# OUTGOING SENDER CONNECTOR AND PREFERENCE CONTROL

CONTENTS



## 1. GENERAL

1.1 This section outlines continuity tests to be performed on Preference Control Circuit, SD-27760-01, the associated Outgoing Sender Connector, SD-27758-01 and SD-27759-01, and the LLP outgoing sender control portion of the terminating marker applique circuit, SD-27765-01.

1.2 Operational features of these circuits will be checked when tests of outgoing senders and line circuits per Sections 233 & 234 are performed.

1.3 Notice: On completion of tests of each connector, relays MP- and E- associated with unequipped markers should be blocked nonoperated in a permanent manner. This is done to prevent false operation of these relays in service and should be accomplished as follows:

With the relay armature in the nonoperated position, insert the broad end of a flat toothpick between the armature and core until a snug fit is obtained. Cut off the toothpick 1/4 inch beyond the end of the armature or even with the face of the relay contact cover.

## 2. RECORDS

### 2.1 Records

2.11 Forms SD-4-1313 and SD-4-1315 are required for recording the results of these tests. For further information on records, see Section 3 of Handbook 3.

## 3. TEST EQUIPMENT

### 3.1 Test Sets and Accessories

| AMT | CODE | DESCRIPTION | WITH ITE |
|---|---|---|---|
| 2 | R-1824 | Pencil Lamp | 4023 |
| 2 | R-9572 | Test Receiver | 4023 |
| 1 | 322A | Make Busy Plug | 4023 |

## 4. FUSING

### 4.1 Shop Installed Fuses

4.11 When the Preference Control Circuit is mounted on the Outgoing Sender Connector frame, observe each fuse is correctly positioned and that the fuses are the correct type and current carrying capacity.

4.12 Using test receiver, verify battery is present on TS A0-5, terminal 18. Also verify ground is present on TS A0-5, terminals 46-48.

### 4.2 Installer Installed Fuses

4.21 When the Preference Control Circuit is relay rack mounted, use a test receiver to check fuse posts A0 & A1 for absence of battery and ground. Also check TS A0 & A1, terminal 18 for absence of battery and ground.

4.22 Install a 1 1/3 amp fuse in the A0 position on the relay rack fuse panel and using test receiver, verify battery is present on TS A0, terminal 18 and not present on TS A1, terminal 18.

4.23 Install a 1 1/3 amp fuse in the A1 position on the relay rack fuse panel and using test receiver, verify battery is present on TS A1, terminal 18.

4.24 Using test receiver, verify ground is present on TS A0 & A1, terminals 46-48.

## 5. OUTGOING SENDER CONNECTOR AND PREFERENCE TESTS

### 5.1 Emergency Transfer and Alarm Circuit

5.11 Refer to Figure 1 and perform test operations specified in associated Table 1A.

### 5.2 Marker Preference Chains

#### 5.21 MP- Relay Chains

5.211 Using two test receivers connected to 48V battery, apply and remove battery at unit terminal strip punching associated with MP- relays in outgoing sender connector control circuit under test in the ascending sequence shown in Table 2. Check that the MP- relays operate in the order given. Lamp CH in associated transfer and alarm circuit should not light during this test.

5.212 Apply and remove battery at unit terminal strip punching associated with MP- relays in descending sequence shown in Table 3. Check that MP- relays operate and release in order indicated.

