MANUAL SUPPLEMENTARY TEST OF SUBSCRIBER SENDERS

CONTENTS

1. GENERAL INFORMATION

1.1 Description of Test: This section describes the miscellaneous supplementary tests to be applied to subscriber sender SD-25012-01 before routine.

1.2 Test Procedures

Perform these tests before making supplementary tests with the sender test frame outlined in Section 162.1. Refer to Section 161 for general information.

2. RECORDS AND REQUIREMENTS

2.1 Records: SD-4-1313 and ID-2209 Trouble Records shall be used for this test. See Handbook 50, Section 3.

2.2 Requirements: All tests listed in this section are supplementary and should be completed before the concentrated load test is made.

3. TEST EQUIPMENT

Amt	Code	Description	Furnished With
1	ITE-8253	Contact Protection Circuit Test Set	ITE-4023
1	ITE-4034 or 4442	Ohmmeter	
1	ITE-4029	Pulse Checking Set	
1	KS-3008	Stop Watch	
1	ITE-4015	Continuity Test Set	ITE-4023
1	R-1824	Portable Pencil Lamp	ITE-4023
¢1	509A and 419A	Relay Connecting Tool	
¢1	ITE-9528 or ITE-9726	Single Conductor cord equipped with socket and spade tip or plug	

¢ Furnished with 3-Scale Current Flow Set ITE-2790 and Adjusting Set. ITE-4040.

4. FUSING

4.1 Fuses installed by shop

4.11 Observe each fuse mounting equipped with alarm type fuses and check that each fuse is of the correct type and current carrying capacity as shown on associated circuit drawings, and that each fuse is installed properly.

4.2 Fuses not installed by shop

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

4.22 Using fuses of the correct type as indicated by circuit drawings and fuse panel designations, install the following fuses, one at a time, and check that each fuse is associated with the correct circuit and is free from crosses with other unfused posts on the fuse panel.

Fuse	Equipment
A	winding, F hold magnet
B	" , TH "
C	" , relay (STB) 5B
D	winding, relay (DRL) 7B
E	" , relay (AV4) 5B
F	A resistance
G	winding, relay (SD1) 4B
H	" , relay (TP) RB1 Fig. G only (MR2P)
¢J	winding, relay (L4) 3BF
K	" , relay (FP) 7B
L	" , relay (GT) 1B Fig. E only
M	" , relay (UL2) B
¢N	DE resistance
P	winding, relay (CL5) 4B
WL	BA resistance or 5B (FP) relay
R	winding, MT1 Relay 10-B
★LT2	(TN) Cond. Terminal
☆TN	TN Relay 7T Fig. H.
☆CC	Lamp Fig. AL

¢ Block non-operated relay DST and then block operated the ON1 relay.

★ Fuses located on Misc. Fuse Panel.

5. CONTACT PROTECTION

5.1 Using equivalent sender circuits, check the following contact protection circuits listed in Table A, using the method described in Section 2 of Handbook 50.

