

**SENDERS**  
**OPERATION TESTS**  
**USING TEST CIRCUIT SD-32270-01 AND TEST SET SD-32271-01 (J38913A)**  
**STEP-BY-STEP INTERTOLL DIALING OFFICES ARRANGED FOR CAMA**

**1. GENERAL**

**PAGE**

**1.01** This section describes a method of testing CAMA senders SD-32261-01 in step-by-step intertoll dialing offices using manual test set SD-32271-01 and test circuit SD-32270-01.

connecting to AMA equipment if a NCAM indication is received from the decoder.

9

**1.02** This section is reissued to:

- (a) Include in Test AH the stuck sender indication for a non-CAMA call.
- (b) Add Test AJ for called vacant and irregular code trap.
- (c) Add Test AK for second stop-go signal.
- (d) Include SD key operation in Tests A, B, C, J, and M for senders provided with SP lead continuity check feature and outpulsing class CL0 or CL1.

**D. Intercept or Announcement Trunk Call:** This test checks that a sender will release after outpulsing arbitrary digit(s) if CL3 indication is received from the decoder.

10

**1.03** The tests covered are:

**E. ANI Calls Identified by Operator:** This test (see Test Chart) checks that calls with the following ANI conditions connect to a position:

Tests 1 through 5—Information digits 1, 2, 4, 5, or greater

Test 6—Time-out

Test 7—Premature ST signal

Test 8—CKE relay operation

Tests 9 through 12—Digit instead of ST signal

Test 13—S7 relay failure. T12 lead to transverter is checked.

11

**PAGE**

**A. Regular Call—Operator Identified:**

This is the basic test of a sender for called and calling registration, outpulsing, and leads to the decoder and transverter. All tests are operator identified.

5

**B. Regular Call—ANI:** In this test, called-number registration, ANI registration of calling number, connection with decoder and transverter, and outpulsing are checked.

7

**C. Regular Call—Non-CAMA:** This test determines the ability of senders to complete selections and release without

**F. Alternate Route and All Paths Busy:** This test checks the ability of a sender to: (a) recognize busy flash through incoming trunk, (b) make second seizure of decoder for alternate routing, and (c) set trunk to overflow on all-paths-busy condition.

13

**G. Superfluous Area Code Call:** This test checks the ability of a sender to complete regular call functions if

	PAGE
customer dials own area code. SAC leads to the decoder and transverter are verified. . . . .	14
<b>H. MF Receiver:</b> This test checks the MF receiver for modulation products, response to signal with maximum loss, and response to twist test (1500 cycles, 6 to 6.5 db higher than 700 cycles). . . . .	14
<b>J. Suspend Operator Identification:</b> This test determines the ability of a sender to complete calls which normally require aid of CAMA operator if switchboard operation is suspended. . . . .	15
<b>K. Operator Reorders:</b> This test checks the ability of a sender to reorder position if: (a) single frequency is keyed, (b) a code match occurs, or (c) timeout occurs between sixth and seventh digits of calling number. . . . .	17
<b>L. Drop Connection Forward on CL1 or CL2 Outpulsing:</b> This test checks that a sender releases outgoing trunk connection on CL1 or CL2 outpulsing if CAMA operator keys RS signal or a code match. . . . .	17
<b>M. Sender Busy and Pulse Generator 2/5 Network Check:</b> This test checks the ability of a sender to: (a) indicate a service or test busy to associated trunk finder(s) and (b) stop outpulsing if more or less than two RR0-7 relays are operated. . . . .	18
<b>N. Abandoned Call Before Transverter Connection:</b> This test checks that a sender can restore on calls abandoned before transverter connection. . . . .	20
<b>P. Abandoned Call While Transverter is Connected:</b> This test determines that the sender and transverter remain locked until initial entry is completed if call is abandoned. . . . .	20
<b>Q. Pulse Generator Speed and Percent Break:</b> The pulse generator is checked for pulses per second and percent	

break given in the circuit requirements table. . . . .	21
--	----

**REORDER TO CUSTOMER**

<b>R. Reorder—Called Number—Premature Start Signal:</b> . . . . .	22
<b>S. Reorder—Called Number—Incomplete Registration:</b> . . . . .	22
<b>T. Reorder—Called Number—Digit Instead of ST Signal:</b> . . . . .	22
<b>U. Reorder—Decoder Trouble Release:</b> . . . . .	23
<b>V. Reorder—Time-Out After Second Operator Error—RLT Relay Operated:</b> . . . . .	24
<b>W. Reorder—Extra Digit as Second Operator Error:</b> . . . . .	24
<b>X. Reorder—Registration While Transverter is Connected:</b> . . . . .	25
<b>Y. Reorder—Trouble Release by Transverter:</b> . . . . .	26
<b>Z. Reorder—Position Disconnect:</b> . . . . .	27
<b>AA. Reorder—More Than Ten Pulses in One Dial-Outpulsed Digit:</b> . . . . .	27
<b>AB. Reorder—ANI Code Match:</b> . . . . .	28
<b>AC. Reorder—ME Supply Transfer Alarm:</b> . . . . .	29
<b>AD. Reorder—Intersender Time-Out:</b> . . . . .	30
<b>AE. Reorder—Time-Out Waiting for Decoder:</b> . . . . .	31
<b>AF. Reorder—Time-Out Waiting for Position:</b> . . . . .	31
<b>AG. Reorder—Time-Out Waiting for Transverter:</b> . . . . .	32

PAGE

**AH. Reorder—Time-Out Waiting for Release and Regular Call—Non-CAMA—Stuck Sender:** . . . . . 33

**AJ. ♦Vacant Code Trap:** This test verifies that the proper printout occurs at the trouble ticketer for called vacant and irregular codes when the VCT key is operated. This test also verifies that the proper routing digits are outpulsed to reorder, announcement, or intercept trunk. . . . . 34

**AK. Second Stop-Go Signal:** This test verifies that the completion of outpulsing of a sender equipped with option M (SG3 relay provided) will not be prevented by a second stop-go signal.♦ . 35

**1.04** The traffic department should be consulted before starting Test J and notified of completion because of possible service interruptions and operating room alarms.

**1.05** Tests J and N require action and verification at the CAMA switchboard.

**1.06** If Test A, B, C, E, K, R, S, V, AD, AE, AF, AG, or AH indicates trouble in a timing network, check timing interval as specified in circuit requirements table.

