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ROUTINE AND SUPPLEMENTARY TESTS OF SUBSCRIBERS SENDERS

CONTENTS

1. GENERAL INFORMATION

1.1 Description of Test

1.11 This section describes the following tests to be made on the subscriber senders.

ROUTINE TESTS
SUPPLEMENTARY TEST USING TEST FRAME

1.2 Test Procedure

1.21 Refer to Section 161 for general information and method of setting up test calls.

1.22 The performance requirements for subscriber senders are covered in BSP Section AA634.001 and AA634.007.

1.3 Test Call Chart

1.31 Using Figure 1 or 2 as a guide, prepare a test call chart from the information given on the originating marker cross-connection list for the particular job. The chart should include calls to check all features specified in the performance requirement that are used in the telephone company assignments.

1.32 Office codes for the various test calls should be selected and indicated on the test call chart to check the 1, 2, 4 and 5 receiving leads from the marker to the sender for the A, B and C digits. A typical set of office codes that check all of these leads are as follows:

Digits Dialed	Leads Grounded A	B	C
782	2-5	1-2-5	2
444	4	4	4
825	1-2-5	2	5
243	2	4	1-2

1.33 The F- and the D- receiving leads are checked when different F- and CS- keys respectively are used on different routine tests as described in Paragraphs 4.05 and 4.06 of Section 161. The AR, OF and TP receiving leads are checked in the tests described in Paragraphs 3.205, 3.09 and 3.206 respectively.

1.34 Test codes should be selected and indicated on the test call chart to check the office brush (OB-1, 2, 4 & 5), the office group (OG1, 2, 4 & 5), the skip office (SO) and if used over five office brush (SSO) and AG5 transmitting leads. The class of call (CL1, 2, 3 and 4) transmitting leads are automatically checked in connection with the various classes of calls. The compensating resistance transmitting leads are checked by the supplementary test described in Paragraph 4.24 of Section 162. Other transmitting leads are automatically tested by the various test calls.

1.35 PCI codes both direct and tandem should be selected so as to use all A, B & C crosspoints and all pulse combinations. It will be noted that the digits 3, 7 and 9 can be used to check the pulses of the various digits. For example, the following office codes could be used:

342 677
729 893
935

2. RECORDS AND REQUIREMENTS

2.1 SD-4-1313, SD-4-1315 and ID-1334 are required as outlined in Handbook 50, Section 3.

3. ROUTINE TESTS

NOTE: Refer to Section 161 for method of setting up test calls and checking lamp information.

3.1 Perform the tests listed in the call chart prepared for the job (see Paragraph 1.3) at the frequencies specified in the performance requirements. Where more than one test call is listed for a particular routine change the test calls on recurring cycles. During the routine tests the test keys should be changed on recurring cycles to conform with the following requirements.

3.2 Full Selector (Rout. 2720-A) Class Key 1

3.201 Panel and Crossbar Codes and Four Numerical Digits so as to include (TH) 0-4 keys with (H) 5. Operate the XB-SY key for crossbar codes.

3.202 Office and Skip Office Selections Keys OB and OG for office selections or SO and AAO if equipped for no office selections.

ROUTINE TEST (SD-25012-01)

ROUTINE NUMBER	CLASS OF TEST	CLASS KEY	TEST KEYS (SEE NOTE)	AREA CODE A B C	A B C	TH H T U STA	CLASS CS CHECK	OB OG	COMP. RES. OFF	COMP. RES. BOF	STA. DEL.
2720A	Full Selector	1	XB-SY. AR. MTG. TPO. TPNO SP (See Par. 3.2). SGT-NO. SGT-OPR								
2720B	PCI Direct Tandem	5 4	CAP-PCI. CN FAS.SD.TS-PCI(See Par. 3.3)								
2720C	Register Control	2	XB-SY and MTG keys are not used for this test. (See Par. 3.4)								
2720D	Late Release (FS)	3	(See Par. 3.51)								
2720E	Late Release (PCI) Distant Office Without D.O.	 8 7	 SD (See Par. 3.522) SD (See Par. 3.521)								
2720F	Special Service Operator	9	(See Par. 3.61)		0 0 0						
2720G	Three Digit Operator Direct Routing 3-Wire Off. Routing PCI Routing	 10 11 6	 (See Par. 3.62 (a)) (See Par. 3.62 (c)) (See Par. 3.62 (b))		X 1 1						
2720H	Off. Overflow PCI Off. Overflow FS Inc. Overflow	13 13 14	(See Par. 3.71) (See Par. 3.71) MTG (See Par. 3.72) L-10F (See Par. 3.72)								
	SUPPLEMENTARY TESTS USING TEST FRAME										
	Permanent Signal	12	Par. 4.02		- 0 0						
	Trouble Release	16	Par. 4.04								
	Operation with AUX Sender	17	Par. 4.05	X X X							
	Restricted Codes	18	Par. 4.06								
	Sender Block on Two Party Test	1	Par. 4.08								
	Partial Dial	10	Par. 4.0921,4.0931.4.0951								
	Stuck Sender	18	Par. 4.0922,4.0932,4.0942 4.0943								
	Dial Tone	1	Par. 4.01								
	OF Relay Shunt	18	Par. 4.07								
	OF-2 Relay Hold Path	14	Par. 4.12								
	F- and CS- Lead Cross Detection Feature	1	Par. 4.13								
	Premature Operation of Sender AV4 Relay	1	Par. 4.11								
	All OFL Trks. Busy	10	Par. 4.14				NOTE: Operate different test keys on recurring cycles so that all test conditions are covered over the last required number of cycles.				
	Misc. Features	-	Par. 4.15 to 4.18								
	Coin Signals	18	Par. 4.0923.4.0933.4.0944 4.0924.4.0934,4.0945								
	Marker Conn. Paths	-	Par. 4.10								

