Installation Engineering Handbook 59
Western Electric Company, Incorporated
Columbus Works

LINE VERIFICATION CIRCUITS

PANEL AND NO. 1 CROSSBAR

CONTENTS

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1. GENERAL INFORMATION

1.1 This section describes the tests to be made on the following ANI circuits.

SD-	Name of Circuit	Abbreviation
95828-01	Line Verification Connector and Display Circuit	L.V. C&D Ckt.
95888-01	Line Verification Circuit	L.V. Ckt. (N. N. Fr.)
21973-01	Line Verification Trunk Circuit	L.V. Trk.

1.2 This section also tests the ANI features of the following #1 Crossbar circuits which are modified for ANI.

SD-	Name of Circuit
25065-01	Miscellaneous Circuit
25352-01	Miscellaneous Circuit
25192-01	Incoming Trunk
25433-01	Incoming Trunk

2. RECORDS AND REQUIREMENTS

2.1 Records

2.11 Record the results of these tests on the Test Trouble Record, SD-4-1313, and the Summary of Tests Other Than General and Routine, SD-4-1315. ←

2.2 Requirements

2.21 These tests conform with performance requirements as listed in BSP's 814-200-180, 815-015-180 or 816-200-180. ←

3. TEST EQUIPMENT

3.1 Test Sets

Note	Amt	ITE	Description
	1	1883	Wheatstone Bridge
	1	4442	Volt-Ohmmeter
1	1	4033B	Link Frame Test Set

NOTE 1: If ITE-4033B is not available, use ITE-4033.

3.2 Cord and Accessories

Amt	No.	Description	With ITE
1	R-9572	Test Receiver	4023, 2367
5	349A	Make Busy Plug	4023, 2367
10	ITE-4085	Push On Clips	4023, 2367
1	ITE-9984	Cord	4033B
1	ITE-9598	Cord	4033B

4. FUSING

4.1 Fusing tests of these circuits are described in Section 107 of this handbook.

5. RESISTANCE MEASUREMENTS

5.1 Line Verification Trunk Ckt. (Panel) (SD-21973-01)

5.11 Using an ITE-1883 Wheatstone Bridge, as described in Handbook 61, Section 0.2, verify that the following resistors are within the required values. ←

Option	Resistor	Value Min.	Max.
Z,Q	BSY	110.8	113.2
Y,Q	BSY1	217.8	222.4

6. LINE VERIFICATION CONNECTOR AND DISPLAY CIRCUIT (SD-95828-01)

6.1 Preference and Cutin Relays

6.11 Test Setup

6.111 Connect -48 Volt central office battery and ground to ITE-4033B with the ITE-9598 cord.

6.112 Check that all toggle switches on ITE-4033B are in the OFF position.

6.113 Connect an ITE-9984 cord to the "A" Jones connector on the test set. Connect the other end to the Line Verification Connector and Display circuit as follows, using ITE-4085 Push-on clips.

ITE-9984 Sockets	T.S. "C" Pchg.	Lead
0	21	ST0
1	22	ST1
2	23	ST2
3	24	ST3
4	25	ST4
5	26	ST5

6.114 Operate (AB) key on test set.

6.12 Test Operations

6.121 Perform the operations and check results as indicated in Table 1. This test is arranged for the maximum number (6) of (VP-) relay. If less than this are provided, ignore references to higher numbered (VP-) etc., relays than are provided.

6.122 Remove all test connections.

6.2 Lamp Display Control

6.21 General Instructions

6.211 The following tests should be performed for each Lamp Display Panel provided.

6.212 Each Lamp Display panel at a Message Register Rack Location has an associated (LP) relay in the LVC & D ckt. and each Lamp Display Panel at a Number Network Frame location has an associated (NLP) relay in the LVC & D Circuit.

6.213 The OF, TH, H, T, and U lamps referred to in the following tests are "Nixie" numerical indicator tubes mounted at the top of the line message register rack or the bottom of the number network frame.

6.214 The MP, TBL and TO lamps are 2Y lamps mounted at the bottom of the line message register rack and number network frame and are multiplied to all even numbered bays.

6.22 Lamp Check

6.221 Block operated the (LP) or (NLP) relay associated with the Lamp Display under test. (If two number network frame locations are served by the same Misc. Ckt, also block operated the associated (LO3) or (LO3A) relay at the Misc. Ckt. when checking lamps at the number network frame locations.

