

DIAL COIN ZONE CONCENTRATORS  
TESTS

NO. 5 CROSSBAR OFFICES

1. GENERAL

PAGE

1.01 This section describes a method of testing the concentrating circuit SD-26114-01, for coin zone trunk and junctor circuits in No. 5 crossbar offices.

**C. Trouble Indications:** This test checks the continuity of the leads which convey trouble record information between the controller and trouble indicator lamps. . . . . 5

1.02 This section is reissued for the following reasons:

**D. Select and Hold Magnet Cross Detection:** This test checks the features for detecting crosses on the select and hold magnets. . . . . 9

- (a) To revise Tests F, G, and H.
- (b) To add SD- number to paragraph 1.01.
- (c) To revise selection of circuits and test conditions at MTF in accordance with Section 218-106-301.
- (d) To add paragraphs 1.06 thru 1.11.
- (e) To revise Test Preparation Part 3.

**E. Direction of Selection Control:** This test checks the direction of selection control features. . . . . 10

**F. Short Time-out:** This test checks the short time-out feature. . . . . 12

**G. Long Time-out:** This test checks the long time-out feature. . . . . 12

Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

**H. End of Cycle and Guard Timing:** This test checks the operation or the end of cycle and guard timing features. . . . . 13

This reissue does not affect Equipment Test Lists.

1.03 The tests covered are:

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**A. Incoming Trunk Sequence of Service:** This test checks the incoming group and trunk lockout features and that the trunks are served in the proper order. . . . . 3

1.04 Tests A, B, C, D, E, F, G, and H may interfere with service calls and should be completed as rapidly as possible.

**B. Outgoing Trunk Sequence of Service:** This test checks outgoing group and trunk lockout, select magnet operating paths, and correct sequence of service of outgoing trunks. . . . . 4

1.05 Local instructions should be followed with reference to recording any register operations caused by these tests.

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

1.07 The manner of selecting some circuits and test conditions at the MTF and its associated

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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.

**1.08 Lettered Steps:** A letter a, b, c, etc, added to a step number in Parts 3 and 4 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.

**1.09** When the office is arranged for LAMA-C or ETS, the distributors and scanners associated with the marker and trunk used in the test call must be in service or in a *maintenance-busy* condition - not in an *out-of-service* condition. To change a scanner or distributor from an *out-of-service* to a *maintenance-busy* condition, use the procedure given in the following sections for the office arrangement.

218-798-308—Taking LAMA-C  
Equipment Out-of-Service

218-799-701—Taking ETS  
Equipment Out-of-Service

**1.10** When the trunk under test is arranged for ETS, the first completed test call from the MTF will cause the TST bit to be set in the trunk register associated with the selected trunk, enabling trunk supervisory scanning to be repeated on the FT, CS, and S1 lamps at the MTF trunk test circuit. As long as the TST bit is set in the trunk register, supervision will continue to be repeated

on the lamps, even on service calls. The TST bit will remain set in the trunk register until (1) a test call is made from the MTF to another trunk, or (2) the command **STOP:TRK TST** is entered at the maintenance TTY.

**1.11** On issue 76D of SD-25800-01 a group of 18 "class of test" lamps was replaced by a single "start test" lamp designated STT. Since the designation given to the lamp is not specific, the lamp will not be called out in the section, as well as the 18 discontinued lamps, DT, ORIG, ITDO, ITNP, OGT, INC, OR, SDR, IR, MISC, IAO, MLV, LT, IMS, PTT, TVT, ATNT, and IMT.

## 2. APPARATUS

### Tests A, B, C, and D

**2.01** 322A (make busy) plugs, as required.

**2.02** Master test control circuit, SD-25800-01.

**2.03** Trunk test circuit, SD-25918-01.

**2.04** 32A test set (remote control cord).

### Tests C and D

**2.05** 651 tools, as required.

**2.06** Testing cord, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord) and two 639A tools (for making test connections to relay contacts).

### Tests F, G, and H

**2.07** KS-3008 stopwatch, or equivalent.

### All Tests

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

## 3. PREPARATION

### STEP

### ACTION

### VERIFICATION

**Note:** Refer to 1.06 through 1.11 before using MTF.

STEP	ACTION	VERIFICATION
<b>Tests B, C, and D</b>		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Insert make-busy plug into MB jack of coin zone trunk to be used for tests.	
4	Operate NTTS, NTFS, TLK, CN keys.	
5	Select class of service for flat rate, message, AMA, or coin operation as required.	
6a	If ETS provided— Operate PTS, PCS keys.	
7	Select A through L digits as required for office code associated with trunk under test.	
8	Select marker.	
9	Select route advance as required.	
10	Operate GPA/GPB key, as required, when trunk under test is in an allotted group.	
11	Select OGT class of test.	
12	At concentrator frame— Insert plug of 32A test set in RC jack.	

