

**CORD SERVICE OBSERVING CIRCUITS  
AND ASSOCIATED DIAL TO MF PULSE CONVERTERS  
DIAL PULSE MONITORING  
AND DC SIGNAL MONITORING CIRCUITS  
FOR POSITIONS ARRANGED FOR DIALING  
TESTS  
NO. 12 OR MODIFIED NO. 7 SERVICE OBSERVING DESKS**

**1. GENERAL**

**1.01** This section describes a method of testing the cord service observing circuits, with or without a remote control connector circuit; the associated dial to MF pulse converter circuit; dial pulse monitoring circuits; dc signal monitoring circuit; and the transmission check circuit on cord service observing circuits (SOC) associated with a No. 12 or modified No. 7 service observing desk position and a toll or DSA switchboard position.

**1.02** This section is reissued to make a minor change in the title and to provide a method of checking the transmission check circuit.

**1.03** The tests covered are:

**A. Circuit Alarm Test (Where Provided):**  
This test checks:

- (1) Continuity of contact chain.
- (2) Audible alarm release.
- (3) Restoration of trunk to service.
- (4) Potential check on connector leads.

**B. Loop Reduction (Where Provided):** This test checks:

- (1) Out-of-service trunk condition.

(2) Connector loops in group A.

(3) Connector loops in group B.

(4) Connector loops in both groups A and B.

(5) Connector loops in neither group A nor group B.

**C. Plug-Up, Supervision, and Stale Call:** This test checks:

(1) Front and rear cord plug-up.

(2) Front and rear cord supervision.

(3) Front and rear cord transmission.

(4) Operating group identification.

(5) Connector release under control of RLS key at No. 7 or No. 12 desk.

(6) Stale call rejection.

**D. Ringing — No. 3, 3C, and 3CL Toll Switchboards:** This test checks that ringing on the front or rear cord lights the FR or RR lamp at the No. 7 or No. 12 desk.

**E. Dial Operation — No. 1 Toll Switchboard:**  
This test checks:

- (1) Dial circuit attached.

- (2) Dial pilot.
- (3) Called number registration.
- (4) Operation of indicator lamps at desk.
- (5) Extra digit dialed.
- (6) Dial circuit disconnect.
- (7) Trunk disconnect.
- (8) Dial attached timing.
- (9) Operation of connector identification.

**F. Dial Operation — No. 3, 3C, and 3CL Toll Switchboards:** This test checks the features outlined in Test E.

**G. Dial Operation — No. 13C, 13D, 15C, and 15D DSA Switchboards:** This test checks the features outlined in Test E.

**H. Dial Operation — No. 14C and 14D DSA Switchboards:** This test checks the features outlined in Test E.

**I. Dialing Against Reorder Signal:** This test determines whether or not digits dialed after a reorder signal is received are incorrectly registered at the desk.

**J. Remote Control Connector (Where Provided):** This test checks the operation of the position and cord connector relays at the switchboard under control of the remote control connector position and cord selector switches.

**K. Transmission Check Circuit (Where Provided):** This test checks for the proper operation of circuits and relays associated with the transmission calibration check circuit.

**1.04** Tests A and B require action and verification at the No. 7 or No. 12 desk and at the relay frame on which the cord service observing equipment is located.

**1.05** Tests C through I and K require action and verification at the No. 7 or No. 12 desk and at the switchboard position at which the cord under observation is located.

**1.06** Test J requires action and verification at the remote control connector cabinet and at the associated switchboard positions.

**1.07** A talking path will be required between the No. 7 or No. 12 desk and the relay frame on which the cord service observing equipment is located and also between the No. 7 or No. 12 desk and the switchboard position at which the cord under observation is located.

**1.08** Approval of the traffic department shall be obtained before performing these tests.

**1.09** Perform Tests C through I and K on one cord associated with any connector. Perform Test C on one cord of each remaining connector. Where a remote control connector circuit is provided, different settings on the cord and position switches should be used in order to check paths through the remote control connector circuit.

**1.10** Where connection to the cord under observation requires the use of a patching cord equipped with a No. 615A Tool, the procedure to be followed shall be in accordance with Section 210-101-301.

**1.11 Lettered Steps:** A letter a, b, c, etc, is added to a step number to indicate that the step covers an action which may or may not be required, depending on local conditions. The conditions under which a lettered step or series of steps should be made are given in the ACTION column, and all steps governed by the same condition are designated by the same letter. Where a condition does not apply, the associated steps should be omitted.

## 2. APPARATUS

**2.01** The apparatus required for each test is shown in Table A. The details of each item are covered in the indicated paragraph.

