

LAMA TRANSVERTER SD-25591-01

MISCELLANEOUS TESTS

NO. 5 CROSSBAR OFFICES

1. GENERAL

PAGE

1.01 This section describes a method of testing transverter SD-25591-01 in No. 5 crossbar offices equipped with the master test frame (MTF). The tests also apply when the transverter is arranged for ANI or AIOD service.

seizure to translator release when RL relay is operated (TM1 tube timing). (3) Translator seizure to AMA recorder seizure (TM2 tube timing). (4) Transverter release timing (TM2 tube timing). (5) Trouble entry timing (TM2 tube timing). (6) Trouble recorder timing (TRT tube timing).

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1.02 This section is reissued for the following reasons:

- (1) To revise Table A and Table B to specify the test connection for each item for use in Test A
- (2) To revise Test E to provide means for checking the condenser timed timeout feature while simulating seizure of the associated AMA translator and recorder
- (3) To make minor changes as required.

C. Long Timeout Feature and Fuse Alarm: This test checks that the long timeout feature (TAL tube timing) is operative and that it is activated under the following conditions: (1) A blown fuse. (2) Operation of a cross-detecting relay. (3) Seizure of transverters. (4) Trouble recorder seizure by transverter.

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This reissue affects Equipment Test Lists.

1.03 The tests covered are:

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A. Trouble Detecting Features for Ground, Battery, and Crosses and Trouble Recording Feature: The following features are checked: (1) Detection of false battery or ground on certain leads when transverter is normal. (2) Miscellaneous trouble recorder punch indications. (3) Trouble cross-detecting features.

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B. Short Timeout Features: This test checks the short timeout features controlling the following intervals: (1) Transverter seizure to translator seizure (TM1 tube timing). (2) AMA recorder

D. ANI Timeout Feature: This test checks that the TAL relay is operative and that it is activated under the following conditions: (1) ANI feature is provided. (2) Transverter is seized. (3) Trouble recorder is seized during the short timeout interval.

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E. Condenser Timed Timeout Feature: This test checks that the condenser timed timeout feature is operative and that it is activated by translator seizure and by perforation of any line of an AMA tape entry. The condenser timing interval is not tested in this test and should be tested using the timing requirements for the CT relay.

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F. All-Transverters-Busy Alarm: This test checks the all-transverters-busy alarm feature.

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NOTICE

Not for use or disclosure outside the Bell System except under written agreement

1.04 Tests of trouble detecting features, other than those covered in Test A, and transverter tests involving the use of master test control circuit are covered in Section 218-172-501.

1.05 Tests A through E require actions and verifications at the MTF and transverter frame. Test F requires actions and verifications at the associated switchboard if the all-transverters-busy alarm is arranged to bring in an alarm at an associated switchboard.

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

1.07 Local instructions should be followed for recording and reporting any register operations caused by performing these tests.

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

2. APPARATUS

All Tests

2.01 322A (make-busy) plugs as required.

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

Tests A, C Through F

2.03 67C test set or equivalent, equipped with one KS-6278 connecting clip, one 651-type tool, and one 639A tool (for use in connecting battery or ground and testing for presence of ground).

Tests A Through E

2.04 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), two 419A (test connector) tools, and one KS-6278 connecting clip (for connecting to relay springs of nonwire-spring-type relays and interconnecting terminals).

Tests B Through F

2.05 KS-3008 stopwatch or equivalent.

3. METHOD

STEP	ACTION	VERIFICATION
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A. Trouble Detecting Features for Ground, Battery, and Crosses and Trouble Recording Feature

1	At MTF— Operate CTOS key.	
2	At jack, lamp, and key circuit— Insert make-busy plug into TVMB_ jack associated with transverter under test.	
3	At transverter frame— Momentarily connect ground to terminal 16 on T terminal strip.	At MTF— Trouble record taken. XVF designation perforated. Minor alarm sounds.
4	Momentarily operate TRR-AR key.	Minor alarm silenced.
5	At transverter frame— Momentarily connect ground to terminal 11	At MTF— Trouble record taken.