**1.07 Caution: Tests AC (MF supply ♦transfer alarm) and AD (intersender time-out) can cause reorder in other senders.**

**1.08** For all Tests except Q and R, the Test Chart provides spaces for listing specific keys to be operated and numbers to be keyed, depending on local conditions. This chart should be filled out from local records in accordance with instructions provided in Part 5, Preparation of Test Charts.

**1.09** Table A provides information for transverter trouble tickets.

**1.10** For the purpose of testing all paths, periodically select a different decoder, transverter, position, and trunk class translator in Steps 4a, 5b, 6c, and 7 of Preparation each time these tests are performed.

**1.11** ♦DL (display lost) lamp lighting at the trouble ticketer and test frame indicates that an attempt was made to print a trouble ticket but no ticket was printed due to a trouble ticketer busy condition.♦

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

**2. APPARATUS**

**All Tests**

**2.01** Test set J38913A (SD-32271-01).

**2.02** Test circuit SD-32270-01.

**2.03** Patching cord, P3D cord, 3 feet long (3P3C cord), equipped with 309 plugs (for connecting test circuit jacks to sender, position, decoder, trunk class translator, and transverter circuits).

**2.04** Three 20-conductor cords, 10 feet long, equipped with one KS-13875 plug and one KS-13895 plug (W20D cord) (for connecting A, B, and C connectors of CAMA test set to A, B, and C connectors of CAMA test circuit).

**♦Tests A Through G and J Through AK♦**

**2.05** Head telephone set.

**Tests A, B, C, E, ♦J,♦ K, R, S, V, AD, AE, AF, AG, AH**

**2.06** KS-3008 stopwatch or equivalent.

**Tests E, M, W, X, AA, AB, AD, AE, AF, AG, AH**

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

**SECTION 227-325-500**

**Test M**

**2.08** Test receiver, 509 receiver (or equivalent high resistant) attached to a W2AB cord, equipped with two 360A tools (2W21A cord), one KS-6278 connecting clip, and one 411A (test pick) tool (to check battery or ground).

**Test Q**

**2.09** 258-type (make-busy) plugs as required (for removing sender from service).

**Test AH**

**2.10** 322A plug (for primed release of sender).

**3. PREPARATION**

**3.01** In this section, exit digits are those arbitrary digits required to reach an outgoing trunk from the CAMA office.

**3.02** The DC key on the test set permits control of each digit outpulsed by the sender. To use this feature, operate DC key momentarily after START key operation to prepare the test circuit. When ready to read outpulsing, operate DC key momentarily for each digit. When the DC key is used to control MF outpulsing, only 20 seconds may elapse between digits before time-out of the checking sender.

**3.03** Outpulsed digits are displayed on numerical tube of test set.

**3. PREPARATION (Cont)**

STEP	ACTION	VERIFICATION
------	--------	--------------

**All Tests**

1	At test set— Patch A, B, C connectors of test set to A, B, C connectors of test circuit.	
---	---	--

**Tests A Through G, J Through AK**

2	Insert plug of head telephone set into AB jacks.	
---	--	--

**3.04** Operate or restore miscellaneous keys and key digits or signals in accordance with Test Chart unless otherwise indicated.

**3.05** Operation of CT key on the test set prevents operation of the TM timer in the sender when testing senders or trunks.

**3.06** By operation of FT- keys, forced transverter trouble tickets verify sender registration of called and calling numbers and leads between sender and transverter. (Refer to Table A.)

**3.07** If senders are not arranged for ANI (APP Fig. 1 not provided), Tests B, E, and AB are not required and AI lead to transverter connector need not be verified.

**3.08** If trunk class translator is not provided in office (sender not equipped with OD, NCAM relays), Test C is not required and RN- and RC-leads to transverter connector and OD and NCAM leads to decoder connector need not be verified.

**3.09** Tests requiring a particular outpulsing class are to be omitted where such class is not used in service.

**3.10** If the sender is not equipped with VCT relay, Test AJ is not necessary.

**3.11** If the sender is not equipped with SG3 relay, Test AK is not necessary.

**3.12** *Caution: START key of test set should be normal before plug of patching cord is removed from SDR T- jack to prevent leaving associated senders off-normal.*

STEP	ACTION	VERIFICATION
------	--------	--------------

**Tests A Through G, J Through Q, U Through AH**

- 3 At trouble ticketer and test frame—  
Patch TST S1 jack to C SDR- jack of sender  
not under test.

**Tests A Through G, J Through P, U Through AD, AF  
Through AK**

- 4a If a particular decoder is to be used—  
Patch TST DR jack to DR T- jack.
- 5b If a particular trunk class translator is to be  
used—  
Patch TST TCL jack to CL (A,B) T jack.

**Tests A, B, E Through G, J Through P, V Through  
AD, AF Through AJ**

- 6c If a particular transverter is to be used—  
Patch TST TV jack to TVT- jack.

**Tests A, E, F, G, J Through P, V Through AA, AC,  
AD, AF Through AH, AK**

- 7 Patch TST P jack to POS T- jack of a vacated  
position (Refer to 1.10.)

**Tests A, E, F, G, J Through M, P, V Through AA,  
AC, AD, AF Through AH, AK**

- 8 At test set—  
Operate CI key.

**4. METHOD**

STEP	ACTION	VERIFICATION
------	--------	--------------

**A. Regular Call—Operator Identified**

- 9 At trouble ticketer and test frame—  
Patch TST S jack to SDR T- jack of sender  
under test.
- 10 Operate keys in accordance with Test Chart.
- 11 At test set—  
Operate CT key.
- 12d If outpulsing is CL0 and CL4—  
Operate SD key.
- 13 Operate START key.

BSY lamp lighted until sender is seized.

