

CAMA TRANSVERTER CONNECTORS SD-26011-01

TESTS

NO. 5 CROSSBAR OFFICES

1. GENERAL

PAGE

1.01 This section describes a method of testing transverter connectors in No. 5 crossbar offices arranged for CAMA.

1.02 This section is reissued for the following reasons:

- (a) To include test procedures required when the No. 5 Crossbar office is arranged with the Electronic Translation System (ETS) and the CAMA feature is provided.
- (b) To make minor changes as required.

Revision arrows are used to emphasize the more significant changes.

This reissue does not affect Equipment Tests Lists.

1.03 The tests covered are:

PAGE

A. Transverter Preference and Lockout Feature—CB_ Relay Chain:

This test checks that selection of transverters in each transverter preference chain is made in the order of preference. It also checks that transverter preference is changed on alternate tests.

3

B. Transverter Preference and Lockout Feature—TS_ Relay Chain:

This test checks that all transverter connectors have access to one transverter and that only one transverter connector at a time is connected to this transverter.

4

C. Sender Preference and Lockout Feature:

This test checks the order of preference of the SS_ relays and that only one sender at a time is served by the transverter connector. It also checks the continuity of the TM lead between the sender and transverter connector control relays.

6

D. Transverter Busy to Transverter Connector:

This test checks that the transverter is made busy to the transverter connector from the master test frame. It also checks the locking circuit of the CB_ relays.

7

E. Timeout Features:

This test checks that the TRS timer operates in approximately 1 second to transfer the start lead if a transverter is not connected within that time. It also checks that the TM overall timer operates and brings in an alarm in 5 to 10 seconds if the transverter connector fails to seize a transverter.

8

F. False Ground Feature:

This test checks that, if a ground appears on the PRL, RL, ROP, TR1, or TR leads while the transverter connector is normal, a major alarm sounds. It also checks that the false ground detection feature is disabled whenever the connector is seized.

9

G. Second Trial Features:

This test checks that a trouble release signal during first trial will cause the transverter connector to advance to the

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next transverter and give this transverter a second trial indication. 10

1.04 All tests require that all senders serving the transverter connector under test be made busy. Tests B, D, F, and G require that transverters be made busy.

1.05 Lettered Steps: A letter a, b, c, etc, added to step number in Parts 3 and 4 of this section indicates an action which may or may not be required depending on local conditions. This 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.

1.06 The manner of selecting some circuits and test conditions at the master test frame (MTF) and its associated circuits varies depending on the apparatus options furnished with these circuits. Therefore, where variable means of selection are provided, precise instructions for the selection of circuits and test conditions are not given. Precise instructions for the use of these variable means are given in Section 218-106-301.

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

2. APPARATUS

2.01 The apparatus required for each test is listed in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.

2.02 67C test set or equivalent, equipped with one KS-6278 connecting clip (for checking the presence or absence of battery or ground).

2.03 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one KS-6278 connecting clip, and one 419A (test

APPARATUS	TESTS						
	A	B	C	D	E	F	G
322A (make-busy) Plugs	✓	✓	✓	✓	✓	✓	✓
349A (make-busy) Plug		1					
Test Set (2.02)	1		1	1	1	1	1
Cord (2.03)				1		1	
Cord (2.04)		2					
Cord (2.05)	1				1	1	1
Cord (2.06)		1					
KS-3008 Stopwatch or equivalent					1		
Tools (2.07)	✓		✓		✓	✓	✓

✓As required.

connector) tool (for establishing ground test connections).

2.04 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one KS-6278 connecting clip, and one 624A tool (for connecting to winding terminals of wire-spring-type relays).

2.05 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one KS-6278 connecting clip, and one 639A (relay contact connector) tool and one 651D (relay contact connector holder) tool (for connecting to relay springs of wire-spring-type relays).

2.06 Patching cord, P3D cord, 9 inches long, equipped with two 309 plugs (3P3D cord) (for patching the TRR-AR jack and RC-AR-SP jack at the MTF).

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

3. PREPARATION**Test B**

3.01 If the SP jacks of the transverter connector frame have been cross-connected to the RC-AR-SP jack of the MTF, the minor alarm may

be restored by remote control instead of by operating the TRR-AR key at the MTF. Using the P3D cord, patch the TRR-AR jack to the RC-AR-SP jack on the MTF. To restore the alarm, momentarily insert a 349A plug into the SP jack associated with the frame at which the test is being made.

3. PREPARATION (CONT)**STEP****ACTION****VERIFICATION****Tests A, C, E, F, G**

Note: Refer to paragraphs 1.06 and 1.07.

- 1 At MTF—
Insert make-busy plugs into SMB_ jacks for all senders served by transverter connector under test.