STEP	ACTION	VERIFICATION
	on T terminal strip.	XET designation perforated. Minor alarm sounds.
6	Momentarily operate TRR-AR key.	Minor alarm silenced.
7	At transverter frame— Momentarily connect battery to terminal 17 on T terminal strip.	At MTF— Trouble record taken. XVG designation perforated. Minor alarm sounds.
8	Momentarily operate TRR-AR key.	Minor alarm silenced.
9	At transverter frame— Momentarily connect direct ground to terminal 115 on TVC terminal strip.	At MTF— Trouble record taken. XOF, X designations perforated. Minor alarm sounds.
10	Momentarily operate TRR-AR key.	Minor alarm silenced.
11	At transverter frame— Momentarily connect direct ground to 2T of RS10 relay.	At MTF— Trouble record taken. XRST, XRB, X designations perforated. Minor alarm sounds.
12	Momentarily operate TRR-AR key.	Minor alarm silenced.
13	At transverter frame— Block operated TOK relay.	At MTF— Trouble record taken. TOK, XIC, X designations perforated. Minor alarm sounds.
14	At transverter frame— Remove blocking tool from TOK relay.	
15	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
16	At transverter frame— Block operated ICK relay.	At MTF— Trouble record taken. IC, XICK, X designations perforated. Minor alarm sounds.
17	At transverter frame— Remove blocking tool from ICK relay.	
18	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
19	At transverter frame— Block operated TBY relay.	At MTF— Trouble record taken. TBY, XRL, X designations perforated. Minor alarm sounds.

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STEP	ACTION	VERIFICATION
20	At transverter frame— Remove blocking tool from TBY relay.	
21	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
22	At transverter frame— Block operated RTR relay.	At MTF— Trouble record taken. TR, XRB, X designations perforated. Minor alarm sounds.
23	At transverter frame— Remove blocking tool from RTR relay.	
24	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
25	At transverter frame— Block operated RK relay.	At MTF— Trouble record taken. XIC, X designations perforated. Minor alarm sounds.
26	At transverter frame— Remove blocking tool from RK relay.	
27	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
28	At transverter frame— Block operated RL relay.	At MTF— Trouble record taken. RL, RLR, X, XRL, TR designations perforated. Minor alarm sounds.
29	At transverter frame— Remove blocking tool from RL relay.	
30	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
31	At transverter frame— Block operated TM1 relay.	At MTF— Trouble record taken. TM1 designation perforated. Minor alarm sounds.
32	At transverter frame— Remove blocking tool from TM1 relay.	
33	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
34	At transverter frame— Block nonoperated XP1 relay.	

STEP	ACTION	VERIFICATION
35	Block operated CK5, TM2 relays.	At MTF— Trouble record taken. TM2, CK7 designations perforated. Minor alarm sounds.
36	At transverter frame— Remove blocking tools from TM2, CK5, XP1 relays.	
37	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
38	At transverter frame— Block operated EXT, CBG, IR relays.	
39	Interconnect 9B, 10B of TRBA relay.	
40	Connect ground to 4T of SC relay.	
41	Block operated X2P relay.	At MTF— Trouble record taken. EXT, BY, SC, IRY, RD, X2P designations perforated. Minor alarm sounds.
42	At transverter frame— Remove blocking tools from X2P, EXT, CBG, IR relays.	
43	Remove test connection from SC relay.	
44	Remove test connection from TRBA relay.	
45	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
46a	If directory number register relays (OFF_, HN_, etc) are nonwire-spring type— At transverter frame— Connect ground to terminal 15 on OFF-K2 terminal strip.	
47b	If directory number register relays (OFF_, HN_, etc) are wire-spring type— At transverter frame— Connect ground to terminal 58 on MI terminal strip.	
48	Momentarily operate TR1 relay.	TR1 relay locked operated after trouble record is taken. EX designation perforated. Minor alarm sounds.

