame having access to marker under test associated with register or transfer trunk group (refer to paragraph 1.10).

11 Select junctor sequence 0.

STEP	ACTION	VERIFICATION
12	Operate FS, STP1, REC keys.	
13b	If transfer line link frame is selected— Operate DTF key.	
14	Determine from Table E which junctor subgroup should be selected for junctor step position 1 (STP1) and junctor sequence 0.	
15	Determine which junctors may be used for this test from local junctor distribution information.	
16	At line link or transfer line link frame— Insert plug of 32A test set into RC jack. ***Note 1:*** When a channel is to be checked and its junctor is found plugged busy before start of this test, proceed to next preferred channel for checking momentary operation of junctor hold magnet. Upon completion of this test, ***do not*** restore to service junctors which were plugged busy before start of this test. These channels should be tested at another time. ***Note 2:*** When a channel is to be checked and it is found to be busy on a service call (junctor hold magnet operated), proceed to next preferred channel for checking momentary operation of junctor hold magnet. If busy channel becomes idle during progress of this test, it immediately regains its position in the preference chain. When each of the less preferred channels is to be checked, note whether or not junctor hold magnet (of channel found busy) has released. If channel is still busy upon completion of this test, it should be checked at another time.	
17	Momentarily operate white (ST) button.	Junctor hold magnet (of most preferred idle channel for first trial) momentarily operated. At MTF— TC1, MRL lamps lighted. Trouble record taken. CH_ designation perforated agreed with channel under test. For 2-wire and 4-wire networks— LL_ designation perforated agreed with channel under test.
18	Momentarily operate RL key.	All lamps extinguished.

STEP	ACTION	VERIFICATION
19	At line link or transfer line link frame— When junctor hold magnet (operated momentarily in Step 17) is normal and associated selected magnets are released— Insert make-busy plug into sleeve of junctor hold magnet.	Junctor hold magnet operated. No select magnet on same switch operated. ***Caution: Before proceeding with test, check that no crosspoints associated with operated hold magnet are closed.***
20	Repeat Steps 17, 18, 19 until junctor hold magnet of least preferred idle channel for first trial is checked.	
21	Restore to service junctors made busy.	
22	At MTF— Operate TR2 key.	
23	At line link or transfer line link frame— Repeat Steps 17, 18, 19 for most preferred idle channel for second trial.	
24	Repeat Steps 17, 18, 19 until junctor hold magnet of least preferred idle channel for second trial is checked.	
25	Restore to service junctors made busy.	
26	Remove plug of 32A test set from RC jack.	
27	At MTF— Restore all keys and switches not required in next test.	

I. False Cross and Ground Test Feature — FCG, FCGA, and FCGB Relays

Note: When marker is arranged for 2-wire or 4-wire only, or 4-wire only network operation, select a 4-wire line location. When marker is arranged for transfer operation, select a transfer line link location having access to marker under test.

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location of lowest numbered line link frame group or transfer line link frame group having access to marker under test.	
10	Operate FCG key.	

STEP	ACTION	VERIFICATION
11b	If transfer line link frame is selected— Operate DTF key.	
12	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. FCG designation perforated.
13	Momentarily operate RL key.	All lamps extinguished.
14	Operate TR2 key.	
15	Insert make-busy plug into TRMB M_ jack of marker being tested.	
16	Momentarily operate ST key.	BT-OF lamp lighted.
17	Momentarily operate RL key.	All lamps extinguished.
18	Restore TR2 key.	
19c	If HTR key is provided— Operate HTR key.	
20d	If HTR key is not provided— At marker frame— Block nonoperated HTT relay.	
21d	Block operated HTR relay.	
22	At MTF— Momentarily operate ST key.	TC1, MRL lamps lighted.
23	Momentarily operate RL key.	All lamps extinguished.
24c	If HTR key is provided— Restore HTR key.	
25d	If HTR key is not provided— At marker frame— Remove blocking tools from HTT, HTR relays.	
26	At MTF— Remove make-busy plug from TRMB M_ jack.	
27e	If selected line link frame serves 4-wire customers or a transfer line link frame is selected— Restore FCG key.	
28e	Operate FCGA key.	

