

COMBINED AND COMPLETING MARKER CIRCUITS—PART 9
TESTS USING MASTER TEST FRAME
NO. 5 CROSSBAR OFFICES

| 1. GENERAL | | PAGE |
|---|---|-------------|
| 1.01 | This section is Part 9 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. This issue does not affect Equipment Test Lists. | |
| (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 expand Test AQ "Route Advance Feature—Tandem Route", to include "Mutilated Digit-Second Trial Failure." Equipment change notice, SD-26002-01, Issue 53B, provides a modification (option ZNG) in the marker to return overflow rather than route advance on a TOG call after second trial failure due to mutilated digits. | |
| (d) | To make minor changes as required. | |
| 1.03 | The tests covered are: | |
| | PAGE | |
| AQ. Route Advance Feature—Tandem Route: | This test checks that the marker functions properly for route advance from tandem route and returns overflow after second trial failure due to mutilated digits. | 2 |
| AR. Route Advance Feature—Intertoll Route: | This test checks that the marker functions properly for route advance from intertoll route. | 5 |
| | AS. Transfer of Start Lead Feature: | |
| | This test checks that the marker recognizes a transfer of marker start lead within a marker-connector. | 8 |
| | AT. Blank and Unequipped Number Feature: | |
| | This test checks that the marker reroutes calls terminated to blank or unequipped numbers to intercept routes. | 9 |
| | AU. Number Series Discrimination or Office Discrimination (Physical, Theoretical, and Extra-Theoretical): | |
| | This test checks that the marker recognizes an incorrect combination of office code and numericals and routes the customer to an intercept trunk. | 11 |
| | AV. Number Series Discrimination or Office Discrimination (Physical and Theoretical) Controlled by High-Low Incoming Group Selection in Revertive Pulse Incoming Register: | |
| | This test checks that the marker recognizes an incorrect combination of high-low indication and numericals. | 14 |
| 1.04 | For Tests AU and AV, the selected code or office indication (A_ B_ C_ keys as required, ITC_ key, or PHC/THC key) and the thousands digit of the numericals should direct the marker to a number group which serves two or more number series (NS0-5) or offices (LPA, LPB, LTA, LTB, LEA, LEB). However, the selected numericals should represent a working line number associated with an office code or indication other than that | |

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selected. In Tests AU and AV, combinations of this type are called unmatched combinations.

1.05 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.

1.06 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.

1.08 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.

1.09 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 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.

1.11 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.

2. APPARATUS

All Tests

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

3. METHOD

| STEP | ACTION | VERIFICATION |
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Note: Refer to paragraphs 1.05, 1.06, 1.07, 1.09, and 1.11.

AQ. Route Advance Feature—Tandem Route

| | | |
|---|---|-------------------------|
| 1 | At MTF— Restore all keys and switches. | |
| 2 | Momentarily operate RL key. | All lamps extinguished. |

| STEP | ACTION | VERIFICATION |
|------|---|---|
| 3 | Select INC class of test. | |
| 4 | Select A_ through K_ digits as required to direct call to outgoing tandem route. | |
| 5 | Select any trunk link frame. | |
| 6 | Select trunk number as required for access to outgoing tandem route. | |
| 7 | Select incoming class of call with translator indication as required for completion to tandem outgoing route. | |
| 8a | If CAMA operation— Select ACD or LCD 1/2 as required for completion to tandem outgoing route. | |
| 9 | Select marker under test. | |
| 10 | Select route advance 0. | |
| 11b | ◆If ETS provided— Operate PTS key.◆ | |
| 12 | Operate REC key. | |
| 13c | ◆If ETS provided and CM dump is required— Operate TCPO key. | |
| | <i>Note:</i> See paragraph 1.11.◆ | |
| 14 | Momentarily operate ST key. | MRL lamp lighted. ◆If ETS not provided— TNK lamp lighted if equipped.◆ Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of tandem outgoing trunk in selected route. ◆If ETS provided— TG_ designation not perforated.◆ |
| 15 | Momentarily operate RL key. | All lamps extinguished. |
| 16 | Select route advance 1. | |
| 17 | Momentarily operate ST key. | Alternate Route Not Provided OFL, MRL, RA1 lamps lighted. ◆If ETS not provided— TNK lamp lighted if equipped. If ETS provided— RA1 lamp not lighted.◆ |