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STEP	ACTION	VERIFICATION
49	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
50a	If directory number register relays (OFF_, HN_, etc) are nonwire-spring type— At transverter frame— Remove test connection from OFF-K2 terminal strip.	
51b	If directory number register relays (OFF_, HN_, etc) are wire-spring type— Remove test connection from MI terminal strip.	
52a	If directory number register relays (OFF_, HN_, etc) are nonwire-spring type— Connect battery to terminal 12 on OFF-K2 terminal strip.	
53b	If directory number register relays (OFF_, HN_, etc) are wire-spring type— Connect battery to terminal 18 on MI terminal strip.	
54	Momentarily operate TR1 relay.	TR1 relay locked operated until after trouble record is taken. EX designation perforated. Minor alarm sounds.
55	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
56	Restore CTOS key.	
57a	If directory number register relays (OFF_, HN_, etc) are nonwire-spring type— At transverter frame— Remove test connection from OFF-K2 terminal strip.	
58b	If directory number register relays (OFF_, HN_, etc) are wire-spring type— Remove test connection from MI terminal strip.	
59	Block nonoperated TR1, CK5 relays.	
60	Block relays operated and make test connection for first item in Table A.	AL relay operated.
	Note: Use 67C test set to connect ground unless direct ground is specified.	

STEP	ACTION	VERIFICATION
61	Remove test connection applied in Step 60.	AL relay released.
62	Remove blocking tools from relays blocked operated in Step 60.	
63	Repeat Steps 60 through 62 for each item in Table A and Table B.	
64	Remove blocking tools from TR1, CK5 relays.	
65	At MTF— Remove make-busy plug from TVMB_ jack associated with transverter under test.	
B. Short Timeout Features		
1	At MTF— Insert make-busy plugs into TVMB_ and TRMB-TV_ jacks associated with transverter under test.	
TM1 Tube Timing		
2	At transverter frame— Block nonoperated TAL, TR1A, TRT1, RCCK relays.	
3	Insulate 1, 2B. of TBC3 relay.	
4a	If ANI features are provided— At transverter frame— Block operated SPL relay.	
5a	Block nonoperated CH2 relay; <i>start timing.</i>	At MTF— TV_ lamp associated with transverter lighted. At transverter frame— TST, TBC2, TMS1 relays operated. In 1 to 2 seconds— TM1, TRT relays operated. Minor alarm sounds.
6a	Remove blocking tools from SPL, CH2 relays.	TMS1, TM1, TBC2, TRT, TST relays released. At MTF— TV_ lamp extinguished.
7a	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
8	Block nonoperated CH2 relay; <i>start timing.</i>	At MTF— TV_ lamp associated with transverter lighted. At transverter frame— TST, TBC2, TMS1 relays operated.

→ TABLE A ←

CONNECT GROUND TO	BLOCK RELAYS OPERATED	
6B RN1	RN2	
6B RN1	RN4	
6B RN1	RN7	
6B MB1	MB2* (VE, VF)	
6B MB1	MB4	
6B MB1	MB7	
	OPTION TX	OPTION UZ
6B CP1* (Q)	CP2	CP0
6B CP1* (Q)	CP4	CP4
6B CP1* (Q)	CP7	CP7
4T ST1* (6)	ST2	
4T ST1* (6)	ST4	
4T ST1* (6)	ST7	
4T UD1* (5)	UD2	
4T UD1* (5)	UD4	
4T UD1* (5)	UD7	
6B VG1	VG2	
6B VG1	VG4	
6B VG1	VG7	
6B VG1	VG10	
6B FC1* (16)	FC2	
6B FC1* (16)	FC4	
6B FC1* (16)	FC7	
	OPTION TC	OPTION UE
8B FB1* (TC, UE)	FB4	FB2
8B FB1* (TC, UE)	FB7	FB4
8B FB1* (TC, UE)		FB7
OPTION UJ	OPTION UI	
3T FA1'	2B FA1'	FA2'
3T FA1'	2B FA1'	FA4
3T FA1'	2B FA1'	FA7
8M CD0* (WT)	CD1, CD2	
8M CD0* (WT)	CD2, CD4	
8M CD0* (WT)	CD4, CD7	