#### 4. METHOD

STEP	ACTION	VERIFICATION
<b>A. Incoming Trunk Sequence of Service</b>		
1	Select one outgoing coin zone trunk from each equipped tens group.	
2	At MTF— Insert make-busy plug in MB jack of each selected trunk.	
3	At concentrator frame— Block operated TB0 relay.	
	<b>Note:</b> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.	

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STEP	ACTION	VERIFICATION
4	Block nonoperated AW relay.	
5	Block nonoperated ST, TG1, TG2, UC_ relays.	
6	At each selected trunk— Block relay operated which connects ground to the ST_ (start lead) of the concentrator.	
7	At concentrator frame— Remove blocking tools from TG1, TG2 relays simultaneously.	All TN_ relays operated. HC_ relay of lowest numbered tens group operated.
8	Remove blocking tool from UC_ relay of lowest numbered group, manually release TN_ relay of lowest group.	HC_ relay of next higher tens group operated.
9	Continuing from lower to higher numbered trunk groups— Repeat Step 8 until all selected trunks have been served.	
10	Block AW relay operated.	
11	Repeat Steps 5 through 7.	All TN_ relays operated. HC_ relay of highest numbered incoming trunk group operated.
12	Remove blocking tool from UC_ relay of highest numbered trunk group, manually release TN_ relay of highest group.	HC_ relay of next lower numbered trunk group operated.
13	Continuing from higher to lower numbered trunk groups, repeat Step 12 until every selected trunk has been served.	
14	Remove blocking tools from ST, AW, TB0 relays.	
15	At trunk frame— Remove blocking tools from all relays.	

**B. Outgoing Trunk Sequence of Service**

- 13 Block TB0 relay operated.
- Note:* This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.
- 14 Block GR relay nonoperated and manually release all operated GP\_ relays.

STEP	ACTION	VERIFICATION
	<i>Note:</i> This is to release all OT_ relays whose associated outgoing trunks are idle.	
15	Remove blocking tool from GR relay.	
16	Release AOW relay manually if operated.	
17	In each outgoing trunk group— Operate all unoperated OT_ relays except lowest and highest unoperated relays.	
18	Operate white button of 32A test set momentarily.	Lowest numbered unoperated OT_ relay of lowest numbered outgoing trunk group operated.
19	Operate red button of 32A test set momentarily.	
20	After a short interval, again operate white button of 32A test set momentarily.	Highest numbered unoperated OT_ relay in lowest numbered outgoing trunk group operated.
21	Operate red button of 32A test set momentarily.	
22	Repeat Steps 18 through 21 for each remaining outgoing trunk group.	
	<i>Note:</i> When the highest trunk in the highest trunk group has been served, concentrator goes through end of cycle and guard timing; AOW and AOZ relays operated.	
23	Repeat Step 17.	
24	Repeat Steps 18 through 21 for each out-going trunk group.	The highest numbered OT_ relay in highest numbered group operates first, followed by lowest numbered relay in same group.  The remaining groups will be served in descending order in the same manner.
25	Remove blocking tools from TB0 relay.	

### C. Trouble Indications

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|----|---|
| 13 | Block TB0 relay operated.   |
|    | <i>Note:</i> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks. |
| 14 | Block alarm relays AL, MA nonoperated.  |
| 15 | Block SO1, SO2 relays nonoperated.  |

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STEP	ACTION	VERIFICATION
16	Block CT1 relay operated.	
17	Operate LP key.	
18	Block operated TN_ relay of any incoming trunk group.	T_ lamp corresponding to incoming tens group lighted.
19	Remove blocking tools from TN_, CT1 relays.	
20	Operate RLS key momentarily.	
21	Block CT1 relay operated.	T_ lamp extinguished.
22	Repeat Steps 18 through 21 for each remaining TN_ relay.	T_ lamp corresponding to incoming tens group lighted.
23	Block AOW, AW relays nonoperated.	
24	Block U0 relay operated.	
25	Operate white button of 32A test set momentarily.	UT0 lamp lighted.
26	Remove blocking tool from U0 relay.	
27	Operate red button of 32A test set momentarily.	
28	Operate RLS key momentarily.	UT0 lamp extinguished.
29	Repeat Steps 24 through 28 for each remaining U_ relay.	
30	Operate white button of 32A test set momentarily.	ILH, OLH lamps lighted.
31	Operate red button of 32A test set momentarily.	
32	Operate RLS key momentarily.	ILH, OLH lamps extinguished.
33	Block AOW, AW relays operated.	
34	Operate white button of 32A test set momentarily.	IHL, OHL lamps lighted.
35	Operate red button of 32A test set momentarily.	
36	Operate RLS key momentarily. Remove blocking tools from AOW, AW relays.	IHL, OHL lamps extinguished.
37	Release manually all operated GP_ relays momentarily. (All OTT_ relays associated with idle outgoing trunks released.)	