**SECTION 227-325-500**

STEP	ACTION	VERIFICATION
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted. If outpulsing is CL0 and CL4— Exit digit(s) displayed. If outpulsing is CL0 only— Arbitrary digit(s) displayed. ◆If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆
15e	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL0 only— Momentarily operate SD key.	Called number (except units) displayed.◆
16d	If outpulsing is CL0 and CL4— Restore SD key; start timing.	After 2 to 3 seconds, balance of arbitrary digits, called number (except units) displayed.
17f	If outpulsing is CL1 and CL4— Operate SD key.	
18f	Key first digit of calling number.	Exit digit(s) displayed.
19f	Restore SD key; start timing.	After 2 to 3 seconds, balance of arbitrary digits, called number (except units) displayed.
20g	If outpulsing is CL1 only— Key first digit of calling number.	◆Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆
21h	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL1 only— Momentarily operate SD key.	Called number (except units) displayed.◆
22	Momentarily operate DC key.	
23i	If outpulsing is CL2— Key first digit of calling number.	
24i	Momentarily operate DC key for each exit digit.	Exit digit(s) displayed. BSY lamp lighted until checking sender is seized.
25i	After BSY lamp is extinguished— Operate, restore SD key.	Next digit displayed.
26i	Momentarily operate DC key for each remaining digit.	Balance of arbitrary digits, called number (except units) displayed.
27	Key all or balance of calling number.	IE lamp lighted. ◆POS lamp extinguished.◆

STEP	ACTION	VERIFICATION
28	Momentarily operate DC key.	
	<b>Note:</b> If outpulsing is CL2, complete action of this step within 20 seconds after Step 26i.	Units digit displayed.
29i	If outpulsing is CL2— Momentarily operate DC key.	ST signal displayed.
30	Operate DC key for 1 second and restore.	RV lamp winks. Digit 1 displayed.
31	Restore START key.	IE, RV, numerical lamps extinguished.
32	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
33j	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>B. Regular Call—ANI</b>		
7	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
8	Operate keys in accordance with Test Chart.	
9	At test set— Operate CT key.	
10d	If outpulsing is CL0 and CL4— Operate SD key.	
11e	If outpulsing is CL1 and CL4— Operate SD key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. If outpulsing is CL0 and CL4— Exit digit(s) displayed. If outpulsing is CL0 only— Arbitrary digit(s) displayed. ◆If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆
14f	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL0 only— Momentarily operate SD key.	Called number (except units) displayed.◆
15d	If outpulsing is CL0 and CL4— Restore SD key; start timing.	After 2 to 3 seconds, balance of arbitrary digits and called number (except units) displayed.

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
16g	If outpulsing is CL0 only— Momentarily operate DC key.	
17h	If outpulsing is CL2— Momentarily operate DC key.	
18	Key KP signal, information digit, calling number.	
19i	If outpulsing is CL1 or CL1 and CL4— Restore CT key only when ready to complete Steps 20 and either 21j or 22e promptly.	
20	Key ST signal.	
	<b>Note:</b> If outpulsing is CL1 or CL1 and CL4, complete action of this step within 5 seconds of Step 19i.	IE lamp lighted. Transverter trouble ticket printed. If outpulsing is CL1 and CL4— Exit digit(s) displayed. If outpulsing is CL1 only— ◆Arbitrary digit(s), digit 1 displayed. RV lamp winks. If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆
21j	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL1 only— Momentarily operate SD key.	Called number (except units) displayed.◆
22e	If outpulsing is CL1 and CL4— Restore SD key; start timing. Complete action of this step immediately after display of exit digit(s) in Step 20.	After 2 to 3 seconds, balance of arbitrary digits, called number, digit 1 displayed. RV lamp winks.
23d	If outpulsing is CL0 and CL4— Momentarily operate DC key.	Units digit displayed.
24d	Operate DC key for 1 second and restore.	RV lamp winks. Digit 1 displayed.
25g	If outpulsing is CL0 only— Momentarily operate DC key.	Units digit displayed.
26g	Operate DC key for 1 second and restore.	RV lamp winks. Digit 1 displayed.
27h	If outpulsing is CL2— Momentarily operate DC key for each exit digit.	Exit digit(s) displayed. BSY lamp lighted until checking sender is seized.
28h	After BSY lamp is extinguished— Operate, restore SD key.	Next digit displayed.

STEP	ACTION	VERIFICATION
29h	Momentarily operate DC key for each remaining digit.	Balance of arbitrary digits, called number displayed.
30h	Momentarily operate DC key.	ST signal displayed.
31h	Operate DC key for 1 second and restore.	RV lamp winks. Digit 1 displayed.
32	Restore START key.	IE, RV, numerical lamps extinguished.
33	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
34k	If no further tests are to be made— Restore all keys; remove all patching cords.	

### C. Regular Call—Non-CAMA

6	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
7	Operate keys in accordance with Test Chart.	
8	At test set— Operate CT key.	
9d	If outputting is CL0 and CL4 or CL1 and CL4— Operate SD key.	
10	Operate START key.	BSY lamp lighted until sender is seized.
11e	If outputting is CL2— Momentarily operate DC key.	
12	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. If outputting is CL0 and CL4 or CL1 and CL4— Exit digit(s) displayed. If outputting is CL0 or CL1 only— ◆Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number, digit 1 displayed.◆ RV lamp winks. Decoder trouble ticket printed. Outputting class indicated.

STEP ACTION VERIFICATION

TICKET POSITION	OUTPULSING CLASS				
	DIGITS PRINTED				
	0	1	2	4	7
31	→ Not → CL4	CL0	CL1	CL2	CL3
34		CL4			

- 13f    If SP lead continuity check (SG3 relay) is provided and outpulsing is CL0 only—  
Momentarily operate SD key.                      Called number, digit 1 displayed.  
RV lamp winks.
- 14g    If SP lead continuity check (SG3 relay) is provided and outpulsing is CL1 only—  
Momentarily operate SD key.                      Called number, digit 1 displayed.  
RV lamp winks.⚡
- 15d    If outpulsing is CL0 and CL4 or CL1 and CL4—  
Restore SD key; start timing.                      After 2 to 3 seconds, balance of arbitrary digits, called number, digit 1 displayed.  
RV lamp winks.
- 16e    If outpulsing is CL2—  
Operate DC key for each exit digit.                      Exit digit(s) displayed.  
BSY lamp lighted until checking sender is seized.
- 17e    After BSY lamp is extinguished—  
Operate, restore SD key.                              Next digit displayed.
- 18e    Momentarily operate DC key for each remaining digit.                      Balance of arbitrary digits, called number displayed.
- 19e    Momentarily operate DC key.                              ST signal displayed.
- 20e    Operate DC key for 1 second and restore.                      RV lamp winks.  
Digit 1 displayed.
- 21      Restore START key.                                      RV, numerical lamps extinguished.
- 22      At trouble ticketer and test frame—  
Remove patching cord from SDR T- jack.
- 23h    If no further tests are to be made—  
Restore all keys; remove all patching cords.

**D. Intercept or Announcement Trunk Call**

- 6      At trouble ticketer and test frame—  
Patch TST S jack to SDR T- jack of sender under test.
- 7      Operate keys in accordance with Test Chart.