| STEP | ACTION | VERIFICATION |
|------|--|---|
| | | Trouble record taken. OV, OFH, TER, ROA designations perforated. Alternate Route Provided RA1, MRL lamps lighted. ♦If ETS not provided— TNK lamp lighted if equipped. If ETS provided— RA1 lamp not lighted.♦ Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of trunk in alternate route. ♦If ETS provided— TG_ designation not perforated.♦ |
| 18 | Momentarily operate RL key. | All lamps extinguished. |
| 19d | If alternate routes are provided— Select route advance which is one number higher than the number of alternate routes provided. | |
| 20d | Momentarily operate ST key. | OFL, MRL lamps lighted. ♦If ETS not provided— TNK lamp lighted if equipped.♦ RA_ lamp(s) lighted for number of route advances required. ♦If ETS provided— RA_ lamp(s) not lighted.♦ Trouble record taken. OV, OFH, TER, ROA designations perforated. |
| 21d | Momentarily operate RL key. | All lamps extinguished. |
| 22 | Restore all keys and switches. | |
| | ♦Mutilated Digit—Second Trial Failure—Marker Arranged to Return Overflow Rather Than Route Advance | |
| 23 | Select INC class of test. | |
| 24 | Select A_ through K_ digits as required to direct call to outgoing tandem route. | |
| 25 | Select any trunk link frame. | |
| 26 | Select trunk number as required for access to outgoing tandem route. | |
| 27 | Select incoming class of call with translator indication as required for completion to tandem outgoing route. | |

| STEP | ACTION | VERIFICATION |
|------------|---|---|
| 28a | If CAMA operation— Select ACD or LCD 1/2 as required for completion to tandem outgoing route. | |
| 29 | Select marker under test. | |
| 30 | Operate TR2, REC keys. | |
| 31 | Momentarily operate ST key. | MRL lamp lighted. If ETS not provided— TNK lamp lighted if equipped. Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK, TR2 designations perforated indicating location of tandem outgoing trunk in selected route. If ETS provided— TG_ designation not perforated. |
| 32 | Momentarily operate RL key. | All lamps extinguished. |
| 33 | Release F_ digit selected in Step 24. <i>Note:</i> F digit 0/5 registered in the marker should simulate a mutilated digit. | |
| 34 | Release REC key. | |
| 35 | Momentarily operate ST key. | OFL, RA1 lamps lighted. If ETS not provided— TNK lamp lighted if equipped. Trouble record taken. TOG, TR2, designations perforated. F_ designation not perforated. |
| 36 | Momentarily operate RL key. | All lamps extinguished. |
| 37 | Restore all keys and switches.⚡ | |
| AR. | Route Advance Feature—Intertoll Route 2- and 4-Wire Offices—Multilevel Preemption Not Provided | |
| 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 to direct call to outgoing intertoll route. | |

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| STEP | ACTION | VERIFICATION |
|------|--|---|
| 5 | Select any trunk link frame. | |
| 6 | Select trunk number as required for completion to outgoing intertoll route. | |
| 7 | Select incoming class of call with translator indication as required for completion to outgoing intertoll route. | |
| 8a | If CAMA operation— Select ACD or LCD 1/2 as required for completion to outgoing intertoll route. | |
| 9b | If 4-wire route is selected— Operate 4W key. | |
| 10 | Select marker under test. | |
| 11 | Select route advance 0. | |
| 12c | ◆If ETS provided— Operate PTS key.◆ | |
| 13 | Operate REC key. | |
| 14d | ◆If ETS provided and CM dump is required— Operate TCPO key. | |
| | Note: See paragraph 1.11.◆ | |
| 15 | Momentarily operate ST key. | MRL lamp lighted. ◆If ETS not provided— TNK lamp lighted if equipped.◆ Trouble record taken. TT and TOL or CAMS designations perforated. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of outgoing trunk in selected route. ◆If ETS provided— TG_ designation not perforated.◆ |
| 16 | Momentarily operate RL key. | All lamps extinguished. |
| 17 | Select route advance 1. | |
| 18 | Momentarily operate ST key. | Alternate Route Not Provided OFL, MRL, RA1 lamps lighted. ◆If ETS not provided— TNK lamp lighted if equipped. If ETS provided— RA1 lamp not lighted.◆ Trouble record taken. |

| STEP | ACTION | VERIFICATION |
|--|---|--|
| | | OV, OFH, TER, ROA designations perforated. Alternate Route Provided RA1, MRL lamps lighted. ♦If ETS not provided— TNK lamp lighted if equipped. If ETS provided— RA1 lamp not lighted.♦ Trouble record taken. FS_, TS_, TG_, TB_, LC_, LV_, FAK/FBK designations perforated indicating location of trunk in alternate route. ♦If ETS provided— TG_ designation not perforated.♦ |
| 19 | Momentarily operate RL key. | All lamps extinguished. |
| 20e | If alternate routes are provided— Select route advance which is one number higher than number of alternate routes provided. | |
| 21e | Momentarily operate ST key. | OFL, MRL lamps lighted. ♦If ETS not provided— TNK lamp lighted if equipped.♦ RA_ lamp(s) lighted for number of route advances required. ♦If ETS provided— RA_ lamp(s) not lighted.♦ Trouble record taken. OV, OFH, TER, ROA designations perforated. |
| 22e | Momentarily operate RL key. | All lamps extinguished. |
| 23 | Restore all keys and switches. | |
| 4-Wire Office—Multilevel Preemption Provided—♦ETS Not Provided♦ | | |
| 24 | At MTF— Restore all keys and switches. | |
| 25 | Momentarily operate RL key. | All lamps extinguished. |
| 26 | Select INC class of test. | |
| 27 | Select A_ through K_ digits as required to direct call to outgoing intertoll route arranged for multilevel preemption. | |
| 28 | Select any trunk link frame. | |
| 29 | Select trunk number as required for completion to outgoing intertoll route. | |

