OUTGOING TRUNK CIRCUIT TO LOCAL TEST DESK NO. 14 (SD-2H141)—TEST NO. 2 AND NO. 2B ELECTRONIC SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes the method of testing the outgoing trunk circuit to local test desk No. 14 (SD-2H141) used in the No. 2 and No. 2B Electronic Switching Systems (ESS). The outgoing trunk circuit is used to provide means by which the central processor can carry out the functions required at the originating end of a trunk to complete a call to the local test desk.

1.02 This section is reissued to cover the EF-2 and 2B-EF-2 generic programs.

1.03 ▶New (conventional) service order codes were adopted for use with the EF-2 and 2B-EF-2 generic programs. However, the translations can be configured with the old (No. 2 ESS unique) service order codes as an option. These old codes are common to all previous No. 2 and No. 2B ESS generic programs. The EF-2 and 2B-EF-2 generic programs can be arranged to recognize either option. In this section the term "conventional (new)" or "No. 2 ESS unique (old)" is used to identify the service order code for the keywords in each TTY input message given.◀

1.04 The following test will be performed.

A. Circuit State and Scan Point Operation: This test verifies the operation of the circuit relays and the saturation of the ferrod sensors associated with the outgoing trunk circuit.

1.05 The outgoing trunk circuit test is performed on a periodic basis as prescribed by the equipment test list or when a malfunction of the circuit is suspected.

1.06 The tests will be performed from the trunk test panel (TTP) in conjunction with the maintenance display buffer and teletypewriter (TTY). For detailed information about the TTP and its operation, refer to Section 232-130-301, Trunk Test Panel—Method of Operation.

1.07 The keys on the TTP may be either a locking or a nonlocking type. In order to differentiate between the two types of keys, the use of a locking type key shall be identified by the words "operate" and "release" and the use of a nonlocking type key shall be identified by the word "depress" in the ACTION column.

Note: Nonlocking keys require a depression of at least one-half second to ensure system recognition.

1.08 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Part 3 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 series of lettered steps should be made is given in the ACTION column and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

1.08 Whenever the term TOUCH-TONE® telephone service is used, it refers to the equipment required to provide this service to the customer.

2. APPARATUS

Note: The following equipment will be used at the local test desk.

2.01 A 1013A handset consisting of a LB7 receiver, an H2B cord and two alligator clips or equivalent.

2.02 A 900-ohm termination.

Note: The following equipment will be used at the TTP.

2.03 One 262C-type (900 ohm) plug.

2.04 ◗Headset for receiving only, with a 310 plug on the end.◖

3. METHOD

3.01 Refer to the office records to obtain the following information about the circuit to be tested:

(a) trunk group number (TGN)

(b) member number (MEMN)

(c) Supervisory scan point number (SPN).

3.02 Verify the scan point numbers obtained from the office records as follows:

At maintenance TTY, type in:

A VY:TRK:aaa bbb!

aaa = TGN

bbb = MEMN

◗***The system response for offices using No. 2 ESS unique (old) code is as follows:***

AR VY TRK aaa bbb
.
.
.
SPN ss rrbb

The system response for offices using conventional (new) code is as follows:

AR VY TRK aaa bbb
.
.
.
SP ss rrbb◖

ss = scanner number

rr = scanner row

bb = bit in row

The bb bit represents the first ferrod sensor (0) in the scanner row that is associated with the specific circuit. All other ferrod sensors assigned to the same circuit follow in consecutive order (0, 1, 2, etc). Refer to the output message manual (OM-2H200) for explanation of other data fields, if required.

3.03 If the verification procedure fails or if a malfunctioning circuit is indicated during any part of this test, proceed as follows:

(1) Discontinue the test.

(2) Troubleshoot the circuit which failed.

(3) Replace faulty circuit components using standard repair procedures.

(4) Repeat the test step which failed. If verification indicates that the faulty circuit has been repaired, continue the test.