STEP	ACTION	VERIFICATION
8	At test set— Operate START key.	BSY lamp lighted until sender is seized.
9	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. Arbitrary digit(s), digit 1 displayed. RV lamp winks.
10	Restore START key.	RV, numerical lamps extinguished.
11	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
12d	If no further tests are to be made— Restore all keys; remove all patching cords.	

#### E. ANI Calls Identified by Operator

*Note:* Throughout Test E, test numbers referred to are in Test Chart.

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted.
15d	If performing Test 6— Restore CT key; start timing.	In 5 to 9 seconds, POS lamp lighted. Single long order tone heard.
16e	If performing one of Tests 9 through 12— At trunk finder frame(s)— Insert 258-type plugs into test and make-busy jack(s) of trunk finder(s) associated with sender under test.	
17f	If performing Test 13— At trunk finder(s)— Insert 258-type plug(s) into test and make-busy jack(s) of trunk finder(s) associated with sender under test.	

**SECTION 227-325-500**

STEP	ACTION	VERIFICATION
18e	If performing one of Tests 9 through 12— At sender— Block nonoperated OEXD relay.	
19e	Insulate 9B of S7 relay.	
	<i>Caution: When insulating springs, use care not to dislodge movable springs from grooves of comb.</i>	
20f	If performing Test 13— At sender— Block nonoperated S7 relay.	
21g	If performing tests other than Test 6— At test set— Key KP signal and digit(s) listed in calling number of Test Chart.	POS lamp lighted. If performing Test 1 or 3— Double order tone heard. If performing test other than 1, 3, or 6— Single long order tone heard.
22e	If performing one of Tests 9 through 12— At sender, after performing last of Tests 9 through 12— Remove blocking tool from OEXD relay.	
23e	After performing last of Tests 9 through 12— Remove insulating tool from 9B of S7 relay.	
24f	If performing Test 13— At sender— Remove blocking tool from S7 relay.	
25f	Key calling number.	IE lamp lighted. Transverter trouble ticket printed.
26	Restore START key.	RV, POS lamps extinguished. If performing Test 13— IE lamp extinguished.
27	Repeat Steps 11 through 26 as required for other numbered tests in Test Chart.	
28e	If performing one of Tests 9 through 12— At trunk finder frame(s)— Remove plug(s) from test and make-busy jack(s) of associated trunk finder(s).	
29f	If performing Test 13— At trunk finder frame(s)— Remove plug(s) from test and make-busy jack(s) of associated trunk finder(s).	

STEP	ACTION	VERIFICATION
30	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
31h	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>F. Alternate Route and All Paths Busy</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11d	If trunk class translator is provided— Operate NCAM key.	
12	At test set— Operate CT, BSY keys.	
13	Operate START key.	BSY lamp lighted until sender is seized.
14	Momentarily operate DC key.	
15	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. If operator identified— POS lamp lighted.
16	At trouble ticketer and test frame— Operate DRR key.	
17	At test set— Momentarily operate DC key for each exit digit.	Exit digit(s) of primary route displayed. Digit 2 printed in position 6 of decoder trouble ticket. Numerical lamp extinguished.
18	At trouble ticketer and test frame— Restore DRR key.	
19e	If operator identified— Key first digit of calling number.	
20	Momentarily operate DC key for each exit digit of alternate route.	Exit digit(s) displayed. If NCAM key is operated— RV lamp winks. BSY lamp flashes. Digit 1 displayed.
21e	If operator identified— Key balance of calling number.	RV lamp winks. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished.

## SECTION 227-325-500

STEP	ACTION	VERIFICATION
22	Restore START key.	BSY, RV, numerical lamps extinguished.
23	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
24f	If no further tests are to be made— Restore all keys; remove all patching cords.	

### G. Superfluous Area Code Call

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
15	Key calling number.	POS lamp extinguished. IE lamp lighted. Digit 3 printed in position 25 of transverter trouble ticket.
16	Restore START key.	RV, IE lamps extinguished.
17	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
18d	If no further tests are to be made— Restore all keys; remove all patching cords.	

### H. MF Receiver

2	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender associated with receiver under test.	
3	Operate keys in accordance with Test Chart.	
4	At test set— Operate CT key.	
5	Operate START key.	BSY lamp lighted until sender is seized.

STEP	ACTION	VERIFICATION
6	After BSY lamp is extinguished— Key KP signal and six digits in accordance with Test Chart.	Keyed digits printed in positions 13 through 18 of decoder trouble ticket.
7	Restore START key.	RV lamp winks.
8	Repeat Steps 3 through 7 for other numbered tests listed on Test Chart.	
9	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
10d	If no further tests are to be made— Restore all keys; remove all patching cords.	

#### J. Suspend Operator Identification

**Note:** Consult local traffic and plant supervisors before making this test.

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted. If outputting is CL0 only— Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆
14d	◆ If SP lead continuity check (SG3 relay) is provided and outputting is CL0 only— Momentarily operate SD key.	Called number (except units) displayed.◆
15	Key calling code.	If outputting is CL1— ◆Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number (except units) displayed.◆ If outputting is CL2— Exit digit(s) displayed. BSY lamp lighted until MF checking sender is received.

SECTION 227-325-500

STEP	ACTION	VERIFICATION
16e	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL1 only— Momentarily operate SD key.	Called number (except units) displayed.◆
17	Momentarily operate DC key.	
18f	If outpulsing is CL2— Operate, restore SD key.	Next digit displayed.
19f	Momentarily operate DC key for each remaining digit (except units).	Balance of arbitrary digits, called number (except units) displayed.
20f	Momentarily operate DC key for units digit.	Numerical lamp extinguished.
21	At switchboard position or at trouble ticketer and test frame— On all senders except one tested in Step 22— Operate, restore AS key.	At test set— POS lamp extinguished.
22	On only one of senders tested— Operate AS key for 3 seconds and restore.	At test set— POS lamp extinguished. <b>While AS key is operated at either location—</b> In operating room— Alarm sounds. AS lamp lighted. In switchroom— Alarm sounds. AS1 lamp lighted.
23	At test set— Momentarily operate DC key.	
	<b>Note:</b> If outpulsing is CL2, complete action of this step within 20 to 30 seconds of Step 20F.	Units digit displayed.
24f	If outpulsing is CL2— Momentarily operate DC key.	ST signal displayed.
25	Operate DC key for 1 second and restore.	RV lamp winks. Digit 1 displayed.
26	Restore START key.	RV, numerical lamps extinguished.
27	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
28g	If no further tests are to be made— Restore all keys; remove all patching cords.	

