

## J1H011A SWITCH UNIT ATTENDANT CIRCUIT TESTS USING 124A TEST SET SD-1H070-01 NO. 101 ELECTRONIC SWITCHING SYSTEM

### 1. GENERAL

1.01 This section describes a method for testing the attendant circuit when there are indications that this circuit is causing console failures.

*Note:* A lamp failure should be suspected when a console lamp remains dark at all times. Perform Test W, Console Lamps to check each lamp filament.

1.02 The tests covered are:

*A. Interrupt Generators:* This test makes a visual frequency check on each circuit package within interrupt generators 1 and 2.

*B. Interrupt Distribution Circuit:* This test makes a visual frequency check on each of the three distribution circuits.

*C. Interrupt Rates to Tone Generator:* This test makes a visual frequency check on the fast and slow busy signals destined for the tone generator circuit.

*D. Interrupt Rates to Ring-Ringback Logic:* This test makes a visual frequency check on the 15-ipm and 30-ipm rates to the two ring-ringback logic circuits.

*E. Key Lamps:* This test checks the portion of the loop lamp control circuit that controls the operation of each of the six key lamps. Continuous test messages from the control unit are used to exercise only the key lamp of the loop in question. This allows the remaining five loops to be used for attendant traffic.

*F. Source Lamps:* This test checks the portion of the loop lamp control circuit that controls the operation of each of the six source lamps. Continuous test messages from the control unit are used to exercise only the source lamp of the loop in question. This allows the remaining five loops to be used for attendant traffic.

*G. Destination Lamps:* This test checks the portion of the loop lamp control circuit that controls the operation of each of the six destination lamps. Continuous test messages from the control unit are used to exercise only the destination lamp of the loop in question. This allows the remaining five loops to be used for attendant traffic.

*H. Input Gates for Key Lamps:* This test checks the ability of the three input gates circuits to translate key lamp information into the proper signals for use by the loop lamp control. Loop 6 is made busy for this test. Also tested are the special power circuits supplying power to all lamp gating paths.

*I. Input Gates for Source Lamps:* This test checks the ability of the three input gates circuits to translate the source lamp information into the proper signals for use by the loop lamp control. Loop 6 is made busy for this test.

*J. Input Gates for Destination Lamps:* This test checks the ability of the three input gates circuits to translate the destination lamp information into the proper signals for use by the loop lamp control. Loop 6 is made busy for this test.

*K. Loop Number Translator:* This test checks the ability of the circuit to translate the loop number information into the proper 1-out-of-6 output. The loop under test is removed from service during the performance of this test.

*L. Exclude Source Lamp Circuit:* This test checks the ability of the associated logic to control the state of the exclude source lamp. The exclude source lamp and other lamps are made unavailable to the attendant during this test.

**M. Ready Lamp Circuit:** This test checks the ability of the associated logic to control the state of the ready lamp. The ready lamp and other lamps are made unavailable to the attendant during this test.

**N. Exclude Destination Lamp Circuit:** This test checks the ability of the associated logic to control the state of the exclude destination lamp in response to test messages. The exclude destination lamp and other lamps are made unavailable to the attendant during this test.

**O. Audible Signal:** This test checks the ability of the associated gating paths to enable the audible signal under control of continuous test messages.

**P. Position Available:** This test checks the ability of the associated logic to control the state of the position available lamp in response to test messages. The position available lamp and other lamps are made unavailable to the attendant during this test.

**Q. Position Busy:** This test checks the ability of the associated logic to control the state of the position busy lamp in response to test messages. The position busy lamp and other lamps are made unavailable to the attendant during this test.

**R. Calls Waiting:** This test checks the ability of the associated logic to control the state of the calls waiting lamp in response to test messages. The calls waiting lamp and other lamps are made unavailable to the attendant during this test.

**S. Night Service:** This test checks the ability of the associated logic to control the state of the night service (NITE) lamp in response to test messages. The night service lamp and other lamps are made unavailable to the attendant during this test.

**T. Attendant Controlled Conference:** This test checks the ability of the associated logic to control the state of the conference lamps in response to test messages. Neither conference circuit may be used for conference calls during this test.

**U. Attendant Line:** This test requires the attendant to establish a talking connection between the console and a station. The location of the attendant line circuit packages is given in the event replacement is required.

**V. Timing Circuit:** This test checks that the "clear and gate" logic responds to the attendant start bits.

**W. Console Lamps:** This test checks the continuity of each console lamp by applying 12 volts to the lamp via a test lamp on AUX BOARD B.

**Caution:** Parts of Tests C and D call for a brief disconnect of the interrupt signals to the tone generator circuit and ring-ringback logic circuit number 1. This occurs during the insertion of AUX BOARD B.

**1.03** All tests in this section must be performed with the knowledge and cooperation of the console attendant.

**1.04** Performance of Tests H and J requires that the console be put on night service temporarily.

**1.05** Performance of Tests C through J, V, and W cause a disruption in the services normally available at the console.

**1.06** This section is arranged to test any or all three attendant circuits. Test W is devoted exclusively to console lamps.

**1.07** References to tray locations are all in BAY 1, unless otherwise specified.

**1.08** Test point designations TP-Tx refer to the test points associated with a specific terminal number on AUX BOARD B. The letter X is the connector terminal number on the circuit pack under test. The use of AUX BOARD B allows a convenient test connection to be made on any connector terminal without going to the back of the equipment bays.

**1.09** Certain tests in this section require the assistance of the control unit. Test messages required to perform these tests must be originated by an appropriate *manual request* teletypewriter print-in.

1.10 The control unit must be notified whenever an inadvertant disruption of service occurs as a result of testing. This applies to blown fuses in both on- and off-line circuits.

1.11 For Tests E, F, and G refer to Table U.

1.12 **Lettered Steps:** A letter a, b, c, etc, added to a step number in Part 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.

**2. APPARATUS**

**All Tests**

2.01 731A (key extractor) tool (for CP removal).

**Tests A through T and V**

2.02 124A test set, SD-1H070-01.

2.03 M3BP cord, power cable, 6 feet long (for patching battery from switch unit to test set).

**3. PREPARATION**

STEP	ACTION	VERIFICATION
<b>Tests A through T and V</b>		
1	Connect power to test set.	

**4. METHOD**

STEP	ACTION	VERIFICATION
<b>A. Interrupt Generators</b>		
2	On test set — Operate K1 to COMPARATOR.	
3	Operate K2 to SEP.	
4	Operate K3 to AUTO RST.	
5	Operate SYNC DELAY to 3.	
6	Operate DIAL B key 25 to green, all others to amber.	

**Tests A through H, K through T, and V**

2.04 Four W1BD cords (test lead, 8 feet long, equipped with test point contact spring and pin plug).

**Tests A,H,L,M,N,O,P,Q,R,S,V**

2.05 Three P1U cords (test lead, 10 inches long, equipped with pin plugs).

**Tests C,D,H,J,L,M,N,P,Q,R,S,T,W**

2.06 164A adaptor, AUX BOARD B (extender card for access to circuit pack connector terminals and for console lamp testing).

**Tests E,F,G,L,M,N,O,T**

2.07 Three W1BE cords (test lead, 10 inches long, equipped with test point contact spring and alligator clip).

**Tests I,J,K**

2.08 W25C cord, testing cord, 8 feet long (for patching various switch unit test points to 25 terminal test set connector, INPUTS 1 to 24).

**Test K**

2.09 W9B cord, testing cord, 6 feet long (for patching various switch unit test points to 9 terminal test set connector, INPUTS 25 to 32).

STEP	ACTION	VERIFICATION
7	Connect INPUT 25 to INPUT D.	
8a	If testing interrupt generator 1 — Connect INPUT C to TP3 at 17C8 (CP193).	MSG IND 1 flashes at 240 ipm (4 ips). <b>Note:</b> No verification indicates a bad CP193 at 17C8.
9a	Move INPUT C to TP4 at 17C5 (CP244).	MSG IND 1 flashes at 240 ipm (4 ips). <b>Note:</b> No verification indicates a bad CP244 at 17C5.
10b	If testing interrupt generator 2 — Connect INPUT C to TP3 at 17A17 (CP193).	MSG IND 1 flashes at 240 ipm (4 ips). <b>Note:</b> No verification indicates a bad CP193 at 17A17.
11b	Move INPUT C to TP4 at 17A14 (CP244).	MSG IND 1 flashes at 240 ipm (4 ips). <b>Note:</b> No verification indicates a bad CP244 at 17A14.
12	Remove INPUT C from switch unit.	
13	Remove INPUT 25 from INPUT D.	
14a	If testing interrupt generator 1 — Connect INPUT 25 to TP3 at 17C2 (CP235).	MSG IND 1 flashes at 60 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP235 at 17C2.
15a	Move INPUT 25 to TP4 at 17B20 (CP235).	MSG IND 1 flashes at 15 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP235 at 17B20.
16a	Remove INPUT 25 from TP4 at 17B20.	
17b	If testing interrupt generator 2 — Connect INPUT 25 to TP3 at 17A11 (CP235).	MSG IND 1 flashes at 60 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP235 at 17A11.
18b	Move INPUT 25 to TP4 at 17A8 (CP235).	MSG IND 1 flashes at 15 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP235 at 17A8.
19b	Remove INPUT 25 from TP4 at 17A8.	
20c	If no further tests are to be made at this time — Remove battery connection between test set and switch unit.	