STEP	ACTION	VERIFICATION
38	When concentrator has completed end of cycle and guard time operation— Block AOW relay nonoperated.	
39	Block UG1, UG2, FX relays nonoperated.	
40	Operate white button of 32A test set momentarily.	G0 lamp lighted. OTT_ lamp, corresponding to lowest numbered unoperated OTT_ relay in lowest numbered group, lighted.
41	Operate red button of 32A test set momentarily.	
42	Operate RLS key momentarily.	G0, OTT_ lamps extinguished.
43	Operate manually lowest numbered unoperated OTT_ relay in group (relay locks operated).	
44	Repeat Steps 40 through 43 for each unoperated OTT_ relay in group.	G0, OTT_ lamps corresponding to lowest numbered unoperated OTT_ relay in group lighted. (When last OTT_ relay in group has been operated, GP0 relay released, all free OTT_ relays in group released.)
45	Repeat Steps 40 through 43 for each remaining group of outgoing trunks.	G_ lamps corresponding to group and OTT_ lamp corresponding to lowest numbered unoperated OTT_ relay will light in ascending order.
46	Release manually all GP_ relays momentarily.	
47	When the concentrator has completed end of cycle and guard time operation after the last OTT_ relay in highest numbered group has been operated— Block AOW relay operated.	
48	Repeat Steps 39 through 41.	GP_ lamp corresponding to highest numbered group lighted. OTT_ lamp corresponding to highest numbered unoperated OTT_ relay in that group lighted.
49	Operate manually highest unoperated OTT_ relay in highest group (relay locks operated).	
50	Repeat Steps 40, 41, 42, 49 for each unoperated OTT_ relay in group.	G_ lamp corresponding to group and OTT_ lamp corresponding to highest numbered unoperated OTT_ relay will light in descending order.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
51	Repeat Steps 40, 41, 42, 49 for each remaining group.	
52	When all groups have been tested— Remove blocking tools from UG1, UG2, SO1, SO2, AOW, FX relays; manually release all GP_ relays momentarily.	
53	Operate CS key.	
54	Block AOW, AW relays nonoperated.	
55	Block HG1 relay nonoperated.	
56	Operate white button of 32A test set momentarily.	SM, HM, CPC lamps lighted.
57	Operate red button of 32A test set momentarily.	
58	Operate RLS momentarily.	SM, HM, CPC lamps extinguished.
59	Remove blocking tool from HG1 relay.	
60	Block AOW, AW relays operated.	
61	Block HG2 relay nonoperated.	
62	Repeat Steps 56 through 58.	SM, HM, CPC lamps lighted.
63	Remove blocking tool from HG2, AOW, AW relays.	
64	Restore CS key.	
65	Operate RLS key momentarily.	
66	Release manually all operated GP_ relays momentarily.	
67	Block AOW relay nonoperated.	
68	Block SC1 relay nonoperated.	
69	Operate white button of 32A test set momentarily.	XS lamp lighted.
70	Operate red button of 32A test set momentarily.	
71	Operate RLS key momentarily.	XS lamp extinguished.
72	Remove blocking tool from SC1 relay.	

STEP	ACTION	VERIFICATION
73	Block AOW relay operated.	
74	Block SC2 relay nonoperated.	
75	Repeat Steps 69 through 71.	XS lamp lighted.
76	Remove blocking tool from SC2, AOW relays.	
77	Block AW relay nonoperated.	
78	Using testing cord— Connect one end of cord to fixed contact terminal of HC_ relay corresponding to tens digit of coin zone trunk being used.	
79	Connect other end of testing cord to HC_ relay fixed contact terminal corresponding to an unoperated hold magnet in same tens group as selected trunk.	
80	Operate white button of 32A test set momentarily.	XH lamp lighted.
81	Operate red button of 32A test set momentarily.	
82	Operate RLS key momentarily.	XH lamp extinguished.
83	Block AW relay operated.	
84	Repeat Steps 80 through 82.	XH lamp lighted.
85	Restore LP key.	
86	Disconnect testing cord, remove blocking tools from AW, TB0 relays.	