★ TABLE 1A

| PREFERENCE CHAIN TRANSFER AND ALARM TESTS | | | |
|---|---|---|---|
| NO. | TEST OPERATION | INDICATION | NOTES: |
| 1 | (M) OPEN #8 CONTACT MPO RELAY | LAMP CH LIGHTS TR- RELAYS OPERATE MINOR ALARM OPERATES AND AISLE PILOT LIGHTS | ★ THESE TESTS REQUIRE THE CH LEAD TO BE CONNECTED TO THE ALARM CIRCUIT AND THE LK LEAD TO GROUND EITHER IN THE ALARM SENDING CIRCUIT OR BY Z OPTION WHICHEVER IS SPECIFIED.<br><br>(M) INDICATES MOMENTARY OPERATION. |
| 2 | (M) OPERATE AR KEY | LAMP CH OUT, ALL TR- RELAYS RELEASE. ALARM RETIRED | |
| 3 | (M) OPEN #12 CONTACT MPO RELAY | LAMP CH LIGHTS, TR- RELAYS OPERATE | |
| 4 | (M) OPERATE AR KEY | LAMP CH OUT, ALL TR- RELAYS RELEASE | |
| 5 | OPERATE KEY TR | RELAYS TR- OPERATE | |
| 6 | (M) OPEN #8 CONTACT E-0 RELAY | LAMP CH LIGHTS. TR- RELAYS RELEASE, MINOR ALARM OPERATES | |
| 7 | (M) OPERATE AR KEY | LAMP CH OUT, TR- RELAYS REOPERATE. MINOR ALARM RETIRED | |
| 8 | (M) OPEN #12 CONTACT E-0 RELAY | LAMP CH LIGHTS. TR- RELAYS RELEASE | |
| 9 | RELEASE TR KEY | TR- RELAYS OPERATE | |
| 10 | (M) OPERATE AR KEY | LAMP CH OUT. ALL TR- RELAYS RELEASE | |