6.222 Operate the combinations of relays at the LVC & D Circuit and check that the correct lamps light at the Lamp Display location as indicated in Table 2. Release relay (LP) or (NLP) after each test and reblock it operated before proceeding to the next test.

6.3 Identification Tone Control

6.31 Ground lead "OSC" on T.S. (E) terminal 26 of the first trunk control unit.

6.32 Connect a test receiver between the "S" and "SG" leads on T.S. (E) terminals 11 and 12. Check that no tone is heard in receiver.

6.33 Operate relay (ID-) on the unit under test. Tone (5800 cycles) is heard in the test receiver. Check that no tone is heard across the "S" and "SG" leads on other trunk control units.

6.34 Release relay (ID-). Remove ground from "OSC" lead.

6.35 Repeat this test for each remaining trunk control unit.

6.4 Leads Checks

6.41 LVC & D Circuit to L.V. Trunk (Panel) and Incoming Trunk (#1) X-Bar)

6.411 At the LVC & D circuit block nonoperated the (VC-1) relay associated with the trunk under test and block relay (VC-2) operated.

6.412 At the LVC & D circuit check for battery or ground as indicated on the following leads using a volt-ohmmeter.

Lead	Potential	Check At
STB	-48V	9 make (VC-1) Relay
SP	-48V	4 make (VC-1) Relay
SP1	-48V	1 fixed (VC-1) Relay
TM	Grd.	5 make (VC-1) Relay

TABLE 1

Test No.	Test Operations ITE-4033B SW. ON	Test Operations ITE-4033B SW. OFF	Observe Results (LVC & D Circuit) Relay Operates	Observe Results (LVC & D Circuit) Relay Releases
1	A0		VP0,VC01,VC02,LP0	
2	A1			
3		A0	VP1,VC11,VC12,LP1	VP0,VC01,VC02,LP0
4	A2			
5		A1	VP2,VC21,VC22,LP2	VP1,VC11,VC12,LP1
6	A3			
7		A2	VP3,VC31,VC32,LP3	VP2,VC21,VC22,LP2
8	A4			
9		A3	VP4,VC41,VC42,LP4	VP3,VC31,VC32,LP3
10	A5			
11		A4	VP5,VC51,VC52,LP5	VP4,VC41,VC42,LP4
12	A4		VP4	
13		A5	VC41,VC42,LP4	VP5,VC51,VC52,LP5
14	A3		VP3	
15		A4	VC31,VC32,LP3	VP4,VC41,VC42,LP4
16	A2		VP2	
17		A3	VC21,VC22,LP2	VP3,VC31,VC32,LP3
18	A1		VP1	
19		A2	VC11,VC12,LP1	VP2,VC21,VC22,LP2
20	A0		VP0	
21		A1	VC01,VC02,LP0	VP1,VC11,VC12,LP1
22		A0		VP0,VC01,VC02,LP0

TABLE 2

Test No.	Test Operation (LVC & D Circuit) Operate Relays OF-	TH-	H-	T-	U-	Observe Results Lamps Light OF-	TH-	H-	T-	U-
1	0	4,7	4,7	4,7	4,7	0	0	0	0	0
2	1	0,1	0,1	0,1	0,1	1	1	1	1	1
3	2	0,2	0,2	0,2	0,2	2	2	2	2	2
4	3	1,2	1,2	1,2	1,2	3	3	3	3	3
5	4	0,4	0,4	0,4	0,4	4	4	4	4	4
6	5	1,4	1,4	1,4	1,4	5	5	5	5	5
7		2,4	2,4	2,4	2,4		6	6	6	6
8		0,7	0,7	0,7	0,7		7	7	7	7
9		1,7	1,7	1,7	1,7		8	8	8	8
10		2,7	2,7	2,7	2,7		9	9	9	9
11			MP					MP		
12			TBL					TBL		
13			TM1					TO		

6.413 At the trunk circuit operate relay (SP) which locks operated and check the following leads.

Lead	Condition	Check At
STB	OPEN	9 make (VC-1) Relay
SP	OPEN	4 make (VC-1) Relay
TM	OPEN	5 make (VC-1) Relay

