

## ORIGINATING MARKER TEST

Replaces: Section 172.2  
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| <p>1. <u>GENERAL INFORMATION</u></p> <p>1.1 Refer to Originating Marker Tests per Section 172 for General Information, Test Procedure, Records and Requirements, Test Equipment and Test Setup. This section describes tests of the time measure function of the marker.</p> <p>1.2 To make the timing measurements required in this section, use Stop Watch R-3314. Unless otherwise specified, timing begins when the test call is started.</p> <p>2. <u>FIRST TIMING STAGE</u></p> <p>NOTE: This test checks that the marker times out when the information from the sender is not properly received before the first timing stage has elapsed.</p> <p>2.1 Block relays CK1 and CK3 normal and make a test call. Observe that the marker times out in 1 to 2 seconds, lamps CKG and K5 light and lamp MS does not light. Remove the blocks from relays CK1 and CK3.</p> <p>2.2 Block operated relay CK1. Make a test call and observe that the marker times out in 1 to 2 seconds, lamps CKG, K4, K5 light, and lamp MS does not light. Remove the block from relay CK1.</p> <p>2.3 Block operated relay CK3. Make a test call and observe that the marker times out in 1 to 2 seconds, lamps CKG, K4 and K5 light, and lamp MS does not light. Remove the block from the CK3 relay.</p> | <p>3. <u>SECOND TIMING STAGE (AFTER REGISTRATION)</u></p> <p>NOTE: This test checks that the marker times out after registration is complete when the office link connector is not seized before the second timing stage has elapsed.</p> <p>3.1 Insulate contacts 1B-2B of relay ST3. Start a test call and observe that the marker times out in 4 to 5 seconds and lamps CKG, TK, TKE, CHE, TM6 and EC (ZO wiring only) light. Lamps DK, CK and MS do not light. Remove the insulator from relay ST3.</p> <p>4. <u>SECOND TIMING STAGE (AFTER OFFICE LINK SEIZURE)</u></p> <p>NOTE: This test checks that the marker times out after seizure of the office link connector when the district link connector checks busy and is not checked connected before the second timing stage has elapsed.</p> <p>4.1 Insulate contacts 5 and 6B relay ST5. Operate key F-0 and start a test call. Observe that the marker times out in 4 to 5 seconds and that lamps TM6, CKG, TK, CK, CHE and DK light. Lamps AK, SR and MS do not light.</p> <p>4.11 Operate (F) keys as required and repeat the test described in Paragraph 4.1 once for each district link frame. Observe the same test results for each of the test calls. Remove the insulation from relay ST5.</p> |
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5. CONDENSER TIMED TIME-OUT

NOTE A: The test described in Paragraph 5.1 checks that the marker times out after seizure of the office link when the district link checks idle and the channel circuits are not checked connected for test before the interval (.4 second) allowed by the TM condenser has elapsed.

NOTE B: The test described in Paragraph 5.2 checks that the marker times out after the channel circuits are checked connected for test when the marker is not released before the interval allowed by the TM condenser has elapsed.

NOTE C: The tests described in Paragraphs 5.3 and 5.31 check that the marker cancels condenser timed time out on a permanent signal call from a line with an open message register cross-connection.

5.1 Insulate contacts 2-3 of relay XDF and 13-13M of relay CIF1. Start a test call and observe that the marker times out approximately 1/2 second after relay OCB operates, lamps CKG, TK and CK light and lamps TM6, DK, AK, SR and BK do not light. Remove the insulator from relay XDF.

5.2 Block relay SIK nonoperated, operate key AR and start a test call. Observe that the marker times out approximately 1/2 second after relay BK operates and that lamps AK, CK, DK, SR, RL, BK, MS and S light. Lamps SIK and TM6 do not light and a major alarm does not operate.

5.21 Cross contacts 1B-2B of relay XBE and repeat the test call described in Paragraph 5.2. Observe that the marker times out in 1/2 seconds after the DK relay operates and that lamps AK, CK, DK, SR, RL, BK, MS and S light. Lamp SIK does not light.

5.211 Remove the cross from 1B-2B of relay XBE and cross 1B-2B contacts of relay XBO. Repeat the test call. Observe the same test results. Remove the block from relay SIK and the cross from relay XBO. Restore key AR.

5.3 Operate key PS, key MR1 and a CS key associated with a class of service which requires a line message register cross-connection. Insulate contacts: (1B-2B) of MR1 for Figure AA, (1T-2T) and (4T-5T) of MR1 for Figure AB and (5T-6T) and (8T-9T) of MR1 for Figure AC. If equipped with IX option, insulate 1 and 2B, relay PS.