→ TABLE A (CONT) ←

CONNECT GROUND TO	BLOCK RELAYS OPERATED
4T FACK* (16)	FA3D, P4* (YD)
	ODD, EVN, ODD1,* (XR) EVN1* (XR)
	TVT, SC* (SF)
	1TR, 2TR* (VE, VF)
	NOB, OBS* (VE)
	RP, TP
	2L, 4L, SC
	SC, TTK1* (YW)
	SC, SDT2, 2TR* (YW)
	SC, TVT1* (YW)
	SC, TVT2* (YW)
	OPTION UX
	2L, MB9
	4WL, 4WTB* (23)
	NSP, SPC, 1TR* (36, VF)
	TDMD, 2LOC* (40)
	4IOD, 4WTB (UD)
	P1K, P2K
	P1K, P3K
	P2K, P3K
	P4K, P3K
	PFAK, P3K* (YD)
	PFAK, P2K* (YD)
	FAF, FAC0* (18)
	FAF, FAC1* (18)
	FAF, FAC2* (18)
	FAF, FAC3* (18)
	FAF, FAC4* (18)
	FAF, FAC5* (18)
	FAF, FAC5* (18)
	FAF, FAC6* (18)
	FAF, FAC7* (18)

STEP

ACTION

VERIFICATION

→ TABLE A (CONT) ←

CONNECT GROUND TO	BLOCK RELAYS OPERATED
	FAF, FAC8* (18)
	FAC0, FAC1* (18)
	FAC1 FAC2* (18)
	FAC2 FAC3* (18)
	FAC3 FAC4* (18)
	FAC4 FAC5* (18)
	FAC6 FAC7* (18)
	FAC7 FAC8* (18)
TR TERMINAL (ZS)	
12F 11DG* (UZ)	11DG, 10DG
12F 11DG* (UZ)	10DG, 9DG
12F 11DG* (UZ)	9DG, 8DG
12F 11DG* (UZ)	8DG, 7DG
9B RN1, 1T RN7†	RNT0* (22)
9B RN1, 1T RN7†	RNT1* (22)
9B RN1, 1T RN7†	RNT2* (SN)
2T IOD* (27)	AOS* (27, XZ)
2T IOD* (27)	NID* (27, XZ)

* When designated relay or contact wiring is optional, the option or apparatus figure is given in parentheses behind the relay listing.

† Block nonoperated RST0, RST1, and RST2 relays and use direct ground.

In 2 to 4 seconds—
TM1, TRT relays operated.
Minor alarm sounds.

- | | | |
|----|---------------------------------|----------------------------------|
| 9 | Momentarily operate TMS2 relay. | TMS1 relay released momentarily. |
| 10 | Momentarily operate RL relay. | TMS1 relay released momentarily. |
| 11 | Momentarily operate TK relay. | TMS1 relay released momentarily. |