STEP	ACTION	VERIFICATION
<b>K. Operator Reorders</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
15	Key three digits matching called code and four additional digits.	POS lamp flashes.
16	Key RS signal.	POS lamp steadily lighted.
17	Key six digits of calling number.	
18	Restore CT key; start timing.	In 5 to 9 seconds, POS lamp flashes.
19	Key RS signal.	POS lamp steadily lighted.
20	Key SF signal.	POS lamp flashes.
21	Restore START key.	RV, POS lamps extinguished.
22	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
23d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>L. Drop Connection Forward on CL1 or CL2 Outpulsing</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate DRR key.	
11	Operate keys in accordance with Test Chart.	
12	At test set— Operate CT, SD keys.	
13	Operate START key.	BSY lamp lighted until sender is seized.

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted. Decoder trouble ticket printed. If outpulsing is CL1— Digit 2 printed in position 31. If outpulsing is CL2— Digit 4 printed in position 31.
15	Key first digit of calling number.	Exit digit(s) displayed. If outpulsing is CL2— BSY lamp lighted until checking sender is seized.
16	Key RS signal.	Numerical lamp extinguished.
17	Key three digits matching called code.	Exit digit(s) displayed.
18	Key any four digits.	POS lamp flashes. Numerical lamp extinguished.
19	Key RS signal.	POS lamp steadily lighted.
20	Key first digit of calling number.	Exit digit(s) displayed.
21	Key balance of calling number.	IE lamp lighted. POS lamp extinguished.
22	Restore START key.	IE, RV, numerical lamps extinguished.
23	Repeat Steps 13 through 22 once for Test Z in Test Chart.	
24	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
25d	If no further tests are to be made— Restore all keys; remove all patching cords.	

**M. Sender Busy and Pulse Generator 2/5 Network**

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized. After BSY lamp extinguished— At trunk finder frame(s)— 48 volts removed from commutator brush(es) of associated trunk finder(s) (D relay(s) operated).

STEP	ACTION	VERIFICATION
13	At test set— Key KP signal, called number with digits 1, 3 keyed simultaneously in hundreds of the numerical, and ST signal.	RV, POS lamps lighted. ◆If outpulsing is CL0— Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number (stopping at thousands) displayed. At sender— RR0, 1, 2 relays operated.◆
14d	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL0— At test set— Momentarily operate SD key.	Called number (stopping at thousands) displayed. At sender— RR0, 1, 2 relays operated.◆
15e	If outpulsing is CL1— ◆At test set—◆ Key first digit of calling number.	◆Arbitrary digit(s) displayed. If SP lead continuity check (SG3 relay) is not provided— Called number (stopping at thousands) displayed. At sender— RR0, 1, 2 relays operated.◆
16f	◆If SP lead continuity check (SG3 relay) is provided and outpulsing is CL1— At test set— Momentarily operate SD key.	Called number (stopping at thousands) displayed. At sender— RR0, 1, 2 relays operated.◆
17g	If outpulsing is CL2— ◆At test set—◆ Key first digit of calling number.	Exit digit(s) displayed. BSY lamp lighted until checking sender is seized.
18g	Momentarily operate DC key.	
19g	After BSY lamp is extinguished— Operate, restore SD key.	Next digit displayed.
20g	Momentarily operate DC key for each digit to hundreds of numerals.	Balance of arbitrary digits and called number (stopping at thousands) displayed. Numerical lamp extinguished. At sender— RR0, 1, 2 relays operated.
21	At test set— Restore START key.	RV, POS lamps extinguished. If outpulsing is CL0 or CL1— Numerical lamp extinguished.
22	Repeat Steps 12 through 21 once, as required, except in Step 13 key digits 6, 0 in hundreds simultaneously.	Same as Steps 12 through 21, except that in Steps ◆13 through 16f◆ and 20g, relays RR2, 4, 7 are operated. ◆Also, trunk finder condition in Step 12 need not be verified.◆
23	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
24h	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>N. Abandoned Call Before Transverter Connection</b>		
8	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
9	At test set— Operate START key.	BSY lamp lighted until sender is seized.
10	Momentarily operate DC key.	
11d	If call is abandoned before registration— After BSY lamp is extinguished— Key KP signal and any three digits.	
12d	Restore START key.	RV, digit 1 lamps momentarily lighted.
13e	If call is abandoned while position is connected— After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. CAMA operator connected.
14e	At CAMA switchboard position— Key first digit of calling number.	
15e	At test set— Restore START key.	
16e	At CAMA switchboard position— Key balance of calling number.	RV lamp extinguished.
17	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
18f	If no further tests are to be made— Restore all keys; remove all patching cords.	

**P. Abandoned Call While Transverter is Connected**

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	Operate HTAC key.	
12	At test set— Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	

STEP	ACTION	VERIFICATION
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
15	Key calling number.	POS lamp extinguished.
16	Restore START key.	
17	At trouble ticketer and test frame— Restore HTAC key.	At test set— IE lamp momentarily lighted. RV lamp extinguished.
	<i>Note:</i> Complete action of this step within 13 seconds of Step 15.	
18	Remove patching cord from SDR T- jack.	
19d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>Q. Pulse Generator Speed and Percent Break</b>		
4	At trunk finder frame(s)— Insert 258-type plug(s) into test and make-busy jack(s) of trunk finder(s) associated with sender under test.	
5	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
6	At test set— Operate START key.	BSY lamp lighted until sender is seized.
7	After BSY lamp is extinguished— Restore START key.	
8	At sender— Perform percent break and pulses-per-second tests, using Section 163-653-501 and circuit requirements table.	Requirements of table are met.
9	At trunk finder frame(s)— Remove plug(s) from test and make-busy jack(s) of associated trunk finder(s).	
10	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
11d	If no further tests are to be made— Remove all patching cords.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
<b>R. Reorder—Called Number—Premature ST Signal</b>		
3	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
4	At test set— Operate START key.	BSY lamp lighted until sender is seized.
5	After BSY lamp is extinguished— Start timing. Key KP, ST signals.	In 20 to 30 seconds, BSY lamp flashes. RV lamp lighted. Digit 1 displayed.
6	Restore START key.	BSY, RV, numerical lamps extinguished.
7	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
8d	If no further tests are to be made— Remove all patching cords.	
<b>S. Reorder—Called Number—Incomplete Registration</b>		
3	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
4	Operate keys in accordance with Test Chart.	
5	At test set— Operate START key.	BSY lamp lighted until sender is seized.
6	After BSY lamp is extinguished— Start timing. Key KP signal and first six digits of called number.	In 20 to 30 seconds, BSY lamp flashes. RV lamp lighted. Digit 1 displayed.
7	Restore START key.	BSY, RV, numerical lamps extinguished.
8	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
9d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>T. Reorder—Called Number—Digit Instead of ST Signal</b>		
3	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
4	Operate keys in accordance with Test Chart.	