FIG. 1 OUTLINE FOR TEST CALL CHART

ROUTINE TESTS (SD-27810-01)

ROUTINE NUMBER	CLASS OF TEST	CLASS KEY	TEST KEYS OR JACKS	AREA CODE ACA	AREA CODE ACB	AREA CODE ACC	A B C	TH HU T U	CLASS CS CHECK	FA F OB OG	COMP. RES. OFF BOF	REMARKS
2720A	Full Selector	1	R2, XB-SY, AR " " MTC " " TPO " " TPNO " " SP " " SGT-NO " " SGT-OPR	- - - - - - -	- - - - - - -	- - - - - - -						Paragraph 3.2 Repeat Class one test using Touch Tone and varying key per Paragraph 3.8.
2720C	Register Control	2	R2 " " " " " "					5 6 7 8 1 1 1 1 2 2 2 2 3 3 3 3 4 4 4 4 5 5 5 5 6 6 6 6				Paragraph 3.4
2720D	Late Release (FS)	3	R2	-	-	-						Paragraph 3.51
2720B	PCI Direct Tandem	5 4	R2 CAP-PCI CN R2 PAS SD TS-PCI	-	-	-						Paragraph 3.3
2720E	Late Release (PCI) Distant Office Without DO	 8 7		 - -	 - -	 - -						 Paragraph 3.522 Paragraph 3.521
2720F	Special Service Operator	9		-	-	-	0 0 0	- - - -				Paragraph 3.61
2720G	Three Digit OPR Direct Routing 3-Wire Office Routing PCI Routing	 10 11 6	 R1 R1 R2	 - - -	 - - -	 - - -	X 1 1					Paragraph 3.62 (a) (c) (b)
2720H	Office Overflow PCI Office Overflow FS Inc. Overflow	13 13 14 14	R1 R1 R1 MTG R1 L-10F	- - - -	- - - -	- - - -						Paragraph 3.71 Paragraph 3.72
2725A	10 Digit No Skip	17	PP		0-1						SO	Paragraph 3.91
2725B	10 Digit Skip 3 10 Digit Reconstructed Area Code	17 17	7DG-PL, PP PDG1, RCY		0-1						SO	Paragraph 3.92 Paragraph 3.93
2725C	7 Digit No. Skip	17	7DG-DL, PP	-	-	-					SO	Paragraph 3.94
2725D	7 Digit Skip 3	17	7DG-DL, PP 4DG-PL	-	-	-					SO	Paragraph 3.96
2725E	7 Digit Skip 2	17	7DG-DL, PP 5DG-PL	-	-	-					SO	Paragraph 3.95

FIGURE 2

ROUTINE TESTS (SD-27810-01) (Cont.)