→ TABLE B ←

CONNECT GROUND TO		BLOCK RELAYS OPERATED
WS	NWS	
10M U0	4T U0	U1
10M U0	4T U0	U2
10M U0	4T U0	U3
10M U0	4T U0	U4
10M U0	4T U0	U5
10M U0	4T U0	U6
10M U0	4T U0	U7
10M U0	4T U0	U8
10M U0	4T U0	U9
10M T0	3T T0	T1
10M T0	3T T0	T2
10M T0	3T T0	T3
10M T0	3T T0	T4
10M T0	3T T0	T5
10M T0	3T T0	T6
10M T0	3T T0	T7
10M T0	3T T0	T8
10M T0	3T T0	T9
10M HNO	4T HNO	HN1
10M HNO	4T HNO	HN2
10M HNO	4T HNO	HN3
10M HNO	4T HNO	HN4
10M HNO	4T HNO	HN5
10M HNO	4T HNO	HN6
10M HNO	4T HNO	HN7
10M HNO	4T HNO	HN8
10M HNO	4T HNO	HN9
10M TH0	3T TH0	TH1
10M TH0	3T TH0	TH2
10M TH0	3T TH0	TH3
10M TH0	3T TH0	TH4
10M TH0	3T TH0	TH5
10M TH0	3T TH0	TH6
10M TH0	3T TH0	TH7
10M TH0	3T TH0	TH8
10M TH0	3T TH0	TH9

STEP ACTION VERIFICATION

→ TABLE B (CONT) ←

CONNECT GROUND TO		BLOCK RELAYS OPERATED
WS	NWS	
10M OFF0	4T OFF0	OFF1
10M OFF0	4T OFF0	OFF2
10M OFF0	4T OFF0	OFF3
10M OFF0	4T OFF0	OFF4
10M OFF0	4T OFF0	OFF5
10M OFF0	4T OFF0	OFF6
10M OFF0	4T OFF0	OFF7
10M OFF0	4T OFF0	OFF8
10M OFF0	4T OFF0	OFF9
10M OFT0* (28)	—	OFT1* (28)
10M OFT0* (28)	—	OFT1* (28)

* When designated relay is optional, the apparatus figure is given in parentheses behind the relay listing.

- 12 Momentarily operate EXT relay. TMS1 relay released momentarily.
- 13 Momentarily operate TEC relay. TRT relay released momentarily.
- 14 Remove blocking tool from CH2 relay. TMS1, TM1, TBC2, TRT, TST relays released.
At MTF—
TV lamp extinguished.
- 15 At MTF—
Momentarily operate TRR-AR key. Minor alarm silenced.

TM2 DOESN'T OPERATE TV 1

TM2 Tube Timing

- 16 At transverter frame—
Block operated TK, RL relays.
- 17 Block nonoperated CH1 relay; *start timing*.
At transverter frame—
TMS2, TBC2 relays operated.
In 1 to 2 seconds—
TM2, TRT relays operated.
Minor alarm sounds.
If office is not equipped with traffic usage recorder—
At MTF—

STEP	ACTION	VERIFICATION
		TV_ lamp associated with transverter under test lighted.
18	Momentarily operate TMS1 relay.	TMS2 relay released momentarily.
19	Insulate 9T of RL relay.	
20	Momentarily operate RKA relay.	TMS2 relay released momentarily.
21	Remove insulator from RL relay.	
22	Remove blocking tool from CH1 relay.	TMS2, TM2, TBC2, TRT relays released. At MTF— TV_ lamp extinguished.
23	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
24	At transverter frame— Remove blocking tool from RL relay.	RL relay released.
25	Block operated EXT relay.	
26	Block nonoperated CH1 relay.	TMS2 relay not operated.
27	Remove blocking tool from EXT relay; <i>start timing.</i>	TMS2 relay operated. EXT relay released. In 3 to 6 seconds— TM2 relay operated. Minor alarm sounds.
28	Remove blocking tool from CH1 relay.	TM2 relay released.
29	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
30	At transverter frame— Block operated TEP relay.	
31	Block nonoperated CH1 relay; <i>start timing.</i>	TMS2 relay operated. In 1 to 2 seconds— TM2 relay operated. Minor alarm sounds.
32	Remove blocking tool from CH1 relay.	TM2 relay released.
33	At MTF— Momentarily operate TRR-AR key.	Minor alarm silenced.
34	At transverter frame— Remove blocking tools from TR1A, TK, TEP, TRT1 relays.	TR1A, TK, TEP, TRT1 relays released.