TABLE A

Desig.	Loc. on SD Dwg.	ED Eqpt. Dwg. Mtg. Pl.	ED Eqpt. Dwg. Pos. on Plate	Test At Rel. or Hold Mag.	Test At Contact	Block or Insulate	Option
2L Rel.	B79	L	11	2L	5T	See Note 1	AV
12 "	F27	H	9	12	3T	"	EF
34 "	F27	H	10	34	3T	"	EF
A "	D32	N	3	A	4T	"	EF
A' "	B32	N	4	A	1B	See Note 1, A' Norm.	EF
AAM	B38	AB	33	AA Hold	4T	See Note 1	EF
AL1 Rel.	B58	K	5	AL1	7T	"	Fig. A
AL2 "	D59	K	6	AL2	2B	"	"
" "	F59	K	6	"	4T	"	Fig. B
AM	B38	AB	34	A Hold	2T	"	EF
ARL Rel.	C76	L	5	ARL	9TF	"	AV
AST "	D75	L	3	AST	4B	"	AV
AV1 "	E64	LL	7	AV1	2B	"	Fig. Z
AV2 "	G5	U	8	AV2	4B	"	EG
AV3 "	G5	U	9	AV2	4T	" , AV3 Norm.	EF
AV4 "	H41	U	10	AV1	4B	" , AV4 Norm.	EF
B "	D31	N	5	B	4T	See Note 1	EF
B' "	B31	N	6	B	1B	" B' Norm.	EF
BM	C37	AB	34	RA5	1T	" B Hold	EF
C	I34	AB	12	OC	5T	(BS Wrg.) S6 Norm.	WA
C Rel.	D30	N	7	C	4T	See Note 1	EF
C' "	B30	N	8	C	3B	C' Norm.	EF
C-1	I6	AB	2	FO3	1B	Operate DST	BO
C-2	I5	AB	6	FO3	3B	" "	BO
C-3	J5	AB	8	OF2	1T		EG
C-4	J4	AB	9	6'	1B	Operate 5	EG
C-5	I3	AB	10	FO2	4T	Insulate FO2, 3 & 4T	EG
CA	D42	Z	1	SM1	4T	See Note 1	EG
CE	E31	Z	5	C	2T	(BY Wrg.) Norm. PG1	EK
CF	GT	Z	7	OF1	6T	" IA	EG
CK	C8	Z	11	CL1	1B	" FO2	EG
CL Rel.	E36	M	8	CL	7T	See Note 1	EF
CL1 "	C8	T	5	CL1	4T	"	EO
CL2 "	B110	T	6	CL2	10T	"	Fig. AG
CL3 "	B49	T	7	CL3	7B	"	Fig. BG
CL4 "	E7	T	8	CL4	6B	"	EF
CM	F35	Z	13	L3	1T		EG
CN	C36	Z	14	HL	3B	Norm. C Hold	EG

NOTE 1: Block normal relay at test point and remove when test is completed.

TABLE A (Cont'd)

Desig.	SD Dwg.	ED Eqpt. Dwg. Mtg.Pl.	Pos. on Plate	Test At = Rel. or Hold Mag.	Contact	Block or Insulate	Option
CR1 Rel.	A64	W	9	CR1	1B	See Note 1	EF
CR2 "	B64	W	10	CR2	1B	"	EF
CR3 "	C3	W	11	CR3	1B	See Note 1	EF
CR4 "	C4	W	12	CR4	1B	"	EF
CR5 "	E5	W	13	CR5	1B	"	EF
CS0 "	B44	X	1	CS0	5B	"	EM
CS1 "	B43	X	2	CS1	5B	"	EM
CS2 "	B43	X	3	CS2	5B	"	EM