ROUTINE NUMBER	CLASS OF TEST	CLASS KEY	TEST KEYS OR JACKS	AREA CODE ACA ACB ACC	A B C	TH HU T U	CLASS CS CHECK	FA F OB OG	COMP. RES. OFF BOF	REMARKS
2725F	10 Digit Aban Dialing Complete	17	WO1 PP						SO	Paragraph 3.972
2725G	10 Digit Aban MF Pulsing	17	WO2 PP						SO	Paragraph 3.973
	10 Digit Aban After 9 Digits	17	WO PP						SO	Paragraph 3.971
			SUPPLEMENTARY TESTS (SD-27810-01)							
	Permanent Signal	12		- - -	0 0					Paragraph 4.02
	Trouble Release	16		- - -						Paragraph 4.04
	Restricted Codes	18		- - -						Paragraph 4.06
	Block on Two Party Test	1	TPO	- - -						Paragraph 4.08
	Partial Dial	10	SL, TA	- - -						Paragraphs 4.0921, 4.0931, 4.0941
	Stuck Sender	18	SL, TA	- - -						Paragraphs 4.0922, 4.0932, 4.0942, 4.0943
	Dial Tone	1		- - -						Paragraph 4.01
	OF Relay Shunt	18	RVT	- - -						Paragraph 4.07
	F and CS Lead Cross Detection Feature	1		- - -						Paragraph 4.13
	Premature Operation of AV-4 Relay	1		- - -						Paragraph 4.11
	All OFL Trks Busy	10		- - -						Paragraph 4.14
	Misc. Features	-		- - -						Paragraphs 4.15 to 4.18
	Coin Signals	18		- - -						Paragraphs 4.0923, 4.0933, 4.0944, 4.0924, 4.0934, 4.0945
	Marker Conn. Paths	-								Paragraph 4.10
	10 Digit TBL Time Out Partial Dial	17								Paragraph 4.21
	10 Digit TBL Time Out Dialing Complete	17								Paragraph 4.22
	10 Digit Incoming Trunk Reversed	17								Paragraph 4.3

FIGURE 2 (Cont.)

3.203 Slow and Fast Revertive Pulsing. SP key operated for slow pulsing.

3.204 Test of MTG Relay (Marginal Trunk Guard): Operate the MTG key for routes using the sender MTG relay.

3.205 Alternate Route Test. Operate the SR key to test the ability of a sender to ask for an alternate route and to function with the resulting translation. This key may be operated for the regular test of any code except permanent signal, late release, SGT operate, or overflow.

3.206 Operate and Nonoperate Test of TP Relay. Set up a full selector test using class key 1 and a two party MR class of service. Operate the tip party key to its TPO position to test the sender TP relay for operate, or to its TPNO position to test for nonoperate.

3.207 On alternate cycles use 90 ohms and 1600 ohms compensating resistance (sender plus test circuit).

3.208 Test of Coin Senders. Use a post payment coin class of service, make sure that the FC and TP-TPNO keys are normal and proceed as follows:

(1) To test relay GT for nonoperate and operate set up any full selector test other than late release or overflow

(2) To test SGT for nonoperate, operate the SGT-NO key and set up a full selector test using class key 1.

(3) To test relay SGT for operate, operate the SGT-OPR key and set up a full selector test using class key 1. Make sure that the AR key is normal.

3.209 Dialing Conditions. Apply the various dialing conditions over the routine test cycles as described in Section 161, Paragraph 4.10.

3.210 Where the senders are arranged to complete calls over common trunk groups to two XB offices, (Figure AG in sender), select full selector test calls to each office. Operate IG5 key for codes which add 5 to the incoming group selection. On such codes the marker will not operate the sender SD-1 relay.

3.211 To test "regular" GT testing leads operate LT key on alternate cycles.

3.3 Panel Call Indicator (Rout. 2720-B)

3.31 PCI Tandem Test. Operate class key 4. Use any PCI tandem or sender tandem code and four numerical digits. Operate the proper key in the STA row and the SD (station delay) key, if required as outlined in Paragraph 4.17 of Section 161. When the senders are arranged for two stage tandem PCI calls for certain codes (CL5 relay operated by the marker) the TS-PCI key should be operated on tests using these codes.

3.32 PCI Direct Test. Operate class key 5. Use any code for direct PCI and four numerical digits. Operate the proper key in the STA row and the SD key, if required as outlined in Section 161, Paragraph 4.17.

3.33 Test for Short Fundamental Closure from a PCI Trunk. Operate the fast assignment key FAS as outlined in Section 161, Paragraph 4.13.

3.34 Capacity PCI Test. Refer to Section 161, Paragraph 4.14.

3.35 All Station Delay Features for which Cross-Connections are provided. Refer to Paragraph 4.17 of Section 161.

3.36 To test the senders ability to block until a coin is deposited operate the CN key, and set up a PCI call, either tandem with class key 4 operated or direct with class key 5 operated. Use an office code that does not require the sender to wait for stations or fifth numerical digit. If no such code is available, use a code requiring a station digit and depress a station key and the SD key.

3.4 Register Control (Rout. 2720-C) Class Key 2

3.41 Use any panel code not involving the sender MTG relay. Make sure that keys XB-SY and MTG are normal. Operate the 26 PPS MAX BR dial control key. Although any four numerical digits will make a fairly good test of the senders ability to record digits in quick succession, certain digits may be selected to apply the most severe tests to certain portions of the dial register as follows:

(a) RA Relay Test: To test the ability of the RA relay to release quickly between digits, operate key 5, 6, 7, 8, 9 or Q in each TH, H and T rows.