STEP	ACTION	VERIFICATION
35	Remove insulator from TBC3 relay.	
TRT Tube Timing—AMA Translator Line Verification (ATLV) Test Circuit Not Provided		
36	Block operated TR relay.	At MTF— DL lamp lighted. Minor alarm sounds.
37	At transverter frame— Connect ground to 6T of winding terminal of TRT relay; <i>start timing</i> .	TRT relay operated. In 2 to 4 seconds— TRT1 relay operated. Major alarm sounds. TA, TRT lamps lighted.
38	Remove test connection from TRT relay.	TRT, TRT1 relays released. TRT lamp extinguished.
39	Remove blocking tools from TAL, TR, RCKK relays.	
40	Momentarily operate AR key.	TA lamp extinguished. Major alarm silenced.
41	At MTF— Momentarily operate TRR-AR key.	DL lamp extinguished. Minor alarm silenced.
42	Remove make-busy plugs from TVMB_, TRMB-TV_ jacks.	
TRT Tube Timing—AMA Translator Line Verification (ATLV) Test Circuit Provided		
43	◆At transverter frame— Block nonoperated RCKK relay.◆	
44	Block operated TR, ◆CH1, CH2 relays.◆	At MTF— DL lamp lighted. Minor alarm sounds.
45	At transverter frame— Block nonoperated TAL relay.	
46	Block nonoperated TMS1 relay.	
47	At ATLV test circuit frame— Block operated TTS relay.	
48	At transverter frame— Connect ground to 6T winding terminal of TRT relay; <i>start timing</i> .	◆TRT relay operated.◆ In 8 to 10 seconds— TRT1 relay operated.

STEP	ACTION	VERIFICATION
		Major alarm sounds. TA, TRT lamps lighted.
49	Remove test connection from TRT relay.	♦TRT, TRT1 relays released. TRT lamp extinguished.♦
50	Remove blocking tools from TR, TAL relays.	
51	At ATLV test circuit frame— Remove blocking tool from TTS relay.	
52	At transverter frame— Momentarily operate AR key.	TA lamp extinguished. Major alarm silenced. Minor alarm sounds.
53	Remove blocking tool from TMS1, ♦RCCK, CH1, CH2 relays.♦	
54	At MTF— Momentarily operate TRR-AR key.	DL lamp extinguished. Minor alarm silenced.
55	Remove make-busy plugs from TVMB_, TRMB-TV_ jacks.	
C. Long Timeout Feature and Fuse Alarm		
1	At MTF— Insert make-busy plugs into TVMB_, TRMB-TV_ jacks associated with transverter under test.	
2	At transverter frame— Momentarily connect direct battery to B winding terminal of FA relay; <i>start timing.</i> 36+	FA1 relay locked operated. In 13 to 25 seconds— Major alarm sounds. FG, TA lamps lighted. At MTF— TVFG_ lamp lighted.
3	At transverter frame— Momentarily operate AR key.	Major alarm silenced. FG, TA lamps extinguished. At MTF— TVFG_ lamp extinguished.
4	At transverter frame— 36+ Block nonoperated FA1 relay.	
5	Momentarily operate FA relay.	TAL relay operated momentarily.
6	Remove blocking tool from FA1 relay. 33+	
7	Momentarily operate TR1 relay. 33+	TAL relay operated momentarily.
8	Momentarily operate TR relay.	TAL relay operated momentarily.

STEP	ACTION	VERIFICATION
9	Momentarily operate XL relay. ⁻³⁷⁺	TAL relay operated momentarily.
10	Momentarily connect ground to 3T of RB relay. ³⁶⁺	TAL relay operated momentarily.
11	Momentarily operate TVT relay. ³²⁺	TAL relay operated momentarily.
12	At MTF— Remove make-busy plugs from TVMB_, TRMB-TV_ jacks.	