CS3 "	B42	X	4	CS3	9T	"	EM
CS4 "	B42	X	5	CS4	9T	"	EM
CS5 "	B41	X	6	CS5	9T	"	EM
CS6 "	B41	X	7	CS6	5T	"	EM
CS7 "	B40	X	8	CS7	5T	"	EM
CS8 "	B38	X	9	CS8	5B	"	EM
CS9 "	B37	X	10	CS9	5B	"	EM
D	I26	AB	16	TG1	1B	TG2 Norm.	CO
DC Rel.	H33	T	10	DC	1B	See Note 1	Fig. BA
DL	F39	E	15	RA	4T	"	EO
DM	F38	E	29	RA	2B	RA1 Norm.	EH
DN	H45	E	31	SR1	9B	SR, L1 Norm.	EO
DRL Rel.	B11	U	2	DRL	4T	See Note 1	EF
DST "	C10	U	1	DST	13T	"	EF
F	E26	AB	19	SR1	6B	PR Norm.	WB
FOO Rel.	B46	X	11	FOO	1B	See Note 1	EF
FO1 "	F7	T	11	OF1	1T	FO1 Norm.	EG
FO3 "	F5	S	9	RC	2B	See Note 1	EG
F10 "	B47	X	12	F10	1B	"	EF
FM	B39	AB	33	F Hold	4T	"	EG
FS1 Rel.	J14	S	12	FS1	12T	"	EF
FS2 "	C65	R	9	FS2	9T	"	EF
FS3 "	H12	R	10	S4	6T	"	EF
G	E25	AB	19	PT	4T	"	WC
GR Rel.	F25	H	5	PG1	4T	"	EF
H	E41	AB	20	P6	1T	"	EF
H Rel.	D28	N	13	H	4T	"	EF
H' "	B28	N	14	H	1B	See Note 1, H' Norm.	EF
HM	D35	AB	36	TD	4T	H Hold Norm.	EF
HL Rel.	C34	M	9	HL	4T	See Note 1	EF
J	D41	AB	21	SM1	5T	SM2 Norm.	CQ
LM Rel.	E33	J	4	LM	3T	See Note 1	EF
LM1 "	E33	J	5	LM1	1B	"	EF
OB1 "	A63	W	1	OB1	4T	"	EF
OB2 "	A63	W	2	OB2	4T	"	EF
OB4 "	B63	W	3	OB4	4T	"	EF
OB5 "	D64	W	4	OB5	4T	"	EF
OF1 "	F7	S	10	OF1	6T	"	EF
OF2 "	G8	S	11	OF2	4T	"	EF
OG1 "	B63	W	5	OG1	4T	"	EF
OG2 "	C63	W	6	OG2	4T	"	EF
OG4 "	C63	W	7	OG4	4T	"	EF
OG5 "	D63	W	8	OG5	4T	"	EF
ON1 "	B99	U	4	ON1	10B	"	Fig. M
ON2	G46	AB	22	ON2	3T	"	EF
ON3 Rel.	H50	U	6	ON3	10T	"	Fig. G
ON4 "	D33	V	6	ON4	11T	"	EF
ONP	H50	AB	23	ON3	9T	"	EF
P1	F45	AB	24	P1	8TR	"	EG
P1 Rel.	E46	F	1	P1	7TR	"	EO
P1	F45	AB	24	P1	10TR	"	AJ
P1	E46	F	1	P1	9TF	"	AJ
P2 Rel.	F45	F	2	P2	6T	"	EO
P3 "	F44	F	3	P3	2B	"	EO
P4 "	F44	F	4	P4	2T	"	EO
P5 "	F43	F	5	P5	7T	"	EO
P6 "	F42	F	6	P6	7T	"	EO
R	H44	AB	25	ON2	2B	"	CQ
S	F40	AB	25	L2	5T	"	CQ
S1 Rel.	E15	S	1	S1	5T	See Note 1 DST Oper.	EG
S1' "	G15	R	1	S1'	6B	" ,DST,S1 Oper.	EO