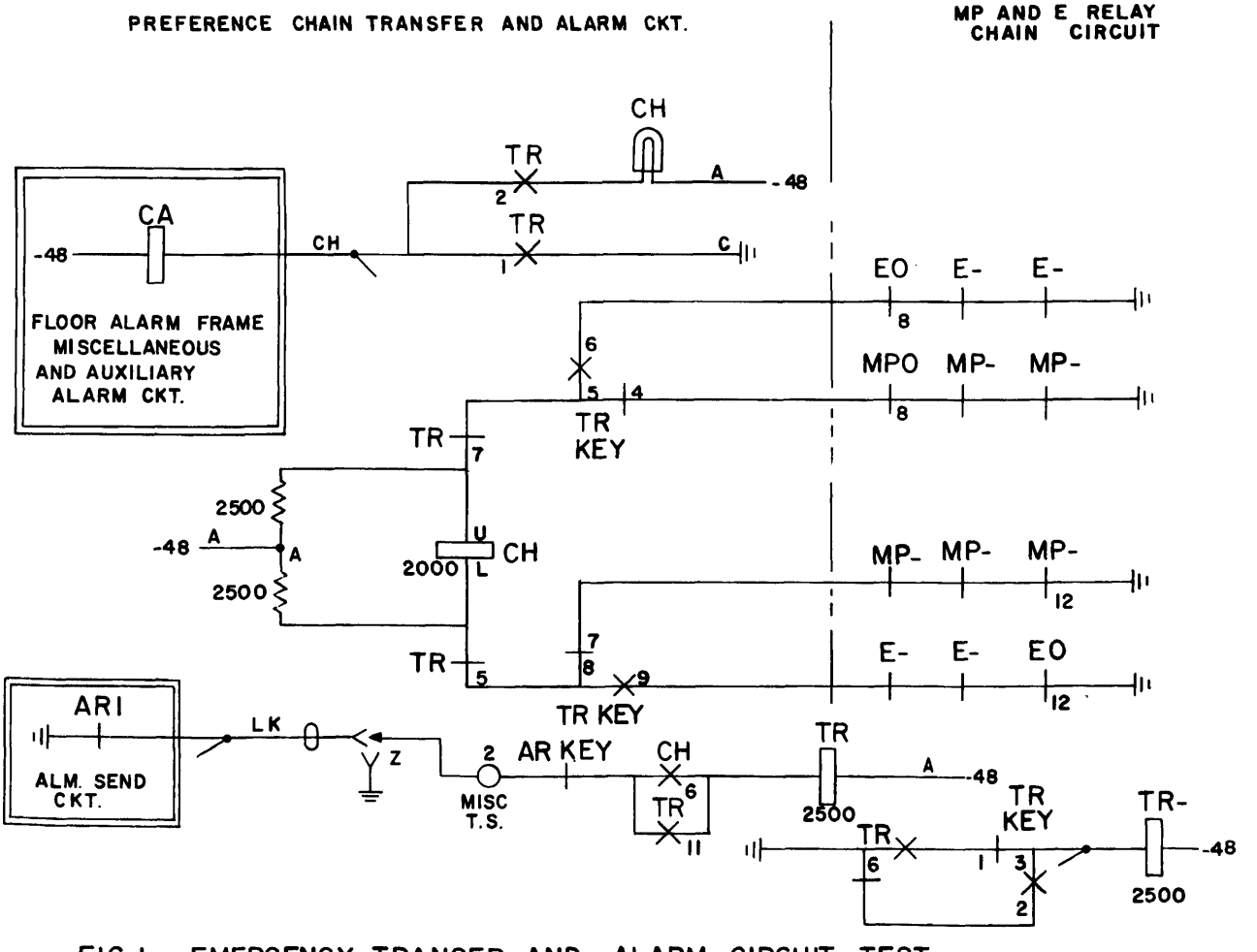


FIG. 1 EMERGENCY TRANSER AND ALARM CIRCUIT TEST

5.22 E- Relay Chains

5.221 Operate key TR of associated transfer and alarm circuit. Associated TR- relay should operate.

5.222 Repeat test operations 5.211 and 5.212 applying battery to unit terminal strip punching associated with E relays instead of MP- relays. Check that E- relays operate and release as specified in Tables 2 and 3.

5.223 Release key TR on completion of test.

5.224 Perform tests 5.21 and 5.22 on each OSC preference and control circuit.

TABLE 2

TEST OPERATIONS OSCC MP- AND E- RELAY WORK CHAINS

| TEST STEP (NOTE) | Test Conn. Unit TS A Pchg. Conn. Bat. | Test Conn. Unit TS A Pchg. Rem. Bat. | Observe Relays MP- or E- at OSCC Ckt. Oper. | Observe Relays MP- or E- at OSCC Ckt. Rls. |
|---|---|---|---|---|
| 1 | 31 | | 0 | - |
| 2 | 41 | | 1 | - |
| 3 | | 31 | - | 0 |
| 4 | 32 | | 2 | - |
| 5 | | 41 | - | 1 |
| 6 | 42 | | 3 | - |
| 7 | | 32 | - | 2 |
| 8 | 33 | | 4 | - |
| 9 | | 42 | - | 3 |
| 10 | 43 | | 5 | - |
| 11 | | 33 | - | 4 |
| 12 | 34 | | 6 | - |
| 13 | | 43 | - | 5 |
| 14 | 44 | | 7 | - |
| 15 | | 34 | - | 6 |
| 16 | 35 | | 8 | |
| 17 | | 44 | - | 7 |
| 18 | 45 | | 9 | - |
| 19 | | 35 | - | 8 |
| 20 | | 45 | | 9 |

NOTE: If less than ten MP- relays are equipped, continue test to include operation and release of highest numbered relay.

TABLE 3

TEST OPERATIONS MP- AND E- RELAY OPERATING CHAINS

| TEST STEP (NOTE) | Test Conn. Unit TS A Pchg. Conn. Bat. | Test Conn. Unit TS A Pchg. Rem. Bat. | Observe Relays MP- or E- at OSCC Ckt. Oper. | Observe Relays MP- or E- at OSCC Ckt. Rls. |
|---|---|---|---|---|
| 1 | 45 | | 9 | - |
| 2 | 35 | | - | - |
| 3 | - | 45 | 8 | 9 |
| 4 | 44 | - | - | - |
| 5 | - | 35 | 7 | 8 |
| 6 | 34 | - | - | - |
| 7 | - | 44 | 6 | 7 |
| 8 | 43 | - | - | - |
| 9 | - | 34 | 5 | 6 |
| 10 | 33 | - | - | - |
| 11 | - | 43 | 4 | 5 |
| 12 | 42 | - | - | - |

TABLE 3 (Cont.)