STEP	ACTION	VERIFICATION
5	At test set— Operate CT key.	
6	Operate START key.	BSY lamp lighted until sender is seized.
7	After BSY lamp is extinguished— Key KP signal, called number, digit 7 instead of ST signal.	BSY lamp flashes. RV lamp lighted. Digit 1 displayed.
8	Restore START key.	BSY, RV, numerical lamps extinguished.
9	Repeat Steps 6, 7, and 8 three times, except that in Step 7, key digit 8, 9, or 0 instead of ST signal.	
10	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
11d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>U. Reorder—Decoder Trouble Release</b>		
6	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
7	Operate keys in accordance with Test Chart.	
8	Operate DTR key.	
9	At test set— Operate CT key.	
10	Operate START key.	BSY lamp lighted until sender is seized.
11	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	BSY lamp flashes. RV lamp lighted. Digit 1 displayed. Digit 3 printed in position 11 of decoder trouble ticket.
12	Restore START key.	BSY, RV, numerical lamps extinguished.
13	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
14d	If no further tests are to be made— Restore all keys; remove all patching cords.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
<b>V. Reorder—Time-Out After Second Operator Error—RLT Relay Operated</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate START key.	BSY lamp lighted until sender is seized.
12	Momentarily operate DC key.	
13	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	POS, RV lamps lighted.
14	Key SF signal.	POS lamp flashes.
15	Key RS signal.	POS lamp lighted.
16	Key digits 1, 8 simultaneously; start timing.	After 5 to 9 seconds, BSY lamp flashes. RV lamp winks. Digit 1 displayed. POS lamp extinguished. Digit 0 printed in position 12 of transverter trouble ticket.
17	Restore START key.	BSY, RV, numerical lamps extinguished.
18	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
19d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>W. Reorder—Extra Digit as Second Operator Error</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— At sender— Block nonoperated STT, TB2 relays.	

STEP	ACTION	VERIFICATION
15	At test set— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
16	Key SF signal.	POS lamp flashes.
17	Key RS signal.	POS lamp lighted.
18	Key calling number and an extra digit.	BSY lamp flashes. RV lamp winks. Digit 1 displayed. POS lamp extinguished.
19	Remove blocking tools from STT, TB2 relays.	
20	Restore START key.	RV, POS, numerical lamps extinguished.
21	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
22d	If no further tests are to be made— Restore all keys; remove all patching cords.	

**X. Reorder—Registration While Transverter is Connected**

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— At sender— Block nonoperated TB2, OEXD, STT relays.	
15	At test set— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
16	Key calling number.	
17	At sender— Block operated RA relay.	
18	Remove blocking tool from STT relay.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
19	Operate STT relay.	RV lamp winks. IE lamp lighted. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished.
20	Remove blocking tools from TB2, OEXD, RA relays.	
21	At test set— Restore START key.	IE, BSY, RV, numerical lamps extinguished.
22	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
23d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>Y. Reorder—Trouble Release by Transverter</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	Operate TTR key.	
12	At test set— Operate CT key.	
13	Operate START key.	BSY lamp lighted until sender is seized.
14	Momentarily operate DC key.	
15	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
16	Key calling number.	RV lamp winks. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished. Digit 5 printed in position 10 of transverter trouble ticket.
17	Restore START key.	BSY, RV, numerical lamps extinguished.
18	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
19d	If no further tests are to be made— Restore all keys; remove all patching cords.	

STEP	ACTION	VERIFICATION
<b>Z. Reorder—Position Disconnect</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
15	Key first digit of calling number.	
16	At test set— Momentarily operate PD key.	RV lamp winks. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished.
17	Restore START key.	BSY, RV, numerical lamps lighted.
18	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
19d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AA. Reorder—More Than Ten Pulses in One Dial-Outputped Digit</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— At sender— Block nonoperated SP relay.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
14	At test set— Key KP signal, called number, ST signal.	RV lamp lighted. If operator identified— POS lamp lighted. If not operator identified— RV lamp winks. BSY lamp flashes.
15d	If operator identified— Key calling number.	RV lamp winks. BSY lamp flashes. POS lamp extinguished.
16	At sender— Remove blocking tool from SP relay.	
17	At test set— Restore START key.	BSY, RV lamps extinguished.
18	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
19e	If no further tests are to be made— Restore all keys; remove all patching cords.	

**AB. Reorder—ANI Code Match**

7	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
8	Operate keys in accordance with Test Chart.	
9	At test set— Operate CT key.	
10	Operate START key.	BSY lamp lighted until sender is seized.
11	Momentarily operate DC key.	
12	After BSY lamp is extinguished— At sender— Block nonoperated TRT relay.	
13	Key KP signal, 7-digit called number, ST signal.	RV lamp lighted.
14	Key KP signal, information digit 3, calling number with code matching called code, ST signal.	RV lamp winks. BSY lamp flashes. Digit 1 displayed.
15	At sender— Remove blocking tool from TRT relay.	

STEP	ACTION	VERIFICATION
16	At test set— Restore START key.	BSY, RV, numerical lamps extinguished.
17	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
18d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AC. Reorder—MF Supply Transfer Alarm</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate SD, CT keys.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
15	Key calling number.	IE lamp lighted. POS lamp extinguished.
16	Momentarily operate DC key for each exit digit.	Exit digit(s) displayed. BSY lamp lighted until checking sender is seized.
17	After BSY lamp is extinguished— Restore SD key.	Next digit displayed.
18d	At MF supply frame— If sender under test is on even-numbered frame— Momentarily operate SWE key.	
	<b>Note:</b> Complete action of this step within 20 to 30 seconds after Step 17.	RV lamp winks. BSY lamp flashes. Digit 1 and previous digit displayed.
19e	If sender under test is on odd-numbered frame— Momentarily operate SWO key.	
	<b>Note:</b> Complete action of this step within 20 to 30 seconds after Step 17.	RV lamp winks. BSY lamp flashes. Digit 1 and previous digit displayed.