3.04 The following is a step-by-step procedure to make the outgoing trunk circuit traffic busy and connect it to the TTP (Fig. 1).

STEP	ACTION	VERIFICATION
1	At telephone set on TTP— Operate access trunk 1 key.	
2	Lift handset off-hook, or operate TRFR key at TEL CKT on TTP if using headset.	At telephone set— Access trunk 1 lamp lighted. At ACCESS TRUNK 1 CONTROL— SUPV lamp lighted. At TEL CKT— TRFR lamp lighted if TRFR key is operated.

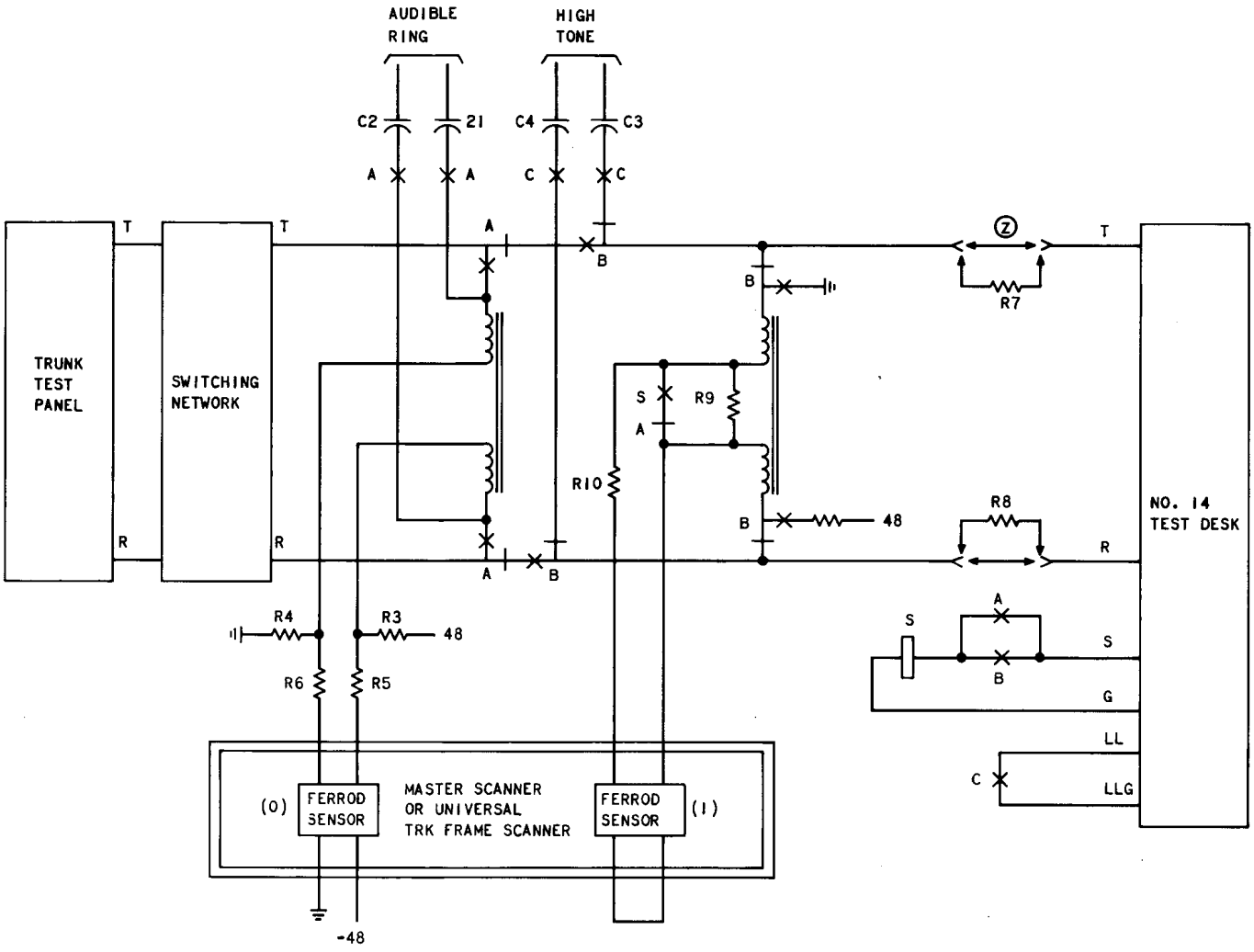

Fig. 1—Outgoing Trunk Circuit Local Test Desk No. 14

STEP	ACTION	VERIFICATION
3	At TOUCH-TONE dial— Dial 1 + TGN + MEMN + ST.	At ACCESS TRUNK 1 CONTROL— EQPT ST lamp lighted steadily or flashing at a rate of 120 interruptions per minute. At MISC TEST CONTROL— P & E lamp lighted steadily if connection was successful. ***Note:*** If the EQPT ST lamp is flashing and the P & E lamp is not lighted steadily, the TTP is not connected to the circuit to be tested.

STEP	ACTION	VERIFICATION
4a	If the P & E is not lighted steadily— At ACCESS TRUNK 1 CONTROL— Depress RLS key.	
5a	Repeat Steps 3 and 4a until connection is successful.	
6	Place handset on-hook, or release TRFR key.	At telephone set— Access trunk 1 lamp extinguished. At TEL CKT— TRFR lamp extinguished.
7	Use the TTP printout from 3.02 to determine the trunk scanner and number of the scanner row associated with the scan points assigned to the outgoing trunk circuit.	
8	At maintenance TTY— For No. 2 ESS offices type in: UBRL TS:RSN:ssrr! ss = Number of trunk scanner in decimal (00-11) from Step 7. rr = Number of scanner row in decimal (00-63) from Step 7. For No. 2B ESS offices type in: MON:TSSN ssrr;RDT LAMPS! ss = Number of trunk scanner in decimal ⧫(00-11 for the 2B-EF-1 generic program) or (00-30 for the 2B-EF-2 generic program)⧫ from Step 7. rr = Number of scanner row in decimal (00-63) from Step 7. RDT LAMPS = Direct the result to the DISPLAY BUFFER.	At DISPLAY BUFFER— Scanner row containing specific scan points displayed on DISPLAY BUFFER lamps. Lamps associated with ferrod sensors connected to circuit under test lighted.