NOTE 1: Block normal relay at test point and remove when test is completed.

TABLE A (Cont'd)

Desig.	SD Dwg.	ED Eqpt. Dwg. Mtg.Pl.	Pos. on Plate	Test At Rel. or Hold Mag.	Contact	Block or Insulate	Option
S2 Rel.	C110	S	2	S2	6T	See Note 1,DST oper.	Fig. AG
S2' "	G14	R	2	S2'	4B	" ,DST,S2 oper.	EO
S3 "	E13	S	3	S3	6T	" ,DST oper.	EG
S3' "	G13	R	3	S3'	8B	" ,DST,S3 oper.	EO
S4 "	E12	S	4	S4	7T	" ,DST oper.	EG
S4' "	G12	R	4	S4'	8T	" ,DST,S4 oper.	EO
S5 "	E11	S	5	S5	6T	" ,DST oper.	EG
S5' "	G11	R	5	S5'	8T	" ,DST,S5 oper.	EO
S6 "	E10	S	6	S6	6T	" ,DST oper.	EG
S6' "	G10	R	6	S6'	8T	" ,DST,S6 oper.	EO
SC2 "	D47	V	4	SC2	13T	" ,SC3 Norm.	EF
SC3 "	C47	V	5	SC3	5T	See Note 1	EF
SD "	C49	V	8	SD	4B	"	Fig. BG
SD1 "	C110	V	9	SD1	4T	"	Fig. AG
SO "	B64	W	14	SO	1B	"	EF
SR1 "	G46	E	26	SR1	12T	"	EF
STA "	D30	N	9	STA	6T	"	EF
STA' "	B30	N	10	STA	1B	See Note 1,STA' Norm.	EG
STB "	D25	P	5	STB	5T	See Note 1	EF
STB' "	C25	P	6	STB	3T	" STB' Norm.	EF
STL "	H37	M	12	LR	8L	STL Norm.	EF
STM	C33	AB	37	HL	1T	ST Norm.	EF
T Rel.	D27	P	1	T	4T	See Note 1	EF
T' "	B27	P	2	T	1B	See Note 1 T' Norm.	EF
TD "	E36	R	12	TD	11T	See Note 1	EJ
TG	G27	P	13	TG1	3T or 4T	See Note 1	EF
TH Rel.	D29	N	11	TH	4T	See Note 1	EF
TH' "	B29	N	12	TH	1B	See Note 1 TH' Norm.	EF
THM	C35	AB	35	HL	3T	TH Hold Norm.	EF
TM	C35	AB	36	CR	1T	T Hold Norm.	EF
TM1 Rel.	H61	K	7	TM1	1B	Insulate 1-3B of	Fig. B
TM1 "	B62	K	7	TM1	1B	TM1 and 2-3B of	Fig. A
TM2 "	B61	K	8	TM1	1B	TM2. Block normal	Fig. A
TM2 "	H60	K	8	TM1	1B	TM2.	Fig. B
TP1 "	H52	V	1	TP1	4T	See Note 1	Fig. G.
TP2 "	I52	V	2	TP2	4T	"	EF
U	G47	AB	26	SC1	13T	"	EO
U Rel.	D26	P	3	U	4T	"	EF
UL1 "	D57	J	2	UL1	10TR	"	Fig. AS
UL1 "	H64	J	2	UL1	11T	"	Fig. AY
UL2 "	D60	K	12	UL2	10T	"	Fig. BC
UL2 "	F60	K	12	UL2	4T	"	Fig. B
UM	C34	AB	37	HL	1B	U Hold Norm.	EF
MI0 "	E79	L	6	MI0	3B	See Note 1	Fig. AV
MI1 "	C79	L	7	MI1	3B	"	Fig. AV
MI2 "	B79	L	8	MI2	4B	"	Fig. AV
MI4 "	E79	L	9	MI4	3B	"	Fig. AV
MI7 "	F79	L	10	MI7	4B	"	Fig. AV
U "	B26	P	4	U	1B	See Note 1, U' Norm.	EF

NOTE 1: Block normal relay at test point and remove when test is completed.

6. CHECK OF COMPENSATING RESISTANCES

6.1 Using the cords furnished with the volt-ohmmeter, ITE-4034, connect the X terminal of the ohmmeter to FR lead punching 80, Link and Test terminal strip. Connect the R x 10 terminal to 7B of relay C11. Operate the DC and RES keys. Operate the DC and RES keys. Operate relays as indicated and check the resistance. The values may vary ±5%.

Relays Operated	Resistance
None	0
CR-3	300
CR-3,CR-4	900
CR-4	600

6.2 Shift the ohmmeter lead from 7B of the C11 relay to 5B of the S3' relay. Operate relays as indicated and check the resistance.

Relays Operated.	Resistance
None	900
CR-1	600
CR-1,CR-2	0
CR-2	300

6.3 Remove the ohmmeter lead from 5B of the S3' relay. Connect pchg. 70 LK & TST T.S. to terminal Rx10. Operate relays as indicated and check the resistance. (For S-3, CR-5 operated change connection from Rx10 to Rx1000).

Relays Operated	Resistance
S-3	Open
CR-5	Open
AV-2	500
S-3, CR-5	25,500

6.4 Connect the X term. of ohmmeter to 6B of DRL relay and Rx10 term. to pchg. 61 LK & TST T.S. Ohmmeter reads zero. Insulate 9 and 10T of LR relay. Block LR operated. Ohmmeter indicates an open circuit. Block relay DC operated. Ohmmeter reads zero. Release relays LR and DC and disconnect the ohmmeter. The purpose of this test is to check that ground is kept on the LR lead when a call is abandoned, until the marker is released.

7. TOLL DIVERSION

7.1 Block operated TDC and ON3 (if equipped) relays.

7.2 With a test receiver, check for battery at 9T (STL) relay and ground at 3T (AV4) relay. The TDS relay will operate each time.