TABLE A

| APPARATUS                             | TEST |   |   |   |   |   |   |   |   |   |   |
|---------------------------------------|------|---|---|---|---|---|---|---|---|---|---|
|                                       | A    | B | C | D | E | F | G | H | I | J | K |
| No. 1020B Headset                     | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 |
| Operator Telephone Set                | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 |
| Portable Control Test Set,<br>J64717B | -    | - | - | 1 | - | 1 | - | - | - | - | - |
| Test Cord (2.02)                      | -    | - | 1 | - | 1 | - | - | - | - | - | - |
| Test Cord (2.03)                      | -    | - | - | - | - | - | 1 | - | - | - | - |
| Test Cord (2.04)                      | -    | - | - | - | - | - | - | 1 | - | - | - |
| Test Cord (2.05)                      | -    | - | - | 1 | - | 1 | - | - | - | - | - |
| Test Cord (2.06)                      | -    | - | - | 1 | - | 1 | - | - | - | - | - |
| Test Cord (2.07)                      | -    | - | - | 1 | - | 1 | - | - | - | - | - |
| Test Cord (2.08)                      | -    | - | - | - | 1 | 1 | 1 | 1 | - | - | - |
| KS-3008 Stop Watch                    | 1    | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | - | 1 |
| Blocking tools (2.09)                 | √    | - | - | - | √ | √ | √ | √ | - | √ | √ |

√ As Required

**2.02** Special cord for use with No. 1 Toll Switchboard, constructed as follows:

- (a) Use No. 309 or No. 310 red plug and No. 309 or No. 310 black plug, depending upon jacks used.
- (b) Use two standard-type switchboard cords.
- (c) Connect the tip of the red plug to the ring of the black plug with a KS-13492, L3 1000-ohm resistor, or equivalent, inserted in this connection.
- (d) Connect the sleeve of the red plug to the tip of the black plug.

**2.03** Special cord for use with No. 13C, 13D, 15C, or 15D DSA switchboard, constructed as follows:

- (a) Use No. 309 or No. 310 red plug and No. 309 or No. 310 black plug, depending upon jacks used.
- (b) Use two standard-type switchboard cords.

(c) Connect the tip of the red plug to the tip of the black plug with a KS-13492, L3 1000-ohm resistor, or equivalent, inserted in this connection.

(d) Connect the ring and sleeve of the black plug together.

**2.04** Special cord for use with No. 14C or No. 14D DSA switchboard, constructed as follows:

(a) Use No. 309 or No. 310 plug, depending upon jacks used.

(b) Use a standard-type switchboard cord.

(c) Connect the tip of the cord to one side of an 18EW resistor (5000 ohms).

(d) Connect the other side of the 18EW resistor to the sleeve of the cord, and also to one side of an 18CK resistor (440 ohms).

(e) Connect the other side of the 18CK resistor to the ring of the cord.

## SECTION 210-114-502

### 2.05 One of the following cords:

- (a) 49-type jack switchboard; P3E cord, 6 feet long, equipped with two No. 310 plugs (3P7A cord).
- (b) 92-type jack switchboard; P3F cord, 6 feet long, equipped with one No. 309 plug and one No. 310 plug (3P12E cord).

### 2.06 One of the following cords:

- (a) 49-type jack switchboard; P3E cord, 6 feet long, equipped with two No. 110 plugs (3P6C cord).
- (b) 92-type jack switchboard; P3F cord, 6 feet long, equipped with one No. 309 plug and one No. 310 plug (3P12F cord).

### 2.07 One of the following cords:

- (a) 49-type jack switchboard; P3E cord, 6 feet long, equipped with two No. 310 plugs and one No. 310 plug (3P6D cord).
- (b) 92-type jack switchboard; P3F cord, 6 feet long, equipped with one No. 309 plug and one No. 310 plug (3P12G cord).

**2.08** No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B cord) and two No. 419A tools. (Used to establish test connections to relay springs.)

**2.09** Blocking and insulating tools, as required. Apply tools as covered in Section 069-020-801.

## 3. PREPARATION

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

### Tests A Through I and K

- |    |   |  |
|----|---|--|
| 1  | At desk —<br>Operate CO CD key at all positions except the position to be used for test.  |  |
| 2  | At desk position being used for test —<br>Operate all CO- class exclusion keys except CO CD key.  |  |
| 3  | At cable turning section of desk —<br>Operate OS keys for all cord SOC's.   |  |
| 4  | Set the SW key of the SOC under test to normal position to permit observation on all connectors.  |  |
| 5a | Where remote control connector circuit is not provided —<br>At switchboard —<br>Remove all patching cords associated with the SOC under test. |  |