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| STEP | ACTION | VERIFICATION |
|-------------|--|--|
| 30 | Select incoming class of call with translator indication as required for completion to outgoing intertoll route. | |
| 31 | Select CDP, CDA, CD control digits as required for access to outgoing intertoll route. | |
| 32 | Operate 4W, AD, REC keys. | |
| 33 | Select marker under test. | |
| 34 | Select route advance which is one number higher than number of routes available for associated call. | |
| 35 | Momentarily operate ST key. | 4W, RBT1, BT-OFF lamps lighted. ◆TNK lamp lighted if equipped.◆ RA_ lamp(s) lighted for number of route advances required. |
| 36 | Momentarily operate RL key. | All lamps extinguished. |
| 37 | Select CDP, CDA, CD control digits other than routine priority. | |
| 38 | Momentarily operate ST key. | PE lamp lighted. ◆TNK lamp lighted if equipped.◆ RA_ lamp(s) lighted for number of route advances required. |
| 39 | Momentarily operate RL key. | All lamps extinguished. |
| 40 | Restore all keys and switches. | |

AS. Transfer of Start Lead Feature

| | | |
|---|--|-------------------------|
| 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 G_ digits as required to direct call through intraoffice route to any individual line. | |
| 5 | Select line location as required for line identification of any line which has originating service. | |

| STEP | ACTION | VERIFICATION |
|------|---|---|
| 6 | Select class of service and rate treatment as required for access to selected route. | |
| 7a | ◆If ETS provided— Operate PCS key.◆ | |
| 8 | Select OR class of call with LT Translator indication. | |
| 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 TRS key. | |
| 13 | Momentarily operate ST key. | LK2, MRL lamps lighted. Trouble record taken. TRS designation perforated. |
| 14 | Momentarily operate RL key. | All lamps extinguished. |
| 15 | Restore all keys and switches. | |

AT. Blank and Unequipped Number Feature

| | | |
|----|---|-------------------------|
| 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 G_ digits as required to direct call through intraoffice route to blank or unequipped number. | |
| 5 | Select line location as required for line identification of any line which has originating service. | |
| 6 | Select class of service and rate treatment as required for access to selected route. | |
| 7a | ◆If ETS provided— Operate PCS key.◆ | |

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| STEP | ACTION | VERIFICATION |
|------|---|--|
| 8 | Select OR class of call with LT Translator indication. | |
| 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. | |
| | Note: See paragraph 1.11.◆ | |
| 14 | Momentarily operate ST key. | MRL lamp lighted. Two trouble records taken. First trouble record— ◆If ETS not provided or ETS and AIS without LLP provided— BN or RI designation perforated.◆ If office is arranged for separate trunk groups for intercept— Verify FT_, FU_, VG_, HG_, VF_ designations perforated for intercept trunk. If AIS is provided— FT_, FU_, VG_, HG_, VF_ designations perforated for AIS trunk. |
| 15 | Momentarily operate RL key. | All lamps extinguished. |
| 16 | Restore all keys and switches. | |
| 17 | Select INC class of test. | |
| 18 | Select A_ through G_ digits as required to direct call to blank or unequipped number. | |
| 19 | Select any trunk link frame. | |
| 20 | Select incoming trunk class as required for completion to called line. | |
| 21b | If 4-wire switching route is selected— Operate 4W key. | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 22c | If office is arranged for multilevel preemption— Select CDP, CDA, CD control digits as required for access to called line. | |
| 23e | If office is arranged for multilevel preemption and call is directed to line with multilevel preemption features— Operate AD key. | |
| 24f | If office is arranged for multilevel preemption and call is directed to line without multilevel preemption features— Operate OD key. | |
| 25 | Select incoming class of call with translator indication as required for completion to called line. | |
| 26 | Select marker under test. | |
| 27 | Operate REC key. | |
| 28d | ◆If ETS provided and CM dump is required— Operate TCPO key.◆ | |
| 29 | Momentarily operate ST key. | MRL lamp lighted. Trouble record taken. OV, BN, or RI designation perforated. ◆If ETS without AIS provided or ETS and AIS with LLP provided— BN or RI designation not perforated.◆ If office is arranged for separate trunk groups for intercept trunks— Verify FT_, FU_, VG_, HG_, VF_ designations perforated for intercept trunk. If AIS is provided— FT_, FU_, VG_, HG_, VF_ designations perforated for AIS trunk. |
| 30 | Momentarily operate RL key. | All lamps extinguished. |
| 31 | Restore all keys and switches. | |
| AU. Number Series Discrimination or Office Discrimination (Physical, Theoretical, and Extra-Theoretical) | | |
| 1 | At MTF— Restore all keys and switches. | |
| 2 | Momentarily operate RL key. | All lamps extinguished. |