5.31 Start a test call. Observe that the marker times out in approximately 1/2 second after relay BK operates and that lamps PS1, MR1, OT, OT1, DK, AK, SR, RL, MS, CK, BK, B, SIK, MRL and EC light. Lamps MR and TM6 do not light.

5.32 Remove insulators from: (1B-2B) of MR1 for Figure AA, (1T-2T) and (4T-5T) of MR1 for Figure AB, (5T-6T) and (8T-9T) of MR1 for Figure AC. Repeat the test call. Observe that the marker times out in 2.0 to 3.0 seconds after relay DK operates and that lamps PS1, MR1, OT, OT1, DK, AK, SR, RL, MS, CK, BK, B, SIK, MRL and EC light. Lamp MR does not light. Restore keys PS, MR and CS and remove insulation from 1 and 2B, relay PS.

5.4 Block relay ZL normal. Operate key AR and start a zone charge test call. The marker times out after 2-3 seconds. Note that the ZCK and SL lamps do not light. Remove block from ZL relay.

5.41 Block relay ZO nonoperated. Operate keys AR and ZOF. Start a test call to a route requiring zone charge conditions. Note that the marker times out after 2-3 seconds. The TCK and SL lamps do not light. Remove block from ZO relay and insulation from 13-13M of CIF1 relay.

6. THIRD TIMING STAGE

NOTE: This test checks that the marker times out after the office and districts links are connected when the marker is not released and has not timed out through the operation of the condenser timed time out circuit before the third timing stage has elapsed.

6.1 Block relay SIK normal, insulate 13-13M of CIF1 relay and start a test call. Observe that the marker times out in 2 to 3 seconds after relay DK operates and that lamps SR, MS, CK, DK, BK, S, MR, RL, MRL and EC light. Lamp SIK does not light. Remove the block from relay SIK and insulation from relay CIF1.

7. RELEASE STAGE (TM-7)

NOTE: This test checks that the marker functions to release the office and district link connectors, transmits a trouble release signal, operates a major alarm and releases itself for service, when the trouble indicator fails to cause the marker to release before relay TM7 operates after time out.

7.1 Operate key BAT, block relay TR normal and start a test call. Observe that an O and D lamp light, indicating connection to the associated office and district link connectors.

- 7.11 After 3 to 4 seconds, marker relays TM7, TM10, RL and MRL operate, the O and D lamps are extinguished, marker lamp TA and trouble indicator lamps DT and MB associated with the marker under test light, the major alarm operates and marker relays CBR, CBS and CBT, if equipped, release.
- 7.12 Momentarily operate marker key AR to extinguish the lighted lamps and to silence the alarm. Repeat the test as required.
- 7.13 On repeat tests, check that ground is momentarily connected to lead TRL on Terminal 01 of T.S. OMC-B and lead TRL on Terminal 01 of T.S. DIST-A. Remove the block from relay TR.
8. TM LEAD
- 8.1 Momentarily release relays DA1 and DA2, one at a time. Observe that relay TMS1 operates in each case and in addition, the RX relay operates when DA2 is released.
- 8.2 Momentarily operate relay ST1. Observe that relays TMS1, DLX and RX operate momentarily.
9. LONG TIME-OUT
- NOTE: This test checks that the marker functions to release the associated connector circuits, operates the major alarm and holds itself busy when ground is not removed from interrupter DB before the long time out interval has elapsed.
- 9.1 DB Interrupter
- NOTE: This test should be made during light traffic because it will hold connectors busy.
- 9.11 Block relay SDT operated. Observe that relay TM8 operates and that 6, 7 and 13 seconds later, respectively, relays TM8B, TM8C and TM9 operate. Remove the block from relay SDT and momentarily operate key AR to restore the alarm.
- 9.12 Block relays TR and TM7 normal and start a test call. Observe, after 12 to 19 seconds, that marker relays TM9, TM10 and MRL operate, marker lamp TA, the associated aisle pilot and trouble indicator lamps DT and MB associated with the marker under test light, the major alarm sounds, relays DK, the operated O-, CBR, CBS and CBT, if equipped, release.
- 9.121 Momentarily operate marker frame key AR to extinguish the lighted lamps and to silence the alarm. Repeat the test as required. On repeat tests, check that ground is momentarily connected to the TRL leads toward the marker connector and the district link frames. (T.S. OMC-B Terminal 01 and T.S. DIST-A Terminal 01.) Remove the blocks from relays TR and TM7.
10. DB LEAD
- 10.1 Verify that relays XRL, TR, SDT, XX1 and XX2 of the marker and the DT relay of the trouble indicator associated with the marker under test ground the DB lead by momentarily operating each one of these relays one at a time and observing that the CBR, CBS and CBT relays, as provided, operate.
11. OVERLAP OPERATION (SHORT TIME-OUT)
- 11.1 Block relays: DL, TM7, TM8, TMS and DA1 normal. Observe that relays TMS1, TM1, TM4, TM5 and TM6 operate in that order. Momentarily operate relay DK and then DLX. Observe that relays TMS1, TM1, TM4, TM5 and TM6 release in each case. Repeat the momentary operation of relay DK or DLX as required.
- 11.11 Block relay DLX operated and observe that none of relays TMS1, TMS2, TM1, TM4, TM5 and TM6 operate. Cross contacts 9B and 10B of relay ST1 and observe that relays TMS1, TM1, TM4, TM5 and TM6 operate. Remove the cross from relay ST1 and the blocks from relays DA1 and DLX.
- 11.12 Remove the block from relay TMS and again block relay DA1 normal. Observe that relays TMS1, TM1, TM4, TM5 and TM6 operate.
- 11.121 When relay TM6 operates, manually operate relay DK. Observe that relay TMS operates and relays TMS1, TM1, TM4, TM5 and TM6 operate.
- 11.122 Release the DK relay. Observe that relays TMS, TMS2, TM4, TM5 and TM6 release and the cycle is repeated as it began. Repeat the test as required and remove the blocks from all relays.
12. OVERLAP OPERATION (LONG TIME-OUT)
- 12.1 Block operated relay SDT. Observe that relays TM8, TM8B, TM8C, TM9 and TM10 operate in that order.

