

# COMBINED AND COMPLETING MARKER CIRCUITS—PART 15

## TESTS USING MASTER TEST FRAME

### NO. 5 CROSSBAR OFFICES

#### 1. GENERAL

1.01 This section is Part 15 in a series of sections for testing combined and completing markers.

1.02 The reasons for reissuing this section are listed below. Revision arrows are used to emphasize the more significant changes. Equipment Test Lists are not affected.

- (a) To revise test procedures to include offices arranged with Electronic Translation System (ETS).
- (b) To exclude under verification in all tests, reference to "class of test" lamps.
- (c) To make minor changes as required.

1.03 The tests covered are:

**BO. Vacant Code Feature:** This test checks that the marker recognizes a vacant code. . . . . 2

**BP. Sender Group Release Feature:** This test checks that the marker functions with the sender group release circuit. . . . . 11

**BQ. Dual Voltage Hold Magnet Operation Feature—Wire-Spring-Relay Type Completing Markers:** This test checks hold magnet operation by the marker. . . . . 12

**BR. Route Advance Feature—Pulse Conversion Route:** This test checks that the marker functions properly for route advance from pulse conversion route. . . . . 13

1.04 **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.

1.05 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.

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

1.07 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.

1.08 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,

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NOTICE

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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.

**1.09** Additional test procedures are available for verification of leads between the completing marker and the distributor and scanner (DAS). Refer to Section 218-122-531 for DAS application to LAMA-C or Section 218-799-321 for DAS application to ETS.

**1.10** When making tests in No. 5 crossbar offices arranged with Electronic Translation System and test verification requires a completing marker trace output (teletype printout or data dump) to determine the data used to process a call, operate the TCPO key at the master test frame (MTF). The data dump received at the maintenance

teletypewriters (TTY) may be in a raw form (binary or hexadecimal numbering system), formatted into decimal and written text, or a combination of both. For additional information on data dumps and formats used, refer to Section 218-799-102.4

**2. APPARATUS**

**All Tests**

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

**Test BP**

**2.02** 32A test set.

**Test BQ**

**2.03** 322A (make-busy) plugs as required.

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

**3. METHOD**

STEP	ACTION	VERIFICATION
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*Note:* Refer to paragraphs 1.04 through 1.10.

**BO. Vacant Code Feature**

**NXX Vacant Office Codes—OR Class**

- |   |  |                         |
|---|--|-------------------------|
| 1 | At MTF—<br>Restore all keys and switches.  |                         |
| 2 | Momentarily operate RL key.  | All lamps extinguished. |
| 3 | Select ORIG class of test.   |                         |
| 4 | Select A_ through G_ digits as required to direct call to vacant NXX code and any line number.   |                         |
| 5 | Select OR class of call with LT translator indication.   |                         |
| 6 | Select line location as required for line identification of any line having originating service. |                         |
| 7 | Select class of service and rate treatment as required for access to selected route.             |                         |

STEP	ACTION	VERIFICATION
8a	◆If ETS provided— Operate PCS key.◆	
9b	If 4-wire switching route is selected— Operate 4W key.	
10c	If office is arranged for multilevel preemption— Select CDP, CD control digits as required for access to selected route.	
11	Select marker under test.	
12	Operate REC key.	
13d	◆If ETS provided and CM dump is required— Operate TCPO key.	
	<b>Note:</b> See paragraph 1.10.◆	
14	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. FS_ TS_ TG_ TB_ LC_ LV_ FAK/FBK designations perforated indicating location of tone trunk, special service operator trunk, or announcement trunk. ◆If ETS provided— TG_ designation not perforated.◆
15	Momentarily operate RL key.	All lamps extinguished.
16	Restore all keys and switches.	
<b>11 Prefixed NXX Vacant Office Codes—Foreign Area Translator Used—OR Class</b>		
17	Perform Steps 1 through 4.	
18	Select OR class of call with 11 translator indication.	
19	Perform Steps 6 through 16.	
<b>Vacant NOX, N1X Foreign Area Codes—FAC Class</b>		
20	Perform Steps 1 through 3.	
21	Select A_ through C_ digits to direct call to vacant NOX/N1X foreign area code.	
22	Select D_ through K_ digits as required for any office code and line number.	