#### B. Interrupt Distribution Circuit

- 2 On test set —  
Operate K2 to SEP.
- 3 Operate K3 to AUTO RST.

STEP	ACTION	VERIFICATION
4	Operate DIAL B key 25 to red, all others to amber.	
5a	If testing circuits associated with attendant circuit 1 — Connect INPUT 25 to TP4 at 17B17 (CP243).	MSG IND 1 flashes at 120 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 17B17.
6a	Move INPUT 25 to TP2 at 17B17 (CP243).	MSG IND 1 flashes at 60 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 17B17.
7a	Move INPUT 25 to TP3 at 17B17 (CP243).	MSG IND 1 flashes on for 1/4 second at 2-second intervals. <i>Note:</i> No verification indicates a bad CP243 at 17B17 or CP75 at 25B23.
8a	Remove INPUT 25 from TP3 at 17B17.	
9b	If testing circuits associated with attendant circuit 2 — Connect INPUT 25 to TP4 at 17A5 (CP243).	MSG IND 1 flashes at 120 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 17A5.
10b	Move INPUT 25 to TP2 at 17A5 (CP243).	MSG IND 1 flashes at 60 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 17A5.
11b	Move INPUT 25 to TP3 at 17A5 (CP243).	MSG IND 1 flashes on for 1/4 second at 2-second intervals. <i>Note:</i> No verification indicates a bad CP243 at 17A5 or CP75 at 9B23.
12b	Remove INPUT 25 from TP3 at 17A5.	
13c	If testing circuits associated with attendant circuit 3 — Connect INPUT 25 to TP4 at 5A17 (CP243).	MSG IND 1 flashes at 120 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 5A17.
14c	Move INPUT 25 to TP2 at 5A17 (CP243).	MSG IND 1 flashes at 60 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad CP243 at 5A17.
15c	Move INPUT 25 to TP3 at 5A17 (CP243).	MSG IND 1 flashes on for 1/4 second at 2-second intervals. <i>Note:</i> No verification indicates a bad CP243 at 5A17 or CP75 at 1B23.
16c	Remove INPUT 25 from TP3 at 5A17.	
17d	If no further tests are to be made at this time — Remove battery connection between test set and switch unit.	

STEP	ACTION	VERIFICATION
<b>C. Interrupt Rates to Tone Generator</b>		
2	On test set — Operate K2 to SEP.	
3	Operate K3 to AUTO RST.	
4	Operate DIAL B key 25 to green, all others to amber.	
5	Remove CP75 from 17B23.	
6	Install AUX BOARD B at 17B23.	
7	Install the CP75 (removed in Step 5) in AUX BOARD B.	
8	Connect INPUT 25 to TP-T7 on AUX BOARD B. (See 1.08.)	MSG IND 1 flashes at 60 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP75 at 17B23.
9	Move INPUT 25 to TP-T21 on AUX BOARD B.	MSG IND 1 flashes at 120 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP75 at 17B23.
10	Remove INPUT 25 from TP-T21.	
11	Remove AUX BOARD B from 17B23.	
12	Replace CP75 at 17B23.	
13a	If no further tests are to be made at this time — Remove battery connection between test set and switch unit.	

#### D. Interrupt Rates to Ring-Ringback Logic

2	Request a control unit print-in to inhibit switch unit maintenance.	
3	On test set — Operate K2 to SEP.	
4	Operate K3 to AUTO RST.	
5	Operate DIAL B key 25 to green, all others to amber.	
6	Connect INPUT 25 to TP1 at 17B23 (CP75).	MSG IND 1 flashes at 30 ipm with equal on-off times. <b>Note:</b> No indication indicates a bad CP75 at 17B23.
7	Move INPUT 25 to TP6 at 17B23 (CP75).	MSG IND 1 flashes at 15 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP75 at 17B23.

STEP	ACTION	VERIFICATION
8	Remove INPUT 25 from TP6 at 17B23.	
9	Remove CP70 from 17A20.	
10	Install AUX BOARD B at 17A20.	
11	Install CP70 (removed in Step 9) in AUX BOARD B.	
12	Connect INPUT 25 to TP-T6 on AUX BOARD B.	MSG IND 1 flashes at 30 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP70 at 17A20.
13	Move INPUT 25 to TP-T4 on AUX BOARD B.	MSG IND 1 flashes at 15 ipm with equal on-off times. <b>Note:</b> No verification indicates a bad CP70 at 17A20.
14	Remove INPUT 25 from TP-T4.	
15	Remove AUX BOARD B from 17A20.	
16	Replace CP70 at 17A20.	
17	Request control unit print-in to enable switch unit maintenance.	
18a	If no further tests are to be made at this time — Remove battery connection between test set and switch unit.	

#### E. Key Lamps

**Note 1:** If no location is given for a particular circuit package refer to Table U.

**Note 2:** When verification cannot be obtained after CP replacement as suggested under verification, proceed to Test H. Input Gates for Key Lamps.

- 2 Request control unit to remove from service the console loop under test.
- 3 Notify attendant to disregard signals on loop under test and unexpected behavior of some common lamps.
- 4 Connect to ground, momentarily, the test points listed in Table U for K1FF (CP204) and K2FF (CP80) of loop and console under test.
- 5 Connect INPUT 22, 23, and 25 to K1FF (CP204), K2FF (CP80) and KLD (CP191) respectively, of loop and console under test.
- 6 Operate K2 to SEP.
- 7 Operate K3 to DTR 2.

STEP	ACTION	VERIFICATION
8	Operate DIAL A and B keys 22, 23, and 25 to green, all others to amber.	
9	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad K1FF (CP204) or K2FF (CP80) to which INPUT 22 and 23 are connected.
10	Operate RST2 momentarily.	On release of RST2 — MSG IND 2 lighted. <b>Note:</b> No verification indicates a bad KLD (CP191) to which INPUT 25 is connected. <b>Note:</b> Removal of this CP191 will disrupt key lamp messages in two consoles.
11	Operate DIAL A and B keys as follows: key 22 to green, key 23 to red, key 25 to red, all others to amber.	
12	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 remains extinguished.
13	Operate RST2 momentarily.	On release of RST2 — MSG IND 2 remains extinguished.
14	Request control unit print-in to send continuous test messages to cause the key lamp to <i>wink</i> (on the console loop under test.)	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad K1G (CP75) or K1FF (CP204). MSG IND 2 lighted. <b>Note:</b> No verification indicates a bad K1G (CP75) or KLD (CP191).
15	Operate K3 to AUTO RST.	
16	Operate DIAL A keys 22 and 23 to amber.	MSG IND 1 extinguished for 1/4 second at 2-second intervals. <b>Note:</b> No verification indicates a bad K1G (CP75).
17	Request control unit to remove test message.	
18	Request control unit print-in to send continuous test messages to cause key lamp to <i>light steadily</i> .	MSG IND 1 lighted steadily. <b>Note:</b> No verification indicates a bad K2G (CP75) or K2FF (CP80).
19	Remove INPUTS 22, 23, and 25 from switch unit.	
20	Request control unit to remove test message.	