| STEP | ACTION | VERIFICATION |
|------|---|---|
| 3 | Select ORIG class of test. | |
| 4 | Select A_ through G_ digits as required for unmatched office codes and numerals. | |
| 5 | Select line location as required for line identification of any line with originating service. | |
| 6 | Select class of service and rate treatment as required for access to selected route. | |
| 7a | ◆If ETS provided— Operate PCS key.◆ | |
| 8 | Select OR class of call with LT translator indication. | |
| 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. | |
| | Note: See paragraph 1.11.◆ | |
| 14 | Momentarily operate ST key. | MRL lamp lighted. Two trouble records taken. First trouble record— ◆If ETS not provided or ETS and AIS without LLP provided— BN or RI designation perforated. If office is arranged for separate trunk groups for intercept trunks— Verify FT_, FU_, VG_, HG_, VF_ designations perforated for intercept trunk. If AIS is provided— FT_, FU_, VG_, HG_, VF_ designations perforated for AIS trunk.◆ |
| 15 | Momentarily operate RL key. | All lamps extinguished. |

| STEP | ACTION | VERIFICATION |
|------|--|---|
| 16 | Repeat Steps 4, 14, 15 as required for other combinations of unmatched office code and numerals. | |
| 17 | Restore all keys and switches. | |
| 18 | Select INC class of test. | |
| 19 | Select A_ through D_ digits as required for unmatched office indication and numerals. | |
| 20 | Select any trunk link frame. | |
| 21 | Select incoming trunk class as required for completion of call. | |
| 22 | Select INC incoming class of call with translator indication as required for completion of call. | |
| 23b | If 4-wire switching route is selected— Operate 4W key. | |
| 24c | If office is arranged for multilevel preemption— Select CDP, CDA, CD control digits as required for completion of call. | |
| 25 | Select marker under test. | |
| 26 | Operate REC key. | |
| 27 | ♦If ETS provided and CM dump is required— Operate TCPO key.♦ | |
| 28 | Momentarily operate ST key. | MRL lamp lighted. Trouble record taken. OV, BN, or RI designation perforated. ♦If ETS without AIS provided or ETS and AIS with LLP provided— BN or RI designation not perforated. If office is arranged for separate trunk groups for intercept trunks— Verify FT_, FU_, VG_, HG_, VF_ designations perforated for intercept trunk. If AIS is provided— FT_, FU_, VG_, HG_, VF_ designations perforated for AIS trunk.♦ |
| 29 | Momentarily operate RL key. | All lamps extinguished. |
| 30 | Repeat Steps 19, 28, 29 as required for other combinations of unmatched office indications and numerals. | |

| STEP | ACTION | VERIFICATION |
|--|---|---|
| 31 | Restore all keys and switches. | |
| AV. Number Series Discrimination or Office Discrimination (Physical and Theoretical) Controlled by High-Low Incoming-Group Selection in Revertive Pulse Incoming Register | | |
| 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 D_ digits as required for unmatched office indication and numericals. | |
| 5 | Select any trunk link frame. | |
| 6 | Select incoming trunk class as required for completion of call. | |
| 7 | Select INC incoming class of call with PHC/THC translator indication. | |
| 8 | Select marker under test. | |
| 9 | Operate REC key. | |
| 10a | ♦If ETS provided and CM dump is required— Operate TCPO key. | |
| | Note: See paragraph 1.11.♦ | |
| 11 | Momentarily operate ST key. | MRL lamp lighted. Trouble record taken. OV, BN, or RI designation perforated. ♦If ETS without AIS provided or ETS and AIS with LLP provided— BN or RI designation not perforated. If office is arranged for separate trunk groups for intercept trunks— Verify FT_, FU_, VG_, HG_, VF_ designations perforated for intercept trunk. If AIS is provided— FT_, FU_, VG_, HG_, VF_ designations perforated for AIS trunk.♦ |
| 12 | Momentarily operate RL key. | All lamps extinguished. |

STEP

ACTION

VERIFICATION

13 Repeat Steps 4, 11, 12 as required for other combinations of unmatched office indications and numericals.

14 Restore all keys and switches.