STEP	ACTION	VERIFICATION
29e	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. FCG designation perforated.
30e	Momentarily operate RL key.	All lamps extinguished.
31e	Repeat Steps 14 through 26 for second trial.	
32b	If transfer line link frame is selected— Restore FCGA key.	
33b	Operate FCGB key.	
34b	Repeat Steps 29e, 30e, 31e.	
35	Restore all keys and switches not required in next test.	
36	Remove make-busy plug from MMB or M-D-MB jack.	

J. Continuity Test Feature

Note: When operation is provided for more than one of the three networks — 2-wire, 4-wire, and transfer, perform this test for all equipped networks having access to marker under test.

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location on lowest numbered line link or transfer line link frame having access to marker under test and to register or transfer trunk group selected (refer to paragraph 1.10).	
10b	If selected line link frame serves 2-wire customers— Operate TC key.	
11b	Momentarily operate ST key.	TC1, MRL lamps lighted. If wire-spring-relay type markers with dual voltage feature are being tested. LHMT, TLH, LLJ lamps also lighted.
12b	Momentarily operate RL key.	All lamps extinguished.
13b	At MTF— Operate RV key.	

STEP	ACTION	VERIFICATION
14b	Momentarily operate ST key.	TC1, MRL lamps lighted.
15b	Momentarily operate RL key.	All lamps extinguished.
16b	Restore TC key.	
17b	Momentarily operate ST key.	TC1, MRL lamps lighted.
18b	Momentarily operate RL key.	All lamps extinguished.
19b	Operate CON key.	
20b	Momentarily operate ST key.	TC1, MRL lamps lighted.
21b	Momentarily operate RL key.	All lamps extinguished.
22c	If transfer line link frame is selected— Operate DTF key.	
23d	If selected line link frame serves 4-wire customers, or a transfer line link frame is selected— Momentarily operate ST key.	TC1, MRL lamps lighted.
24d	Momentarily operate RL key.	All lamps extinguished.
25d	Operate CONA key.	
26d	Momentarily operate ST key.	TC1, MRL lamps lighted.
27d	Momentarily operate RL key.	All lamps extinguished.
28	Restore all keys and switches not required in next test.	
29	Remove make-busy plug from MMB or M-D-MB jack.	

K. Heavy Traffic Feature

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location having access to marker under test and to register group selected (refer to paragraph 1.10).	
10	At marker frame— Insert plug of 32A test set into RC jack.	
11	Momentarily operate ST key; ***start timing.***	HTR relay operated for 1.0 to 1.5 seconds.

STEP	ACTION	VERIFICATION
12	Momentarily operate RL key.	
13	Block operated OAT1 relay.	HTR relay operated. HTT relay not operated within 2 seconds after HTR relay operated.
14	Remove blocking tool from OAT1 relay; ***start timing.***	HTR relay released in 1.0 to 1.5 seconds.
15	Remove plug of 32A test set from RC jack.	
16	At MTF— Restore all keys and switches not required in next test.	
17	Remove make-busy plug from MMB or M-D-MB jack.	

L. Route Advance Feature — All Registers Busy

Note: The OAN key should be in the normal position for this test.

8	Select line location having access to marker under test and to register group selected (refer to paragraph 1.10).	
9	Select route advance 0.	
10	Momentarily operate ST key.	TC1, MRL lamps lighted.
11	Momentarily operate RL key.	All lamps extinguished.
12	Select route advance 1.	
13	Momentarily operate ST key.	TC1, MRL, RA1 lamps lighted.
14	Momentarily operate RL key.	All lamps extinguished.
15	Restore all keys and switches not required in next test.	

M. Transfer of Start Lead Feature

8	Select line location having access to marker under test and to register group selected (refer to paragraph 1.10).	
9	Operate TRS key.	

STEP	ACTION	VERIFICATION
10	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. TRS designation perforated.
11	Momentarily operate RL key.	All lamps extinguished.
12	Restore all keys and switches not required in next test.	

N. Timing Features

All Timers

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Insert make-busy plug into TRMB M_ jack associated with marker being tested.	
10	Select line location having access to marker under test and to register or transfer trunk group selected (refer to paragraph 1.10).	

Work Timer

11	At marker frame— Block operated SP relay.	
12	At MTF— Momentarily operate ST key.	TC1 lamp lighted. Within 1 second— TRL lamp lighted.
13	Momentarily operate RL key.	TC1, TRL lamps extinguished.
14	At marker frame— Remove blocking tool from SP relay.	