STEP	ACTION	VERIFICATION
21	Request control unit to return loop to service.	
22	Notify attendant that all loops are in service.	
23a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	
<b>F. Source Lamps</b>		
<i>Note 1:</i> If no location is given for a particular circuit pack refer to Table U.		
<i>Note 2:</i> If verification cannot be obtained after CP replacement as suggested under verification, proceed to Test I. Input Gates for Source Lamps.		
2	Request control unit to remove from service console loop under test.	
3	Notify attendant to disregard signals on loop under test and unexpected behavior of some common lamps.	
4	Connect to ground test points listed in Table U for S2FF (CP80) and S3FF (CP80) of the console loop under test.	
5	Connect TP1 of S1IG (CP75) to ground for console loop under test.	
6	Connect INPUT 25 to TP2 of S2IG (CP75).	
7	Operate K2 to SEP.	
8	Operate K3 to AUTO RST.	
9	Operate DIAL B key 25 to red, all others (DIAL A and B) to amber.	MSG IND 1 flashes at 60 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad S2IG (CP75).
10	Move INPUT 25 to TP5 of S3IG (CP75).	MSG IND 1 flashes at 120 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad S3IG (CP75).
11	Move INPUT 25 to SLD (CP191).	MSG IND 1 extinguished for 1/4 second at 1-second intervals. <i>Note:</i> No verification indicates a bad SLD (CP191).
12	Remove ground from TP1 of S1IG (CP75).	MSG IND 1 lighted steadily. <i>Note:</i> No verification indicates a bad S1IG (CP175).

STEP	ACTION	VERIFICATION
13	Remove grounds from S2FF (CP80) and S3FF (CP80).	MSG IND 1 remains lighted. <i>Note:</i> No verification indicates a bad S2FF, S3FF (CP80), or LCR1 (CP204).
14	Request control unit print-in to send continuous test messages to cause source lamp for console loop under test to be <i>extinguished</i> .	On receipt of test message — MSG IND 1 extinguished. <i>Note:</i> No verification indicates a bad S2FF, S3FF (CP80), or LCR1 (CP204).
15	Request control unit to remove test message.	
16	Request control unit print-in to send continuous test messages to cause source lamp for console loop under test to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted steadily. <i>Note:</i> No verification indicates a bad S2G or S3G (CP75).
17	Remove INPUT 25 from SLD (CP191).	
18	Request control unit to remove test message.	
19	Request control unit to return loop to service.	
20	Notify attendant that this loop is in service.	
21a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### G. Destination Lamps

*Note 1:* If no location is given for a particular circuit pack refer to Table U.

*Note 2:* If verification cannot be obtained after CP replacement as suggested under verification, proceed to Test J. Input Gates for Destination Lamps.

- 2 Request control unit remove from service the console loop under test.
- 3 Notify attendant to disregard signals on loop under test and unexpected behavior of some common lamps.
- 4 Connect to ground test points listed in Table U for D1FF (CP80), D2FF (CP80), and D3FF (CP80) for console loop under test.
- 5 Connect INPUT 25 to TP4 of D1IG (CP75).
- 6 Operate K2 to SEP.
- 7 Operate K3 to AUTO RST.
- 8 Operate DIAL B key 25 to red, all others (DIAL A and B) to amber.

STEP	ACTION	VERIFICATION
9	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <i>Note:</i> No verification indicates a bad D1IG (CP75).
10	Move INPUT 25 to D2IG (CP75).	MSG IND 1 flashes at 60 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad D2IG (CP75).
11	Move INPUT 25 to D3IG (CP75).	MSG IND 1 flashes at 120 ipm with equal on-off times. <i>Note:</i> No verification indicates a bad D3IG (CP75).
12	Move INPUT 25 to DLD (CP191).	MSG IND 1 extinguished for 1/4 second at 1-second intervals. <i>Note:</i> No verification indicates a bad DLD (CP191).
13	Remove grounds from D1FF, D2FF, and D3FF (CP80).	MSG IND 1 remains as in Step 12. <i>Note:</i> No verification indicates a bad D1FF, D2FF, or D3FF (CP80).
14	Request control unit print-in to send continuous test messages to cause destination lamp for console loop under test to be <i>extinguished</i> .	On receipt of test message — MSG IND 1 extinguished. <i>Note:</i> No verification indicates a bad LCR2 (CP204), D1G (CP75), D1FF, D2FF, or D3FF (CP80).
15	Request control unit to remove test message.	
16	Request control unit print-in to send continuous test messages to cause destination lamp for console loop under test to <i>wink</i> .	On receipt of test message — MSG IND 1 winks off for 1/4 second every 2 seconds. <i>Note:</i> No verification indicates a bad D1IG, D2IG (CP75), D2FF (CP80), or D2G (CP75).
17	Request control unit to remove test message.	
18	Request control unit print-in to send continuous test messages to cause destination lamp for console loop under test to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted steadily. <i>Note:</i> No verification indicates a bad D3IG (CP75), D3FF (CP80), or D3G (CP75).
19	Remove INPUT 25 from DLD.	
20	Request control unit to remove test message.	
21	Request control unit to return loop to service.	

STEP	ACTION	VERIFICATION
22	Notify attendant that this loop is in service.	
23a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	
<b>H. Input Gates for Key Lamps</b>		
2	Notify attendant to place this console on night service.	
3	At attendant circuit under test — Insert AUX BOARD B in series with CP70 located as follows: attendant circuit 1--21C20, attendant circuit 2--13C20, attendant circuit 3--5C20.	
4	Notify attendant to remove this console from night service.	
5	Request control unit print-in to cause loop 6 of console under test to be removed from service.	
6	Notify attendant to disregard signals on loop 6 and unexpected behavior of some common lamps.	
7	Request control unit print-in to send continuous test messages to cause loop 6 key lamp to <i>wink</i> on console under test.	
8	Operate K1 to COMPARATOR.	
9	Operate SYNC DELAY to 1.	
10	At circuit under test — Connect INPUT C to TP1 of CP244 located as follows: attendant circuit 1--17C5, attendant circuit 2--17A14, attendant circuit 3--5A14.	
11	Connect INPUT A to S+12.	
12	At circuit under test — Connect INPUT B to TP4 of CP192 located as follows: attendant circuit 1--21B14, attendant circuit 2--13B14, attendant circuit 3--5B14.	
13	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted.
		<b>Note:</b> No verification indicates a bad CP192 to which INPUT B was connected in Step 12.

STEP	ACTION	VERIFICATION
14	Remove INPUT A from S+12.	
15	Remove INPUT B from connection made in Step 12.	
16	Remove INPUT C from connection made in Step 10.	
17	At circuit under test — Connect INPUT 22 to TP5 of CP207 located as follows: attendant circuit 1--21C5, attendant circuit 2--13C5, attendant circuit 3--5C5.	
18	At circuit under test — Connect INPUT 23 to TP-T18 of AUX BOARD B.	
19	Connect INPUT 24 to TP4 of CP70 in AUX BOARD B.	
20	Connect INPUT 25 to TP4 of CP192 located as follows: attendant circuit 1--21B14, attendant circuit 2--13B14, attendant circuit 3--5B14.	
21	Operate K2 to SEP.	
22	Operate K3 to DTR 2.	
23	Operate DIAL A and B keys as follows: DIAL A key 22--green, DIAL A key 23--green, DIAL A key 24--red, DIAL B key 25--red.	
24	Operate RST2 momentarily.	On receipt of test message — MSG IND 2 lighted. <b>Note:</b> No verification indicates a bad CP192 to which INPUT 25 was connected in Step 20.
25	Operate K2 to COMB.	
26	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP207 or CP70 to which INPUTS 22 and 23 were connected in Steps 17 and 18, respectively. The trouble may also be in CP75 located at 21C23, 13C23, or 5C23 when testing attendant circuit 1, 2, or 3, respectively.

STEP	ACTION	VERIFICATION
27	Operate DIAL A and B keys 22, 23, 24, and 25 to red, all others to amber.	
28	Request control unit to remove test message.	
29	Request control unit print-in to send continuous test messages to cause <i>no change</i> in loop 6 key lamp.	
30	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> No verification indicates a bad CP as stated in the note for Step 26.
31	Operate DIAL A and B keys as follows: DIAL A key 22--green, DIAL A key 23--red, DIAL A key 24--green, DIAL B key 25--red.	
32	Request control unit to remove test message.	
33	Request control unit print-in to send continuous test messages to cause loop 6 key lamp to <i>light steadily</i> .	
34	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> No verification indicates a bad CP as stated in the note for Step 26.
35	Request control unit to remove test message.	
36	Remove INPUTS 22, 23, 24, and 25 from circuit under test.	
37	Notify attendant to place this console on night service.	
38	Remove AUX BOARD B and replace CP70.	
39	Notify attendant to remove console from night service.	
40	Request control unit to return loop 6 to service.	
41	Notify attendant that loop 6 is in service.	
42a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

STEP	ACTION	VERIFICATION
<b>I. Input Gates for Source Lamps</b>		
2	Request control unit to print-in to cause loop 6 of console under test to be removed from service.	
3	Notify attendant to disregard signals on loop 6 and unexpected behavior of some common lamps.	
4	Operate K2 to SEP.	
5	Operate K3 to DTR 2.	
6	Connect INPUTS 18 through 24 to test points of the attendant circuit under test as listed in Table A.	