7.3 Remove blocks from TDC and ON3 relays.

8. TEST OF SM-2 RELAY WIRING (ISSUE 48AR)

8.1 This change eliminates excessive heating of the SM-2 relay due to trouble conditions such as opens in the hold magnet operate circuit.

8.2 Using ITE-4034 or 4442 check that there is a 75 ohm ± 1% (SM) resistance connected between the 4T (secondary winding) of the SM-2 relay and 3T of the SM-3 relay.

9. PER CENT BREAK TEST OF PG RELAYS

9.1 Connect 48V battery and ground to the A jack of ITE-4029 (Pulse Checking Set) using cord ITE-9598. Connect the (P) binding post of ITE-4029 to IT (FP) relay, using an ITE-9528 cord equipped with a 419A test connector.

9.2 Block (C11), (CL2) and (FP) relays operated and (SP) relay nonoperated. Insulate 2T (PG3) and 4B (C11) relays.

9.3 Perform calibration tests as outlined in HB 50, Section 5, Paragraph 4, under test procedure.

9.4 Remove block from (SP) relay to start pulsing. The (PG) relay cover must be in place while making pulsing tests.

9.5 Check that the (PG) relay meets the requirements specified on the (PG) relay Pulse Check Graph shown in the circuit requirement table, as follows:

(a) Plot the readings of ITE-4029 on t the scales of the (PG) relay Pulse Check Graph SD-25012-0112. Then extend a horizontal line from the "Per Cent Break" value and a vertical line from the "Pulses per Second" value through the diamond shaped area on the graph.

(b) If the intersection of these two lines falls within the area bounded by the solid lines on the graph, the (PG) relay meets requirements.

10. AV1 RELAY OPERATING PATH

10.1 This test checks the operating path for the AV1 relay on a PCI stuck sender condition where assignment is delayed.

10.2 Block relay TN (for timed release senders) CL2 and TG1 operated and check that relay AV-1 operates when ground is applied to relay SS (4T) (for sender monitor senders) or relay TN, (1T) Fig. H.

10.3 Release the blocked relays.

11. "AA" STRAP ON BO RELAY AND SOAK PATH FOR STP RELAY

Block relay DC operated and note that relay STP operates. Check that front contact of relay BO is grounded. Release the DC relay.

12. COIN SENDERS - TIP AND RING TO SENDER MONITOR

12.1 Connect the B and G terminals of the ITE-4015 to 48 volt battery and ground respectively. Connect a cord to the IT terminal of the test set.

12.2 Momentarily connect the other end of the cord to the 6T and 3B contacts, (one at a time) of the MS1 relay. Observe that there is no deflection in either direction of the needle, indicating that the tip and ring leads are not crossed with battery or ground.

13. OPERATING PATH FOR STL RELAY OPENED WHEN FIFTH NUMERICAL DIGIT IS DIALED WITH TIME NEARLY UP

13.1 Block relays ON-1, ON-4, RA and F hold magnet operated. Manually operate relay STB and note that it locks in series with STB'. Check that STL relay does not operate. Release relay RA and note that relay STL operates.

13.2 Release relay ON-1 to release the circuit.

14. CHECK FOR OPERATION OF PS RELAY WHEN SENDER MONITOR PRIMES WHEN OFFICE CODE IS NOT COMPLETED (SENDER MONITOR ONLY)

14.1 Check that relay PS operates when relays MT and L2 are manually operated.

15. OPERATE PATH OF LR RELAY IF SENDER IS PRIMED AFTER OFFICE CODE IS DIALED (SENDER MONITOR ONLY)

15.1 Block relay MT operated. Note that relay LR operates when relay DST is manually operated and also when relay TR1 is manually operated. Release the relays.

16. MAKE BUSY FEATURES

16.1 Check that relay MB of the sender operates when the sender is made busy at the sender make busy frame and that ground is applied to contact 4T of relay ON1 and that battery is applied to contact 1B of relay SC1.

16.2 Check that sender MB relay operates when a make busy plug is inserted into (GB)- jack at OT1 frame associated with the marker connector on which the sender under test appears.

16.3 Block operated the ON-4 relay. Manually operate and release in turn relay OF1 and the units hold magnet and check that relay ON1 operates as each is operated.