(b) Test of P1 to P6 Relays: To test the ability of the P1 to P6 relays to release quickly, operate a TH, H or T key which will use the relay under test for operating a selecting magnet, as shown below:

Relay Under Test	Digit to be Dialed
P1	1 or 7
P2	2 or 8
P3	3 or 9
P4	4 or 0
P5	5 or 6
P6	6, 7, 8, 9 or 0

(c) Release Test of Select Bars: Use 26 PPS-MIN BR dial control key to test the ability of select bar and selecting fingers to quickly restore between digits. Operate a TH, H or T key which will operate the select bar unit under test and for the succeeding digit operate key (1) in all cases except when select bar (0-1) is under test, in which case operate key (2). For example, (a) Numbers 0202, 2020, 1212, 2121, 3131, 1313 will check select bars (0-1) and (2-3), (b) Numbers 4141, 1414, 5151 and 1515 will check select bar (4-5). Sufficient numbers should be used to include the test of all selecting fingers of each bar in both positions.

(d) Test of Interval Between Selections: Operate the SP key and set up the number 9999 on the TH, H, T and U keys.

3.5 Late Release

3.51 Late Release - Full Selector (Rout. 2720-D) Class Key 3: Use any crossbar or panel code and four numerical digits. Do not operate the XB-SY or AR key.

3.52 Late Release PCI Test (Rout. 2720-E)

3.521 Late Release PCI Test with TW Relay Normal: Operate class key 7 and use any code for direct PCI not routed through a distant office selector, and four numerical digits. Operate the proper key in the STA row and the SD key. If required as outlined in Paragraph 4.17 of Section 161.

3.522 Late Release PCI Test with TW Relay Operated: Operate class key 8 and use any code for direct PCI via distant office selector and four numerical digits. Operate the proper key in the STA row and the SD key, if required, as outlined in Paragraph 4.17 of Section 161. FAS key should be normal for this test.

3.6 Operator

3.61 Special Service Operator (Rout. 2720-F) Class Key 9: Operate the 0 key in rows A,B and C.

3.62 3-Digit Operator Full Selector Test (Rout. 2720-G)

NOTE: Use Tests (a), (b) and (c) on recurring cycles, when the features of (b) and (c) are provided.

(a) Direct Routine (Class Key 10): Use any 3-digit operator class code on which the sender will expect only 3 digits.

(b) PCI Tandem (Class Key 6): Use official 3-digit operator code routed through PCI tandem (marker CL5 cross-connection). Operate the 0 keys in rows TH, H, T, U and STA.

(c) Three-Wire Panel Office Selector (Class Key 10): Use a 3-digit operator code routed through 3-wire panel office selector and operate a key in rows OFF-CR, OB and OG.

3.7 Office and Incoming Overflow Tests (Rout. 2720-H)

NOTE: This test checks the reaction of the sender when encountering a reversed fundamental loop beyond office trunk test. The test is, therefore, to be made regardless of whether the senders in the particular office under test will work through office selectors. It is not necessary to use codes requiring office selections, although such codes may be used when provided.

3.71 Operate class key 13 for the office overflow test. The sum of the compensating resistance in the sender and test circuit should be 900 ohms for office and beyond office selections. Office selections when required, should be set up in accordance with alternate route or second trial translation for the code used. Use full selector, PCI and operator codes for this test.

3.72 Operate class key 14 for the incoming overflow test. The total compensating resistance between sender and test circuit should be 900 ohms for all selections. Use any code which is routed full selector on its alternate route or second trial, setting up office selections in accordance with this route. Use any four numerical digits. Tests should be made using codes that require the MTG relay in the sender (MTG key operated) and codes that require the TG relay in the sender (MTG key normal) in order to apply the two speed test conditions to the sender OF and STP relays. On alternate cycles operate the L-10F key to check that the sender waits for the distant circuit to open the fundamental loop.

3.8 Touch-Tone Feature

3.81 Set up a full selector call with (Class 1) for touch-tone dialing, TT key operated.

3.82 Select digits to vary frequencies transmitted to the sender receiver.

3.83 Repeat one call using special tests keys LLV, HLV, HLV LGP, 3FS, SFL, SFH, MXF, LLV, (CD-25221-01, Section 143, Paragraph 11).

NOTE: The following routine tests to be applied to SD-27810-01 only.

3.9 Set test class switch to position 17.

3.91 10 Digit - No Skip

3.911 Set up a 10 digit call.

3.912 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.913 Operate ST key to start test.

3.92 10 Digit - Skip Three

3.921 Set up a 10 digit call arranged to skip 3 digits.

3.922 Place plug in 7 DG-PL jack.

3.923 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.924 Operate ST key to start test.