**Note:** Disconnect patching cord from cord fasteners or cord socket before removing plug from loop connector socket.

| STEP                           | ACTION   | VERIFICATION  |
|--------------------------------|--|---|
| 6b                             | Where remote control connector is provided —<br>At control cabinet —<br>Open cabinet door.   | All OS lamps are lighted.   |
| 7b                             | Restore all cord and position selector switches to an off or blank setting.  |   |
| <b>Tests C Through I and K</b> |  |   |
| 8a                             | Where remote control connector circuit is not provided —<br>At switchboard position being used for test, connect the patching cord into the loop connector socket and then to the cord socket or cord fasteners of the cord under observation. |   |
| 9a                             | At cable turning section of desk —<br>Restore OS key for SOC to be tested.   |   |
| 10b                            | Where remote control connector circuit is provided —<br>At control cabinet —<br>Set the cord and position switches to agree with the cord and position to be used for test.  |   |
| 11b                            | At cable turning section of desk —<br>Restore OS key for SOC to be tested.   | At control cabinet —<br>OS lamps associated with SOC under test are extinguished. |
| 12                             | At desk —<br>Insert No. 1020B headset into C and D jacks.  |   |

#### 4. METHOD

| STEP                                     | ACTION   | VERIFICATION  |
|--|--|---|
| <b>A. Circuit Alarm (Where Provided)</b> |  |   |
| 8  | At relay frame —<br>Insulate 2T and 3T contacts of an A relay in any connector circuit.  |   |
| 9a                                       | Where remote control connector circuit is not provided —<br>At cable turning section of desk —<br>Restore OS key for SOC to be tested. |   |
| 10b                                      | Where remote control connector circuit is provided —<br>At cable turning section of desk —<br>Restore OS key for SOC to be tested.     | At control cabinet —<br>OS lamps associated with SOC under test are extinguished. |

SECTION 210-114-502

| STEP | ACTION  | VERIFICATION   |
|------|---|--|
| 11   | At desk —<br>Insert No. 1020B headset into the C and D jacks.   | At relay frame —<br>AL lamp lights, minor audible alarm sounds, and aisle pilot lamp lights.                       |
| 12   | At relay frame —<br>Operate AR key.   | Minor audible alarm is silenced, aisle pilot lamp is extinguished, AL relay releases, and AL lamp remains lighted. |
| 13   | Remove insulator from A relay.  |  |
| 14   | Connect ground to FT lead at the make contact (——) of the CH relay.   |  |
| 15   | Restore AR key.   | AL lamp remains lighted, minor audible alarm sounds, and aisle pilot lamp lights.                                  |
| 16   | Operate the AR key.   | Minor audible alarm is silenced, aisle pilot lamp is extinguished, and AL relay releases.                          |
| 17   | Remove ground from FT lead.   |  |
| 18   | Restore AR key.   | AL lamp is extinguished.   |
| 19c  | If no further tests are to be made on this circuit —<br>Remove No. 1020B headset from C and D jacks at desk.  | Relay frame equipment restores to normal.  |
| 20c  | At cable turning section of desk —<br>Restore SW key to position in which it was set prior to Step 4.   |  |
| 21a  | Where remote control connector circuit is not provided —<br>At switchboard —<br>Reconnect all patching cords associated with the SOC under test.                                |  |
|      | <i>Note:</i> Connect patching cord to loop connector socket before connecting to cord socket or cord fasteners.   |  |
| 22b  | Where remote control connector circuit is provided —<br>At control cabinet —<br>Reset the cord and position selector switches to their original setting and close cabinet door. |  |
| 23c  | At desk —<br>Restore all CO- keys and OS keys operated in Steps 1 to 3.   |  |

| STEP                                      | ACTION   | VERIFICATION  |
|---|--|---|
| <b>B. Loop Reduction (Where Provided)</b> |  |   |
| 8a  | Where remote control connector circuit is not provided —<br>At cable turning section of desk —<br>Restore OS key for SOC to be tested. |   |
| 9b  | Where remote control connector circuit is provided —<br>At cable turning section of desk —<br>Restore OS key for SOC to be tested.     | At control cabinet —<br>OS lamps associated with SOC under test are extinguished.   |
| 10  | At desk.—<br>Insert No. 1020B headset into C and D jacks.  |   |
| 11  | At cable turning section of desk —<br>Operate OS key for circuit under test.   |   |
| 12  | Set SW key in position to select group A for observation.  | At relay frame —<br>AG relay operates.  |
| 13  | Restore OS key.  | At relay frame —<br>After 22 to 34 seconds time delay, A relays are operated in connectors in group A and also in connectors common to both group A and group B. Consult local office records for connector loop assignments. |
| 14  | Operate OS key.  | All A relays are released.  |
| 15  | Set SW key in position to select group B for observation.  | AG relay is released, and BG relay is operated.   |
| 16  | Restore OS key.  | After 22 to 34 seconds time delay, A relays are operated in connectors in group B, and also in connectors common to both group A and group B. Consult local office records for connector loop assignments.                    |
| 17  | Operate OS key.  | All A relays are released.  |
| 18  | Restore SW key to center position.   | BG relay is released.   |
| 19  | Restore OS key.  | After 22 to 34 seconds time delay, all A relays are operated.   |
| 20c                                       | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.                                   |   |