D. ANI Timeout Feature

1	At MTF— Insert make-busy plugs into TVMB_, TRMB-TV_ jacks associated with transverter under test.	
2	At transverter frame— Block operated SPL relay.	
3	Momentarily connect direct battery to B winding terminal of FA relay; <i>start timing</i> . ³⁵⁺	FA1 relay locked operated. In 6 to 12 seconds— Major alarm sounds. FG, TA lamps lighted. At MTF— TVFG_ lamp lighted.
4	At transverter frame— Momentarily operate AR key.	Major alarm silenced. FG, TA lamps extinguished. At MTF— TVFG_ lamp extinguished.
5	At transverter frame— Remove blocking tool from SPL relay.	
6	At MTF— Remove make-busy plugs from TVMB_, TRMB-TV_ jacks.	

E. Condenser Timed Timeout Feature

1	At MTF— Insert make-busy plugs into TVMB_, TRMB-TV_ jacks associated with transverter under test.	
2	At transverter under test ^{41L} Block nonoperated TMS1, TBC1, DCB relays. ^{32R}	
3	Block operated CH2, CK6 relays. ³¹ ³⁰	
	Note: CH2 relay normally operated.	
4	Block operated CK5 relay. ³⁰	CK7 relay operated.

AT MTF
Tb1 Rec.

TU-0 } 12.02.
TU-1 }

STEP

ACTION

VERIFICATION

5a If transverter under test is arranged for ANI operation—
Block operated SPL relay; *start timing.*

TR1 relay operated.
In 1 second—
Minor alarm sounds.
In 6 to 12 seconds after minor alarm sounds—
Major alarm sounds.

TU-0
OK

6a Remove blocking tool from SPL relay.

SPL, CK7, TR1 relays released.

7a Remove blocking tool from CK5 relay.

Major alarm silenced.
Minor alarm sounds.

8a Momentarily operate AR key.

Minor alarm silenced.

9a At MTF—
Momentarily operate TRR-AR key.

10a At transverter under test—
Block operated CK5 relay.

CK7 relay operated.

Minor Alarm from Attempt To call in MTF For Td Card

11 Block operated CK4 relay.

TR1 relay operated.
In 1 second—
Minor alarm sounds.
In 13 to 25 seconds after minor alarm sounds—
Major alarm sounds.

12 Remove blocking tool from CK5 relay.

CK7, TR1 relays released.

13 Momentarily operate AR key.

Major alarm silenced.
Minor alarm sounds.

14 At MTF—
Momentarily operate TRR-AR key.

Minor alarm silenced.

15 At transverter under test—
Block nonoperated CK7, TM4, TRST relays.

16 Insulate 2, 3B of TM4 relay.

17 Block operated CK5 relay.

TR1 relay operated.

18 Momentarily connect ground to 5T of highest numbered TS_ relay or 10B of highest numbered 4WT—relay, if provided.

TBG relay operated momentarily
TR1 relay released momentarily.

19b If transverter under test is arranged for PBX-AIOD operation—
Momentarily connect ground to 7F of relay.

TBG relay operated momentarily.
TR1 relay released momentarily.

20 Momentarily connect ground to 6T of TR1A relay.

TRT relay operated momentarily.
TR1 relay released momentarily.