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
23	Select FAC class of call with LT1 translator indication.	
24	Perform Steps 6 through 16.	
<b>Vacant X11 Service Codes—OR Class</b>		
25	Perform Steps 1 through 3.	
26e	If pretranslation is provided— Select A_ digit for vacant X11 code.	
27f	If pretranslation is not provided— Select A_, B1, C1 digits for vacant X11 code.	
28	Perform Steps 5 through 16.	
<b>Vacant 11X Service Codes—OR Class</b>		
29	Perform Steps 1 through 3.	
30	Select A_ digit for vacant 11X code.	
31	Select OR class of call with 11 translator indication.	
32	Perform Steps 6 through 16.	
<b>Vacant NXX Office Codes Preceded by Assigned NOX, N1X Foreign Area Codes—Foreign Area Translation Used—FAC Class</b>		
33	Perform Steps 1 through 3.	
34	Select A_ through C_ digits for assigned NOX/N1X foreign area code.	
35	Select D_ through K_ digits for vacant NXX office code and any line number.	
36	Select FAC class of call with LT1 translator indication.	
37	Perform Steps 6 through 16.	
<b>Vacant 1-, 2-, 3-Digit Office Codes—TAN or TOL Class</b>		
38	At MTF— Restore all keys and switches.	
39	Momentarily operate RL key.	All lamps extinguished.

STEP	ACTION	VERIFICATION
40	Select INC class of test.	
41	Select A_ through G_ digits as required for vacant 1-, 2-, or 3-digit office code and any line number.	
42g	If testing TAN class— Select TAN class of call with translator indication as required for access to selected route.	
43h	If testing TOL class— Select TOL class of call with translator indication as required for access to selected route.	
44	Select any trunk link frame.	
45	Select trunk number as required for access to selected route.	
46b	If 4-wire switching route is selected— Operate 4W key.	
47c	If office is arranged for multilevel preemption— Select CDP, CD, CDA control digits as required for completion to called line.	
48i	If office is arranged for multilevel preemption and call is directed to line with multilevel preemption features— Operate AD key.	
49j	If office is arranged for multilevel preemption and call is directed to line without multilevel preemption features— Operate OD key.	
50	Select marker under test.	
51	Operate REC key.	
52d	◆If ETS provided and CM dump is required— Operate TCPO key.◆	
53	Momentarily operate ST key.	<p><b>Incoming Trunk Set for Reorder</b> MRL, OFL lamps lighted. Trouble record taken. TER, ROA, OV, OFH, RS0, RS9 designations perforated.</p> <p><b>Call Routed to Operator</b> MRL lamp lighted. Trouble record taken.</p>

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STEP	ACTION	VERIFICATION
		FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of special service operator trunk. ♦If ETS provided— TG_ designation not perforated.♦
54	Momentarily operate RL key.	All lamps extinguished.
55	Restore all keys and switches.	
<b>Vacant NOX, N1X Foreign Area Codes—TAN or TOL Class</b>		
56	Perform Steps 38 through 40.	
57	Select A_ through C_ digits for vacant NOX/N1X foreign area code.	
58	Select D_ through K_ digits for any office code and line number.	
59	Perform Steps 42g through 55.	
<b>Vacant NXX Office Codes Preceded by Assigned NOX/N1X Foreign Area Codes—Foreign Area Translation Used—TAN or TOL Class</b>		
60	Perform Steps 38 through 40.	
61	Select A_ through C_ digits for assigned NOX/N1X foreign area code.	
62	Select D_ through K_ digits as required for vacant NXX office code and any line number.	
63	Perform Steps 42g through 55.	
<b>11 Prefixed NXX Vacant Office Codes—Foreign Area Translation Used—TAN or TOL Class</b>		
64	Perform Steps 38 through 40.	
65	Select A_ through G_ digits as required for access to vacant NXX office code and any line number.	
66	Perform Steps 42g through 55.	
<b>Vacant 1-, 2-, 3-Digit Office Codes—INC Class</b>		
67	At MTF— Restore all keys and switches.	