Note: Wait approximately 1 minute for senders to become idle.

Tests B, E, F

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|----|--|-----------------------|
| 2a | If alarm transfer is provided—
Operate alarm transfer key to NTR. | TR lamp lighted. |
| 3a | Momentarily operate RS key. | TR lamp extinguished. |

4. METHOD**STEP****ACTION****VERIFICATION****A. Transverter Preference and Lockout Feature—CB_ Relay Chain**

- | | | |
|---|---|--|
| 2 | At transverter connector under test—
Manually release W relay if operated. | W, Z relays released if operated. |
| 3 | Block nonoperated Z, TRS, all TS_, all CB_ relays. | |
| 4 | Connect battery to 4F of Z relay. | First preferred TS_ relay associated with STA lead energized. |
| 5 | Block operated CB_ relay associated with first preferred TS_ relay. | First preferred TS_ relay <i>not</i> energized.
Next preferred TS_ relay energized. |
| 6 | Block operated CB_ relay associated with energized TS_ relay. | TS_ relay <i>not</i> energized.
Next preferred TS_ relay in chain energized. |

STEP	ACTION	VERIFICATION
7	Repeat Step 6 until all CB_ relays are blocked operated.	
8	Change battery connection from 4F to 2F of Z relay.	
9	Block nonoperated all CB_ relays.	
10	Block operated Z relay.	First preferred TS_ relay associated with STB lead energized.
11	Block operated CB_ relay associated with first preferred TS_ relay.	First preferred TS_ relay <i>not</i> energized. Next preferred TS_ relay energized.
12	Block operated CB_ relay associated with energized TS_ relay.	TS_ relay <i>not</i> energized. Next preferred TS_ relay in chain energized.
13	Repeat Step 12 until all CB_ relays are blocked operated.	
14	Remove battery connection from 2F of Z relay.	
15	Remove blocking tools from Z, TRS, all TS_ all CB_ relays.	
16	At MTF— Remove make-busy plugs from SMB_ jacks.	
B. Transverter Preference and Lockout Feature—TS_ Relay Chain		
4	Insert make-busy plug into TVMB_ jack of any CAMA transverter or PCTV-C (Program Controlled Transverter for CAMA).	At transverter connector frame— CB_ relay associated with transverter made busy operated in all connectors.
5	At MTF— Insert make-busy plug into TRMB TV_ jack of same CAMA or PCTV-C transverter.	
6	Insert make-busy plugs into SMB_ jacks of all senders served by transverter connector having first preference in TS_ relay chain for transverter made busy.	
	Note: Allow approximately 1 minute for senders to become idle before proceeding to next step.	
7	At transverter connector frame— Connect battery to lower winding terminal of TS_ relay having first preference for transverter made busy.	TS_ TVA_ TVB_ TVC_ TVD_ TVE_ TVF_ relays operated. CB_ relay released.

STEP	ACTION	VERIFICATION
		<p>Note: The operation of the TS relay for 2 to 4 seconds causes the transverter to time out and sound the minor alarm. If the TS relay is operated for 14 to 24 seconds, the major alarm sounds. After the TS relay is released, momentarily operate the AR key at the transverter frame to silence the major alarm. Momentarily operate the TRR-AR key at the MTF to silence the minor alarm or refer to paragraph 3.01.</p>
8	<p>At transverter connector having next preference in TS relay chain for transverter made busy— Connect battery to lower winding terminal of TS relay.</p>	TS relay remains nonoperated.
9	<p>At MTF— Insert make-busy plugs into SMB jacks of senders served by next preferred transverter connector in TS relay chain.</p> <p>Note: Allow approximately 1 minute for senders to become idle before proceeding to next step.</p>	
10	<p>At transverter connector frame— Remove battery connection from more preferred TS relay.</p>	<p>TS, TVA, TVB, TVC, TVD, TVE, TVF relays released. CB relay operated. At transverter connector having next preference in TS relay chain— TS, TVA, TVB, TVC, TVD, TVE, TVF relays operated. CB relay released.</p>
11	<p>At MTF— Remove make-busy plugs from SMB jacks of senders served by more preferred transverter connector in TS relay chain.</p>	
12	<p>At transverter connector frame— Reconnect battery to lower winding terminal of more preferred TS relay in chain.</p>	<p>TS relay operated. TVA, TVB relays remain released.</p>
13	<p>Remove test connection from more preferred TS relay in chain.</p>	TS relay released.
14	<p>Repeat Steps 8 through 13 for all remaining TS relays in chain associated with transverter made busy.</p>	
15	<p>Remove test connection from TS relay tested last.</p>	