- 12.11 Remove the block from relay SDT and momentarily operate marker frame key AR. Observe that relays, TM8, TM8B, TM8C, TM9 and TM10 release.
- 12.2 Block operated relay TMS. Observe that relays TM8A, TM8B, TM8C, TM9 and TM10 operate in that order.
- 12.21 Remove the block from relay TMS and momentarily operate marker frame key AR. Observe that relays TM8A, TM8B, TM8C, TM9 and TM10 release.
- 12.3 Block normal relay TM9 and block operated relay SDT. Observe that relays TM8, TM8B and TM8C operate.
- 12.31 When relay TM8C operates, manually operate relay DK. Observe that relay TMS operates and relays TM8, TM8B and TM8C release, and then; relays TM8A, TM8B and TM8C operate.
- 12.32 Release the DK relay. Observe that relays TMS, TM8A, TM8B and TM8C release and the cycle is repeated as it began. Repeat the test as required.
- 12.4 On one of the tests described in Paragraph 12.3 check that relay TMS can be held operated by operating relay AK1, (relay DK released). Release relay AK1. Repeat this test using relay CK. Remove the blocks from relays SDT and TM9.

No Changes Indicated Due  
To Extensive Revision

### 13. DK-DC LEAD

NOTE: This test checks that relay TM7 or TM9 operated opens the DK-DC lead.

- 13.1 Insulate 1B and 2B contacts of relay TM7. Make a test call and observe that the marker times out, marker timing relay TM1 does not operate, marker relay DK operates and lamp DK lights. Remove the insulator from the contacts or relay TM7. Repeat the test using contacts 1B and 2B of relay TM9.

### 14. MISCELLANEOUS FEATURES

NOTE: These tests cover miscellaneous features which are not checked readily by operating tests.

#### 14.1 Office Line Start Lead

- 14.11 Block relays TMS1 and TM10 normal and ST1 operated. Check that battery (226 ohm) is connected to contact 1T of relay TM9. Momentarily operate relay TM7 and check that battery is removed while relay TM7 is operated. Momentarily operate relay TM9 and check that battery is removed from 6B of relay SR while relay TM9 is operated.

#### 14.12 Locking Path for Relay ST5

- 14.21 Connect ground to 4B (TM9). Manually operate relay ST5 and check that it locks operated. Open contacts 4B and 5B (TM9) and observe that relay ST5 releases. Remove ground from 4B (TM9).

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#### Reason For Reissue:

1. To make corrections and clarifications.
2. To make a general revision to update to current Engineering Standards.