TEST OPERATIONS MP- AND E- RELAY OPERATING CHAINS

| TEST STEP (NOTE) | Test Conn. Unit TS A Pchg. Conn. Bat. | Test Conn. Unit TS A Pchg. Rem. Bat. | Observe Relays MP- or E- at OSCC Ckt. Oper. | Observe Relays MP- or E- at OSCC Ckt. Rls. |
|---|---|---|---|---|
| 13 | - | 33 | 3 | 4 |
| 14 | 32 | - | - | - |
| 15 | - | 42 | 2 | 3 |
| 16 | 41 | - | - | - |
| 17 | - | 32 | 1 | 2 |
| 18 | 31 | - | - | - |
| 19 | - | 41 | 0 | 1 |
| 20 | - | 31 | - | 0 |

NOTE: If less than 10 MP- relays are equipped, start test at highest numbered relay.

5.3 ST- Leads from Terminating Markers

5.31 This test verifies the association of ST- leads from each terminating marker to the associated MP- relays in the OSC preference control circuits. A talking line between the markers and the outgoing sender connector frame is required for this test.

5.32 Connect two R-1824 pencil lamps to SKA and SKB leads at terminating marker under test as shown for connections (A) and (B) in Figure 4. Connect other side of lamps to 48V battery as indicated. These lamps are referred to as lamps A and B respectively in Table 4A.

5.33 Apply 48V through a test receiver to each assigned marker ST- lead terminal in order shown in Table 4A. Check that the correct M- relay associated with marker under test operates and test lamp A or B lights as indicated in table.

5.34 Apply tests 5.32 and 5.33 to each terminating marker. Remove test lamps on completion of test.

5.4 Sender Group and Connector Relay Assignment Test

5.41 This test verifies the assignments of the marker OSGA- and OSGB- leads to the OSGA 0 to 5 and OSGB 0 to 5 relays in the sender subgroup relay units on the OSC frames. It also checks the assignments of the OSGA- and OSGB- relays to the connector multicontact relays MA1 and MA2.

5.42 From job traffic schematic and OSC frame wiring list, determine how the OSGA- and OSGB- relays have been assigned to the connector MA1 and MA2 relays as established by straps on TS MA- or MB- of sender group relay unit. (See Figure 5)

5.43 Insert a 322A make busy plug into DR jack of first marker to be checked and block operated its OSC and SKA relays.

5.44 Manually operate and release in turn each assigned OSG- relay in marker. Check that the corresponding OSGA- relay associated with marker in sender subgroup relay unit at OSC operates as each OSG- relay is operated. Also, check that relays MA1 and MA2 associated with marker in outgoing sender connector 0, 2 or 4 to which the sender subgroup has been assigned also operate.

5.45 Unblock marker relay SKA, block operated relay SKA and again operate and release in turn each assigned OSG- relay in the marker. Check that corresponding OSGB- relay associated with marker in sender subgroup relay unit operates as each OSG- relay is operated and that relays MA1 and MA2 associated with marker in outgoing sender connector 1, 3 or 5 to which the sender subgroup has been assigned also operate.

5.46 Unblock relays OSC and SKB on completion of test.

5.47 Perform Paragraphs 5.43 to 5.46 from each marker.

TABLE 4A

| TEST CONNECTIONS ST- LEADS FROM OSCC TO TERM. MARKER APPLIQUE | | | |
|---|---|---|---|
| APPLY TEST BATTERY TO ST- AT TERMINATING MARKER APPLIQUE | | TEST LAMP LIGHTS | ASSOCIATED MARKER MP- RELAYS OPERATES |
| TERMINAL STRIPS | TER. | | |
| EF-B FOR MKRS 0, 2, 4, 6, 8 | 60 | A | MP0 |
| | 61 | B | MP1 |
| EC-B FOR MKRS 1, 3, 5, 7, 9 | 62 | A | MP2 |
| | 63 | B | MP3 |
| | 64 | A | MP4 |
| | 65 | B | MP5 |