6.414 Check for continuity on the R, R1 leads from 3 make (VC-1) to 6 make (VC-1).

6.415 Manually release relay (SP). Leave VC-1 relay blocked non-operated and VC-2 relay blocked operated.

6.42 LVC & D Circuit to Outpulser Connector

6.421 Make a continuity check of the following leads between the points indicated.

Lead	LVC & C Circuit		O. P. CONN	
T	2 fixed	(VC-1)Relay	12 make	(LV)Relay
R	3 "	(VC-1)Relay	11 "	(LV)Relay
SP	4 "	(VC-1)Relay	3 "	(LV)Relay
TST	11 "	(VC-1)Relay	2 "	(LV)Relay
PS	10 "	(VC-1)Relay	7 "	(LV)Relay

6.43 Line Verification Trunk (Panel)

6.4301 Insert a 349A plug in (ANI) jack. (BYI) lamp lights.

6.4302 Insert a 349A plug in (T) jack. At LVC & D circuit check that relay (VP-) operates. Check for ground on lead (T) at 2 make (VC-1) relay. Remove plug from (T) jack. Observe that relay VP(-) releases.

6.4303 Insert a 349A plug in (R) jack. At LVC & D circuit check that relay (VP-) operates and check for ground on lead (R) at 3 make (VC-1) relay.

6.4304 Remove plug from (ANI) jack. At LVC & D circuit check for ground on lead G at 12 make (RS-) relay.

6.4305 Remove plug from (R) jack.

6.4306 At the LVC & D circuit connect ground to T.S. (E) terminal 26 (OSC lead). At the LV Trunk check with a test receiver connected from 6 make (BT-3) relay to ground that no tone is heard.

6.4307 At LVC & D circuit operate the associated (ID-) relay and check for presence of tone (5800 cycles) in the test receiver. Remove ground from (OSC lead).

6.4308 Release relay (ID-) and unblock relay (VC-1).

6.4309 If number network frame access is furnished for the LV trunk under test, operate relay (LO) at the LV trunk. Relay NLP(-) operates at LVC & D circuit.

6.4310 Release relays (LO) and (VC-2) at their respective locations.

6.4311 Repeat tests per Paragraph 6.43 for each LV trunk connected to the LVC & D circuit.

6.44 Incoming Trunk Circuit (#1 X-Bar)

6.4401 Verify that VC-1 relay is blocked nonoperated and VC-2 relay is blocked operated. At the Incoming Trunk block (T1) relay operated. Operate (ANI) relay which locks operated.

6.4402 At the LVC & D circuit check for ground on "T" lead at 2M (VC-1) relay and on "G" lead at 12M (RS-) relay.

6.4403 At the Incoming Trunk unblock relay (T1). Block relay (R) operated.

6.4404 At the LVC & D circuit check for ground on "R" lead at 3M (VC-1) relay.

6.4405 Unblock (R) relay at trunk circuit.

6.4406 At the LVC & D circuit connect ground to T.S. (E) terminal 26 (OSC lead). At the Incoming Trunk check with a test receiver connected from (A) resistor to ground that no tone is heard.

6.4407 At the LVC & D circuit operate the associated (ID-) relay and check for presence of tone (5800 cycles) in the test receiver. Remove ground from (OSC) lead. Check that tone is cut off.

6.4408 Release relay (ID-) and unblock relay (VC-1).

6.4409 If number network frame access is provided for the Incoming Trunk under test, operate (LO) relay at the associated Miscellaneous Circuit. Relay NLP(-) operates at LVC & D circuit.

6.4410 Release relays (LO) and (VC-2) at their respective locations.

6.4411 Repeat tests per Paragraph 6.44 for each Incoming Trunk connected to the LVC & D circuit.

7. PANEL - LINE VERIFICATION TRUNK CIRCUIT (SD-21973-01) AND LINE VERIFICATION CIRCUIT (SD-95888-01)

7.1 Leads Tests

7.11 Perform the operations and check results as indicated in Table 3. Plugs referred to are 349A plugs. Before starting test, insulate contact 3 of relay SP in the LV trunk (SD-21973-01). After completing leads tests, remove insulator from SP relay in the LV trunk circuit.

7.2 Subscriber Line Busy Test

7.21 Single Office Served by LV Trunk (S Option)

7.211 BCO office (F option and Z option) - at the VIDF, connect ground to the tip of the (T1) jack (S lead) of the test line. (SD-21271-01)

7.212 GCO office (J option and Y option) - at the VIDF connect -48V battery to the tip of the (T1) jack (S lead) of the test line. (SD-21271-01)

7.213 At LV trunk insert 349A plug in (ANI) jack. (BY) lamp lights.

7.214 Remove battery or ground connected to (S) lead per Paragraph 7.211 or 7.212. (BY) lamp is extinguished.

7.215 At VIDF short T & R leads at tip and sleeve of (T) jack. (SUB) lamp lights. (FIL) lamp lights (F option). (LIL) lamp lights (J option).