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
20	At test set— Momentarily operate DC key.	Previous digit extinguished.
21	Restore CT key.	
22	Restore START key.	BSY, RV, IE numerical lamps extinguished.
23	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
24f	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AD. Reorder—Intersender Time-Out</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate SD, CT keys.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
14	Key first digit of calling number.	Exit digit(s) displayed. If CL2 outpulsing— BSY lamp lighted until checking sender is seized.
15	Start timing; proceed to sender.	In 5 to 9 seconds, at sender— ATM relay operated.
16	At trunk finder frame— In trunk finder group associated with sender under test— Insulate lower 3, 4 contacts of OB relay.	
17	Momentarily open lower 3, 5 contacts of CI relay.	
18	At test set— Key balance of calling number.	RV lamp winks. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished.
19	Remove insulating tool from OB relay.	

STEP	ACTION	VERIFICATION
20	At test set— Restore START key.	BSY, RV, numerical lamps extinguished.
21	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
22d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AE. Reorder—Time-Out Waiting for Decoder</b>		
4	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
5	Operate keys in accordance with Test Chart.	
6	At test set— Operate CT key.	
7	Operate START key.	BSY lamp lighted until sender is seized.
8	After BSY lamp is extinguished— At sender— Block nonoperated DST relay.	
9	Key KP signal, called number, ST signal.	
10	At test set— Restore CT key; start timing.	In 20 to 30 seconds, BSY lamp flashes. Digit 1 displayed. RV lamp lighted.
11	At sender— Remove blocking tool from DST relay.	
12	At test set— Restore START key.	RV, BSY, numerical lamps extinguished.
13	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
14d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AF. Reorder—Time-Out Waiting for Position</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— At sender— Insulate 3M of PLST relay.	
	<i>Caution: When insulating springs, use care not to dislodge movable springs from grooves of comb.</i>	
14	At test set— Key KP signal, called number, ST signal.	RV lamp lighted. Audible ring heard.
15	Restore CT key; start timing.	In 20 to 30 seconds, RV lamp winks. BSY lamp flashes. Digit 1 displayed.
16	At sender— Remove insulating tool from PLST relay.	
17	At test set— Restore START key.	BSY, RV, numerical lamps extinguished.
18	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
19d	If no further tests are to be made— Restore all keys; remove all patching cords.	

**AG. Reorder—Time-Out Waiting for Transverter**

9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START key.	BSY lamp lighted until sender is seized.
13	Momentarily operate DC key.	
14	After BSY lamp is extinguished— At sender— Insulate 1M, 11M of STT relay.	
	<i>Caution: When insulating springs, use care not to dislodge movable springs from grooves of comb.</i>	

STEP	ACTION	VERIFICATION
15	At test set— Key KP signal, called number, ST signal.	RV, POS lamps lighted.
16	Key calling number.	
17	Restore CT key; start timing.	In 20 to 30 seconds, RV lamp winks. BSY lamp flashes. Digit 1 displayed. POS lamp extinguished.
18	Remove insulating tools from STT relay.	
19	Restore START key.	RV, BSY, numerical lamps extinguished.
20	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
21d	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AH. Reorder—Time-Out Waiting for Release and Regular Call—Non-CAMA—Stuck Sender</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate HN key.	
11d	If maximum number of stuck senders is already held— Release at least one.	
12	Operate keys in accordance with Test Chart.	
13	At test set— Operate CT key.	
14	Operate START key.	BSY lamp lighted until sender is seized.
15	Momentarily operate DC key.	
16	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV lamp lighted. If operator identified— POS lamp lighted.
17e	If ANI is simulated— Key SP signal, information digit 0.	
18f	◆If calling number is required—◆ Key first six digits of calling number.	

**SECTION 227-325-500**

STEP	ACTION	VERIFICATION
19f	Key last digit of calling number.	If operator identified— IE lamp lighted. POS lamp extinguished.
20g	If operator identified— Restore CT key; start timing.	In 20 to 30 seconds, RV lamp extinguished. BSY lamp flashes. At trouble ticketer and test frame— Associated SSL- lamp lighted.
21e	If ANI is simulated— Within 5 seconds after restoring CT key in Step 20g— Key ST signal; start timing.	IE lamp lighted. In 20 to 30 seconds, RV lamp extinguished. BSY lamp flashes. At trouble ticketer and test frame— Associated SSL- lamp lighted.
22h	If non-CAMA operation— Restore CT key; start timing.	In 20 to 30 seconds— RV lamp extinguished. BSY lamp flashes. At trouble ticketer and test frame— Associated SSL- lamp flashes at 60 ipm.
23	At trouble ticketer and test frame— Insert 322A plug into associated RLS- jack.	SSL- lamp extinguished. At test set— RV lamp lighted. Digit 1 displayed.
24	Remove plug from RLS- jack.	
25	At test set— Restore START key.	BSY, RV, IE, numerical lamps extinguished.
26	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
27i	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AJ. Vacant Code Trap</b>		
7	Using P3D cord, patch TST S jack to SDR T- jack of sender used for test.	
8	Operate keys in accordance with Test Chart.	
9	At test set— Operate CT key.	
10	Operate START key.	BSY lamp lighted until sender is seized.

STEP	ACTION	VERIFICATION
11d	If non-ANI call is simulated— When BSY lamp extinguishes— Key KP signal, called number as shown in Test Chart, and ST signal.	RV lamp lighted. If vacant code routing to reorder provided— BSY lamp flashes. If vacant code routing to intercept or announcement provided— Arbitrary digits displayed. At trouble ticketer and test frame— Transverter vacant (or irregular) code trap ticket printed as shown in Table B.
12e	If ANI call is simulated— When BSY lamp extinguishes— Key KP signal, called number as shown in Test Chart, and ST signal.	RV lamp lighted.
13e	When RV lamp lights— Key KP signal, information digit, calling number, and ST signal as shown in Test Chart.	If vacant code routing to reorder is provided— BSY lamp flashes. If vacant code routing to intercept or announcement is provided— Arbitrary digits displayed. At trouble ticketer and test frame— Transverter vacant (or irregular) code trap ticket is printed as shown in Table B.
14	Restore START key.	RV, numerical lamps extinguished.
15f	If other called vacant or irregular codes are to be tested— Repeat Steps 8 through 14.	
16g	If other senders are to be tested— Remove patching cord from SDR T- jack and repeat Steps 7 through 15f.	
17h	If no further tests are to be made— Restore all keys; remove all patching cords.	
<b>AK. Second Stop-Go Signal</b>		
9	At trouble ticketer and test frame— Patch TST S jack to SDR T- jack of sender under test.	
10	Operate keys in accordance with Test Chart.	
11	At test set— Operate CT key.	
12	Operate START, CI keys.	BSY lamp lighted until sender is seized.
13	After BSY lamp is extinguished— Key KP signal, called number, ST signal.	RV, POS lamps lighted. If outpulsing is CLO— Arbitrary digit(s) displayed.