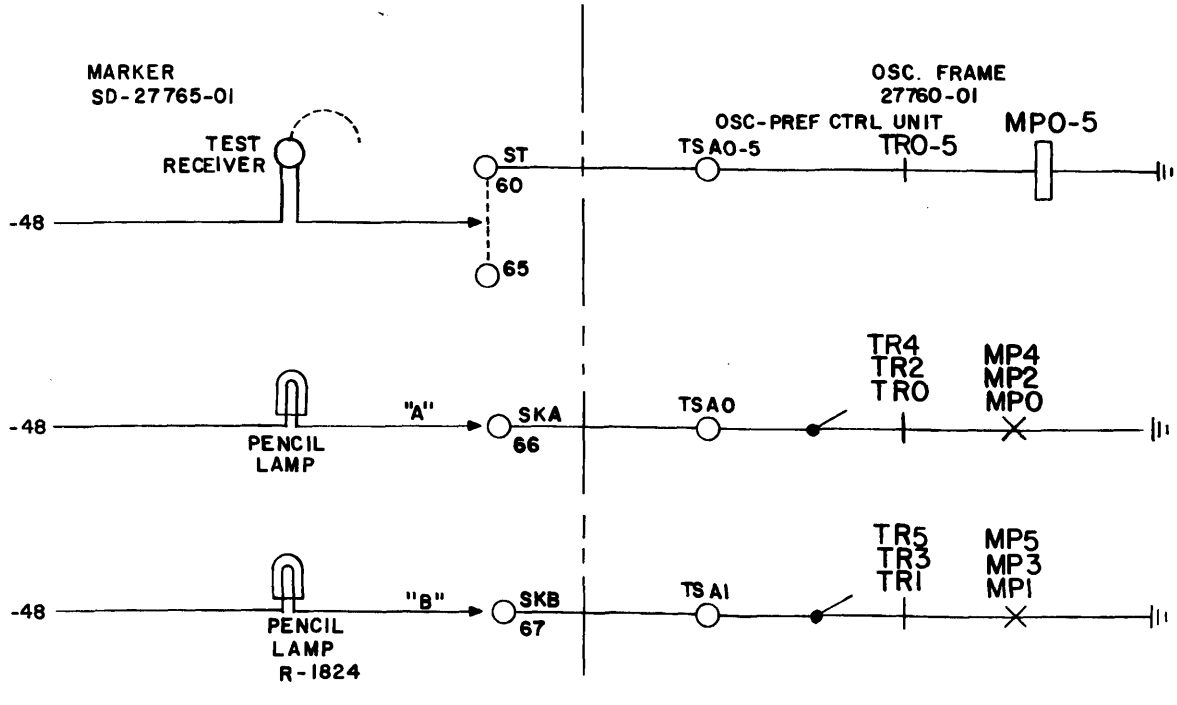


FIG. 4 TEST SETUP FOR ST- LEADS OUTGOING SDR CONN. CONTROL

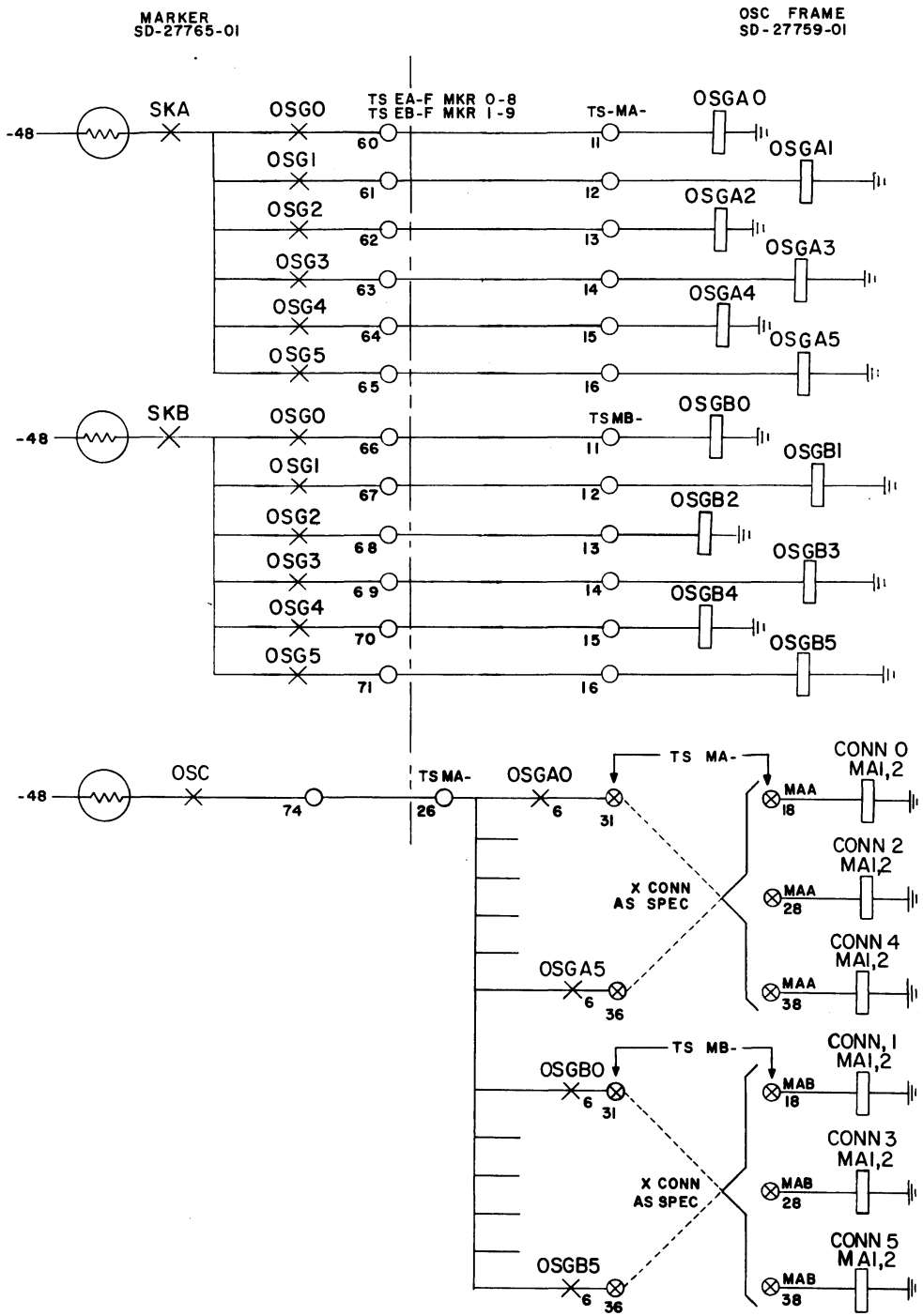


FIG.-5 SENDER GROUP AND CONNECTOR RELAY ASSIGNMENT TEST SET-UP

5.5 Outgoing Sender Preference

5.51 This test verifies the outgoing sender preference cross connections in the terminating marker applique.

5.52 Make marker 0 busy. Block operated relays OSE, SON and W. Block normal relay Z. Momentarily operate in turn, relays OS0-4. Verify only relay OS2 remains operated.

5.53 Block normal relay W and block operated relay Z. Relay OS2 releases. Momentarily operate in turn, relays OS0-4. Verify only relay OS0 remains operated.

5.54 Release relays Z and SON. Relay OS0 releases. Release relay W and OSE. Remove make busy plug for marker 0.

5.55 Repeat Paragraphs 5.52 to 5.54 for remaining markers using Table 5. This table will show which relay, W or Z, to operate and which OS- relay should remain operated.