7.216 Remove short from T & R leads at VIDF (T) jack. (SUB) lamp is extinguished. (FIL) or (LIL) extinguishes.

7.217 Remove plug from (ANI) jack.

7.22 Multiple Office Arrangement (R Option)

7.221 First Office

7.2211 BCO Office - (F option and Z option) - at the VIDF connect ground to the tip of the (T1) jack (S lead) of the test line (SD-21271-01) associated with the first office.

7.2212 GCO office - (J option and Y option) - Connect -48V battery to the tip of the (T1) jack (S lead) of the test line (SD-21271-01) associated with the first office.

7.2213 At LV trunk insert 349A plug in (ANI) jack. (BY) lamp remains dark.

TABLE 3
LEADS TEST - LV TRUNK TO LV CKT (PANEL)

Test No.	Test Operations		Observe Results	
	At LV Ckt. (N.N. Frame)	At LV Trunk (M.R.R. Frame)	At LV Ckt. (N.N. Frame)	At LV Trunk (M.R.R. Frame)
1		Insert 349A plug into ST jack		ST lamp lights
2	Insert 349A plug into ST jack			ST lamp remains lighted
3		Remove plug from ST jack	ST lamp lights	ST lamp out. Relay LO operates
4		Block operated A Relay	SUB lamp lights	
5		Block nonoperated relay BT3. Release relay A	SUB lamp out	
6	Insert 349A plug into ANI jack		BY, BY1 lamps light	BT operates momentarily. BT1, BT2 operate J,F or G option (DL) operates
7	If ANIG jack is provided - remove plug from ANI and insert into ANIG jack		BY, BY1 lamps remain lighted after shifting plug	BT1, BT2 operated (DL) operates after shifting plug. J,F or G option
8		Remove block from (BT3) relay	BY lamp out	BT2 releases. BT3, ANI operate. LIL lamp lights with J option. FIL lamp lights with F option.
9	Insert plug into T jack		BY1 lamp out VC(-)2 operated	Check for ground at 11B of SP relay
10	Insert plug into R jack		BY1 lamp lights VC(-)2 releases	Check for ground at 8B of SP relay
11	Remove plug from T jack		BY1 lamp out VC(-)2 operated	Ground removed from 11B of SP relay
12	Remove plug from R jack		BY1 lamp lights VC(-)2 released	Ground removed from 8B of SP relay
13	Remove plug from ST jack		BY1 and ST lamps out	LO released
14	Remove plug from ANI or ANIG jack			BT1, BT3, ANI relays release
15		Block nonoperated BT3. Insert plug into ANI jack		BT operates momentarily. J,F or G option (DL) BT1. BT2 operate BY, BY1 lamps light.
16		Remove block from (BT3) relay		BT3, ANI relays operate. BT2 releases. BY lamp out. LIL lamp lights with J option. FIL lamp lights with F option.
17		Remove plug from ANI jack		BT1, BT3, ANI relays release. BY1 lamp out J,F or G option (DL) releases

7.2214 Insert 349A plug in (OFO) jack. (BY) lamp lights.

7.2215 Remove battery or ground from (S) lead connected per Paragraph 7.2211 or 7.2212. (BY) lamp is extinguished.

7.2216 Remove plugs from (ANI) and (OFO) jacks.

7.2217 At VIDF short T & R leads at tip and sleeve of (T) jack associated with first office.

7.2218 At LV trunk insert plug in (ANI) jack. (SUB) lamp remains dark. Insert 349A plug in (OFO) jack. (SUB) lamp lights. (LIL) lamp lights with J option. (FIL) lamp lights with (F) option, (G) option and (M) option.

7.2219 Remove short from T & R leads at (T) jack (VIDF) and remove plugs from (ANI) and (OFO) jacks.

7.222 Other Offices - Repeat Paragraph 7.221 for each office served by the Line Verification Trunk using the associated (T) and (T1) jacks at the VIDF, and the associated (OF-) jack.

7.223 Line Busy Test (N. N. Frame)

7.2231 If a Line Verification Circuit for Number Network Frame (SD-95888-01) is provided for the Line Verification Trunk under test, perform the following tests.