9	At ACCESS TRUNK 1 CONTROL— Depress VM key.	At ACCESS TRUNK 1 CONTROL— VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted. At VOLTMETER— Meter indicates 0.
10	At VOLTMETER CONTROL— Operate TR REV key.	At VOLTMETER CONTROL— TR REV lamp lighted. At VOLTMETER— Meter indicates 0.
11	Depress FEMF key.	At VOLTMETER CONTROL— 100K lamp extinguished. FEMF lamp lighted.

STEP	ACTION	VERIFICATION
		At VOLTMETER— Meter indicates 0.
12	Release TR REV key.	At VOLTMETER CONTROL— TR REV lamp extinguished. At VOLTMETER— Meter indicates 0.
13	Depress MET VM key.	At VOLTMETER CONTROL— FEMF lamp extinguished. MET VM lamp lighted. At VOLTMETER— Meter indicates 0.
14	Set PD GROUP switch to 0-5 position.	
15	At PERIPHERAL DECODER POINTS— Operate 0, 1, and 2 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 2 lamps lighted.
16	Depess AT 1 key.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on 120-volt scale. At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 extinguished. At circuit under test— Relays A, B, and C operated.
17	At PERIPHERAL DECODER POINTS— Release 1 and 2 keys.	At PERIPHERAL DECODER POINTS— 1 and 2 lamps extinguished.
18	Depress AT 1 key.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on 120-volt scale. At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 lighted. At circuit under test— Relays B and C released. Relay A remains operated.
19	At front of writing shelf— Insert 262C-type (900 ohm) plug into ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.
20	Remove 262C-type (900 ohm) plug from ACCESS TRK-1 jack.	Lamp associated with ferrod sensor 0 lighted.
21	Connect headset to ACCESS TRK-1 jack.	At headset— Audible ring tone present.
22	At PERIPHERAL DECODER POINTS— Operate 2 key. Release 0 key.	At PERIPHERAL DECODER POINTS— 2 lamp lighted. 0 lamp extinguished.