#### D. Select and Hold Magnet Cross Detection

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| 13 | Block TB0 relay operated.   |  |
|    | <b>Note:</b> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks. |  |
| 14 | Block trouble indicator AL, MA relays nonoperated.  |  |
| 15 | Operate LP key.   |  |
| 16 | Connect one end of testing cord to 4 fixed contact terminal of concentrator OT00 relay.                     |  |

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
17	Connect other end of testing cord to 4 fixed contact terminal of any other OT_ relay.	
18	Block AOW relay operated.	
19	Operate white button of 32A test set momentarily.	XS lamp lighted.
20	Operate red button of 32A test set momentarily.	
21	Operate RLS key momentarily.	XS lamp extinguished.
22	Block AOW relay nonoperated.	
23	Repeat Steps 19 through 21.	XS lamp lighted.
24	Disconnect testing cord.	
25	Connect one end of testing cord to fixed contact terminal of the HC_ relay corresponding to units digit of coin zone trunk being used.	
26	Connect other end of testing cord to HC_ relay fixed contact terminal corresponding to unoperated hold magnet in same tens group as selected trunk.	
27	Block AW relay nonoperated.	
28	Operate white button of 32A test set momentarily.	XH lamp lighted.
29	Operate red button of 32A test set momentarily.	
30	Operate RLS key momentarily.	XH lamp extinguished.
31	Block AW relay operated.	
32	Repeat Steps 28 through 30.	XH lamp lighted.
33	Disconnect testing cord.	
34	Remove blocking tools from AOW, AW, AL, MA relays; restore all operated keys to normal.	

**E. Direction of Selection Control**

- 1 At concentrator frame—  
Block operated TB0 relay.

STEP	ACTION	VERIFICATION
	<i>Note:</i> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.	
2	Release AW, AOW relays manually if operated.	
3	Operate SR1 relay manually.	AW relay operated.
4	Release SR1 relay.	AZ relay operated.
5	Operate SR1 relay manually.	AW relay released.
6	Release SR1 relay.	AZ relay released.
7	Block operated EC1, EC2 relays.	
8	Operate LR1 relay manually.	AW relay operated.
9	Release LR1 relay.	AZ relay operated.
10	Operate LR1 relay manually.	AW relay released.
11	Release LR1 relay.	AZ relay released.
12	Block operated FX relay.	
13	Operate SR1 relay momentarily.	AW relay not operated.
14	Remove blocking tools from FX, EC1, EC2 relays.	
15	Block nonoperated ST, TF1, TF2, RV relays.	
16	Release AOW relay manually if operated.	
17	Operate GT1 relay manually. (Relay locks operated.)	AOW relay operated.
18	Remove blocking tool from TF1 relay.	AOZ relay operated.
19	Block nonoperated TF1 relay.	
20	Operate GT2 relay manually (relay locks operated).	AOW relay released.
21	Remove blocking tool from TF2 relay.	AOZ relay released.
22	Remove blocking tools from ST, TB0, RV, TF1, AL relays.	

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STEP	ACTION	VERIFICATION
<b>F. Short Time-out</b>		
1	At concentrator frame— Block operated TB0 relay.	
	<i>Note:</i> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.	
2	Block nonoperated AW, CC1, CC2 relays.	
3	Block nonoperated TG1 relay, start timing.	In maximum 3.2 seconds, ST0 relay operated.
4	Remove blocking tool from TG1 relay.	
5	Remove blocking tools from CC1, CC2 relays simultaneously.	CC1, CC2 relays operated momentarily.
6	Operate RLS key momentarily.	
7	Block operated AW relay.	
8	Block nonoperated CC1, CC2 relays.	
9	Block nonoperated TG2 relay, start timing.	In maximum 3.2 seconds, ST0 relay operated.
10	Remove blocking tool from TG2 relay.	
11	Remove blocking tools from CC1, CC2 relays simultaneously.	CC1, CC2 relays operated momentarily.
12	Operate RLS key momentarily.	
13	Remove blocking tools from TB0, AW relays.	
<b>G. Long Time-out</b>		
1	At concentrator frame— Block operated TB0, GR relays.	
	<i>Note:</i> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.	
2	Block nonoperated CC1, CC2 relays.	
3	Block operated ST relay, start timing.	Minor alarm sounded. AL lamp lighted. In maximum 12 seconds, HG1 relay operates. Major alarm sounded. Minor alarm silenced.

STEP	ACTION	VERIFICATION
4	Remove blocking tool from CC1, CC2 relays simultaneously.	CC1, CC2 relays operated.
5	Remove blocking tool from ST relay.	CC1, CC2 relays released.
6	Operate AR key momentarily.	AL lamp extinguished. Major alarm retired. Minor alarm sounded.
7	Remove blocking tools from TB0, GR relays.	
8	Operate AR key momentarily.	Minor alarm retired.
<b>H. End of Cycle and Guard Timing</b>		
1	At concentrator frame— Block operated TB0, GR relays.	
	<b>Note:</b> This will cause the outgoing trunks to the switchboard to appear busy to the coin zone trunks.	
2	Block nonoperated all GP_ relays.	EC1, EC2 relays released.
3	In any outgoing trunk group in which there is nonoperated OT relay— Remove blocking tool from GP_ relay, start timing.	In maximum .77 second, relay TF1 and/or relay TF2 operated momentarily.
4	Remove blocking tools from TB0, GR, GP_ relays.	