17. MISCELLANEOUS CIRCUITS

17.1 Test miscellaneous circuit such as the following that are not covered in other tests: (1) Frame test battery; (2) Spare jack to MDF; (3) Frame line circuit; (4) Fuse alarms. Test that the fuse alarm is not stopped when the FA lamp is removed. Repeat the test with the 20A lamp removed.

18. REMOVING BATTERY FROM THE ST AND CBS LEADS TO THE MARKER CONNECTOR WHEN THE LR RELAY IS OPERATED

18.1 Insulate 1 and 2 top contacts of the DRL relay. Block operated the DST relay and check for battery at the 2T contacts of the DRL relay. Insulate 1T and 2T contacts of the LR relay and check that the battery is removed from 2T contact of the DRL relay. Remove the insulator and blocking tools.

19. TEST OF SB4 LEAD

19.1 Block operated the SB relay of the sender under test at the marker connector frame using ITE-4069 relay blocking tool.

19.2 Using a test receiver check for direct ground at the #12 contact of each of the DMB relays on the Connector Unit.

19.3 Manually operate and release one of the DMB relays on the Connector Unit and observe that the SR1 relay in the sender operates and releases.

19.4 Perform this test on each sender in the Connector Unit using a different DMB relay with each sender and if necessary repeat the test so that all DMB relays are used.

20. REMOVAL OF GROUND FROM THE NORMAL CONTACTS OF THE TH, H AND T HOLD MAGNETS WHEN THE LR RELAY IS OPERATED

20.1 Block operated the ON-1 and ON-4 relays. Test for ground at #6 left contact of the TH, H and T hold magnets. Block operated the LR relay and test for absence of ground at the above mentioned contacts. Remove the blocking tools.

21. AV1 RELAY OPERATING PATH

21.1 Apply ground through a test receiver to 1B contact of the LR relay. This operates the AV1 relay. Block operated the DRL relay and the AV-1 relay releases. Remove the blocking tool and the ground.

NOTE: Perform tests per Paragraphs 22 to 26 when Figure 0 is furnished.

22. OPERATION OF CL RELAY

22.1 Block operated the 3 and 4B contact of the SR1 relay and observe that the CL relay does not operate. Block operated the LC relay and observe that the CL relay does operate. Remove the blocking tools.

23. TEST FOR REMOVAL OF DIAL REGISTRATION GROUND

23.1 Block operated the ON1 and SR relays. Test for ground at 7T of the STL relay. Insulate 3T and 4T contacts of the LC relay and the ground is removed. Remove the blocking tools and the insulator.

24. OPEN DIAL TONE CIRCUIT WITH LC RELAY OPERATED

24.1 Block operated the ON1 relay and observe that the AL1 relay does not operate. Block operated the LC relay and observe that the AL1 relay does operate. Remove the blocking tools.

25. OPERATING AND LOCKING GROUND FOR LC RELAY

25.1 With a test receiver test for ground at the 11TF winding terminal of the LC relay. Block ON1 relay operated. Push up the LC relay and observe that it locks. Block operated the CTA relay (when Figure Q is furnished) and the LC relay releases. Remove the blocking tools.

26. "TWO PARTY TEST" BLOCKING CANCELED WITH LC RELAY OPERATED

NOTE: Perform this test when Figure G with AF wiring is furnished.

26.1 Block operated the ON1 relay and the STL relay normal. Test for ground at 6T contact of the TP1 relay. Block operated the LC relay and test for the absence of ground at the 6T contact of the TP1 relay. Remove the blocking tools.

27. NO SUCH NUMBER TONE (TIME RELEASE SENDERS)

NOTE: Perform this test when Figure H is furnished.

27.1 Block non-operated relays TM1 and TM2 and block operated relay ON1. Momentarily operate REG relay and observe that relay TN operated. Using a test receiver connected to ground check at 3T contact of SR relay for tone.

27.2 Block operated relay TM1 and observe relay TN remains operated. Momentarily operate PS relay and observe that relay TN released and that relays PS and SS are operated.

27.3 Remove blocks from relays ON1, TM1 and TM2.

28. RECYCLE TIMING INTERVAL DURING SECOND TRIAL

28.1 Block nonoperated TM1 and TM2 relays and block operated ON1 relay. Momentarily operate relay AL1 and observe that it locks operated. Check that relay AL2 operated.