**TABLE A**  
**TEST CONNECTIONS AND KEY SETTINGS**

TEST SET INPUT	TP-	ATTENDANT CIRCUIT UNDER TEST			CIRCUIT PACK	TEST MESSAGE		
		1	2	3		SOURCE STEADY	SOURCE NO CHANGE	POSITION AVAILABLE
18	4	21C5	13C5	5C5	CP207	G	R	G
19	3	21C20	13C20	5C20	CP70	G	R	R
20	2	21B17	13B17	5B17	CP204	R	G	G
21	6	21C23	13C23	5C23	CP75	G	G	R
22	2	21C23	13C23	5C23	CP75	R	G	R
23	5	21C23	13C23	5C23	CP75	G	R	G
24	2	21C2	13C2	5C2	CP75	G	R	G

STEP	ACTION	VERIFICATION
7	Operate DIAL A keys 18 through 24 (corresponding to INPUTS 18 through 24) to positions listed in Table A under Test Message, Source Steady.	
8	Operate RST1 momentarily.	
9	Request control unit print-in to send continuous test messages to cause loop 6 source lamp to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> On no verification, proceed to Step 10a.

STEP	ACTION	VERIFICATION
10a	If Step 9 failed to verify — Operate DIAL A keys 18 through 24 to amber, starting with key 18, one at a time, until MSG IND 1 lights.	When the DIAL A key associated with the defective stage is operated to amber — MSG IND 1 lighted. <i>Note:</i> The CP containing the defective stage can be found by correlating the key (that caused MSG IND 1 to light) and the INPUT number. Then observe the CP to which the INPUT lead is connected. When the aforementioned key number is known, Table A also gives the defective CP location. CP75 at 25B11, 13B11, and 1B11 for circuits 1, 2, and 3, respectively, may also be at fault.
11	Request control unit to remove test message.	
12	Operate DIAL A keys 18 through 24 to positions listed in Table A under Test Message, No Change.	
13	Operate RST1 momentarily.	
14	Request control unit print-in to send continuous test messages to cause <i>no change</i> in loop 6 source lamp.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Step 10a.
15	Request control unit to remove test message.	
16	Operate DIAL A keys 18 through 24 to positions listed in Table A under Test Message, Position Available.	
17	Operate RST1 momentarily.	
18	Request control unit print-in to send continuous test messages to cause position available lamp to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Step 10a.
19	Remove INPUTS 18 through 24 from circuit under test.	
20	Request control unit to remove test message.	
21	Request control unit to return loop 6 to service.	
22	Notify attendant that loop 6 is in service.	
23b	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	



STEP	ACTION	VERIFICATION
12	Request control unit print-in to send continuous test messages to cause loop 6 destination lamp to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, proceed to Step 13a.
13a	If Step 12 failed to verify — Operate DIAL A keys 18 through 24 to amber, starting with key 18, one at a time, until MSG IND 1 lights.	When the DIAL A key associated with defective stage is operated to amber — MSG IND 1 lighted. <i>Note:</i> The CP containing the defective stage can be found by correlating the key (that caused MSG IND 1 to light) and the INPUT number. Then observe the CP to which the INPUT lead is connected. When the aforementioned key number is known, Table B also gives the defective CP location. In the event an amber setting of key 22 lights MSG IND 1, the trouble may also be in CP75 at 21C23, 13C23, or 5C23 for attendant circuit 1, 2, or 3 respectively.
14	Request control unit to remove test message.	
15	Operate DIAL A keys 18 through 24 to positions listed in Table B under Test Message, Dest 60 ipm.	
16	Operate RST1 momentarily.	
17	Request control unit print-in to send continuous test messages to cause loop 6 destination lamp to <i>flash at 60 ipm</i> .	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Step 13a.
18	Request control unit to remove test message.	
19	Operate DIAL A keys 18 through 24 to positions listed in Table B under Test Message, Dest No Change.	
20	Operate RST1 momentarily.	
21	Request control unit print-in to send continuous test messages to cause <i>no change</i> in the loop 6 destination lamp.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Step 13a.
22	Request control unit to remove test message.	
23	Remove INPUTS 18 through 24 from circuit under test.	

STEP	ACTION	VERIFICATION
24	Notify attendant to place this console on night service.	
25	Remove AUX BOARD B and replace CP70.	
26	Notify attendant to remove this console from night service.	
27	Request control unit to return loop 6 to service.	
28	Notify attendant that loop 6 is in service.	
29b	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### K. Loop Number Translator

2	Operate K1 to COMPARATOR.
3	Operate K2 to COMB.
4	Operate K3 to DTR 2.
5	Operate SYNC DELAY to 2.
6	Connect INPUTS C and 19 through 32 to test points of attendant circuit under test as listed in Table C.
7	Operate DIAL A and B keys 19 through 32 (corresponding to INPUTS 19 through 32) to positions R or G listed in Table C for attendant loop number under test (columns 1, 2, 3, 4, 5, 6).
8	Request control unit to print-in appropriate message to cause console loop under test to be removed from service.
9	Notify attendant to disregard signals on loop under test and unexpected behavior of some common lamps.
10	Request control unit print-in to send continuous test messages to cause source and destination lamps of loop under test to <i>flash at 120 ipm.</i>

**TABLE C**  
**TEST CONNECTIONS AND KEY SETTINGS**

TEST SET INPUT	TP-	ATTENDANT CIRCUIT UNDER TEST			CIRCUIT PACK	ATTENDANT LOOP UNDER TEST					
		1	2	3		1	2	3	4	5	6
19	4	17C23	17B8	5B8	CP83	R	G	G	G	G	G
20	2	17C23	17B8	5B8	CP83	G	R	G	G	G	G
21	1	17C23	17B8	5B8	CP83	G	G	R	G	G	G
22	3	17C23	17B8	5B8	CP83	G	G	G	R	G	G
23	5	17C23	17B8	5B8	CP83	G	G	G	G	R	G
24	6	17C23	17B8	5B8	CP83	G	G	G	G	G	R
25	1	17C17	17B2	5B2	CP243	G	R	R	R	R	R
26	4	17C17	17B2	5B2	CP243	R	G	R	R	R	R
27	2	17C17	17B2	5B2	CP243	R	R	G	R	R	R
28	3	17C17	17B2	5B2	CP243	R	R	R	G	R	R
29	4	17C20	17B5	5B5	CP243	R	R	R	R	G	R
30	2	17C20	17B5	5B5	CP243	R	R	R	R	R	G
31	4	21B14	13B14	5B14	CP192	R	R	R	R	R	R
32		CONNECT TO INPUT E				G	G	G	G	G	G
C	1	17C5	17A14	5A14	CP244						

STEP	ACTION	VERIFICATION
11	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted.  <i>Note:</i> On no verification, proceed to Step 12a.
12a	If Step 11 failed to verify — Operate DIAL A and B keys 19 through 32 to amber, one at a time, starting with key 19, until MSG IND 1 lights.	When DIAL A or B key associated with defective stage is operated to amber — MSG IND 1 lighted.  <i>Note 1:</i> The CP containing the defective stage can be found by correlating the key number (that caused MSG IND 1 to light) and the INPUT number. Then observe the CP to which the INPUT is connected. When the aforementioned key number is known, Table C also gives the defective CP location. In the event a common loop trouble is suspected, CP243 at 17C20, 17B5, or 5B5 for attendant circuits 1, 2, and 3, respectively, may be at fault.  <i>Note 2:</i> INPUT 32 (key 32) is controlled by the circuit to which INPUT C is connected. (See Table C).
13b	If a CP was replaced in Step 12a — Repeat Steps 7 and 11.	Same as Step 11.