3.93 10 Digit - Reconstructed Area Code

3.931 Set up a 10 digit call using an area code which is compressed.

3.932 Place plug in RCY jack.

3.933 Set the necessary code, numericals, frame, class of service, compensating resistance and miscellaneous keys.

3.934 Operate ST key to start test.

3.94 7 Digit Call

3.941 Set up a 7 digit call.

3.942 Place plug in 7 DG-DL jack.

3.943 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.944 Operate ST key to start test.

3.95 7 Digit Call Skip Two

3.951 Set up a 7 Digit call arranged to skip 2 digits.

3.952 Place plugs in 7 DG-DL and 5 DG-PL jacks.

3.953 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.954 Operate ST key to start test.

3.96 7 Digit Call Skip Three

3.961 Set up a 7 digit call arranged to skip 3 digits.

3.962 Place plugs in 7 DG-DL and 4 DJ-PL jacks.

3.963 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.964 Operate ST key to start test.

3.97 Abandoned Calls

3.971 10 Digit Abandoned After 9 Digits

3.9711 Set up a 10 digit call.

3.9712 Place plug in W0 jack.

3.9713 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.9714 Operate ST key to start test.

3.972 10 Digit Abandoned After Dialing

3.9721 Set up a 10 digit call.

3.9722 Place plug in W01 jack.

3.9723 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.9724 Operate ST key to start test.

3.973 10 Digit Abandoned During Outpulsing

3.9731 Set up a 10 digit call.

3.9732 Placing plug in W02 jack.

3.9733 Set the necessary code, numerical, frame, class of service and compensating resistance keys.

3.9734 Operate ST key to start test.

4. SUPPLEMENTARY TESTS USING TEST FRAME

4.01 Dial Tone Test: Operate class key 1, a 26 PPS key and set up a full selector call on the sender test frame. Block the DT relay operated in the CONN part of the test circuit and insulate contacts 3 and 4T of relay ST of the D PLS part of the test circuit. Leave the PP key normal. Operate the ST key and listen for dial tone in the receiver furnished with the test frame. Note that dial tone is cut off after the A digit is dialed and that the test frame tests the sender and then advance to the next sender. Repeat the test on all subscriber senders. When the test is completed release the DT relay and remove the insulation from the ST relay.

4.02 Permanent Signal: Subscribers' senders - class key 12. Operate the 0 keys in rows B and C. To check the timing period with a stopwatch, measure the interval during which the "code dialing" lamp CD is lighted. (20-40 seconds) To stop testing between senders in order to read and reset the stopwatch, operate the TA key during a test and release it momentarily when ready to advance to another sender.

4.03 False Operating Path for SS Register: Manually operate relay ON-1 and note that relay AL-2 does not operate. Release relay ON-1. Check that no battery is present of 2B of relay AL-2 of sender monitor senders.

4.04 Trouble Release: Subscribers' senders class key 16. Use any code and four numerical digits.

4.05 Operation With Auxiliary Sender (SD-25012-01 only): Subscriber's Sender class key 17. Use 7 and 10 digit MF codes that would represent a test of the sender's ability to link to any Auxiliary Sender.

4.051 Check with 7 to 10 Digit MF Codes (SD-27810-01): Subscriber Sender class key 17 uses 7 and 10 digit MF codes.

4.06 Restricted Codes: Class key 18. Use a restricted code on which the senders under test will expect four numerical digits. Operate one key in each of the TH, H, T and U rows.

4.07 Check OF Relay Shunt on Calls to Normally Reversed Trunks: Operate class key 18 (unassigned code on which the senders will expect four numerical digits). Operate RVT key and one key in each of the TH, H, T and U rows. If the shunt is maintained on the OF relay, the test circuit will complete the test and advance to the next sender. If the shunt is open, the sender and the markers will make three attempts to complete the call after which the test circuit will block and time out with the RLS lamp lighted. (Y wiring A & M only) or a second marker will be seized and the test circuit will block with the (OPR-CL) DP switch in position 14. (Z wiring std.)

4.08 Sender Block on Two-Party Test

4.081 To test the party identification features of subscribers' senders, set up a full selector test using class key 1 and a two-party message rate class of service.

4.082 Operate the "tip party" key to its TPO position to test the sender TP relay for operate, or to its TPNO position for nonoperate.

4.083 To test the feature which should block the sender when the first and second party tests of a call disagree, two tests are necessary. For the first test, operate the TPO key before each sender is seized and release it when (code dialing) lamp CD goes out. For the second test, have key TPO normal when each sender is seized and operate it when the CD lamp goes out. In either case the test circuit should block with (release) lamp RLS lighted, and may be restarted by a momentary operation of the CA key.

4.09 Test of Sender Lamps and Priming

4.091 If any of the tests covered in 4.092 to 4.098 inclusive are to be made on monitor type subscriber senders, arrangements must be made for priming stuck senders which indicate by a tone that they are connected to the sender test circuit. The arrangements must insure that priming is prompt, for otherwise the test circuit alarm will operate and sender timing periods cannot be measured accurately. These tests insure not only that the sender lamps at the monitoring position light, but that they flash, for otherwise the senders will not be primed.