STEP	ACTION	VERIFICATION
68	Momentarily operate RL key.	All lamps extinguished.
69	Select INC class of test.	
70	Select A_ through G_ digits as required for vacant 1-, 2-, or 3-digit office code and any line number.	
71	Select INC class of call with translator indication as required for access to called line.	
72b	If 4-wire switching route is selected— Operate 4W key.	
73c	If office is arranged for multilevel preemption— Select CDP, CD, CDA control digits as required for completion to called line.	
74i	If office is arranged for multilevel preemption and call is directed to line with multilevel preemption features— Operate AD key.	
75j	If office is arranged for multilevel preemption and call is directed to line without multilevel preemption features— Operate OD key.	
76	Select any trunk link frame.	
77	Select incoming trunk class as required for completion to called line.	
78	Select marker under test.	
79	Operate REC key.	
80d	◆If ETS provided and CM dump is required— Operate TCPO key.◆	
81	Momentarily operate ST key.	<p><b>Incoming Trunk Set for Reorder</b> MRL, OFL lamps lighted. Trouble record taken. TER, ROA, OV, OFH, RS0, RS9 designations perforated.</p> <p><b>Call Routed to Operator or Announcement Trunk</b> MRL lamp lighted. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of special service operator or announcement trunk.</p>

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STEP	ACTION	VERIFICATION
		◆If ETS provided— TG_ designation not perforated.◆
82	Momentarily operate RL key.	All lamps extinguished.
83	Restore all keys and switches.	
<b>NXX Vacant Office Codes—◆CMF0◆ Class</b>		
84	At MTF— Restore all keys and switches.	
85	Momentarily operate RL key.	All lamps extinguished.
86	Select INC class of test.	
87	Select A_ through G_ digits for vacant NXX office code and any line number.	
88	Select CAMA INC class of call with LT translator indication.	CAMA lamp lighted.
89	Select CAMA sender group.	
90	Select trunk number.	
91	Select recorder number.	
92	Operate ORC_, AD/OD, CAT, REC keys.	
93d	◆If ETS provided and CM dump is required— Operate TCPO key.◆	
94	Select marker under test.	
95	Momentarily operate ST key.	<p data-bbox="878 1377 1382 1409"><b>Incoming Trunk Set for Reorder</b></p> <p data-bbox="878 1409 1463 1535">MRL, OFL lamps lighted. Trouble record taken. TER, ROA, OV, OFH, RS0, RS9 designations perforated.</p> <p data-bbox="878 1535 1252 1566"><b>Call Routed to Operator</b></p> <p data-bbox="878 1566 1463 1734">MRL lamp lighted. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of special service operator trunk.</p> <p data-bbox="878 1734 1333 1797">◆If ETS provided— TG_ designation not perforated.◆</p>
96	Momentarily operate RL key.	All lamps extinguished except CAMA.
97	Restore all keys and switches.	CAMA lamp extinguished.

STEP	ACTION	VERIFICATION
<b>Vacant NOX, N1X Foreign Area Codes—♦CMF1♦ Class</b>		
98	Perform Steps 84 through 86.	
99	Select A_ through C_ digits for vacant NOX/N1X foreign area code.	
100	Select D_ through K_ digits as required for any office code and line number.	
101	Select CAMA ♦PCR♦ class of call with TT translator indication.	CAMA lamp lighted.
102	Perform Steps 89 through 97.	
<b>Vacant NXX Codes Preceded by Assigned NOX/N1X Foreign Area Code—Foreign Area Translation Used—♦CMF1♦ Class</b>		
103	Perform Steps 84 through 86.	
104	Select A_ through C_ digits for assigned NOX/N1X foreign area code.	
105	Select D_ through K_ digits as required for vacant NXX code and any line number.	
106	Select CAMA ♦PCR♦ class of call with TT translator indication.	CAMA lamp lighted.
107	Perform Steps 89 through 97.	
<b>NXX Vacant Office Codes—♦CMS0♦ Class</b>		
108	At MTF— Restore all keys and switches.	
109	Momentarily operate RL key.	All lamps extinguished.
110	Select INC class of test.	
111	Select A_ through G_ digits for vacant NXX office code and any line number.	
112	Select CAMA ♦PCD♦ class of call with LT translator indication.	CAMA lamp lighted.
113	Select any trunk link frame.	
114	Select trunk number.	
115	Operate LCD_, VTC/DNC/FC, REC keys.	

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STEP	ACTION	VERIFICATION
116d	◆If ETS provided and CM dump is required.— Operate TCPO key.◆	
117	Select marker under test.	
118	Momentarily operate ST key.	<b>Incoming Trunk Set for Reorder</b> MRL, OFL lamps lighted. Trouble record taken. TER, ROA, OV, OFH, RS0, RS9 designations perforated. <b>Call Routed to Operator</b> MRL lamp lighted. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of special service operator trunk. ◆If ETS provided— TG_ designation not perforated.◆
119	Momentarily operate RL key.	All lamps extinguished except CAMA.
120	Restore all keys and switches.	CAMA lamp extinguished.

