

**PLANT REGISTERS—PART 2**  
**TESTS USING MASTER TEST FRAME**  
**NO. 5 CROSSBAR OFFICES**

**1. GENERAL**

**PAGE**

**1.01** This section is Part 2 in a series of sections that describe methods for testing plant registers.

returned to the customer. This test also checks that where provided this plant register will not operate on test calls.

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**1.02** This issue affects Equipment Test Lists.

**1.03** The test in this section were formerly covered in Section 218-233-501.

**1.04** The tests covered are:

**PAGE**

**G. Incoming Register Link Release Register (LR Register):** This test checks that a plant register operates when a trouble develops in the incoming register link, causing a combined or completing marker to request a trouble recorder card before regular disconnect on first or second trial service calls.

**4**

**H. Ground Test Failure Register (GTF Register):** This test checks that a plant register operates when a combined or completing marker encounters a ground test failure on service calls.

**5**

**I. Selected Traffic Conditions Register (EXR Register):** This test checks that a plant register operates when a combined or completing marker detects a preselected traffic service condition.

**6**

**J. Glare Detection Marker Route Advance and Reorder Registers (GRA and GRO Registers):** This test checks that a plant register operates when a marker detects a glare condition that results in marker route advance action or when a marker detects a glare condition that results in reorder tone

**K. Pretranslator First and Second Trial Trouble Registers (PTR and PST Registers):** This test checks that a plant register operates on first trial failures or on second trial service call failures.

**9**

**L. Outgoing Sender Group Usage Register (OSG Register):** This test checks that a plant register operates when a combined or completing marker selects a sender associated with a particular sender group on service calls.

**10**

**1.05** Plant registers are located either in a self-contained register cabinet and referred to as the plant register circuit or just above the trouble recorder perforator on the master test frame (MTF) trouble recorder bay.

**1.06** Table A indicates the tests requiring action and verification at more than one location.

**TABLE A**

| ACTION AND/OR VERIFICATION<br>REQUIRED AT: | TESTS |   |   |   |   |   |
|--|-------|---|---|---|---|---|
|  | G     | H | I | J | K | L |
| Master Test Frame                          | ✓     | ✓ | ✓ | ✓ | ✓ | ✓ |
| Marker Frame                               | ✓     | ✓ | — | ✓ | — | ✓ |
| Plant Register Circuit                     | ✓     | ✓ | ✓ | ✓ | ✓ | ✓ |
| Pretranslator Frame                        | —     | — | — | — | ✓ | — |

✓As required.

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**1.07 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.

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

**1.09** The manner of selecting some circuits and test conditions at the 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.

**1.10** 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 B. The details of each item are covered in the paragraph indicated by the number in parentheses. In addition, the following apparatus may also be required.

- (a) Apparatus covered in 2.04 and 2.05 is required when a portable lamp is used to determine register operation.
- (b) Two head telephone sets are required when a portable lamp is not used.
- (c) A 32A test set is required when the master test frame is controlled from a remote point.

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

**TABLE B**

| APPARATUS             | TESTS |   |   |   |   |   |
|-----------------------|-------|---|---|---|---|---|
|                       | G     | H | I | J | K | L |
| Test Circuit (2.02)   | 1     | 1 | 1 | 1 | 1 | 1 |
| 322A (make-busy) Plug | 1     | 1 | — | 1 | 2 | 1 |
| Tool (2.03)           | 1     | 1 | — | — | — | — |
| Cord (2.06)           | —     | — | — | — | 1 | — |
| Cord (2.07)           | 1     | — | — | 1 | — | 1 |
| Cord (2.08)           | 1     | — | — | — | — | 1 |

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

**2.04** Two testing cords, W2W cords, 10 feet long, each equipped with a 310 plug, two 360-type tools (2W17C cords), two KS-6278 connecting clips, and two 108 cord tips (required when a portable test lamp is used).

**2.05** 38B lamp socket, equipped with a 2Y lamp (required when a portable test lamp is used).

**2.06** Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one KS-6278 connecting clip, one 419A (test connector) tool (for use in connecting battery or ground to springs of nonwire-spring-type relays).

**2.07** Testing cord, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord), two 639A (contact connector) tools and two 651-type tools (for making connections to contacts of wire-spring-type relays).

**2.08** Testing cord, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord) and two 419A (test connector) tools (for making connections to contacts of nonwire-spring-type relays).