28.2 Block operated UL1 relay and observe that relay UL2 operated.

28.3 Block operated TR1 relay and observe relay UL2 released.

28.4 Block operated TR2 relay and observe relay UL2 operated.

28.5 Remove blocks from relays ON1, TM1, TM2, UL1, TR1 and TR2.

29. SENDER SUPERVISORY METERS (PDM AND SSM)

NOTE: Perform this test when Figure 4 is furnished.

29.1 Block nonoperated relay TM1 and block operated relay ON1.

29.2 Manually operate relay AL1 and observe that it locks operated. Check that relay AL2 operated.

29.3 Block operated relay RA1 and observe that relay LM operates (MAX. 6 seconds) and that relay LM1 operates approximately 5 seconds later. If the SSM interrupter B and F leads are reversed the LM1 relay will operate immediately after the LM relay operated.

29.4 At the Sender Make Busy Frame check that the needle of the subscriber sender Partial Dial Meter is deflected from normal. Block operated the U hold magnet and check that the needle of the Partial Dial Meter returns to normal and that the needle of the Slow Sender Meter is deflected from normal.

29.5 Remove the block from the RA1 relay and observe that the Slow Sender meter returns to normal.

29.6 Remove the blocks from the TM1 and ON1 relays.

30. TEST OF COMPENSATING RESISTANCE - CR - TRANSMITTING LEADS AND UNUSED TRANSMITTING LEADS

30.1 This test checks continuity and absence of crosses in the CR transmitting leads to the marker, verifies that the proper CR relay is connected to each lead, and verifies the unused leads in the other groups of transmitting leads. The test is made by connecting ground to the lead under test and momentarily operating the DST relay in the sender. The marker calls in the trouble indicator and a record of the grounded lead is taken by the indicator.

30.2 In the sender block normal the relay corresponding to the lead to be tested. For example if the CR1 lead is to be tested block normal the CR1 relay. Using cord ITE-9528 or ITE-9726 equipped with a 509A tool connect ground to the top winding terminal.

30.3 An assistant at the trouble indicator should make busy all except one marker.

30.4 Manually operate the sender DST relay and release in about one second. The XT lamp and the lamp corresponding to the grounded lead light. Observe also that the proper CR, CN and SN lamps at the OT1 frame light for the sender under test.

30.5 Restore the trouble indicator and make the test to each marker.

30.6 Perform the tests per Paragraphs 30.2 to 30.5 testing each CR lead and each lead in the other groups (OB, OG, etc.) that is not used in the regular assignments.

30.7 Perform the tests per Paragraphs 30.2 to 30.6 on each sender. Where more than one sender appears in a marker connector, it will not be necessary to test to all markers from each sender since all connector to marker leads were tested with the first sender. The test per 30.5 may therefore be omitted except for the first sender tested in each connector.

31. INTERSENDER TIMING

31.1 Test at Sender Frame

31.11 Block operated relay IT of Subscriber's Sender Frame Miscellaneous Circuit.

31.12 Block nonoperated relays TM1, TM2, and block operated relays MB and ON1 in sender under test. Disregard any other relay operation not specifically mentioned in this test. Manually operate relay IT. In 3 to 6 sendonds relay OF1 should operate momentarily and every 3 seconds thereafter. Verify with KS-3008 stopwatch. Relay IT2 should be locked operated under control of relay ON1.

31.13 Release relay IT. Relay OF1 should not operate again. Unblock relays ON1 and MB. Verify that relay T2 releases. After testing all senders in frame, unblock relay IT of Miscellaneous Circuit.

31.2 Test at Traffic Register Relay Rack

31.21 Operate ITT relay. Check that ITC and all IT - relays operate.

31.22 Release ITT relay. Check that ITC relay remains operated and that T2 relay operates in 5 to 12 seconds, and that T1, T2 and ITC relays release. Check with KS-3008 stop watch.

Arrowed lines indicate new or changed information.

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Reason for Reissue:
To change intersender timing tests.

Replaces Section 162 of 2-20-58.