7.2232 At the number network frame location, insert a 349A plug in the associated (ST) jack. (ST) lamp lights.

7.2233 Perform the tests of Paragraphs 7.221 and 7.222 using the associated jacks and lamps at the number network location.

NOTE: If the LV trunk serves both BCO and GCO offices use (ANIG) jack instead of (ANI) jack for (GCO) offices.

7.3 First, Intermediate or Last Line Of Terminal Hunting Group Identification

7.31 Insert a 349A Plug in the (ANI) jack. (DL) relay operates. (BT) relay operates. (BTL) relay operates. (BY) lamp lights. (BT) relay releases. (BT2) relay operates. (BT3) relay operates. (BY) lamp extinguishes. (BT2) relay releases. (ANI) relay operates. In a ground cut-off office, (J option), (LIL) lamp lights. In a battery cut-off office, (F option), (FIL) lamp lights.

7.32 Manually operate the (LI) relay. (LI) relay locks operated. In a ground cut-office office, (J option), (FIL) lamp lights. In a battery cut-off office, (F option), (LIL) lamp lights. Remove the 349A plug from the (ANI) jack.

7.33 In combination battery cut-off and ground cut-off offices, (option G), insert a 349A plug in the (ANI) jack. Block operated any (GC-) relay. (LR) relay operates. (FIL) lamp lights. Operate (LI) relay. (LI) relay locks operated. (LIL) lamp lights. Remove the block from the (GC-) relay. Remove the 349A plug from the (ANI) jack.

8. #1 CROSSBAR - MISC. CKTS. (SD-25065-01, SD-25352-01), INCOMING TRUNK CKTS. (SD-25192-01, SD-25433-01), LINE VERIFICATION CIRCUIT (SD-95888-01)

8.1 General - This section tests the (ANI) features of the Miscellaneous and Incoming Trunk circuits, which are modified for use in (ANI) line verification, and the Line Verification Circuit (Number Network Frame).

8.11 Insulate contacts 1 and 2 top relay (A1) of the incoming trunk during tests per Paragraph 8.3, 8.4, 8.5 or 8.6.

8.2 Miscellaneous Circuits (Message Register Rack)

8.21 With LV Circuit (N.N. Frame Provided

8.2101 Insert 349A plug in (ST) jack. (ST) lamp lights.

8.2102 Hold relay (M1) operated. (R) lamp lights.

8.2103 Release (M1) relay. Hold (M2) relay operated. (T) lamp lights, (R) lamp is extinguished.

8.2104 Release (M2) relay. Hole (TH) relay operated. (H) lamp lights, (T) lamp is extinguished.

8.2105 Release (TH) relay. (H) lamp is extinguished.

8.2106 Connect ground temporarily to (A) resistor. (BY) lamp lights.

8.2107 Remove ground from (A) resistor. (BY) lamp is extinguished.

8.2108 Remove plug from (ST) jack. (ST) lamp is extinguished.

8.2109 Insulate 1 and 3 top (LO) relay. Insert 349A plug in (ANI) jack. (BYI) lamp lights.

8.2110 Repeat Paragraphs 8.2101 through 8.2108 using (ST) jack at the number network frame. Corresponding lamps light at the number network frame location.

8.2111 At the number network frame location insert a 349A plug in (ANI) jack. Hold relay (LO2) operated at the Miscellaneous Circuit. (BYI) lamp lights at the number network frame.

8.2112 Remove plug from (ANI) jack (N.N. Frame) and release (LO2) relay. (BYI) lamp is extinguished (N.N. Frame).

8.2113 Connect ground temporarily to 2 bottom (LO) relay. (SS) buzzer sounds at N.N. Frame.

8.2114 Remove ground from 2 bottom (LO) relay.

8.2115 If a second number network location is served by the Misc. Ckt. under test, repeat the tests of Paragraphs 8.2101 through 8.2114 using relays (LOA) in place of (LO) and (LO2A) in place of (LO2).

8.22 Without LV Circuit (N.N. Frame)

8.221 Connect ground temporarily to tip (ANI) jack. (BYI) lamp lights.

8.222 Remove ground from (ANI) jack tip.

8.3 Incoming Trunk Circuit - (SD-25192-01) (SD-25433-01, Figure 1, A or B) With LV Circuit (N.N. Frame) Provided

8.31 Perform the following operations at the Miscellaneous Circuit (M.R.R.) and check that the indicated relays operate at the Incoming Trunk Circuit.