NOTE: The partial dial register or the stuck sender register of timed release subscriber senders will be operated by the following tests except in case of failure of coin test. Therefore, the register readings should be noted before and after the test are made. Operate the REG relay of any sender and observe that the PD lamp at the SMB frame flashes and that the PD register scored once. Release REG relay.

4.092 Sender Monitor

4.0921 To test partial dial priming and signals, operate the SL (sender lamp) key and class key 10 and set up a full selector or PCI code. To check the sender timing period start timing when the A progress lamp goes out and stop when the RLS (release) lamp goes out. This interval should be 30 to 50 seconds plus the time required for the monitor to answer the signal, recognize the test circuit tone and prime. The TA key may be kept operated except when advancing to a new sender, in order to permit reading and resetting the stopwatch after each test.

4.0922 To test stuck sender priming and signals, operate the SL key and class key 18, and set up four numerical digits and either a PCI code without stations delay or a full selector code. To check both of the sender timing intervals, measure the time the RLS (release) lamp is lighted. These intervals should be 60 to 80 seconds for PCI codes and for codes routed through distant office selectors, and 30 to 50 seconds for other codes plus the monitor's answering and priming time. The TA key may be kept operated except when advancing to a new sender, in order to permit reading and resetting the stopwatch after each test. This key should be used when testing the long time out to prevent possible test circuit alarms. At the sender make-busy frame, check that the SS register associated with the group scores once.

4.0923 To test coin signals and priming in coin senders when no coin ground is on the line, use a coin class of service, operate the FC and SL keys and class key 18, and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval measure the time the RLS lamp is lighted, which should be 3 to 4 seconds plus the monitor's time for monitor type subscriber senders.

4.0924 To test coin signals and priming in coin senders when solid ground is on the line, use a coin class of service, operate the SGT-OPR and SL keys and class key 18 and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval, measure the time the RLS lamp is lighted, which should be 3 to 4 seconds plus the monitor's time for monitor type subscriber senders.

4.093 Automatic Priming

NOTE: Push in CTR key button to release sender, pull out key button to hold sender.

4.0931 To test partial dial priming signals, operate the SL (sender lamp) key and class key 10 and set up a full selector or PCI code. To check the sender timing period start timing when the A progress lamp goes out and stop when the RLS (release) lamp goes out. This interval should be 30 to 50 seconds. The TA key may be kept operated except when advancing to a new sender, in order to permit reading and resetting the stopwatch after each test.

4.0932 To test stuck sender priming and signals, operate the SL key and class key 18, and set up four numerical digits and either a PCI code without stations delay or a full selector code. To check both of the sender timing intervals, measure the time the RLS (release) lamp is lighted. These intervals should be 60 to 80 seconds for PCI codes and for codes routed through distant office selectors, and 30 to 50 seconds for other codes plus the minotor's answering the priming time. The TA key may be kept operated except when advancing to a new sender, in order to permit reading and resetting the stopwatch after each test. This key should be used when testing the long time-out to prevent possible test circuit alarms.

4.0933 To test coin signals and priming in coin senders when no coin ground is on the line, use a coin class of service, operate the PC and SL key and class key 18, and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval measure the time the RLS lamp is lighted. Which should be 3 to 4 seconds.

4.0934 To test coin signals and priming in coin senders when solid ground is on the line, use a coin class of service, operate the SGT-OPT and SL keys and class key 18 and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval, measure the time the RLS lamp is lighted, which should be 3 to 4 seconds plus the monitor's time for monitor type subscriber senders.

4.094 Timed Release

4.0941 To test partial dial disconnect tone and priming in timed release subscriber senders, push in the control buttons of the CTR keys at the sender make-busy frame, operate the SL key and class key 10. Set up both full selector and PCI codes. Have the TA key operated except when advancing to a new sender. Tone should be heard in the test circuit receiver within 20 to 40 seconds after the A progress lamp goes out, and should continue for 20 seconds. The RLS lamp should go out within 130 seconds total for short time out, full selector codes, and 170 seconds total for long time out (PCI and distant office) codes.

4.0942 To test stuck sender disconnect tone and priming in timed release subscriber senders, push in the control buttons of the CTR keys at the sender make-busy frame, operate the SL key and class key 18, and four numerical keys. Set up both PCI with stations delay and full selector codes. Tone should be heard within 20 to 40 seconds after the RLS lamp lights in the case of full selector codes without distant office, or 60 to 80 seconds for other (PCI and distant office selector) codes. Tone should continue for 20 seconds, and the RLS lamp should go out with a total of 50 to 70 seconds for short time-out codes or 90 to 110 seconds for other codes. When testing the long time-out have the TA key operated except when advancing to a new sender. This key also may be used with the short time-out in order to permit reading and resetting the stopwatch after each test.