STEP	ACTION	VERIFICATION
14	Request control unit to remove test message.	
15	Request control unit to return loop under test to service.	
16	Notify attendant that this loop is in service.	
17	Remove INPUTS C and 19 through 31 from attendant circuit under test.	
18c	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### L. Exclude Source Lamp Circuit

2	Notify attendant that exclude source lamp circuit is under test and to disregard any change in its lamp state and the state of some common lamps during performance of this test.	
3	Connect INPUT A to MULT 1.	
4	Connect INPUT B to TP4 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C2, attendant circuit 2--13C2, attendant circuit 3--5C2.	
5	Connect INPUT E to MULT 1.	
6	Connect MULT 1 to GRD.	
7	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted.  <b>Note:</b> No verification indicates a bad CP75 to which INPUT B is connected.
8	Request control unit print-in to send continuous test messages to cause exclude source lamp to <b>light steadily</b> .	On receipt of test message — ERROR lamp lighted.  <b>Note:</b> On no verification, refer to Table D. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

TABLE D — EXCLUDE SOURCE

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C2	13C2	5C2
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	--	--	5B11
CP74	--	--	5D2

STEP	ACTION	VERIFICATION
9	Remove INPUT B from connection made in Step 4.	
10	Operate K2 to SEP.	
11	Operate K3 to DTR 2.	
12	Notify attendant to ignore exclude source, exclude destination and ready lamp states until Step 13 is completed.	
13	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.	
14	Connect ground to TP5 of CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.	
15	Connect INPUT 22 to TP-T18 of AUX BOARD B.	
16	Operate DIAL A key 22 to red, all others to amber.	
17	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <i>Note:</i> No verification indicates a bad CP191 on AUX BOARD B.
18	Remove ground made in Step 14.	
19	Operate DIAL A key 22 to green, others remain amber.	
20	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Table E. Replace the indicated circuit packs one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE E  
EXCLUDE SOURCE**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP191	21B20	13B20	5B20
CP76	21B23	13B23	5B23
CP207	21C5	13C5	5C5
CP75	21C2	13C2	5C2
CP204	21B17	13B17	5B17

STEP	ACTION	VERIFICATION
21	Connect INPUT B to TP5 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C2, attendant circuit 2--13C2, attendant circuit 3--5C2.	
22	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted. <b>Note:</b> No verification indicates a bad CP75 to which INPUT B is connected.
23	Request control unit print-in to send continuous test messages to cause both ready and exclude source lamps to <i>light steadily</i> .	On receipt of test message — ERROR lamp lighted. <b>Note:</b> No verification indicates a bad CP75 to which INPUT B is connected.
24	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> On no verification, refer to Table E. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.
25	Request control unit to remove test message.	
26	Remove INPUTS B and 22 from attendant circuit under test.	
27	Remove leads to MULT 1.	
28	Notify attendant to ignore exclude source, exclude destination, and ready lamp states until Step 29 is completed.	
29	Remove AUX BOARD B and replace CP191.	
30	Notify attendant that this test is completed.	
31a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

## M. Ready Lamp Circuit

2	Notify attendant that ready lamp circuit is under test and to disregard any change in its lamp state and the state of some common lamps during performance of this test.
3	Connect INPUT A to MULT 1.
4	Connect INPUT B to TP6 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C2, attendant circuit 2--13C2, attendant circuit 3--5C2.

STEP	ACTION	VERIFICATION
16	Operate DIAL A key 22 to red, all others to amber.	
17	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP191 on AUX BOARD B.
18	Remove ground made in Step 14.	
19	Operate DIAL A key 22 to green, others remain amber.	
20	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <b>Note:</b> On no verification, refer to Table G. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement operate RST1 momentarily and recheck for verification.

TABLE G  
READY

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP191	21B20	13B20	5B20
CP76	21B23	21B23	5B23
CP207	21C5	13C5	5C5
CP75	21C2	13C2	5C2
CP204	21B17	13B17	5B17
CP70	21C20	13C20	5C20

21	Operate DIAL A key 22 to red, others remain amber.	
22	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 remains extinguished.
23	Request control unit print-in to send continuous test messages to cause position available lamp to <i>light steadily</i> and ready lamp to be <i>extinguished</i> .	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP70 at 21C20, 13C20, or 5C20 for attendant circuits 1, 2, and 3, respectively.
24	Operate DIAL A key 22 to green, others remain amber.	
25	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 remains extinguished.

STEP	ACTION	VERIFICATION
5	Connect INPUT E to MULT 1.	
6	Connect MULT 1 to GRD.	
7	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted. <b>Note:</b> No verification indicates a bad CP75 to which INPUT B is connected.
8	Request control unit print-in to send continuous test messages to cause ready lamp (only) to <i>light steadily</i> .	On receipt of test message — ERROR lamp lighted. <b>Note:</b> On no verification, refer to Table F. Replace the indicated circuit packs, one at a time starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.

TABLE F  
READY

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C2	13C2	5C2
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	--	--	5B11
CP74	--	--	5D2

9	Remove INPUT B from connection made in Step 4.
10	Operate K2 to SEP.
11	Operate K3 to DTR 2.
12	Notify attendant to ignore exclude source, exclude destination, and ready lamp states until Step 13 is completed.
13	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.
14	Connect ground to TP6 of CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.
15	Connect INPUT 22 to TP-T28 of AUX BOARD B.

STEP	ACTION	VERIFICATION
26	Request control unit print-in to send continuous test messages to cause both ready and exclude source lamps to <i>light steadily</i> .	On receipt of test message — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP75 at 21C2, 13C2, or 5C2 for attendant circuits 1, 2, and 3, respectively.
27	Request control unit to remove test message.	
28	Remove INPUTS B and 22 from attendant circuit under test.	
29	Remove leads to MULT 1.	
30	Notify attendant to ignore exclude source, exclude destination and ready lamp states until Step 31 is completed.	
31	Remove AUX BOARD B and replace CP191.	
32	Notify attendant that this test is completed.	
33a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

## N. Exclude Destination Lamp Circuit

2	Notify attendant that exclude destination lamp circuit is under test and to disregard any change in its lamp state and the state of some common lamps during performance of this test.	
3	Connect INPUT A to MULT 1.	
4	Connect INPUT B to TP4 of CP70 at attendant circuit under test as follows: attendant circuit 1--17C11, attendant circuit 2--17A20, attendant circuit 3--5A20.	
5	Connect INPUT E to MULT 1.	
6	Connect MULT 1 to GRD.	
7	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted. <b>Note:</b> On no verification refer to Table H. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.

**TABLE H**  
**EXCLUDE DESTINATION**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	----	----	5B11
CP75	----	----	5C2
CP74	----	----	5D2

STEP	ACTION	VERIFICATION
8	Request control unit print-in to send continuous test messages to cause exclude destination lamp to <i>light steadily</i> .	
9	Notify attendant to ignore exclude source, exclude destination, and ready lamp states until Step 10 is completed.	
10	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.	
11	Connect ground to TP2 of CP191 as follows: attendant circuit 1--21B20, attendant circuit 2--13B20, attendant circuit 3--5B20.	
12	Connect INPUT 22 to TP-T4 of AUX BOARD B.	
13	Operate K2 to SEP.	
14	Operate K3 to DTR 2.	
15	Operate DIAL A key 22 to red, all others to amber.	
16	Operate RST1 momentarily.	On release of RST1 key — MSG IND 1 lighted.  <i>Note:</i> No verification indicates a bad CP191 to which INPUT 22 is connected.
17	Remove ground made in Step 11.	

STEP	ACTION	VERIFICATION
18	Operate DIAL A key 22 to green, others remain amber.	
19	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted.  <i>Note:</i> On no verification, refer to Table I. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

TABLE I  
EXCLUDE DESTINATION

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP191	21B20	13B20	5B20
CP76	21B23	13B23	5B23
CP75	21C2	13C2	5C2
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	----	----	5B11
CP75	----	----	5C2
CP74	----	----	5D2

- 20 Request control unit to remove test message.
- 21 Remove INPUTS B and 22 from attendant circuit under test.
- 22 Remove leads to MULT 1.
- 23 Notify attendant to ignore exclude source, exclude destination, and ready lamp states until Step 24 is completed.
- 24 Remove AUB BOARD B and replace CP191.
- 25 Notify attendant that this test is completed.
- 26a If no further tests are to be performed at this time —  
Remove battery connection between test set and switch unit.