8.311 Insert 349A plug in (TRK) jack. Relays (A), (A1) operate at the incoming trunk. Remove plug from (TRK) jack.

8.312 Insert 349A plug in (X TRK) jack. Relays (A) (XN) operate at incoming trunk. Remove plug from (X TRK) jack.

8.313 Two Offices Served by the Same Miscellaneous Circuit

8.3131 Insert 349A plug in (B TRK) jack. Relays (A), (B) operate at incoming trunk. Remove plug from (B TRK) jack.

8.3132 Insert 349A plug in (BX TRK) jack. Relays (A), (BX) operate at incoming trunk. Remove plug from (BX TRK) jack.

8.314 Insert 349A plug in (ANI) jack. Relays (ANI) (ANI 1) operate at incoming trunk. Remove plug from (ANI) jack.

8.315 Temporarily connect ground to (S) lead at the incoming trunk horizontal unit terminal strip. Insert 349A plug in (ANINLP) jack (M.R.R.). (BY) lamp lights at M.R.R.

8.316 Remove ground from (S) lead and remove plug from (ANINLP) jack. (BY) lamp is extinguished.

8.317 Repeat Paragraphs 8.311 through 8.316 using jacks and lamps at the LV circuit (N. N. frame). Insert a 349A plug in (ST) jack at the N. N. frame during the tests.

8.4 Incoming Trunk Circuit - (SD-25433-01, Figure 1, C & D) With LV Circuit (N. N. Frame) Provided

8.41 Perform the following operations at the Miscellaneous Circuit (M.R.R.) and check that the indicated relays operate at the Incoming Trunk Circuit associated with "A" office.

8.411 Insert 349A plug in (TRK) jack. Relays (SW), (A) operate at the incoming trunk associated with "A" office. (T lamp lights at Miscellaneous Circuit if key pulsing is provided.) Remove plug from (TRK) jack.

8.412 Insert 349A plug in (X TRK) jack. Relays (XN), (A) operate at the incoming trunk associated with "A" office. Remove plug from (X TRK) jack.

8.413 Insert 349A plugs in (ANI), (TRK) jacks. Relays (ANI), (ANI 1) operate at incoming trunk associated with "A" office. Remove plug from (ANI) jacks.

8.414 Connect ground temporarily to (S) lead at the "A" office incoming trunk horizontal terminal strip. Insert 349A plugs in (ANINLP) jack. (BY) lamp lights at Miscellaneous Circuit.

8.415 Remove ground from (S) lead and remove plugs from (TRK), (ANINLP) jacks.

8.42 Perform the following operations at the Miscellaneous Circuit (M.R.R.) and check that the indicated relays operate at the incoming trunk associated with "B" office.

8.421 Insert 349A plug in (B TRK) jack. Relays (SW), (A) operate at the incoming trunk associated with "B" office. Remove plug from (B TRK) jack.

8.422 Insert 349A plug in (BX TRK) jack. Relays (XN), (A) operate at incoming trunk associated with "B" office. Remove plug from (BX TRK) jack.

8.423 Insert 349A plugs in (ANI) (B TRK) jacks. Relays (ANI), (ANI 1) operate at incoming trunk associated with "B" office. Remove plug from (ANI) jacks.

8.424 Connect ground temporarily to (S) lead at the "B" office incoming trunk horizontal terminal strip. Insert 349A plug in (ANINLP) jack. (BY) lamp lights at Miscellaneous Circuit.

8.425 Remove ground from (S) lead and remove plugs from (B TRK), (ANINLP) jacks.

8.43 Repeat Paragraphs 8.41 and 8.42 using jacks and lamps at the LV circuit (N. N. Frame). Insert a 349A plug in (ST) jack at N. N. Frame during tests.

8.5 Incoming Trunk Circuits (SD-25192-01), (SD-25433-01, Figure 1, A or B) Without LV Circuit (N. N. Frame)

8.51 At the Miscellaneous Circuit (M.R.R.) insert 349A plug in (ANI) jack. Relays (ANI), (ANI 1) operate at the incoming trunk. Remove plug from (ANI) jack.

8.52 Temporarily connect ground to (S) lead at the incoming trunk horizontal terminal strip. Insert 349A plug in (ANINLP) jack (M.R.R.). (BY) lamp lights at M.R.R.