4.0943 To test the stuck sender lamp of timed release subscriber senders, pull the control buttons of the CTR keys at the sender make-busy frame outward, operate the ST key and class key 18, and set up four ones for numerical digits and a skip-office full selector code. The stuck sender lamp at the busy frame should light within 60 to 80 seconds after the RLS lamp lights. Listen that a minor alarm sounds. When it does, push in the control button of the associated CTR key and make sure that the lamp goes out and alarm is silenced.

4.0944 To test coin signals and priming in coin senders when no coin ground is on the line, use a coin class of service, operate the FC and SL keys and class key 18, and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval, measure the time the RLS lamp is lighted, which should be 3 to 4 seconds plus the monitor's time for monitor type subscriber senders.

4.0945 To test coin signals and priming in coin senders when solid ground is on the line, use a coin class of service, operate the SGT-OPR and SL keys and class key 18 and set up a full selector code requiring a coin, and four numerical digits. To check the sender timing interval, measure the time the RLS lamp is lighted, which should be 3 to 4 seconds plus the monitor's time for monitor type subscriber senders.

4.0946 SS and SDR Lamps: Check that the proper SS lamp lights at the sender make-busy frame when a 245 type make-busy plug or its equivalent is in the P jack at the sender monitor position. Check that the proper SDR lamp lights at the sender monitor position when the sender is made busy at the sender make-busy frame.

4.10 Test of Paths Through the Marker Connectors

4.101 Apply the tests listed on the Call Chart to one sender in each marker connector using each marker.

4.102 These tests may be combined with the routine tests if they can be administered without causing interference with other tests.

4.11 Premature Operation of AV-4 Relay

4.111 Connect the Portable Pencil Lamp R-1824 to battery and to #2T spring of SW relay in the CONN UNIT of test frame.

4.112 Block operated the AV3 relay in each sender.

4.113 Set up a full selector crossbar test call. Operate the ST key. The test blocks with the R-1824 lamp lighted and the S relay of the test frame CONN UNIT normal.

4.114 Operate the CA key to advance to the next sender. Make the test on all senders. Remove the blocks from the sender AV3 relays, and the test connections at the test frame.

4.12 Supplementary Holding Path of OF-2 Relay (BM Wiring)

4.121 Set up a full selector test with the incoming overflow test class key 14 operated. Insulate contacts 6 and 7B of the FR relay of the OFL CONT SS part of the test circuit. Use 900 ohms compensating resistance.

4.122 Operate the ST key. The test should progress through incoming group selection and should then block with the OF lamp lighted. After about 10 seconds, remove the insulation from the FR relay and observe that the test call is completed. Failure of the test frame to block in the OF position would indicate trouble in the supplementary holding path for the OF-2 relay.

4.123 Make this test on all senders arranged for BM wiring. Remove the insulation from 6 and 7B of the FR relay.

4.124 The test of the OF-2 relay holding path is identical for both KP and subscriber senders, and therefore this test may be applied at the same time to the KP senders per Paragraph 3.3 of Section 163.1.

4.13 Test of F- and CS- Lead Cross Detecting Feature

4.131 Operate class key 1 and set up a full selector call. Depress the F-1 and F-3 frame indication keys. Operate the ST key and note that the test frame blocks with the RL lamp lighted. If the secondary winding of the CK relay of the sender is open, the test frame will block with the CD and the D lamps lighted. Operate and release the CA key and test the next sender. Apply this test to all subscriber senders. Release the F- keys.

4.132 Operate class key 1 and set up a full selector call. Depress two CS class of service keys. Operate the ST key and note that the test frame blocks with the RL lamp lighted. If the primary winding of the CK relay is open, the test frame will block with the CD and the D lamps lighted. Apply this test to all subscriber senders. Release the CS- keys.

4.14 Release of Sender on First or Second Trials When All Overflow Trunks are Found Busy

4.141 Block normal the SDT and XDC relays in each marker. When marker is provided with Figure X, D or V, temporarily cross 7 and 8 top contacts of AK relay. Block normal the CF relay of the test frame CODE TEST circuit. This is done to permit the marker to proceed with the marking functions even though the call is originated in the sender test frame.

4.142 Select a convenient 3 digit operator code and make all trunks for this particular trunk group busy at the OGT jack frame. Also made busy all overflow trunks.

4.143 Make-busy all originating markers but one.

4.144 Set up the 3 digit operator class call and operate class key 10. Operate the REP key in order to check for proper release of the sender. Be sure to use frame indication for an equipped district frame.