STEP	ACTION	VERIFICATION
23	Depress AT 1 key.	At headset— Audible ring tone not present. At circuit under test— Relay C operated. Relay A released.
24	At front of writing shelf— Remove headset from ACCESS TRK-1 jack.	
25	At local test desk— Request maintenance personnel to place 1013A handset across tip and ring.	At headset— High tone present.
26	At PERIPHERAL DECODER POINTS— Operate 1 key. Release 2 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted. 2 lamp extinguished.
27	Depress AT 1 key.	At headset— High tone not present. At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 extinguished. At circuit under test— Relay B operated. Relay C released.
28	At local test desk— Request maintenance personnel to remove 1013A handset from tip and ring and terminate with 900 ohms.	
29	At VOLTMETER CONTROL— Depress 1K key. Operate GRD key.	At VOLTMETER— ***Note:*** If the test desk is at a remote location or option Z is not included in the circuit, refer to Table A to convert the VOLTMETER indication to total loop resistance. Meter indicates between 9.5 and 11.5 volts on 24-volt scale. At VOLTMETER CONTROL— MET VM lamp extinguished. 1K lamp lighted. GRD lamp extinguished.

STEP	ACTION	VERIFICATION

TABLE A

REMOTE LOCATION LOOP RESISTANCE

LOOP RESISTANCE	VOLTMETER READING
Between 1000 and 1400 ohms	Between 8 and 10.4 volts
Between 1400 and 1800 ohms	Between 6.8 and 8.6 volts
Between 1800 and 2200 ohms	Between 6 and 7.4 volts
Between 2200 and 2600 ohms	Between 5.2 and 6.5 volts
Between 2600 and 3000 ohms	Between 4.8 and 5.7 volts

Note: The above table shows the loop resistance if the voltage reading in Step 29 is less than 10.4 volts. The loop resistance is the total tip and ring resistance plus 900 ohms. The tip and ring resistance is the resistance of the wire from the outgoing trunk circuit to the test desk plus 200 ohms if option Z is not in the circuit. This resistance should be within limits specified in office records. Refer to Section 232-130-301 — Table G, for more detailed conversion tables, if necessary.

30	At local test desk— Request maintenance personnel to remove 900-ohm termination.	At VOLTMETER— Meter indicates 0.
31	At VOLTMETER CONTROL— Release TR REV key. Depress MET VM key.	At VOLTMETER CONTROL— TR REV lamp extinguished. 1K lamp extinguished. MET VM lamp lighted.
32	At local test desk— Request maintenance personnel to operate KP key (places low resistance negative battery on sleeve lead).	At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 lighted. At circuit under test— Relay S operated. Relay B remains operated.
33	At PERIPHERAL DECODER POINTS— Operate 0 key. Release 1 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted. 1 lamp extinguished.
34	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 remains lighted At circuit under test— Relay A operated. Relay B released. Relay S remains operated.

STEP	ACTION	VERIFICATION
35	At local test desk— Request maintenance personnel to release KP key (removes low resistance negative battery from sleeve lead).	At circuit under test— Relay S released.
36	At PERIPHERAL DECODER POINTS— Release 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished.
37	Depress AT 1 key.	At circuit under test— Relay A released.
38	At maintenance TTY— For No. 2 ESS offices type in: UB SY:CLB! For No. 2B ESS offices type in: STOP:UTIL!	At DISPLAY BUFFER— Scanner row display removed.
39	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— SUPV lamp extinguished. EQPT ST lamp extinguished. VM lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
40	At telephone set on TTP— Operate green release key.	