Short-Delay Timer for Line Link Frame Seizure

15	At marker frame— Block nonoperated RON relay.	
16	Insulate contacts of LLC1 relay as follows: Wire-spring-type relay — 1 Nonwire-spring-type relay — 9B.	
17	At MTF— Momentarily operate ST key; ***start timing.***	TC1 lamp lighted. Within 2.6 to 4.0 seconds— TRL lamp lighted.
18	Momentarily operate RL key.	TC1, TRL lamps extinguished.

STEP	ACTION	VERIFICATION
19	At marker frame— Remove insulator from LLC1 relay.	
20	Remove blocking tool from RON relay.	
	Short-Delay Timer for Trunk Link Frame Seizure	
21	At marker frame— Block nonoperated FS0, RON relays.	
22	At MTF— Select lowest numbered trunk link frame group having access to marker under test (refer to paragraph 1.10).	
23	Select lowest numbered trunk link frame having access to marker under test (refer to paragraph 1.10).	
24b	If marker being tested is wire-spring-relay type— Operate NTFS key.	
25c	If marker being tested is nonwire-spring-relay type— Operate FS key.	
26	Momentarily operate ST key; ***start timing.***	TC1 lamp lighted. Within 2.6 to 4.6 seconds— TRL lamp lighted.
27	Momentarily operate RL key.	TRL lamp extinguished.
28	At marker frame— Remove blocking tool from RON relay.	
29	At MTF— Momentarily operate ST key; ***start timing.***	TC1 lamp lighted. Within 4.7 to 7.2 seconds— TRL lamp lighted.
30	Momentarily operate RL key.	TRL lamp extinguished.
31	Restore FS or NTFS key.	
32	Restore trunk link frame group.	
33	Restore trunk link frame.	
34	At marker frame— Remove blocking tool from FS0 relay.	

STEP	ACTION	VERIFICATION
Overall Timeout Feature		
35b	If marker being tested is wire-spring-relay type— Block nonoperated RYT, WT, TM, SFT relays.	
36c	If marker being tested is nonwire-spring-relay type— Block nonoperated SF, RON, WT relays.	
37	At MTF— Operate NTFS key.	
38	Momentarily operate ST key; ***start timing.***	Within 9.8 to 15.4 seconds— For wire-spring-relay type markers— BT-OF lamp lighted. For nonwire-spring-relay type markers— BT-OF, MRL lamps lighted. At marker frame— TA lamp lighted. Major alarm sounds.
39	Momentarily operate RL key.	BT-OF, MRL lamps extinguished.
40	At marker frame— Operate AR key.	TA lamp extinguished. Major alarm silenced.
41	Remove all blocking tools from relays blocked nonoperated.	
All Timers		
42	At MTF— Restore all keys and switches not required in next test.	
43	Remove make-busy plug from TRMB M_, MMB or M-D-MB jack.	
O. Surge Operation of Hold Magnet Feature		
	Note: This test should be made only on wire-spring-relay type markers.	
8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location of nonmessage register line having access to marker under test and to register group selected (refer to paragraph 1.10).	

STEP	ACTION	VERIFICATION
10b	If marker is arranged to operate hold magnets on dual voltage only on heavy traffic— Momentarily operate ST key.	MRL lamp lighted. TLH, LLJ, LHMT lamps ***not*** lighted.
11	Momentarily operate RL key.	All lamps extinguished.
12c	If marker is arranged to operate hold magnets on dual voltage, only on heavy traffic, and if HTR key is provided— Operate HTR key.	
13d	If marker is arranged to operate hold magnets on dual voltage, only on heavy traffic, and if HTR key is not provided— At marker frame— Block operated HTR relay.	
14	At MTF— Momentarily operate ST key.	MRL, TLH, LLJ, LHMT lamps lighted.
15	Momentarily operate RL key.	All lamps extinguished.
16e	If office is equipped with message register lines— Change line location to select message register line having access to marker under test and to register group selected (refer to paragraph 1.10).	
17e	Momentarily operate ST key.	MRL, TLH, LLJ lamps lighted. LHMT lamp ***not*** lighted.
18e	Momentarily operate RL key.	All lamps extinguished.
19d	If marker is arranged to operate hold magnets on dual voltage, only on heavy traffic, and if HTR key is not provided— At marker frame— Remove blocking tool from HTR relay.	
20	At MTF— Restore all keys and switches not required in next test.	
21	Remove make-busy plug from MMB or M-D-MB jack.	