4.145 Operate the ST key. Make to repeat tests before advancing to the next sender. If the TR-4 relay of the sender fails to operate from the ground placed on the RO lead by the marker, the test frame will block with the DP switch of the operator class control circuit for subscriber senders in position 14 and a trouble indicator record will be taken.

4.146 Make the test on all subscriber senders. To check all RO leads between senders, marker connectors and markers, test the first sender of the marker connector group using marker 0, the next sender against marker 1, etc. until the RO lead through all DB- relays of the connector have been checked. Test the remaining senders of the marker connector group using the highest number marker.

4.147 Upon completion of the test remove temporary strap at AK relay, release the SDT and XDC relays of each marker and remove the make-busy plugs from the trunks and the markers.

4.15 Test of Prefix 1-1 Feature

4.151 Set up a full selector class of call (class key 1) or a PCI tandem call (class key 4) with an extended area code and operate the 1-1 (one-one) key.

4.16 Official Reroute Test

NOTE: This test is made of senders which are arranged to reroute calls for OFF-9300. The senders are equipped with Figure AH and BK wiring.

4.161 Operate the OFF key. Set up a full selector test using test call OFF-9300. The XB-SY key should be normal. Operate the ST key. The test proceeds through all senders. The ORR lamp will be lighted on a test failure.

4.162 Release the ORR key and operate the AR key. Set up the proper route keys to reach the reroute group of trunks. Operate ST key to start the test. The test will complete in the normal manner.

4.163 Release the ORR and AR keys. Operate the XB-SY key, write up the regular route keys for OFF code and write up the numerical digits 9100. Operate the ST key to start the test. The test completes as a regular full selector call.

4.17 Load Control Test

NOTE: This test is made only on those senders equipped for load control and is, therefore, made on a particular circuit basis.

4.171 Operate the LC and O-RTA keys at the originating trouble indicator frame. Check that the (LCK) lamp at switchboard and (O-RTG) lamp at indicator lights. Observe that the (O-RTA) lamp at the indicator lights during sender test.

4.172 Insert a 322A plug into the test frame LC jack. Operate class key #9. Operate the zero button in the A, B and C rows. Operate a noncoin class of service and a frame indication key.

4.173 Advance the test circuit to the first circuit to be tested and then operate the REP and ST keys. The test proceeds to completion and since REP key is operated the test repeats until ST key is released.

4.174 Proceed as in Paragraph 4.173 until all senders have been tested.

NOTE: Perform the tests outlined in Paragraphs 4.175 and 4.176 when the senders are arranged to complete coin class calls during overloads.

4.175 Leave the setup in Paragraph 4.171.

4.176 Transfer the plug from the LC to the LCC jack. Operate class key #10, a coin class of service key, and set up a 3-digit operator call. From this point make tests similar to Paragraphs 4.172 to 4.174.

4.177 Remove all plugs and release the keys at the trouble indicator frame.

4.18 Sender Block on No Class of Service Indication

4.181 Set up a test call except that no CS key is to be operated. Note that the call blocks.

4.182 Set up a test call except that no frame indication key is to be operated. Note that the call blocks.

4.183 Set up a test call except that the FOA and FA1 keys are to be normal. Note that the test call blocks.

4.19 Cancel Intersender Timing

4.191 Set up a full selector Class of Call (class key-1).

4.192 Use zero for the TH, T, and U digits.

4.193 Set dial speed at 7 minutes.

4.194 Operate Key REP-2.

4.195 Insert plug in the IT jack on the originating trouble indicator frame.

4.196 Operate key ST test completes satisfactory.

4.197 At completion of test release all keys.

NOTE: The following supplementary tests should be applied to SD-27810-01 only.

4.2 Timing Tests

4.21 Partial Dial

4.211 Set up a ten digit test call from the test call chart with the CTR key in normal (IN) position, and with a plug in the TO jack.

4.212 Operate ST key to start test.

4.22 Trouble Time Out - Dialing Completed

4.221 Set up a ten digit test call with the CTR key in normal position (IN), and with a plug in the TO-1 jack.

4.222 Select a subscriber sender.

4.223 Operate ST key to start test.

4.3 Incoming Trunk Reversed

4.31 Set up a test call and operate the RVT key. Operate ST key to start test.

5. MISCELLANEOUS CIRCUITS

5.1 Traffic Register Peg Count Test

5.11 Using the R9572 Test Receiver, momentarily ground punching 60 of T.S. (MISC) on the Sender Frame. At the Traffic Register Circuit, SD-25317-01, verify that the associated peg count register has registered once.

Manager, Crossbar Product Engineering
Control Center

→ Arrowed lines indicate new or changed information.

Reason for Reissue:
To Incorporate a TI.

Replaces Section 162.1 dated 11-18-65.