**2.09** When making connections to relays using test cords listed in this section, use as covered in Section 069-131-811.

**3. PREPARATION**

| STEP | ACTION | VERIFICATION |
|------|--------|--------------|
|------|--------|--------------|

**All Tests**

*Note:* Refer to 1.09 and 1.10.

- |    |   |  |
|----|---|--|
| 1a | If tests are to be performed without portable test lamp—<br>Establish talking circuit between frames where test is to be performed and where observations are to be made.   |  |
| 2b | If tests are to be performed with portable test lamp—<br>At frame where action is to be taken—<br>Insert plug of 2W17C cord, equipped with two KS-6278 connecting clips, into SP jack of miscellaneous circuit.   |  |
| 3b | Determine from circuit drawing of circuit associated with register to be tested, location of terminal on terminal strip at which plant register circuit is connected.   |  |
| 4b | Connect one lead of 2W17C cord to terminal on terminal strip associated with plant register being tested.   |  |
| 5b | Connect other lead of 2W17C cord to battery.  |  |
| 6b | Connect leads of 38B lamp socket to leads of another 2W17C cord, equipped with two KS-6278 connecting clips.  |  |
| 7b | Insert plug of this 2W17C cord into any appearance of selected SP jack of miscellaneous circuit close to position where test is to be performed.  |  |
| 8b | Place portable test lamp so that it can be easily observed.   |  |
| 9b | If tests are to be performed with portable test lamp—<br>To observe scoring of register when using portable test lamp, proceed as follows:<br>(a) For first observation of scoring of register, observe that portable test lamp indicates proper condition on lead and that register scores as required.<br>(b) For subsequent observations of scoring of |  |

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| <b>STEP</b> | <b>ACTION</b>  | <b>VERIFICATION</b>     |
|-------------|--|-------------------------|
|             | same register, observe portable test lamp indications only.  |                         |
|             | <i>Note:</i> When the register to be tested scores at timed intervals, the portable test lamp will flash with the scoring of the register. |                         |
| 10          | At MTF—<br>Restore all keys and switches.  |                         |
| 11          | Momentarily operate RL key.  | All lamps extinguished. |
| 12c         | If testing 4-wire switching systems—<br>Operate 4W key.  |                         |
| 13c         | Select control digits.   |                         |

**4. METHOD**

| <b>STEP</b>   | <b>ACTION</b>   | <b>VERIFICATION</b> |
|---|---|---------------------|
| <b>G. Incoming Register Link Release Register (LR Register)</b> |   |                     |
| 14  | Insert make-busy plug into M-D-MB or M-MB jack associated with combined or completing marker.   |                     |
| 15  | At marker frame—<br>Block nonoperated MT13 relay.   |                     |
| 16d   | If marker is nonwire-spring-relay type and is arranged to prevent scoring of plant registers when made busy (wiring on 3B of MB relay)—<br>Interconnect 3B on MB relay, 7B on DISA relay. |                     |
| 17e   | If marker is wire-spring-relay type and is arranged to prevent scoring of plant registers when made busy (wiring on 7 of MB relay)—<br>Interconnect 7 on MB relay, 4 on DISA relay.       |                     |
| 18  | At MTF—<br>Select A or B office designation.  |                     |
| 19  | Select A- through D- digits to direct call to any local terminating number.   |                     |
| 20  | Select INC class of test.   |                     |
| 21  | Select incoming trunk class.  |                     |

| STEP | ACTION   | VERIFICATION  |
|------|--|---|
| 22   | Select incoming trunk link frame location.   |   |
| 23   | Operate LR key to simulate a link release condition.   |   |
| 24   | Select marker made busy in Step 14.  |   |
| 25   | Momentarily operate ST key.  | At plant register circuit—<br>LR plant register scored once.<br>Minor alarm sounds. |
| 26   | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.   |
| 27   | Momentarily operate TRR-AR key.  | Minor alarm silenced.   |
| 28   | At marker frame—<br>Remove blocking tool from MT13 relay.  |   |
| 29f  | If marker is arranged to prevent scoring of plant registers when made busy—<br>Remove testing cord from MB, DISA relays. |   |
| 30   | At MTF—<br>Remove all make-busy plugs.   |   |
| 31   | Repeat Steps 14 through 30 for each combined or completing marker to be tested for plant register operation.             |   |
| 32   | Restore all keys and switches and remove all patching cords not required in next test.                                   |   |