STEP	ACTION	VERIFICATION
P. Prefix Digit Eight Feature		
Test Deleted		
Q. Paired Line Link Frames Feature		
8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location of originating test line on a paired line link frame having access to marker under test and to register group selected (refer to paragraph 1.10).	
10	Momentarily operate ST key.	TC1, MRL lamps lighted.
11	Momentarily operate RL key.	All lamps extinguished.
12b	If office is equipped with both paired and nonpaired line link frames— Change line location to originating test line on nonpaired line link frame having access to marker under test and to register group selected (refer to paragraph 1.10).	
13b	Momentarily operate ST key.	TC1, MRL lamps lighted.
14b	Momentarily operate RL key.	All lamps extinguished.
15	Restore all keys and switches not required in next test.	
16	Remove make-busy plug from MMB or M-D-MB jack.	
R. Don't Answer Transfer Feature		
8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location having access to marker under test and to transfer trunk group selected (refer to paragraph 1.10).	
10	Operate DAT, DTF, REC keys.	
11	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. DAT designation perforated.
12	Momentarily operate RL key.	All lamps extinguished.

STEP	ACTION	VERIFICATION
13	Restore DAT key.	
14	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. AOT designation perforated.
15	Restore all keys and switches not required in next test.	
16	Remove make-busy plug from MMB or M-D-MB jack.	
S. Local Overload Announcement Feature		
8	At relay rack frame— Set MB switch to MB for trunk equipped for testing local overload announcement having access to marker under test.	
9	At MTF— Select line location having access to marker under test and to register group selected but not having access to local overload announcement (refer to paragraph 1.10).	
10	Select route advance 1.	
11	Operate AN, REC keys.	
12	Operate OAN key to TST.	
13	Momentarily operate ST key.	TC1, MRL, RA1 lamps lighted. RCY lamp ***not*** lighted. Trouble record taken. No trunk selection indicated.
14	Momentarily operate RL key.	All lamps extinguished.
15	Repeat Steps 9, 13, 14 for all vertical groups not having access to overload announcement trunks.	
16	Select line location having access to marker under test and to register group selected and to overload announcement (refer to paragraph 1.10).	
17	Momentarily operate ST key.	TC1, MRL, RCY lamps lighted. Trouble record taken. FS_, TS_, LC_, LV_, FAK/FBK designations perforated for location of common overflow trunk equipped for overload announcement.

STEP	ACTION	VERIFICATION
18	Momentarily operate RL key.	All lamps extinguished.
19	Repeat Steps 16 through 18 for all vertical groups having access to announcement trunks.	
20	Restore REC key.	
21	Restore DT class of test.	
22	Select OR class of test.	
23	Operate NTFS, NTTS, NTC, TLK keys.	
24	Select trunk made busy.	
25	Momentarily operate ST key.	TC1, MRL, RCY, AS lamps lighted. Local overload announcement heard. ***Note:*** After one complete announcement, AS lamp extinguished and announcement discontinued.
26	Momentarily operate RL key.	All lamps extinguished.
27	Restore trunk selection.	
28	Restore NTFS, NTTS keys.	
29	Operate FS, TS keys.	
30	Select trunk link frame group having access to marker under test.	
31	Select trunk link frame having access to marker under test of trunk made busy.	
32	At relay rack— Set MB switches to MB for all other local overload announcement trunks on the same trunk link frame as trunk made busy.	
33	At MTF— Momentarily operate ST key.	TC1, MRL, RA1 lamps lighted. Local overload announcement not heard.
34	Momentarily operate RL key.	All lamps extinguished.
35	Restore OAN key.	
36	At relay rack— Restore MB switches to N for overload announcement trunks made busy.	OAN lamp extinguished.