8.53 Remove ground from (S) lead and remove plug from (ANINLP) jack. (BY) lamp is extinguished.

8.6 Incoming Trunk Circuit - (SD-25433-01 Figure 1, C & D) Without LV Circuit (N.N. Frame)

8.61 At the Miscellaneous Circuit (M.R.R.) insert 349A plugs in (ANI), (TRK) jacks. Relays (ANI)(ANI 1) operate at the incoming trunk associated with "A" office. Remove plug from (ANI) jack.

8.62 Connect ground temporarily to (S) lead at the "A" office incoming trunk horizontal terminal strip. Insert 349A plug in (ANINLP) jack. (BY) lamp lights at Miscellaneous Circuit.

8.63 Remove ground from (S) lead and remove plugs from (TRK), (ANINLP) jacks.

8.64 Insert 349A plugs in (ANI), (B TRK) jacks. Relays (ANI), (ANI 1) operate at the incoming trunk associated with "B" office. Remove plug from (ANI) jack.

8.65 Connect ground temporarily to (S) lead at the "B" office incoming trunk horizontal terminal strip. Insert 349A plug in (ANINLP) jack. (BY) lamp lights at Miscellaneous Circuit.

8.66 Remove ground from (S) lead and remove plugs from (B TRK), (ANINLP) jacks.

9. OVER-ALL OPERATION TESTS

9.1 Panel Offices

9.11 Request the telephone company to make available the line numbers of (1) an individual line or ring party of a 2-party line, (2) a tip party of a 2-party line, and (3) a multiparty line, which can be used for testing purposes.

9.12 If the more than one Line Verification Trunk circuit is provided, a set of line numbers corresponding to each Message Register Rack location will be required.

9.13 The following tests should be performed at each Line Verification Trunk circuit and the corresponding Line Verification Circuit at the number network frame when provided.

9.14 At the VIDF insert 289B plug of P4L cord into (T) and (T1) jacks of test line circuit with plug nearest ridged part of shell of 289B plug in T jack.

9.15 Individual or Ring Party Line

9.1501 As the VIDF connect 234 plug of P4L cord to line group terminals of the individual line or ring party line furnished by the telephone company.

9.1502 At the Line Verification Trunk Circuit or LV circuit at N. N. Frame insert a 349A Make busy plug in the (R) jack.

9.1503 If more than one office is served at this location, insert a 349A plug in the (OF-) jack corresponding to the office in which the line being verified is located.

9.1504 If number network frame access is provided, insert a 349A plug into the (ST) jack. (ST) lamp lights.

9.1505 Insert a 349A plug into (ANI) or (ANIG) jack.

NOTE: At Number Network frame locations which serve both BCO and GCO offices, use (ANIG) jack if the line being verified is located in a GCO office, otherwise use (ANI) jack.

9.1506 The number displayed on the indicator tubes should match the line number being verified.

NOTE: The office code is displayed with a single number. Therefore a translation must be made to enable comparing three digit office codes with the display. A second translation must be made for offices having physical and theoretical offices.

9.1507 After approximately 30 seconds the indicator tubes are extinguished. To redisplay line number, remove and reinsert the plug in the (ANI) or (ANIG) jack.

9.1508 Remove plug from (ST) jack. (ST) lamp is extinguished.

9.1509 Remove plug from (ANI) or (ANIG) jack. All indicator tubes are extinguished.

9.1510 Remove plugs from (OF-) and (R) jacks.

9.1511 Remove patch cord at VIDF from the line group terminals.

9.16 Tip Party Line

9.1601 At the VIDF connect 234 plug of P4L cord to line group terminals of the tip party line furnished by the telephone company.

9.1602 At the LV trunk circuit (M.R.R. frame) or LV circuit (N. N. frame) insert a 349A make busy plug in the T jack.

9.1603 If more than one office is served at this location insert a 349A plug in the (OF-) jack corresponding to the office in which the tip party line is located.

9.1604 If number network frame access is provided, insert a 349A plug into the (ST) jack. (ST) lamp lights.

9.1605 Insert a 349A plug into (ANI) or (ANIG) jack.

NOTE: At Number Network frame locations which serve both BCO and GCO offices, use (ANIG) jack if the tip party line is located in a GCO office. Otherwise use (ANI) jack.

9.1606 The line number displayed on the indicator tubes should match the tip party line being verified.

NOTE: The office code is displayed with a single number. Therefore a translation must be made to enable comparing three digit office codes with the display. A second translation must be made for offices having physical and theoretical offices.