SECTION 218-179-501

STEP	ACTION	VERIFICATION
16	At MTF— Remove make-busy plugs from CAMA or PCTV-C TVMB, CAMA TRMB TV, SMB jacks.	
17	Repeat Steps 2 through 16 for each of remaining CAMA transverters to check the TS relay chains.	
18a	If alarm transfer is provided— Restore alarm transfer key to position prior to test.	
C. Sender Preference and Lockout Feature		
2	At transverter connector under test— Manually release W relay if operated.	W, Z relays released if operated.
3	Block nonoperated TM, TRS relays.	
4	Insulate 4B of Z relay.	
5	At sender frame— At sender associated with lowest numbered SS relay of transverter connector under test— Block operated STT, LR relays.	Lowest numbered SS relay operated. SA, SB, SC, SD, SE, SF relays associated with lowest numbered SS relay operated. At transverter connector under test— TM relay energized.
6	At sender frame— At sender associated with second lowest numbered SS relay of transverter connector under test— Block operated STT, LR relays.	SS relay associated with this sender operated.
7	At sender associated with lowest numbered SS relay of transverter connector under test— Remove blocking tools from STT, LR relays.	Lowest numbered SS, SA, SB, SC, SD, SE, SF relays released. Next highest numbered SA, SB, SC, SD, SE, SF relays operated. At transverter connector under test— TM relay remains energized.
8	At sender frame— At sender associated with lowest numbered SS relay of transverter connector under test— Block operated STT, LR relays.	SS relay associated with this sender remains nonoperated.
9	Remove blocking tools from STT, LR relays.	
10	At sender associated with third lowest numbered SS relay of transverter connector under test— Block operated STT, LR relays.	SS relay associated with this sender operated.

STEP	ACTION	VERIFICATION
11	At sender associated with second lowest numbered SS_ relay of transverter connector under test— Remove blocking tool from STT, LR relays.	Second lowest numbered SS_, SA_, SB_, SC_, SD_, SE_, SF_ relays released. Third lowest numbered SA_, SB_, SC_, SD_, SE_, SF_ relays operated. At transverter connector under test— TM relay remains energized.
12	At sender frame— At sender associated with second lowest numbered SS_ relay of transverter connector under test— Block operated STT, LR relays.	SS_ relay associated with this sender remains nonoperated.
13	Remove blocking tools from STT, LR relays.	
14	Block in succession STT, LR relays in numerical sequence as indicated in Steps 5 through 13 until entire chain of SS_ relays has been tested.	
15	Remove all blocking tools from STT, LR relays.	All SS_, SA_, SB_, SC_, SD_, SE_, SF_ relays released.
16	Remove insulator from 4B of Z relay.	
17	Remove blocking tools from TM, TRS relays.	
18	At MTF— Remove make-busy plugs from SMB_ jacks.	

D. Transverter Busy to Transverter Connector

1	At MTF— Insert make-busy plug into CAMA \blacklozenge or PCTV-C \blacklozenge TVC-MB jack for first transverter associated with transverter connector under test.	At transverter connector under test— CB_ relay associated with first transverter operated.
2	At MTF— Remove make-busy plug from CAMA \blacklozenge or PCTV-C \blacklozenge TVC-MB jack.	At transverter connector under test— CB_ relay associated with first transverter released.
3	Repeat Steps 1 and 2 for all remaining CAMA \blacklozenge or PCTV-C \blacklozenge transverters associated with transverter connector under test.	
4	At MTF— Insert make-busy plug into any CAMA \blacklozenge or PCTV-C \blacklozenge TV-MB jack.	At transverter connector frame— CB_ relay associated with CAMA \blacklozenge or PCTV-C \blacklozenge transverter made busy operated in all connectors.
5	At MTF— Remove make-busy plug from CAMA \blacklozenge or PCTV-C \blacklozenge TV-MB jack.	At transverter connector frame— CB_ relay associated with CAMA \blacklozenge or PCTV-C \blacklozenge transverter made busy released in all connectors.

SECTION 218-179-501

STEP	ACTION	VERIFICATION
6	Repeat Steps 4 and 5 for each CAMA or PCTV-C transverter.	
7	At MTF— Insert make-busy plugs into SMB_ jacks for all senders served by transverter connector under test.	
8	At transverter connector under test— Connect ground to punching 51, 52, 53, or 54 on terminal strip A on CAMA or PCTV-C transverter preference control unit for transverter connector 0, 1, 2, or 3, respectively.	At sender frame— Ground present on 14F of any SC_ relays associated with transverter connector under test.
9	At transverter connector under test— Manually operate any CB_ relay.	CB_ relay remains operated.
10	Manually operate all remaining CB_ relays except one.	CB_ relays remain operated.
11	Manually operate remaining CB_ relay.	Last CB_ relay operated, remains operated. All other CB_ relays released.
	Note: When any CB_ relay except the last fails to release, it may be caused by the associated transverter being busy on a call at the instant the last CB_ relay was operated, or by the transverter being plugged busy. To check the first condition, repeat Steps 9 through 11 and if trouble is repeated, check for transverter plugged busy.	
12	Remove ground connection from terminal strip A on CAMA or PCTV-C transverter preference control unit.	Last CB_ relay released. At sender frame— No ground present on 14F of all SC_ relays associated with transverter under test.
13	At MTF— Remove make-busy plugs from SMB_ jacks.	