#### H. Ground Test Failure Register (GTF Register)

|    |   |
|----|---|
| 14 | Restore CGT (or CGT N PBX), CLPT (or CGT PBX) keys, if operated.                            |
| 15 | Select ORIG class of test.  |
| 16 | Select A- through G- digits to direct call to an intraoffice code and any directory number. |
| 17 | Select class of service and rate treatment as required.                                     |
| 18 | Select a customer line location.  |
| 19 | Operate GT key to simulate a marker ground test failure.                                    |

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| <b>STEP</b> | <b>ACTION</b>  | <b>VERIFICATION</b>   |
|-------------|--|---|
| 20          | Insert make-busy plug into M-D-MB or M-MB jack associated with combined or completing marker.                      |   |
| 21          | Select marker made busy in Step 20.  |   |
| 22          | At marker frame—<br>Block nonoperated MT13 relay.  |   |
| 23          | At MTF—<br>Momentarily operate ST key.   | At plant register circuit—<br>GTF plant register scored once. |
| 24          | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.                                       |
| 25          | Operate TP key to simulate tip party originating customer.   |   |
| 26          | Momentarily operate ST key.  | At plant register circuit—<br>GTF plant register scored once. |
| 27          | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.                                       |
| 28          | Restore TP key.  |   |
| 29          | At marker frame—<br>Remove blocking tool from MT13 relay.  |   |
| 30          | Repeat Steps 14 through 29 for remaining combined or completing markers to be tested for plant register operation. |   |
| 31          | At MTF—<br>Restore CGT (or CGT N PBX), CLPT (or CGT PBX) keys to position prior to start of test.                  |   |
| 32          | Restore all keys and switches not required in next test.   |   |

**I. Selected Traffic Conditions Register (EXR Register)**

- |    |   |
|----|---|
| 14 | Determine from local office records markers arranged for peg count registration of selected traffic conditions. |
| 15 | Restore EXR key if operated.  |
| 16 | Select A- through G- digits to select trunk route to set the traffic condition desired in marker.               |

| STEP | ACTION   | VERIFICATION  |
|------|--|---|
| 17   | Select customer line location.   |   |
| 18   | Select class of service and rate treatment as required.                                |   |
| 19   | Select ORIG class of test.   |   |
| 20   | Select marker.   |   |
| 21   | Momentarily operate ST key.  | At plant register circuit—<br>EXR plant register associated with marker under test scored once. |
| 22   | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.   |
| 23   | Repeat Steps 14 through 22 for all markers to be tested for plant register operation.  |   |
| 24   | Restore EXR key to its original position.  |   |
| 25   | Restore all keys and switches and remove all patching cords not required in next test. |   |

**J. Glare Detection Marker Route Advance and Reorder Register (GRA and GRO Registers)**

**Common to Route Advance and Reorder Condition**

|     |   |
|-----|---|
| 14  | Select OGT class of test.   |
| 15  | Operate TLK, KY, E-M keys.  |
| 16  | Select class of service and rate treatment as required.   |
| 17  | Select A- through L- digits as required to select trunk route arranged for glare detection features.                        |
| 18d | If trunk group selected is provided with allotted trunks—<br>Operate GPA/GPB key as required to select trunk group desired. |
| 19  | Insert make-busy plug into M-MB jack associated with completing marker.   |
| 20  | Select maker.   |
| 21e | If marker is arranged to prevent scoring of plant registers on glare detection test calls                                   |

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| <b>STEP</b>                    | <b>ACTION</b>   | <b>VERIFICATION</b>   |
|--------------------------------|---|---|
|                                | (wiring on 7 of MT1 relay)—<br>At marker frame—<br>Interconnect 7 of MT1 and 10 of GLC relays.  |   |
| 22f                            | If toll screening is provided—<br>Select subclass of test as required.  |   |
| 23                             | Select route advance 0.   |   |
| <b>Route Advance Condition</b> |   |   |
| 24                             | Operate ANS, GLMN keys to simulate glare detection within minimum timing interval.  |   |
| 25                             | Momentarily operate ST key.   | At plant register circuit—<br>GRA plant register scored once.         |
| 26                             | At MTF—<br>Restore ANS, GLMN keys.  |   |
| 27                             | Momentarily operate RL key.   | All lamps extinguished.   |
| <b>Reorder Condition</b>       |   |   |
| 28                             | Operate GLMN key.   |   |
| 29                             | Momentarily operate ST key.   | At plant register circuit—<br>GRO plant register scored once.         |
| 30                             | At MTF—<br>Restore TLK key.   |   |
| 31                             | Momentarily operate RL key.   | All lamps extinguished.   |
| 32e                            | If marker is arranged to prevent scoring of plant registers on glare detection test calls (wiring on 7 of MT1 relay)—<br>At marker frame—<br>Remove interconnection from MT1, GLC relays. |   |
| 33e                            | Repeat Steps 24 through 31.   | At plant register circuit—<br>GRA, GRO plant registers did not score. |
| 34                             | At MTF—<br>Remove make-busy plug from M-MB jack.  |   |
| 35                             | Repeat Steps 14 through 34 for all completing markers to be tested for plant register operation.  |   |
| 36                             | Restore all keys and switches and remove all patching cords not required in next test.  |   |