**SECTION 210-114-502**

| STEP   | ACTION  | VERIFICATION   |
|--|---|--|
| <b>C. Plug-Up, Supervision, and Stale Call</b> |   |  |
| 13c  | If testing from a No. 1 toll switchboard — Insert black plug of special cord assembly into REC jack of continuity test circuit, and insert red plug into B/G jack of low-shunt testing circuit. |  |
| 14c  | Insert rear cord under observation into B TRK jack of continuity test circuit.  | At desk —<br>TRK lamp lights steadily or flashes, and RPU lamp lights.<br>If DC signal monitoring circuit is provided for rear cord —<br>RSV lamp lights and FSV lamp may light. |
| 15d  | If testing from a No. 3, 3C, or 3CL toll switchboard —<br>Insert rear cord not patched for observation into MT jack of position test circuit.   |  |
| 16d  | Insert rear cord under observation into C jack of position test circuit.  | At desk —<br>TRK lamp lights steadily or flashes; RPU and RSV lamps light.   |
| 17e  | If testing from a No. 13-, 14-, or 15-type DSA switchboard —<br>Insert rear cord under observation into RING TEST jack of cord testing circuit.   | Same as for Step 16d.  |
| 18   | Operate TALK key.   |  |
| 19   | Check one-way transmission path by talking from switchboard to desk.  | At desk —<br>Adequate transmission should be received in one receiver.   |
| 20   | Remove rear cord from jack of testing circuit.  | RPU and RSV lamps are extinguished.  |
| 21   | At desk —<br>Operate RLS key momentarily.   | TRK lamp is extinguished.  |
| 22c  | If testing from a No. 1 toll switchboard —<br>Insert front cord into B TRK jack of continuity test circuit.   | At desk —<br>TRK lamp lights steadily or flashes, and FPU lamp lights.<br>If DC signal monitoring circuit is provided for front cord, FSV lamp lights and RSV lamp may light.    |
| 23d  | If testing from a No. 3, 3C, or 3CL toll switchboard —<br>Insert front cord into C jack of position test circuit.   | At desk —<br>TRK lamp lights steadily or flashes, and FPU and FSV lamps light.   |

| STEP | ACTION  | VERIFICATION  |
|------|---|---|
| 24e  | If testing from a No. 13-, 14-, or 15-type DSA switchboard —<br>Insert front cord into RING TEST jack of cord testing circuit.                | Same as for Step 23d.   |
| 25   | Check one-way transmission path by talking from switchboard position to desk.   | At desk —<br>Adequate transmission is received in other receiver. |
| 26   | Remove front cord from jack of testing circuit.   | FPU and FSV lamps are extinguished.                               |
| 27   | Restore TALK key.   |   |
| 28   | At desk —<br>Operate RLS key momentarily.   | TRK lamp is extinguished.   |
| 29c  | If testing from a No. 1 toll switchboard —<br>Remove special cord from REC jack and B/G jack.   |   |
| 30d  | If testing from a No. 3, 3C, or 3CL toll switchboard —<br>Remove rear cord not patched for observation from MT jack of position test circuit. |   |
| 31f  | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.  |   |

#### D. Ringing — No. 3, 3C, and 3CL Toll Switchboards

|    |  |   |
|----|--|---|
| 13 | At switchboard —<br>Insert plug of rear cord not used for observation into MT jack of position test circuit.   |   |
| 14 | Operate control key of control set to BAL position. Patch jacks 1, 2, and 3 of control set to jacks 1, 2, and 3 of position test circuit. Restore control key to TST position. |   |
| 15 | Insert front and rear cords under observation into C and D jacks of position test circuit.   | At desk —<br>TRK lamp lights steadily or flashes; and FSV, RSV, FPU, and RPU lamps light. |
| 16 | Operate RING key for front cord for approximately one second.  | At desk —<br>FR lamp lights for duration of ring.   |
| 17 | Operate RING key for rear cord for approximately one second.   | At desk —<br>RR lamp lights for duration of ring.   |
| 18 | At desk —<br>Operate RLS key momentarily.  | At desk —<br>TRK, FSV, RSV, FPU, and RPU lamps are extinguished.                          |