E. Timeout Features

4	At transverter connector under test— Connect ground to 6F of TV relay; start timing.	TM relay operated. In approximately 1 second— TRS relay operated. In 5 to 10 seconds— Major alarm sounds. Red aisle pilot lamp lighted. Ground present on 10F of each TVC_ relay. At MTF— TVC_ lamp lighted.
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STEP	ACTION	VERIFICATION
5	At transverter connector under test— Block operated TV relay.	TM relay released. TRS relay remains operated.
6	Remove ground connection from 6F of TV relay.	
7	At MTF— Momentarily operate TVC-AR key.	Major alarm silenced. Red aisle pilot lamp extinguished. TVC_ lamp remains lighted.
8	At transverter connector under test— Remove blocking tool from TV relay.	TRS relay released. At MTF— TVC_ lamp extinguished.
9	Remove make-busy plugs from SMB_ jacks.	
10a	If alarm transfer is provided— Restore alarm transfer key to position prior to test.	

F. False Ground Feature

4	Insert make-busy plug into any CAMA or PCTV-C TVMB- jack.	
5	At transverter connector under test— Connect ground to 4F of GT relay.	Major alarm sounds. Red aisle pilot lamp lighted. Ground present on 12F, 20F, 22F, 23F, 24F of all TVC_ relays. At MTF— TVC_ lamp lighted.
6	At transverter connector under test— Remove ground connection from 4F of GT relay.	No ground present on 12F, 20F, 22F, 23F, 24F of any TVC_ relays.
7	At MTF— Momentarily operate TVC-AR key.	Major alarm silenced. All lamps extinguished.
8	At transverter connector under test— Block operated TV relay.	GT relay operated. At MTF— TVC_ lamp lighted.
9	At transverter connector under test— Temporarily ground in succession 20F, 22F, 23F, 24F of TVC_ relay associated with transverter made busy.	CA relay remains nonoperated. Major alarm remains silenced.
10	Remove blocking tool from TV relay.	GT relay released. At MTF— TVC_ lamp extinguished.

SECTION 218-179-501

STEP	ACTION	VERIFICATION
11	Remove make-busy plugs from CAMA or PCTV-C TVMB_ SMB_ jacks.	
12a	If alarm transfer is provided— Restore alarm transfer key to position prior to test.	
G. Second Trial Features		
2	Insert make-busy plug into any TVMB_ jack associated with any CAMA or PCTV-C transverter.	At transverter connector under test— CB_ relay associated with CAMA or PCTV-C transverter made busy operated.
3	At CAMA or PCTV-C transverter make busy— Block nonoperated XRL, TM1, TM2 relays.	
4	At transverter connector under test— Block operated TVA_ relay associated with CAMA or PCTV-C transverter made busy.	CB_ relay associated with CAMA or PCTV-C transverter made busy released. TVC_, TVD_ relays associated with CAMA or PCTV-C transverter made busy operated. TV, GT relays operated.
5	Insulate 13M, 14M of operated TVA_ relay.	
6	Insulate 12M of operated TV_ relay.	
7	Connect ground to 4F of GT relay.	TR relay operated. TR1 relay remains released. CB_ relay associated with CAMA or PCTV-C transverter made busy operated. Ground present on 13F of all TVA- relays.
8	Remove ground from 4F of GT relay.	TR relay remains operated. TR1 relay operated. CB_ relay associated with CAMA or PCTV-C transverter made busy operated. Ground present on 14F of all TVA_ relays. No ground present on 13F of any TVA_ relays. Ground present on 11F of all TVC_, SC_ relays.
9	Remove blocking tool from TVA_ relay.	TVC-, TVD-, TV, TR, TR1, GT relays released. CB_ relay associated with transverter made busy operated. Ground present on 13F of all TVA_ relays. No ground present on 14F of any TVA_ relays. No ground present on 11F of any TVC_, SC_ relays.

STEP

ACTION

VERIFICATION

- 10 Remove insulators from TVA_, TVC_ relays.
- 11 At transverter made busy—
Remove blocking tools from XRL, TM1, TM2 relays.
- 12 At MTF—
Remove make-busy plugs from CAMA or PCTV-C TVMB_, SMB_ jacks.