STEP	ACTION	VERIFICATION
37b	If remote office control of the announcement feature is provided— At remote office— Operate REM_ key.	REM_ lamp lighted. At MTF— OAN lamp lighted.
38b	At remote office— Restore REM_ key.	REM_ lamp extinguished. At MTF— OAN lamp extinguished.
39	At relay rack frame— Restore MB switches to N on overload announcement trunks made busy.	
40	Restore FS, TS keys.	
41	Restore trunk link frame group.	
42	Operate OAN key to ON.	
43	Momentarily operate ST key.	Local overflow announcement heard.
44	Momentarily operate RL key.	All lamps extinguished.
45	Restore OAN key.	
46	Restore all keys and switches not required in next test.	

T. Range Extension for Unigauge Cabling Feature Range Extender Unit Required

8	Select line location of line in horizontal group with range extension for unigauge cabling having access to marker under test and register group selected (refer to paragraph 1.10).	
9	Operate REC key.	
10	Operate LOLL key.	
11	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. LOLL designation perforated. R1, R2, R3, FS_, TS_, TG_, TB_, LC_, LV_, FAK designations perforated for location of originating register selected.
12	Restore LOLL key.	
13	Momentarily operate RL key.	All lamps extinguished.

STEP	ACTION	VERIFICATION
	Range Extender Unit Not Required	
14	Operate NOLL key.	
15	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. RK2, LOLL designations perforated. R1, R2, R3, FS_, TS_, TG_, TB_, LC_, LV_, FAK designations perforated for location of originating register selected.
16	Restore NOLL key.	
17	Momentarily operate RL key.	All lamps extinguished.
18	Restore all keys and switches not required in next test.	
	U. Open LOLL and NLL Leads	
	Open LOLL Lead	
8	Select line location of line in a horizontal group with range extension for unigauge cabling having access to marker under test and register group selected (refer to paragraph 1.10).	
9	Operate NLL key.	
10	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. RK1, RK2, RK3 designations ***not*** perforated.
11	Restore all keys and switches not required in next test.	
	V. Crossed LOLL and NLL Leads	
8	Select line location of line in a horizontal group with range extension for unigauge cabling having access to marker under test and to register group selected (refer to paragraph 1.10).	
9	Operate NOLL, LOLL keys.	
10	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. XCF designation perforated. RKT designation not perforated.

STEP	ACTION	VERIFICATION
11	Momentarily operate RL key.	All lamps extinguished.
12	Operate 2TR key.	
13	Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. XCS designation perforated.
14	Momentarily operate RL key.	All lamps extinguished.
15	Restore NOLL, LOLL keys.	
16	Operate NLL key.	
17	Momentarily operate ST key.	TC1, MRL lamps lighted.
18	Momentarily operate RL key.	All lamps extinguished.
19	Restore all keys and switches not required in next test.	

W. Class-of-Service Identification Feature (ETS not Provided)

8	Select line location having access to marker under test and to register group selected and with class of service to be identified (refer to paragraph 1.10).	
9	Operate REC key.	
10	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. CT_, CU_ designations perforated for class of service of line location used. FT_, FU_, FUT_, VGT_, HGT_, VFT designations perforated for line location.
11	Momentarily operate RL key.	All lamps extinguished.
12	Repeat Steps 7, 8, 10, 11, using a line location having marker access to marker under test for each different class of service used in the office.	
13	Restore all keys and switches not required in next test.	

X. Type of Class Identification Feature (ETS not Provided)

8	Operate REC key.	

STEP	ACTION	VERIFICATION
9	Select line location having access to marker under test and to register group selected (refer to paragraph 1.10).	
10	Select class of service for provided type of class as shown in Table F. ***Note:*** One class of service and rate treatment, if required, should be obtained from office records for each type of class provided and should be entered in Table F under the class of service and rate treatment heading.	
11	Select rate treatment, as required.	
12a	If all other (AO) or all other message register (AOMR) type of class is under test— At marker frame— Insert plug of 32A test set into RC jack.	
13	Momentarily operate ST key. ***Note:*** If AD or AOMR type of class is under test, the white (ST) button should be operated on the 32A test set so that relay operation may be verified.	TC1, MRL lamps lighted. Trouble record taken. CT_, CU_ designations perforated for class of service selected. If AO or AOMR type of class is not under test— Type of class designation perforated as indicated in Table F. If AO or AOMR type of class is under test— At marker frame— AO or AOMR relay momentarily operated.
14	Momentarily operate RL key.	All lamps extinguished.
15	Repeat Steps 4 and 9 through 14 for each type of class provided.	
16	At marker frame— Remove plug of 32A test set from RC jack.	
17	At MTF— Restore all keys and switches.	