**SECTION 210-114-502**

| <b>STEP</b>                                       | <b>ACTION</b>  | <b>VERIFICATION</b>  |
|---|--|--|
| 19  | At switchboard —<br>Remove cords from C and D jacks.   |  |
| 20  | Remove cord from MT jack of position test circuit.   |  |
| 21  | Remove patch cords from jacks of control set and position test circuit.  |  |
| 22c   | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.   |  |
| <b>E. Dial Operation — No. 1 Toll Switchboard</b> |  |  |
| 13c   | If P4, P5, and P6 resistors are provided in service observing position circuit —<br>At relay frame —<br>Insulate 1B and 2B contacts of PC relay.                         |  |
| 14c   | Connect 1T and 2T of MSA relay together using one No. 893 cord.  |  |
| 15  | At switchboard —<br>Insert black plug of special cord assembly into REC jack of continuity test circuit, and insert red plug into B/G jack of low-shunt testing circuit. |  |
| 16  | Insert front cord under observation into B TRK jack of continuity test circuit.  | At desk —<br>TRK lamp lights steadily or flashes, and FPU lamp lights.<br>If DC signal monitoring circuit is provided for front cord, FSV lamp lights.<br>If connector identification is provided, L-lamp associated with connector in use lights. |
| 17d   | If cord is not equipped with a DIAL key —<br>Wait 25 seconds and operate MON key.  |  |
| 18e   | If cord is equipped with a DIAL key —<br>Wait 25 seconds and operate TALK and DIAL keys.   | At desk —<br>Lamp display does not change.   |
| 19  | Dial digit 0.  | At desk —<br>Dialed digit does not appear on digit indicator.  |
| 20d   | If cord is not equipped with a DIAL key —<br>Restore MON key.  |  |
| 21e   | If cord is equipped with a DIAL key —<br>Restore TALK and DIAL keys.   |  |

| STEP | ACTION  | VERIFICATION  |
|------|---|---|
| 22   | Remove front cord from B TRK jack.  | All lamps except TRK lamp are extinguished.   |
| 23   | Insert front cord under observation into B TRK jack of continuity test circuit.   | FPU lamp lights.<br>If DC signal monitoring circuit is provided for front cord, FSV lamp lights.  |
| 24d  | If cord is not equipped with a DIAL key —<br>Within 3 seconds after plug-up —<br>Operate MON key and dial digit 1 twelve or fifteen times, depending upon digit indicator provided.         | K and S lamps light.<br>Digit 1 appears in the first 11 or 14 digit indicator positions.<br>Lamps 1, 3, 5, 7, and 9 light in 12th or 15th indicator position. |
| 25e  | If cord is equipped with a DIAL key —<br>Within 3 seconds after plug-up —<br>Operate TALK and DIAL keys and dial digit 1 twelve or fifteen times, depending on digit indicator provided.    | Same as for Step 24d.   |
| 26d  | If cord is not equipped with a DIAL key —<br>Restore MON key.   | K and S lamps are extinguished and W lamp lights.   |
| 27e  | If cord is equipped with a DIAL key —<br>Restore TALK and DIAL keys.  | K and S lamps are extinguished and W lamp lights.   |
| 28   | Remove front cord from B TRK jack.  | All lamps except TRK lamp are extinguished.   |
| 29   | Repeat Steps 23 through 28 except for Step 24d or 25e where digit 2 should be dialed instead of digit 1. Repeat this procedure until all digits (3, 4, 5, etc, through 0) have been dialed. | Same as for Steps 23 through 28 except for Step 24d or 25e where digit 2 or 3 or 4 etc, through 0 lamp lights in first 11 or 14 display spaces.               |
| 30   | At desk —<br>Operate RLS key momentarily.   | TRK lamp is extinguished.   |
| 31   | At switchboard —<br>Remove special cord from REC and B/G jacks.   |   |
| 32c  | At relay frame —<br>Remove insulator from PC relay.   |   |
| 33c  | Remove No. 893 cord from MSA relay.   |   |
| 34f  | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.  |   |

#### F. Dial Operation — No. 3, 3C, and 3CL Toll Switchboards

|     |  |
|-----|--|
| 13c | If P4, P5, and P6 resistors are provided in service observing position circuit —<br>At relay frame —<br>Insulate 1B and 2B contacts of PC relay. |
| 14c | Connect 1T and 2T of MSA relay together using one No. 893 cord.  |

**SECTION 210-114-502**

| <b>STEP</b> | <b>ACTION</b>  | <b>VERIFICATION</b>  |
|-------------|--|--|
| 15          | At switchboard —<br>Insert front cord not patched for observation into MT jack of position test circuit.   |  |
| 16          | Operate control key of control set to BAL position. Patch jacks 1, 2, and 3 of control set to jacks 1, 2, and 3 of position test circuit. Restore control key to TST position. |  |
| 17          | Insert front cord under observation into D jack of position test circuit.  | At desk —<br>TRK lamp lights steadily or flashes, FPU and FSV lamps light.   |
| 18          | Wait 25 seconds and operate TALK key.  |  |
| 19          | Operate DIAL key at switchboard to front position and dial digit 0.  | In control set —<br>DT2 and DR5 lamps light.<br>If start-dial operation is not provided —<br>Dial pilot lamp at switchboard lights.<br>Lamp display at desk does not change.<br>If start-dial operation is provided —<br>FSV lamp at desk is extinguished.                                     |
| 20          | Restore DIAL and TALK keys.  | DT2 and DR5 lamps of control set, dial pilot lamp at switchboard, and FSV lamp at desk are extinguished.   |
| 21          | Remove front cord from D jack.   | At desk —<br>All lamps except TRK lamp are extinguished.   |
| 22          | Operate TALK key.  |  |
| 23          | Insert front cord into D jack of position test circuit.  | At desk —<br>FPU lamp lights.  |
| 24          | Operate DIAL key to front position within 3 seconds after plug-up.   | In control set —<br>DT2 and DR5 lamps light.<br>If start-dial operation is not provided —<br>Dial pilot lamp at switchboard lights; K, S, and FSV lamps at desk light.<br>If start-dial operation is provided —<br>K lamp at desk lights and S lamp at desk lights momentarily.                |
| 25          | Dial digit 1 twelve or fifteen times, depending upon digit indicator provided.   | At desk —<br>Digit 1 appears in first 11 or 14 digit indicator positions; lamps 1, 3, 5, 7, and 9 light in 12th or 15th indicator position.<br>In control set —<br>Disregard DR5 lamp until dial returns to normal.<br>DT2 and DR5 lamps remain lighted steadily after dial returns to normal. |