| STEP  | ACTION   | VERIFICATION   |
|---|--|--|
| <b>K. Pretranslator First and Second Trial Trouble Register (PTR and PST Registers)</b> |  |  |
| 14  | Insert make-busy plug into PRT-MB jack associated with pretranslator.                        |  |
| 15  | Insert make-busy plug into TRMB PRT- jack associated with pretranslator.                     |  |
| 16  | At pretranslator circuit under test—<br>Connect ground to 6T of TR2 relay.                   |  |
| 17  | At MTF—<br>Select A-, B-, C- digits for any area or office code.                             |  |
| 18  | Select PTT class of test.  |  |
| 19  | Select pretranslator.  |  |
| 20  | Operate PRL key.   |  |
| 21  | Momentarily operate ST key.  | At plant register circuit—<br>PTR plant register associated with pretranslator under test scored once. |
| 22  | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.  |
| 23  | Operate TR2 key to simulate second trial call condition.                                     |  |
| 24  | Momentarily operate ST key.  | At plant register circuit—<br>PST plant register scored once.  |
| 25  | At MTF—<br>Momentarily operate RL key.   | All lamps extinguished.  |
| 26  | At pretranslator circuit—<br>Remove test connection from TR2 relay.                          |  |
| 27  | At MTF—<br>Remove all make-busy plugs.   |  |
| 28  | Repeat Steps 14 through 27 for each pretranslator to be tested for plant register operation. |  |
| 29  | Restore all keys and switches and remove all patching cords not required in next test.       |  |

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| <b>STEP</b>   | <b>ACTION</b>  | <b>VERIFICATION</b>  |
|---|--|--|
| <b>L. Outgoing Sender Group Usage Register (OSG Register)</b> |  |  |
| 14  | Insert make-busy plug into M-C-MB or M-MB jack associated with combined or completing marker.  |  |
| 15d   | If marker selected is wire-spring-relay type—<br>At marker frame—<br>Interconnect 9 of MT13 relay, 10 of SLK2 relay.   |  |
| 16e   | If marker selected is flat-spring-relay type—<br>Interconnect 5T of MT13 relay, 5B of SLK2 relay.  |  |
| 17  | Block nonoperated MT18 relay.  |  |
| 18  | At MTF—<br>Select ORIG class of test.  |  |
| 19  | Select marker.   |  |
| 20  | Select A- through G- digits to direct call to trunk route associated with sender group register to be tested.  |  |
| 21  | Select customer line location.   |  |
| 22  | Select class of service and rate treatment as required.  |  |
| 23f   | If trunk group selected has allotted trunks and all trunks do not have access to sender group—<br>Operate GPA/GPB key to select trunk group having access to sender group. |  |
| 24  | Momentarily operate ST key.  | At plant register circuit—<br>OSG plant register associated with marker and sender group under test scored once. |
| 25  | At MTF—<br>Momentarily operate RL key.   |  |
| 26  | At marker frame—<br>Remove interconnections from MT13 relay and SLK2 relay.  |  |
| 27  | Remove blocking tool from MT18 relay.  |  |

| STEP | ACTION   | VERIFICATION |
|------|--|--------------|
| 28   | At MTF—<br>Remove make-busy plug from M-C-MB or M-MB jack associated with combined or completing marker.     |              |
| 29   | Repeat Steps 14 through 28 for each combined or completing marker to be tested for plant register operation. |              |
| 30   | Restore all keys and switches and remove all patching cords not required in next test.                       |              |