Y. Trunk Link Frames—10 and 12 Level Junctor Switch Operation

8	Operate FS, REC keys.	
9	Select trunk link frame equipped with 10 level junctor switches associated with selected marker under test and register or transfer trunk group (refer to paragraph 1.10).	

TABLE F

TYPE OF CLASS	CLASS OF SERVICE	RATE TREATMENT	TYPE OF CLASS TROUBLE CARD INDICATION
All other (AO) nonmessage register			AO relay*
All other message register (AOMR)			AOMR relay*
Manual (MAN)			MAN
Coin (CN)			CN
Manual coin (MCN)			MAN, CN
Two-party (2P)			2P, 2P relay*
Two-party message register (2PMR)			2P, 2PMR relay*
Centrex without 4- or 5-digit Intra PBX calls (PBX)			PBX
Centrex with 4-digit intra-PBX calls — Nonprivate line network			PBX
Private line network			4DG
Centrex with 5-digit Intra-PBX calls — Nonprivate line network			5DG, PBX 5 relay*
Private line network			5DG, PLN 5 relay*
Centrex with 7-digit Intra-PBX calls Nonprivate line network			PK1
Private line network			PK1, PLN 7 relay* 4DG
Centrex phase 1 & 2 listed directory number calls rerouted via line link frame — Nonprivate line network			NC
Private line network			NC, PLNC relay*
Access 8 (AC8)			AC8
Wideband PBX Trunk (Line)			PK1
4-wire 2-digit Intercom dialing			2P
4-wire 4-digit Intercom dialing			4DG
All other lines			AO relay*
Centrex Phase I, II, III Private line network Manual private line (MPL) Digit 8 cut through			4DG MAN

* Relay operation but no trouble card indication.

STEP	ACTION	VERIFICATION
10	Select line location having access to marker under test and to register or transfer trunk group of selected trunk link frame (refer to paragraph 1.10).	
11b	If transfer line link frame is selected— Operate DTF key.	
12	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK designations perforated associated with register or transfer trunk of selected trunk link frame.
13b	If transfer line link frame is selected— Restore DTF key.	
14	Momentarily operate RL key.	All lamps extinguished.
15	Select trunk link frame equipped with 12 level junctor switches associated with selected marker under test and to register or transfer trunk group (refer to paragraph 1.10).	
16	Select line location having access to marker under test and to register group of selected trunk link frame (refer to paragraph 1.10).	
17	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_ FAK designations perforated associated with register of selected trunk link frame.
18	Momentarily operate RL key.	All lamps extinguished.
19	Restore all keys and switches not required in next test.	

Z. Permanent Junctor Distribution Feature

8	Operate FS, STP1, REC keys.	
9	Select junctor sequence 2.	
10	Select trunk link frame associated with selected register group.	
11	Select line location in line link frame 00 or 01 having access to register group of selected trunk link frame.	

STEP	ACTION	VERIFICATION
12	Momentarily operate ST key.	TC1, MRL lamps lighted. Trouble record taken. PR, EF, STP1, PNR, JG2 designations perforated.
13	Momentarily operate RL key.	All lamps extinguished.
14	Select line location in line link frame 04 or 05 having access to register group of selected trunk link frame.	
15	Momentarily operate ST key.	TC1, MRL lamps lighted. PR, RF, STP1, PNR, JG2 designations perforated.
16	Momentarily operate RL key.	All lamps extinguished.
17	Restore all keys and switches not required in next test.	

AA. Open Lead in the DCT Primary Winding (DCT Diode Provided)

8	Insert make-busy plug into MMB or M-D-MB jack of marker being tested.	
9	Select line location having access to marker under test and to register group selected (refer to paragraph 1.10).	
10	At marker frame— Insulate contact 5M of LLC1 relay.	
11	At MTF— Momentarily operate ST key.	TC1, TRL lamps lighted. Trouble record taken. DCT designation not perforated.
12	Momentarily operate RL key.	All lamps extinguished.
13	At marker frame— Remove insulator from LLC1 relay.	
14	At MTF— Restore all keys and switches not required in next test.	
15	Remove make-busy plug from MMB or M-D-MB jack.	