| STEP   | ACTION   | VERIFICATION  |
|--|--|---|
| 26   | At desk —<br>Operate RLS key momentarily.  | All lamps are extinguished.   |
| 27   | At switchboard —<br>Restore TALK and DIAL keys.  |   |
| 28   | Remove front cord from D jack.   |   |
| 29   | Repeat Steps 23 through 28 except for Step 25 where digit 2 should be dialed instead of digit 1. Repeat this procedure until all digits (3, 4, 5, etc, through 0) have been dialed.        | Same as for Steps 23 through 28 except for Step 25 where digit 2 or 3 or 4 etc, through 0 lamps light in first 11 or 14 display spaces. |
| 30   | At switchboard —<br>Remove front cord from MT jack.  |   |
| 31   | Remove patch cords from jacks of control test set and position test circuit.   |   |
| 32c  | At relay frame —<br>Remove insulator from PC relay.  |   |
| 33c  | Remove No. 893 cord from MSA relay.  |   |
| 34d  | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.   |   |
| <b>G. Dial Operation — No. 13C, 13D, 15C, and 15D DSA Switchboards</b> |  |   |
| 13c  | If P4, P5, and P6 resistors are provided in service observing position circuit —<br>At relay frame —<br>Insulate 1B and 2B contacts of PC relay.   |   |
| 14c  | Connect 1T and 2T of MSA relay together using one No. 893 cord.  |   |
| 15   | At switchboard —<br>Insert black plug of special cord assembly into B-GRD jack, and insert red plug into CON 1 jack of cord testing circuit at a position not being used for observations. |   |
| 16   | Insert front cord under observation into CON 1 jack of cord testing circuit.   | At desk —<br>TRK lamp lights steadily or flashes; FPU and FSV lamps light.  |
| 17   | Wait 25 seconds.   |   |
| 18d  | If dial circuit provides for start-dial operation and is equipped with a DIAL key —<br>Operate TALK key and DIAL key.  | At desk —<br>Lamp display does not change.  |

SECTION 210-114-502

| STEP | ACTION   | VERIFICATION  |
|------|--|---|
| 19e  | If dial circuit does or does not provide for start-dial operation and is not equipped with a release key —<br>Operate TALK key.  | At desk —<br>Lamp display does not change.  |
| 20f  | If dial circuit does not provide for start-dial operation and is not equipped with a release key —<br>Operate DIAL key of cord.  | At desk —<br>Lamp display does not change.  |
| 21   | Dial digit 0.  | At desk —<br>Dialed digit does not appear on indicator.   |
| 22   | Restore DIAL and TALK keys or operate dial circuit release key.  |   |
| 23   | Remove front cord from CON 1 jack.<br><br><i>Note:</i> In performing remaining steps, when dialing successive digits, interdigital time must not exceed 5 seconds.   | All lamps except TRK lamp are extinguished.   |
| 24   | Insert front cord into CON 1 jack of cord testing circuit.   | FPU and FSV lamps light.  |
| 25d  | If dial circuit provides for start-dial operation and is equipped with a DIAL key —<br>Within 3 seconds after plug-up —<br>Operate TALK key and DIAL key, and dial digit 1 twelve or fifteen times, depending upon digit indicator provided.       | At desk —<br>K and S lamps light when DIAL key is operated.<br>Digit 1 appears in first 11 or 14 digit indicator positions; lamps 1, 3, 5, 7, and 9 light in 12th or 15th indicator position.   |
| 26e  | If dial circuit does or does not provide for start-dial operation and is equipped with a release key —<br>Within 3 seconds after plug-up —<br>Operate TALK key and dial digit 1 twelve or fifteen times, depending upon digit indicator provided.  | At desk —<br>K and S lamps light.<br>Digit 1 appears in the first 11 or 14 digit indicator positions; lamps 1, 3, 5, 7, and 9 light in 12th or 15th indicator position.   |
| 27f  | If dial circuit does not provide for start-dial operation, and is not equipped with a release key, within 3 seconds after plug-up —<br>Operate DIAL key of cord and dial digit 1 twelve or fifteen times, depending upon digit indicator provided. | At desk —<br>Digit 1 appears in the first 11 or 14 digit indicator positions; lamps 1, 3, 5, 7, and 9 light in 12th or 15th indicator position.<br>K and S lamps light during dialing and for approximately 5 seconds after dialing last digit; W lamp lights when K and S lamps are extinguished. FSV lamp may flash momentarily when W lamp lights. |
| 28   | Restore DIAL key or operate dial circuit release key.  | K and S lamps are extinguished and W lamp lights in approximately 0.25 or 5 seconds, depending upon dial circuit used with cord.  |