STEP	ACTION	VERIFICATION
<b>O. Audible Signal</b>		
2a	If audible signal is found to be continuously on or off for all loops — Replace the CP192 card in attendant circuit under test as follows: attendant circuit 1--21B14, attendant circuit 2--13B14, attendant circuit 3--5B14.	At the console — When an incoming call arrives on any console loop — An audible signal with a 120-ipm rate is heard.  <i>Note:</i> If the suggested action does not repair the trouble, proceed to Step 3.
3	Operate K2 to SEP.	
4	Operate K3 to DTR 2.	
5	Operate DIAL A key 22 to red, all others to amber.	
6	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 remains extinguished.
7	Connect to ground TP2 of CP81 at attendant circuit under test as follows: attendant circuit 1--21C8, attendant circuit 2--13C8, attendant circuit 3--5C8.	
8b	If option X is wired — Connect ground to TP3 of CP76 at attendant circuit under test as follows: attendant circuit 1--21C14, attendant circuit 2--13C14, attendant circuit 3--5C14.	
9	Connect INPUT 22 to TP1 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C2, attendant circuit 2--13C2, attendant circuit 3--5C17.	MSG IND 1 lighted.  <i>Note:</i> No verification indicates a bad CP75 to which INPUT 22 is connected.
10	Connect INPUT A to MULT 1.	
11	Connect INPUT E to MULT 1.	
12	Connect MULT 1 to GRD.	
13	Connect INPUT B to TP6 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C17, attendant circuit 2--13C17, attendant circuit 3--5C17.	
14	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted.  <i>Note:</i> No verification indicates a bad CP75 to which INPUT B is connected.

STEP	ACTION	VERIFICATION
15	Request control unit print-in to send continuous test messages to <i>turn on</i> audible signal.	On receipt of test message — ERROR lamp lighted.  <i>Note:</i> On no verification, refer to Table J. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.
16	Remove ground made in Step 7.	

**TABLE J**  
**AUDIBLE SIGNAL**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	----	----	5B11
CP74	----	----	5D2

17b	If option X is wired — Remove ground made in Step 8b.	
18	Operate DIAL A key 22 to green, all others to amber.	
19	Operate RST1 momentarily.	After release of RST1 — MSG IND 1 lighted.  <i>Note:</i> On no verification, refer to Table K. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE K**  
**AUDIBLE SIGNAL**

CIRCUIT PACK	ATTENDANT CIRCUIT		
	1	2	3
CP75	21C2	13C2	5C2
CP81	21C8	13C8	5C8
CP76*	21C14	13C14	5C14

\* Test when option X is supplied.

STEP	ACTION	VERIFICATION
20	Request control unit to remove test message.	
21	Remove INPUTS B and 22 from attendant circuit under test.	
22	Remove leads to MULT 1.	
23	Notify attendant that this test is completed.	
24c	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### P. Position Available

2	Notify attendant that position available lamp circuit is under test and to disregard all changes in its lamp state and the state of some common lamps during performance of this test.	
3	Connect INPUT A to MULT 1.	
4	Connect INPUT E to MULT 1.	
5	Connect MULT 1 to GRD.	
6	Connect INPUT B to TP6 of CP204 at attendant circuit under test as follows: attendant circuit 1--21B17, attendant circuit 2--13B17, attendant circuit 3--5B17.	
7	Operate RST3 momentarily.	On release of RST3 — OK lamp lighted.  <b>Note:</b> No verification indicates a bad CP204 to which INPUT B is connected.
8	Request control unit print-in to send continuous test messages to cause position available lamp to <i>light steadily</i> .	On receipt of test message — ERROR lamp lighted.  <b>Note:</b> On no verification, refer to Table L. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.

**TABLE L**  
**POSITION AVAILABLE**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP204	21B17	13B17	5B17
CP192*	21B14	13B14	5B14
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

\* This CP also controls other lamp circuits.

STEP	ACTION	VERIFICATION
9	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 10 is completed.	
10	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21C11, attendant circuit 2--13C11, attendant circuit 3--5C11.	
11	Operate K2 to SEP.	
12	Operate K3 to DTR 2.	
13	Operate DIAL A key 22 to green, all others to amber.	
14	Connect INPUT 22 to TP-T18 of AUX BOARD B.	
15	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted.  <i>Note:</i> No verification indicates a bad CP191 or CP76 at 21C11 and 21C14 for attendant circuit 1; at 13C11 and 13C14 for circuit 2; and 5C11 and 5C14 for circuit 3, respectively.
16	Request control unit to remove test message.	
17	Request control unit print-in to send continuous class II test messages to cause position available lamp to be <i>extinguished</i> .	

- 18 Operate DIAL A key 22 to red.  
19 Operate RST1 momentarily.

On receipt of test message —  
MSG IND 1 lighted.

**Note:** On no verification, refer to Table M. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE M**  
**POSITION AVAILABLE**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP191	21C11	13C11	5C11
CP76	21C14	13C14	5C14
CP75	21C17	13C17	5C17
CP75	21C2	13C2	5C2
CP207	21C5	13C5	5C5
CP204	21B17	13B17	5B17
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

- 20 Request control unit to remove test message.
- 21 Request control unit print-in to send continuous class II test messages to cause position available lamp to **light steadily**.
- 22 Operate DIAL A key 22 to green.
- 23 Operate RST1 momentarily.
- 24 Request control unit remove test message.
- 25 Remove INPUTS B and 22 from attendant circuit under test.
- 26 Remove leads to MULT 1.
- 27 Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 28 is completed.

On receipt of test message —  
MSG IND 1 lighted.

**Note:** No verification indicates a bad CP75 at 21C17, 13C17, and 5C17 for attendant circuits 1, 2, and 3, respectively.

STEP	ACTION	VERIFICATION
28	Remove AUX BOARD B and replace CP191.	
29	Notify attendant that this test is completed.	
30a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### Q. Position Busy

2	Notify attendant that position busy lamp circuit is under test and to disregard all changes in its lamp state and the state of some common lamps during performance of this test.	
3	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 4 is completed.	
4	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21C11, attendant circuit 2--13C11, attendant circuit 3--5C11.	
5	Request control unit print-in to send continuous class II test messages to cause position busy lamp to be <i>extinguished</i> .	
6	Connect INPUT A to MULT 1.	
7	Connect INPUT E to MULT 1.	
8	Connect MULT 1 to GRD.	
9	Connect INPUT B to TP4 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C17, attendant circuit 2--13C17, attendant circuit 3--5C17.	
10	Operate RST3 momentarily.	On receipt of test message — ERROR lamp lighted.
11	Operate K2 to SEP.	
12	Operate K3 to DTR 2.	

*Note:* On no verification, refer to Table N. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.

STEP	ACTION	VERIFICATION
13	Operate DIAL A key 22 to red, others remain amber.	
14	Connect INPUT 22 to TP-T16 of AUX BOARD B.	

TABLE N  
POSITION BUSY

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	21C17	13C17	5C17
CP192*	21B14	13B14	5B14
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

\* This CP also controls other lamp circuits.

15	Operate RST1 momentarily.	On release of RST1 — MSG IN 1 lighted.
		<i>Note:</i> No verification indicates a bad CP191 or CP81 at 21C11 and 21C8 for attendant circuit 1, 13C11 and 13C8 for circuit 2, 5C11 and 5C8 for circuit 3, respectively.
16	Request control unit print-in to send continuous class II test messages to cause position busy lamp to <i>light steadily</i> and position available lamp to be <i>extinguished</i> .	
17	Operate DIAL A key 22 to green, all others remain amber.	
18	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted.
		<i>Note:</i> On no verification, refer to Table O. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE O**  
**POSITION BUSY**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP81	21C8	13C8	5C8
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

STEP	ACTION	VERIFICATION
19	Move INPUT B to TP5 of CP75 at attendant and circuit unit test as follows: attendant circuit 1--21C17, attendant circuit 2--13C17, attendant circuit 3--5C17.	
20	Operate RST3 momentarily.	On receipt of test message — ERROR lamp lighted. <i>Note:</i> On no verification, see note in Step 18.
21	Request control unit print-in to send continuous class II test messages to cause position available lamp to <i>light steadily</i> and position busy lamp to be <i>extinguished</i> .	
22	Operate DIAL A key 22 to red, all others remain amber.	
23	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Table P. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE P**  
**POSITION BUSY**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

STEP	ACTION	VERIFICATION
13	Operate DIAL A key 22 to red, others remain amber.	
14	Connect INPUT 22 to TP-T16 of AUX BOARD B.	

TABLE N  
POSITION BUSY

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	21C17	13C17	5C17
CP192*	21B14	13B14	5B14
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

\* This CP also controls other lamp circuits.