9.1607 After approximately 30 seconds the indicator tubes are extinguished. To redisplay line number, remove and reinsert plug in the (ANI) or (ANIG) jack.

9.1608 Remove plug from (ST) jack. (ST) lamp is extinguished.

9.1609 Remove plug from (ANI) or (ANIG) jack. All indicator tubes are extinguished.

9.1610 Remove plugs from (OF-) and (R) jacks.

9.1611 Remove patch cord at VIDF from the line group terminals.

9.17 Multiparty Line

9.1701 At VIDF connect 234 plug of P4L cord to line group terminals of the multiparty line furnished by the telephone company.

9.1702 At the LV trunk circuit (M.R.R. frame) or LV circuit (N. N. frame) insert a 349A plug in the (R) jack.

9.1703 If more than one office is served at this location, insert a 349A plug in the (OF-) jack corresponding to the office in which the multiparty line being verified is located.

9.1704 If number network frame access is provided, insert a 349A plug into the (ST) jack. (ST) lamp lights.

9.1705 Insert a 349A plug into the (ANI) or (ANIG) jack. (MP) lamp lights.

NOTE: At number network frame locations which serve both BCO and GCO offices, use (ANIG) jack if the line being verified is located in a GCO office. Otherwise use (ANI) jack.

9.1706 After approximately 30 seconds (MP) lamp is extinguished. Remove and reinsert plug in (ANI) or (ANIG) jack. (MP) lamp lights.

9.1707 Remove plug from (ST) jack. (ST) lamp is extinguished.

9.1708 Remove plug from (ANI) or (ANIG) jack. (MP) lamp is extinguished.

9.1709 Remove plugs from (OF-) and (R) jacks.

9.1710 Remove patch cord at VIDF from the line group terminals.

9.2 #1 Crossbar Offices

9.21 Request the telephone company to make available the line numbers of (1) an individual or ring party of a 2-party line, (2) a tip party of a 2-party line, and (3) a multiparty line, which can be used for testing purposes.

9.22 If more than one Incoming Trunk is connected to the LVC & D circuit, a set of line numbers associated with each Incoming Trunk will be required.

9.23 Perform the following tests at each Miscellaneous Circuit and at the corresponding Line Verification Circuit at the number network frame when provided.

9.24 Individual or Ring Party Line

9.241 At the Miscellaneous Circuit insert a 349A plug in (ANINLP) jack and (ST) jack if number network frame access is provided.

9.242 If M.F. keying is provided (SD-25352-01 Figure 24, 25) connect the P8B cord between the Jones socket of the MF Pulsing Set (J27060) and the (MFP) socket of the miscellaneous circuit. Connect the 3P6F cord between the KS jack of the MF pulsing set and the (TRK) jack of the miscellaneous circuit. After (T) lamp lights operate (KP) key on the pulsing set followed by the numerical keys corresponding to the individual or ring party line, and then the (ST) key.

9.243 If key pulsing is not provided, plug the hand telephone set into (TRK) jack and when dial tone or order tone is heard, dial the line number or pass the number to the "B" operator.

9.244 When connection to the line has been established (R) lamp lights. Insert 349A plug in (ANI) jack.

9.245 The line number being verified should be displayed on the indicator tubes.

NOTE: The office code is displayed with a single number. Therefore a translation must be made to enable comparing three digit office codes with the display. A second translation must be made for office having physical and theoretical offices.

9.246 After approximately 30 seconds the indicator tubes are extinguished. To redisplay the line number, remove and reinsert the plug in the (ANI) jack.

9.247 Remove all 349A plugs. All indicator tubes are extinguished.

9.248 Remove cord from (TRK) jack.

9.25 Tip Party Line

9.251 Repeat Paragraph 9.24 using the tip party line number. (T) lamp lights (Paragraph 9.244) when connection to the line has been established instead of (R) lamp.

9.26 Multiparty Line

9.261 Repeat Paragraph 9.241-9.244 using the multiparty line number.

9.262 No line number is displayed on the indicator tube. (MP) lamp lights.

9.263 After approximately 30 seconds (MP) lamp is extinguished. Remove and reinsert plug in (ANI) jack. (MP) lamp lights.

9.264 Remove all 349A plugs and remove cord from (TRK) jack. (MP) lamp is extinguished.

→ Arrowed lines indicate new or changed information.

Manager, Crossbar Product Engineering
Control Center

Reason for Reissue:
To add Paragraph 7.3.