| STEP  | ACTION  | VERIFICATION   |
|---|---|--|
| 29  | Restore TALK key.   |  |
| 30  | Remove front cord from CON 1 jack.  | All lamps except TRK lamp are extinguished.  |
| 31  | At desk —<br>Operate RLS key.   | All lamps are extinguished.  |
| 32  | Repeat Steps 24 through 31 except for Step 25d, 26e, or 27f where digit 2 should be dialed instead of digit 1. Repeat this procedure until all digits (3, 4, 5, etc, through 0) have been dialed. | Same as for Steps 24 through 31 except for Step 25d, 26e, or 27f where digit 2 or 3 or 4, etc, through 0 lamps light in first 11 or 14 display spaces. |
| 33  | At position not being used for observations —<br>Remove special cord assembly from B-GRD and CON 1 jacks.   |  |
| 34c   | At relay frame —<br>Remove insulator from PC relay.   |  |
| 35c   | Remove No. 893 cord from MSA relay.   |  |
| 36g   | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.  |  |
| <b>H. Dial Operation — No. 14C and 14D DSA Switchboards</b> |   |  |
| 13c   | If P4, P5, and P6 resistors are provided in service observing position circuit —<br>At relay frame —<br>Insulate 1B and 2B contacts of PC relay.  |  |
| 14c   | Connect 1T and 2T of MSA relay together using one No. 893 cord.   |  |
| 15  | At relay frame —<br>Block nonoperated BJ relay of cord testing circuit.   |  |
| 16  | At switchboard —<br>Insert special cord assembly into B-GRD jack of cord testing circuit at a position not being used for observations.   |  |
| 17  | Insert front cord under observation into B-GRD jack of cord testing circuit.  | At desk —<br>TRK lamp lights steadily or flashes; FPU and FSV lamps light.   |
| 18  | Wait 25 seconds and operate TALK key.<br>Dial digit 0.  | At desk —<br>Lamp display does not change.   |
| 19  | Operate dial circuit release key.   |  |

SECTION 210-114-502

| STEP | ACTION  | VERIFICATION  |
|------|---|---|
| 20   | Remove front cord from B-GRD jack.  | All lamps except TRK lamp are extinguished.   |
| 21   | Restore TALK key.   |   |
| 22   | Restore dial circuit release key.   |   |
| 23   | Insert front cord into B-GRD jack of cord testing circuit.  | FPU and FSV lamps light.  |
|      | <i>Note:</i> In performing remaining steps, when dialing successive digits, interdigital time must not exceed 5 seconds.  |   |
| 24   | Within 3 seconds after plug-up —<br>Operate TALK key and dial digit 1 twelve or fifteen times, depending upon digit indicator provided.   | K and S lamps light.<br>Digit 1 appears in the first 11 or 14 digit indicator positions.<br>Lamps 1, 3, 5, 7, and 9 light in 12th or 15th digit indicator position. |
| 25   | Operate dial circuit release key.   | K and S lamps are extinguished and W lamp lights in approximately 0.25 or 5 seconds, depending upon dial circuit used with cord.                                    |
| 26   | Remove front cord from B-GRD jack.  | All lamps except TRK lamp are extinguished.   |
| 27   | At desk —<br>Operate RLS key.   | All lamps are extinguished.   |
| 28   | Restore TALK key.   |   |
| 29   | Restore dial circuit release key.   |   |
| 30   | Repeat Steps 23 through 29 except Step 24 where digit 2 should be dialed instead of digit 1. Repeat this procedure until all digits (3, 4, 5, etc, through 0) have been dialed. | Same as for Steps 23 through 29 except for Step 24 where digit 2 or 3 or 4 etc, through 0 lamp lights in first 11 or 14 display spaces.                             |
| 31   | At position not being used for observations —<br>Remove special cord assembly from B-GRD jack.  |   |
| 32   | At relay frame —<br>Remove blocking tool from BJ relay.   |   |
| 33c  | Remove insulator from PC relay.   |   |
| 34c  | Remove No. 893 cord from MSA relay.   |   |
| 35d  | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.  |   |