15	Operate RST1 momentarily.	On release of RST1 — MSG IN 1 lighted.
		<i>Note:</i> No verification indicates a bad CP191 or CP81 at 21C11 and 21C8 for attendant circuit 1, 13C11 and 13C8 for circuit 2, 5C11 and 5C8 for circuit 3, respectively.
16	Request control unit print-in to send continuous class II test messages to cause position busy lamp to <i>light steadily</i> and position available lamp to be <i>extinguished</i> .	
17	Operate DIAL A key 22 to green, all others remain amber.	
18	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted.
		<i>Note:</i> On no verification, refer to Table O. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE O**  
**POSITION BUSY**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP81	21C8	13C8	5C8
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

STEP	ACTION	VERIFICATION
19	Move INPUT B to TP5 of CP75 at attendant circuit unit test as follows: attendant circuit 1--21C17, attendant circuit 2--13C17, attendant circuit 3--5C17.	
20	Operate RST3 momentarily.	On receipt of test message — ERROR lamp lighted. <i>Note:</i> On no verification, see note in Step 18.
21	Request control unit print-in to send continuous class II test messages to cause position available lamp to <i>light steadily</i> and position busy lamp to be <i>extinguished</i> .	
22	Operate DIAL A key 22 to red, all others remain amber.	
23	Operate RST1 momentarily.	On receipt of test message — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Table P. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

**TABLE P**  
**POSITION BUSY**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

STEP	ACTION	VERIFICATION
24	Request control unit to remove test message.	
25	Remove INPUTS B and 22 from attendant circuit under test.	
26	Remove leads to MULT 1.	
27	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 28 is completed.	
28	Remove AUX BOARD B and replace CP191.	
29	Notify attendant that this test is completed.	
30a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### R. Calls Waiting

2	Notify attendant that calls waiting lamp circuit is under test and to disregard all changes in its lamp state and the state of some common lamps during performance of this test.	
3	Connect INPUT A to MULT 1.	
4	Connect INPUT E to MULT 1.	
5	Connect MULT 1 to GRD.	
6	Connect INPUT B to TP3 of CP75 at attendant circuit under test as follows: attendant circuit 1--21C17, attendant circuit 2--13C17, attendant circuit 3--5C17.	
7	Request control unit print-in to send continuous class II test messages to cause calls waiting lamp to <i>light steadily</i> .	
8	Operate RST3 momentarily.	

On receipt of test message —  
ERROR lamp lighted.

**Note:** On no verification, refer to Table Q. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST3 momentarily and recheck for verification.

**TABLE Q**  
**CALLS WAITING**

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP192*	21B14	13B14	5B14
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2

\* This CP also controls other lamp circuits.

STEP	ACTION	VERIFICATION
9	Operate K2 to SEP.	
10	Operate K3 to AUTO RST.	
11	Operate DIAL A key 25 to green, all others (DIAL A and B) to amber.	
12	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 13 is completed.	
13	At attendant circuit under test — Insert AUX BOARD B in series with CP191 as follows: attendant circuit 1--21C11, attendant circuit 2--13C11, attendant circuit 3--5C11.	
14	Connect INPUT 25 to TP-T2 of AUX BOARD B.	
15a	If option W is wired — Operate RST1 momentarily.	On release of RST1 — MSG IND 1 remains extinguished.  <i>Note:</i> No verification indicates a bad CP191 or CP76 at 21C11 and 21C14 for attendant circuit 1, 13C11 and 13C14 for circuit 2, 5C11 and 5C14 for circuit 3, respectively.

STEP	ACTION	VERIFICATION
16b	If option V is wired — Operate RST1 momentarily.	On release of RST1 — MSG IND 1 flashes at 120 ipm. <i>Note:</i> No verification indicates a bad CP191, CP76, or CP75 at 21C11, 21C14, and 25C5 for attendant circuit 1; 13C11, 13C14, and 9C5 for circuit 2; 5C11, 5C14, and 1C5 for circuit 3, respectively.
17	Operate DIAL A key 22 to red, others remain amber.	
18	Request control unit to remove test message.	
19	Operate K2 to COMB.	
20	Operate K3 to DTR 2.	
21	Request control unit print-in to send continuous class II test messages to cause calls waiting lamp to be <i>extinguished</i> .	
22	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <i>Note:</i> On no verification, refer to Table R. Replace the indicated circuit packs, one at a time, starting at the top of the column. After each replacement, operate RST1 momentarily and recheck for verification.

TABLE R  
CALLS WAITING

CIRCUIT PACK	ATTENDANT CIRCUIT UNDER TEST		
	1	2	3
CP191	21C11	13C11	5C11
CP76	21C14	13C14	5C14
CP75	21C17	13C17	5C17
CP70	17C11	17A20	5A20
CP82	17C14	17A23	5A23
CP192*	21B14	13B14	5B14
CP75	25B11	13B11	1B11
CP70	---	---	5B11
CP74	---	---	5D2
CP75†	25C5	9C5	1C5

\* This CP also controls other lamp circuits.

† Wired for option V, only.

STEP	ACTION	VERIFICATION
23	Request control unit to remove test message.	
24	Remove INPUTS B and 25 from attendant circuit under test.	
25	Remove leads to MULT 1.	
26	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 27 is completed.	
27	Remove AUX BOARD B and replace CP191.	
28	Notify attendant that this test is completed.	
29c	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	
<b>S. Night Service</b>		
2	Notify attendant that night service lamp circuit is under test and disregard all changes in its lamp state and the state of some common lamps during performance of this test.	
3	Connect INPUT A to MULT 1.	
4	Connect INPUT E to MULT 1.	
5	Connect MULT 1 to GRD.	
6	Connect INPUT B to TP1 at 21C17 (CP75).	
7	Operate RST3 momentarily.	On release of RST3 — OK lamp lighted. <i>Note:</i> No verification indicates a bad CP75 at 21C17.
8	Request control unit print-in to send continuous class II test messages to cause night service lamp to <i>light steadily</i> .	On receipt of test message — ERROR lamp lighted. <i>Note:</i> No verification indicates one of the following circuit packs is bad: CP75 at 21C17 CP70 at 17C11 CP82 at 17C14 CP75 at 25B11 CP75 at 21C17 CP192 at 21C14
9	Operate K2 to SEP.	
10	Operate K3 to DTR 2.	
11	Operate DIAL A key 22 to green, all others to amber.	

STEP	ACTION	VERIFICATION
12	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 13 is completed.	
13	Insert AUX BOARD B in series with CP191 at 21C11.	
14	Connect INPUT 22 to TP-T4 of AUX BOARD B.	
15	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP191 or CP76 at 21C11 and 21C14, respectively.
16	Move INPUT B to TP2 at 21C17 (CP75).	
17	Operate RST3 momentarily.	On release of RST3 — OK lamp remains lighted. <b>Note:</b> No verification indicates a bad CP75 at 21C17.
18	Request control unit to remove test message.	
19	Request control unit print-in to send a continuous class II test message to cause night service lamp to be <i>extinguished</i> .	On receipt of test message — ERROR lamp lighted. <b>Note:</b> No verification indicates one of the following circuit packs is bad: CP75 at 21C17 CP70 at 17C11 CP82 at 17C14 CP75 at 25B11
20	Operate DIAL A key 22 to red, others remain amber.	
21	Operate RST1 momentarily.	On release of RST1 — MSG IND 1 lighted. <b>Note:</b> No verification indicates a bad CP191 at 21C11 or CP76 at 21C14.
22	Request control unit to remove test message.	
23	Remove INPUTS B and 22 from attendant circuit.	
24	Remove leads to MULT 1.	
25	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 26 is completed.	

STEP	ACTION	VERIFICATION
26	Remove AUX BOARD B from 21C11 and replace CP191.	
27	Notify attendant that this test is completed.	
28a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### T. Attendant Controlled Conference

2	Notify attendant that conference lamp circuit is under test and to disregard all changes in its lamp state and not to attempt to establish conferences during performance of this test.	
3	Operate K2 to SEP.	
4	Operate K3 to AUTO RST.	
5	Operate DIAL B key 25 to green, all others to amber.	
6	Connect INPUT 25 to TP1 of CP74 at 21B2 (Conference 1) or 21A20 (Conference 2).	
7	Connect ground to TP6 (Conference 1) or TP2 (Conference 2) of CP76 at 21A23.	MSG IND 1 flashes at 120 ipm. <i>Note:</i> On no verification replace CP74 at 21B2 (Conference 1) or 21A20 (Conference 2).
8	Remove ground made in Step 7.	
9	Move INPUT 25 to TP3 of CP74 at 21B2 (Conference 1) or 21A20 (Conference 2).	
10	Operate DIAL B key 25 to red, all others to amber.	
11	Connect ground to TP4 (Conference 1) or TP1 (Conference 2) of CP76 at 21A23.	MSG IND 1 winks off for 1/4 second at 2-second intervals. <i>Note:</i> On no verification replace CP74 at 21B2 (Conference 1) or 21A20 (Conference 2).
12	Remove ground made in Step 11.	
13	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 14 is completed.	
14	Insert AUX BOARD B in series with CP191 at 21C11.	
15	Move INPUT 25 to TP-T14 (Conference 1) or TP-T28 (Conference 2) of AUX BOARD B.	