**SECTION 227-325-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
14d	If outpulsing is CL1— Key first digit of calling number.	Arbitrary digit(s) displayed.
15	Momentarily operate DC key several times.	
16	Momentarily operate SD key.	
17	Momentarily operate DC key.	First digit of called number displayed.
18	Momentarily operate SD key.	At sender— SG2 relay operated.
19	At test set— Momentarily operate DC key for each digit (except units) remaining of the called number.	Balance of called number (except units) displayed.
20	Momentarily operate DC key.	
21	Key all or balance of calling number.	IE lamp lighted. POS lamp extinguished.
22	Momentarily operate DC key.	Units digit displayed.
23	Momentarily operate DC key.	Digit 1 displayed. RV lamp winks.
24	Restore START key.	IE, RV, numerical lamps extinguished.
25e	If no further tests are to be made— Restore CI, CT keys.	
26	At trouble ticketer and test frame— Remove patching cord from SDR T- jack.	
27	Restore all keys; remove all patching cords.	





**TABLE B — VACANT AND IRREGULAR CODE TRAP TICKET**

	VCT TST	CALLED NUMBER										CALLING NUMBER							
		AREA CODE			OFFICE CODE				TH	H	T	U	OFFICE CODE			TH	H	T	U
		13	14	15	16	17	18	19	20	21	22	30	31	32	33	34	35	36	
TRANSVERTER TROUBLE TICKET POSITION	4																		
TEST AJ (10-Digit Call)	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	0	X	X	X	X	X	X	X	X	X	X								
TEST AJ (7-Digit Call)	0				X	X	X	X	X	X	X	X	X	X	X	X	X		
	0				X	X	X	X	X	X	X								

**Notes:**

1. X represents any digit keyed in test.
2. Calling number: Printed out on ANI calls.  
Not printed out on OI or non-CAMA calls.



**5. PREPARATION OF TEST CHART**

**5.01** The Test Chart in this section is intended for use as a particular number chart. It shows keys to be operated on the trouble ticketer, test frame, and test set. Blank spaces are provided to be filled with numbers for each test.

**5.02** Record R- and RC- keys and called and calling codes obtained from local records so that a series of calls on one sender will test:

- (a) All coils in all arbitrary, called, and calling number register relays used in service.
- (b) All deletes used in service.
- (c) All coils in RN- and RC- relays used in service.
- (e) All types of identification used in service.

**5.03** Record AR- keys as required by called codes.

**5.04** Record FT1 through FT4 keys so that a series of calls on one sender will check leads and numbers (Table A) to transverter.

**5.05** Record transverter OI relay tens and units digits of calling code in rate class tests only.

**5.06** Test 1 of Test B: Record code (and numerical 9000) which requires greatest CL1 outpulsing time. (Include CL4 if routing permits.)

**5.07** Test G: Record called area code corresponding to originating area.

**5.08** Tests 3 and 4 of code (and numerical 9000) which requires greatest CL1 outpulsing time. (Include CL4 if routing permits.)

**5.07** Test G: Record called area code corresponding to originating area.

**5.08** Tests 3 and 4 of Test H: Test of modulation products requires use of digits 0, 1, 2, 3, 5, 6, and 9.

**5.09** Test J: Record code requiring CL0 or CL1 outpulsing in preference to CL2 because of checking sender time-out possibility.

**5.10** Test AB: Record same code (one which is working in decoder and transverter) for called and calling numbers.

**5.11** Test E: Only one called number is required for all tests.

**5.12** Test AJ: Record a vacant code and where announcement trunk treatment is provided, list arbitrary digits.

**5.13** Test AK: Arbitrary digits may be any working CL0 or CL1 code.

**5.14** Test AH: Record information for Test 2 only if option J (where associated SSL lamp flashes if sender sticks and holds on non-CAMA call) is provided.



TEST CHART (Cont)

BSP TEST	TEST NO.	TOTAL CALLED DIGITS	TROUBLE TICKETER AND TEST FRAME					CALLED NUMBER			DECODER INFORMATION								CALLING NUMBER			OFFICE INDEX TRANSVERTER OF RELAY					
			TRUNK CLASS KEYS				MISC KEYS FT-	AREA	OPC	NUMERICAL	CL-	ARBITRARY DIGITS								INFORMATION DIGIT	OFFICE	NUMERICAL	TENS	UNITS			
			AR-	R-	RC-	TSC-						ARA	SAC	DEL	AR-	BR-	CR-	DR-	ER-								
H	1 2 3 4	6 6 6 6	OP ID or none ↓	— — — —	— — — —	DRR, ML DRR, TW DRR, MP DRR, MP		1 0 1 7 3 7 0 2 3 1 4 5	0 1 0 2 7 7 4 0 6 6 9 0																		
F, AA		7	NCAM or none	— — — —			Trunk test code	— — — —		PRI CL0 ALT CL0	√	3 0	— —														
G, T		10	OP ID or none	— — — —	FT1		— — — —	— — — —			√																
J, K, P, S, U thru Z, AE thru AG		—	OP ID or none	— — — —			— — — —	— — — —																			
AH		1 2 3	OP ID NCAM AD				— — — — — — — — — — — —	— — — — — — — — — — — —																			
L or AD	1 2	— —	OP ID or none OP ID or none	— — — — — — — —			— — — — — — — —	— — — — — — — —		CL1 CL2																	
M		—	OP ID or none	— — — —			— — — —	— — — —																			
N		—	OP ID or none	— — — —			— — — —	— — — —																			
AB		7	AD	— — — —			— — — —	— — — —													3						
AC		—	OP ID or none	— — — —			— — — —	— — — —		CL2																	
AJ	1 2 3 4 5	10 7 10 7 10	AD AD OD OD NCAM	— — — — — — — — — — — — — — — — — — — —	VCTB VCTB VCTB VCTB	V V V	— — — — V V V 0 0 — V V V 1 0 —	— — — — — — — — — — — — — — — — — — — —													0 3						
AK		—	OP ID or none	— — — —			— — — —	— — — —																			

Note: (VVV) represents any called vacant code.