| STEP                                     | ACTION   | VERIFICATION   |
|--|--|--|
| <b>I. Dialing Against Reorder Signal</b> |  |  |
| 13                                       | At switchboard —<br>Insert rear cord under observation into test circuit jack normally used for testing cord circuit supervisory conditions.   | At desk —<br>TRK lamp lights steadily or flashes, and RPU lamp lights. |
| 14                                       | Insert front cord under observation into jack of outgoing trunk associated with a dial circuit arranged to take stop-dial signal, and requiring a sender to complete the call. (Use a repeated-dialing trunk in No. 1- and No. 3-type switchboards.) | FPU lamp lights.   |
| 15c                                      | If using No. 1 switchboard, and cord is equipped with a MON key —<br>Operate MON key.  |  |
| 16d                                      | If using No. 1 switchboard and cord is equipped with a DIAL key —<br>Operate TALK and DIAL keys.   |  |
| 17e                                      | If using No. 3-type switchboard —<br>Operate DIAL key to front position.   |  |
| 18f                                      | If using No. 13- or 15-type DSA switchboard —<br>Operate TALK and/or DIAL keys, as required, to attach dial circuit.   |  |
| 19g                                      | If using No. 14-type DSA switchboard —<br>Operate TALK key of cord.  |  |
| 20                                       | After start-dial indication is received —<br>Dial digit 9 and wait for the return of a reorder signal.   |  |
| 21                                       | Dial digit 9 ten times against reorder signal.   | Dialed number may be registered incorrectly on digit indicator.        |
| 22                                       | At desk —<br>Operate RLS key.  | All lamps are extinguished.  |
| 23c                                      | Restore MON key.   |  |
| 24d                                      | Restore TALK and DIAL keys.  |  |
| 25e                                      | Restore DIAL key.  |  |
| 26f                                      | Restore TALK and/or DIAL keys.   |  |
| 27g                                      | Restore TALK key.  |  |
| 28                                       | Remove front and rear cords from jacks.  |  |

**SECTION 210-114-502**

| <b>STEP</b>   | <b>ACTION</b>  | <b>VERIFICATION</b>  |
|---|--|--|
| 29h   | If no further tests are to be made on this circuit —<br>Proceed as in Test A, Steps 19c through 23c.   |  |
| <b>J. Remote Control Connector (Where Provided)</b>   |  |  |
| 1   | At cable turning section of desk —<br>Operate OS key for cord SOC under test.  |  |
| 2   | At remote control connector cabinet —<br>Open cabinet door.  | OS lamps associated with the cord SOC under test are lighted.  |
| 3   | Set position selector switches to position 1.  |  |
| 4   | Set cord selector switch associated with cord SOC under test to position 1.  |  |
| 5   | Block ST relay operated.   | At switchboard —<br>CD1 relay in the selected position operates.<br>Consult local office records for position selector switch assignments.   |
| 6   | Remove blocking tool from ST relay.  | CD1 relay releases.  |
| 7   | Repeat Steps 4, 5, and 6 for positions 2, 3, and 4 of the cord selector switch.  | Same as in Steps 5 and 6 except that CD2, CD3, and CD4 relays operate instead of CD1 relay.  |
| 8   | Repeat Steps 3 through 7 for positions 2 through 7 of position selector switches.  | Same as in Steps 5, 6, and 7.  |
| 9   | Reset cord and position selector switches to their original settings and close cabinet door.   |  |
| 10  | At cable turning section of desk —<br>Restore OS key for cord SOC used in test.  |  |
| <b>K. Transmission Check Circuit (Where Provided)</b> |  |  |
| 13  | At switchboard position used for test —<br>Connect front and rear cords under observation to balance test termination jacks in switchboard multiple. | At desk —<br>TRK, FPU, and RPU lamps light. (TRK lamp may flash.)  |
| 14  | At desk position used for test —<br>Operate NOISE-ORIG-TERM key to TERM.   |  |
| 15  | Operate CAL-OFF-ON key to CAL.   | At desk —<br>Volume indicating meter indicates $-0.5$ to $+0.5$ vu for approximately 4 seconds, and 1000-cps tone is heard in one receiver; then meter indication drops and tone is no longer heard. |

| STEP | ACTION   | VERIFICATION   |
|------|--|--|
| 16   | Operate NOISE-ORIG-TERM key to NOISE.<br><br><i>Note:</i> If volume indicating meter readings do not meet the requirements of Steps 15 and 16, see Section 210-114-503 for adjusting procedures.   | Volume indicating meter should not read more power than -20 vu.            |
| 17   | Operate CAL-OFF-ON key to OFF.   | Volume indicating needle returns to resting position.                      |
| 18   | Operate NOISE-ORIG-TERM key to TERM.   |  |
| 19c  | If no further tests are to be performed —<br>At switchboard position used for test —<br>Remove front and rear cords under observation from balance test termination jacks in switchboard multiple. | At SO desk position used for test —<br>FPU and RPU lamps are extinguished. |
| 20c  | At SO desk position used for test —<br>Operate RLS key momentarily.  | TRK lamp is extinguished.  |
| 21c  | Proceed as in Test A Steps 19c through 23c.  |  |