STEP	ACTION	VERIFICATION
16	Operate DIAL B key 25 to green, all others to amber.	
17	Request control unit print-in to send continuous test messages to cause conference lamp to <i>flash at 120 ipm</i> .	On receipt of test message — MSG IND 1 flashes at a 120-ipm rate. <b>Note:</b> No verification indicates a bad CP74 at 21A23, CP75 at 21B5, or CP74 at 21B2 (Conference 1), or at 21A20 (Conference 2).
18	Request control unit to remove test message.	
19	Request control unit print-in to send a continuous test message to cause conference lamp to <i>wink</i> .	On receipt of test message — MSG IND 1 winks off for 1/4 second at 2-second intervals. <b>Note:</b> On no verification, see note in Step 17.
20	Request control unit to remove test message.	
21	Remove INPUT 25 from attendant circuit.	
22	Notify attendant to ignore position available, position busy, calls waiting, conference, and night service lamp states until Step 23 is completed.	
23	Remove AUX BOARD B from 21C11 and replace CP191.	
24	Notify attendant that this test is completed.	
25a	If no further tests are to be performed at this time — Remove battery connection between test set and switch unit.	

#### U. Attendant Line

1	At attendant console under test — Establish a talking connection to an extension for test purposes.	Speech level and fidelity is normal in both directions. <b>Note:</b> No verification indicates bad CP4 at 14C17 (BAY 4), 14C22 (BAY 4), and 14A2 (BAY 3) for attendant circuits 1, 2, and 3, respectively. On failure to verify after replacement and retest, refer to Section 240-233-501, Attendant Number Translator — Tests Using 124A Test Set SD-1H070-01.
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#### V. Timing Circuit

2	Notify attendant to ignore position busy, position available, calls waiting, and night service lamps during this test.
3	Request control unit print-in to send continuous test messages to cause position available lamp to <i>light steadily</i> .

STEP	ACTION	VERIFICATION
4	Connect INPUT A to MULT 1.	
5	Connect INPUT E to MULT 1.	
6	Connect MULT 1 to GRD.	
7	Connect INPUT B to attendant circuit under test according to Table S. Connect to each of the test points given for a particular circuit pack, pausing to operate RST3 momentarily and checking for verification between each connection.	ERROR lamp lighted. <i>Note:</i> No verification indicates a bad circuit package to which INPUT B is connected at the time of test failure.

**TABLE S**  
**TIMING CIRCUIT PACK LOCATION**

CIRCUIT PACK	TEST POINT	ATTENDANT CIRCUIT UNDER TEST		
		1	2	3
CP70	TP1	17C11	17A20	5A20
CP70	TP2	17C11	17A20	5A20
CP244	TP1	17C5	17A14	5A14
CP244	TP2	17C5	17A14	5A14

- 8 Remove GRD from MULT 1.
- 9 Connect S+12 to MULT 1.
- 10 Repeat Step 7.
- 11 Remove INPUT B from attendant circuit under test.
- 12 Remove leads to MULT 1.
- 13 Request control unit to remove test message.
- 14 Notify attendant that test is completed.
- 15 Request attendant to normalize console lamps.
- 16a If no further tests are to be performed at this time —  
Remove battery connection between test set and switch unit.

#### W. Console Lamps

- 1 Notify attendant to ignore state of all lamps having same lamp driver circuit package as lamp under test. See Table T.

STEP	ACTION	VERIFICATION
2	At attendant circuit associated with console under test — Insert AUX BOARD B in series with the circuit package containing lamp driver for lamp to be tested. See Table T.	
3	Operate to T appropriate switch (A to F) on AUX BOARD B that is associated with lamp to be tested. All other switches must remain at N. See Table T.	
4	Operate switch G while observing DS1 lamp.	When switch G is operated — DS1 lamp lighted to approximately one-half normal brilliance. <b>Note:</b> No verification indicates the lamp under test is defective.
5	Restore all switches (A to F) to N.	
6	Repeat Steps 1 through 5 for any other lamp to be tested.	
7	Remove AUX BOARD B.	
8	Notify attendant that this test is completed.	

TABLE T  
LAMP DRIVER (CP191) LOCATIONS

Attendant 1	21C11	21B20	25A17		25C2		25D11	
Attendant 2	13C11	13B20	9A17		9C2		9D11	
Attendant 3	5C11	5B20	1A17		1C2		1D11	
AUX BOARD B Switch			Loop 1	Loop 2	Loop 3	Loop 4	Loop 5	Loop 6
A	CONF 1*	--	--	KEY	--	KEY	--	KEY
B	CW	--	--	SRC	--	SRC	--	SRC
C	NITE †	EXCL DEST	SRC	--	SRC	--	SRC	--
D	POS BSY	--	--	DEST	--	DEST	--	DEST
E	PA RLS	EXCL SRC	KEY	--	KEY	--	KEY	--
F	CONF 2*	RDY	DEST	--	DEST	--	DEST	--

\* Attendant 1 only, if provided.

† Attendant 1 only.

**TABLE U**  
**CIRCUIT PACK LOCATION FOR LOOP LAMP CONTROL TESTS**

GATE OR FF UNDER TEST	ATTENDANT CIRCUIT 1, TRAY 25; CIRCUIT 2, TRAY 9; CIRCUIT 3, TRAY 1											
	LOOP 1		LOOP 2		LOOP 3		LOOP 4		LOOP 5		LOOP 6	
	LOC	TP-	LOC	TP-	LOC	TP-	LOC	TP-	LOC	TP-	LOC	TP-
D1FF	A8	5	B2	5	B17	5	C11	5	D2	5	D20	5
D2FF	A8	2	B2	2	B17	2	C11	2	D2	2	D20	2
D3FF	A8	6	B2	6	B17	6	C11	6	D2	6	D20	6
D1G	A5	5	B5	5	B14	5	C14	5	C23	5	D23	5
D2G	A5	2	B5	2	B14	2	C14	2	C23	2	D23	2
D3G	A5	6	B5	6	B14	6	C14	6	C23	6	D23	6
D1IG	A14	4	A20	4	B23	4	C5	4	D8	4	D14	4
D2IG	A14	3	A20	3	B23	3	C5	3	D8	3	D14	3
D3IG	A14	6	A20	6	B23	6	C5	6	D8	6	D14	6
DLD	A17	T28	A17	T16	C2	T28	C2	T16	D11	T28	D11	T16
K1FF	A11	5	A23	5	B20	5	C8	5	D5	5	D17	5
K2FF	A8	1	B2	1	B17	1	C11	1	D2	1	D20	1
K1G	A5	4	B5	4	B14	4	C14	4	C23	4	D23	4
K2G	A5	3	B5	3	B14	3	C14	3	C23	3	D23	3
KIG	A14	-	A20	-	B23	-	C5	-	D8	-	D14	-
KLD	A17	T18	A17	T14	C2	T18	C2	T14	D11	T18	D11	T14
LCR1	A11	3	A23	3	B20	3	C8	3	D5	3	D17	3
LCR2	A11	1	A23	1	B20	1	C8	1	D5	1	D17	1
LCR3	A11	2	A23	2	B20	2	C8	2	D5	2	D17	2
S2FF	A8	3	B2	3	B17	3	C11	3	D2	3	D20	3
S3FF	A8	4	B2	4	B17	4	C11	4	D2	4	D20	4
S2G	A5	-	B5	-	B14	-	C14	-	C23	-	D23	-
S3G	A5	-	B5	-	B14	-	C14	-	C23	-	D23	-
S1IG	A14	1	A20	1	B23	1	C5	1	D8	1	D14	1
S2IG	A14	2	A20	2	B23	2	C5	2	D8	2	D14	2
S3IG	A14	5	A20	5	B23	5	C5	5	D8	5	D14	5
SLD	A17	T4	A17	T2	C2	T4	C2	T2	D11	T4	D11	T2

**Note:** Test points designated TP-Tx require the use of AUX BOARD B.

**TABLE U**  
**Circuit Pack Location for**  
**Loop Lamp Control Tests**