TABLE 5

| TERM MKR APPLIQUE CIRCUIT | BLOCK OPERATED RELAY | RELEASE RELAY | MOMENTARILY OPERATE RELAYS | OS- RELAY REMAINING OPERATED |
|---|---|---|---|---|
| 0 | W | | OS 0-4 | OS 2 |
| 0 | Z | W | | 0 |
| 1 | W | | | 3 |
| 1 | Z | W | | 1 |
| 2 | W | | | 4 |
| 2 | Z | W | | 2 |
| 3 | W | | | 0 |
| 3 | Z | W | | 3 |
| 4 | W | | | 1 |
| 4 | Z | W | | 4 |
| 5 | W | | | 2 |
| 5 | Z | W | | 0 |
| 6 | W | | | 3 |
| 6 | Z | W | | 1 |
| 7 | W | | | 4 |
| 7 | Z | W | | 2 |
| 8 | W | | | 0 |
| 8 | Z | W | | 3 |
| 9 | W | | | 1 |
| 9 | Z | W | OS 0-4 | OS 4 |

5.6 SA1, SA2 Relay Operation

5.61 Determine from office records the assignments of outgoing senders to the outgoing sender connector S terminal strip. SA- terminals. Make a list similar to the following example:

| SA TERMINAL | OS FRAME | SENDER |
|---|---|---|
| 0 | 0 | 0 |
| 1 | 0 | 1 |
| ' | ' | ' |
| ' | ' | ' |
| ' | ' | ' |
| 59 | 10 | 5 |

5.62 Using a R-9572 test receiver, apply battery to T.S. S, terminal SA0. Verify at the outgoing sender frame the associated senders SA1, 2 relays operate. (See Fig. 6)

5.63 Continue applying battery in turn to each assigned SA- terminal and verify the correct SA1, 2 relays at the sender frame operate.

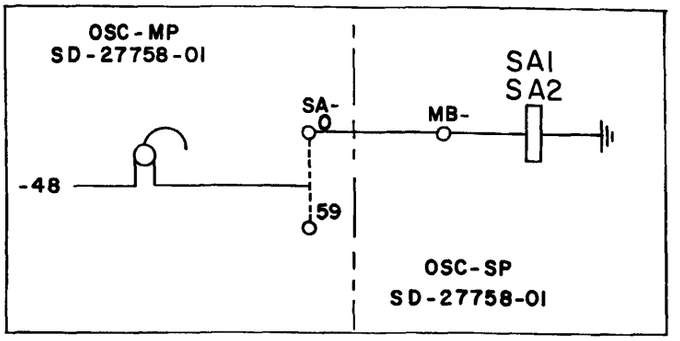


FIG. 6

5.7 OSC- and OSCP- Lamp Lead Verification

5.71 OSC- Leads

5.711 Operate key BAT at terminating trouble indicator frame miscellaneous circuit. At outgoing sender connector frame, momentarily operate relay MA2 in connector 0 for last equipped marker. Check that lamp OSC 0 at TTI miscellaneous circuit lights while relay is operated.

5.712 Repeat test by operating MA2 relays in connectors 1-5. Check that lamps OSC 1-5 light while the associated MA2 relays are operated.

5.713 Release key BAT.

5.72 OSCP- Leads

5.721 Determine from office records and job wiring list which outgoing senders are assigned to each connector position 0-9.

5.722 Operate key BAT at terminating trouble indicator frame miscellaneous circuit. Momentarily operate relay SA1- associated with first sender in connector position 0. Check that lamp OSCP 0 lights.

5.723 Momentarily operate relays SA1- associated with remaining senders assigned to position 0. Check that lamp OSCP 0 lights each time a SA1- relay is operated.

5.724 Momentarily operate each SA1- relay associated with connector positions 1-9. Check that the associated OSCP- lamp lights each time a SA1- relay is operated.

5.725 Release key BAT.