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STEP	ACTION	VERIFICATION
21	Insulate 1T, 10B of XTKK relay.	
22	Momentarily operate TKK relay.	XTKK relay operated momentarily. TR1 relay released momentarily.
23	Remove insulators from XTKK relay.	
24	Insulate 8T of TK relay.	
25	Insulate 3B of RK relay.	
26	Connect ground to 5B of RS10 ^{RST10} relay.	
27	Momentarily operate TK relay.	EXT relay operated momentarily— TR1 relay released momentarily.
28	Momentarily operate RK relay.	EXT relay operated momentarily. TR1 relay released momentarily.
29	Momentarily operate SDT1 relay. 33	EXT relay operated momentarily. TR1 relay released momentarily.
30	Remove ground from RS10 relay.	
31	Remove insulators from TK, RK relays.	
32	Block nonoperated ^{32 40} TBC2, TM2 relays.	
33	Block operated ^{40 19} TMS2, DNK relays.	
34	Momentarily connect ground to 7T of RS10 ^{RST10} relay.	CBG relay operated momentarily. TR1 relay released momentarily.
35	Remove blocking tools from TBC2, TM2, TMS2, DNK relays.	
36	Block nonoperated ³⁹ XP1 relay.	
37	Insulate 2B of ³⁴ TRBA relay.	
38	Block operated ²⁴ C1B relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
39	Remove blocking tool from C1B relay.	CT2 relay released.
40	Block operated ²⁵ C2A relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
41	Remove blocking tool from C2A relay.	CT2 relay released.

STEP	ACTION	VERIFICATION
42	Block operated C2B relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
43	Remove blocking tool from C2B relay.	CT2 relay released.
44	Block operated C3B relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
45	Remove blocking tool from C3B relay.	CT2 relay released.
46	Block operated C4A relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
47	Remove blocking tool from C4A relay.	CT2 relay released.
48	Block operated C4B relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
49	Remove blocking tool from C4B relay.	CT2 relay released.
50	Block operated ²² CFAB relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
51	Remove blocking tool from CFAB relay.	CT2 relay released.
52	Insulate 4T of TK relay.	
53	Block operated TK relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
54	Remove blocking tool from TK relay.	CT2 relay released.
55	Remove insulator from TK relay.	
56	Block operated ⁵ TEB relay.	CT1 relay operated momentarily. CT2 relay operated. TR1 relay released momentarily.
57	Remove blocking tool from TEB relay.	CT2 relay released.
58	Remove blocking tools from CK4, CK5, CK6, CK7, XP1 relays.	
59	Remove blocking tool from CH2 relay.	CH2 relay remains operated.

STEP	ACTION	VERIFICATION
60	Remove blocking tools from TMS1, TBC1, DCB, TM4, TRST relays.	
61	Remove insulators from TM4, TRBA relays.	
62	At MTF— Remove make-busy plugs from TVMB_, TRMB-TV_ jacks.◆	
F. All-Transverters-Busy Alarm		
1	At MTF— Insert make-busy plug into TVMB_ jack for any transverter.	At transverter frame— ATB relay operated.
2	At MTF— Remove make-busy plug from TVMB_ jack.	At transverter frame— ATB relay released.
3	Repeat Steps 1 and 2 for each transverter.	
4	At transverter frames— Block operated ATB relay for each transverter except the highest numbered.	
5	At MTF— Insert make-busy plug into TVMB_ jack of highest numbered transverter; <i>start timing</i> .	ATVB lamp lighted. In 41 to 71 seconds— TVBA lamp lighted. Minor alarm sounds. If the all-transverters-busy circuit is arranged to bring in an auxiliary signal— At associated switchboard— Auxiliary lamp lighted.
6	At master traffic control circuit for transverter connectors— Momentarily operate SRA relay.	TMA relay operated momentarily.
7	Momentarily operate SRB relay.	TMB relay operated momentarily.
8	At MTF— Remove make-busy plug from TVMB_ jack.	ATVB lamp extinguished.
9	Momentarily operate ATVB-AR key.	TVBA lamp extinguished. Minor alarm silenced.
10	At lowest numbered or first transverter— Block nonoperated ATB relay.	
11a	If all-transverters-busy circuit is arranged to bring in an auxiliary signal— At associated switchboard— Momentarily operate RL key.	Auxiliary lamp extinguished.

STEP	ACTION	VERIFICATION
12	At highest numbered or last transverter— Test for absence of ground on 2B of ATB relay.	Ground not present.
13	At all other transverters— Remove blocking tools from ATB relays.	