**Vacant NOX, N1X Foreign Area Codes—◆CMS1◆ Class**

121	Perform Steps 108 through 110.	
122	Select A_ through C_ digits for vacant NOX/N1X foreign area code.	
123	Select D_ through K_ digits as required for any office code and line number.	
124	Select CAMA ◆PCD1◆ class of call with TT translator indication.	CAMA lamp lighted.
125	Perform Steps 113 through 120.	

**Vacant NXX Codes Preceded by Assigned NOX/N1X Foreign Area Code—Foreign Area Translation Used—◆CMS1◆ Class**

126	Perform Steps 108 through 110.	
127	Select A_ through C_ digits for assigned NOX/N1X foreign area code.	
128	Select D_ through K_ digits as required for vacant NXX code and any line.	
129	Select CAMA ◆PCD1◆ class of call with TT translator indication.	CAMA lamp lighted.

STEP	ACTION	VERIFICATION
130	Perform Steps 113 through 120.	
<b>BP. Sender Group Release Feature</b>		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Select ORIG class of test.	
4	Select A_ through K_ digits as required to direct call to outgoing route associated with sender group which is served by sender group release circuit.	
5	Select OR class of call with translator indication as required for access to selected route.	
6	Select line location as required for line identification of line having access to selected route.	
7	Select class of service and rate treatment as required for access to selected route.	
8a	◆If ETS provided— Operate PCS key.◆	
9b	If 4-wire switching route is selected— Operate 4W key.	
10c	If office is arranged for multilevel preemption— Select CDP, CD control digits as required for access to selected route.	
11	Select marker under test.	
12	Operate OSS key.	
13	At relay rack frame where sender group release circuit is located— Insert plug of 32A test set into RC jack.	
14	Momentarily operate white (ST) button.	R or PR relay momentarily operated.
15	Momentarily operate red (RL) button.	
16	Remove plug of 32A test set from RC jack.	
17	At MTF— Restore all keys and switches.	

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STEP	ACTION	VERIFICATION
<b>BQ. Dual Voltage Hold Magnet Operation Feature—Wire-Spring-Relay Type Completing Markers</b>		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Select INC class of test.	
4	Select A_ through G_ digits as required to direct call to any individual line not having message register operation.	
5	Select incoming class of call with translator indication as required for completion to called line.	
6a	If 4-wire switching route is selected— Operate 4W key.	
7b	If office is arranged for multilevel preemption— Select CDP, CD, CDA control digits as required for completion to called line.	
8c	If office is arranged for multilevel preemption and call is directed to line with multilevel preemption features— Operate AD key.	
9d	If office is arranged for multilevel preemption and call is directed to line without multilevel preemption features— Operate OD key.	
10	Select any trunk link frame.	
11	Select incoming trunk class as required for completion to called line.	
12	Select marker under test.	
13e	If HTR key is provided— Operate HTR key.	
14f	If HTR key is not provided— Insert make-busy plug into MMB_ jack of marker under test.	
15f	At marker frame— Block nonoperated HTT relay.	

STEP	ACTION	VERIFICATION
16f	Block operated HTR relay.	
17	At MTF— Momentarily operate ST key.	LHMT_, LLJ, TLH lamps lighted.
18	Momentarily operate RL key.	All lamps extinguished.
19	Restore all keys and switches.	
20f	If HTR key is not provided— At marker frame— Remove blocking tools from HTT, HTR relays.	
21f	At MTF— Remove make-busy plug from MMB_ jack of marker tested.	
<b>BR. Route Advance Feature—Pulse Conversion Route</b>		
1	At MTF— Restore all keys and switches.	
2	Momentarily operate RL key.	All lamps extinguished.
3	Select INC class of test.	
4	Select A_ through K_ digits as required for called number.	
5	Select PCD/PCD1/PCR incoming class of call.	PC lamp lighted.
6	Select 0, 2, 3, or 5 incoming trunk class as required for supervision.	
7	Select marker under test.	
8	Momentarily operate ST key.	MRL lamp lighted. Trouble record taken. OSG_ and PCR, PCD, or PCD1 designations perforated.
9	Momentarily operate RL key.	All lamps extinguished.
10	Operate OSS key.	
11	Momentarily operate ST key.	RA1, OFL, MRL lamps lighted. Trouble record taken. OV, OFH, TER, ROA designations perforated.
12	Momentarily operate RL key.	All lamps extinguished except PC.
13	Restore all keys and switches.	PC lamp extinguished.