

**INCOMING TRUNK CIRCUIT FROM SWITCHBOARD
NO. 3CL IN DISTANT BUILDING THIRD WIRE COIN
CONTROL (SD-2H108)—TESTS
NO. 2 AND 2B ELECTRONIC SWITCHING SYSTEM**

1. GENERAL

1.01 This section describes the procedure for testing the incoming trunk circuit (SD-2H108) from switchboard No. 3CL in distant building third wire coin control used in the No. 2 and 2B Electronic Switching Systems (ESS).

1.02 The following tests 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 incoming trunk circuit.

B. Transmission Loss Measurements:

This test verifies the transmission loss of the incoming trunk circuit.

1.03 The incoming trunk circuit tests are performed on a periodic basis as prescribed by equipment test list procedure or when a malfunctioning of the circuit is suspected.

1.04 The tests will be performed from the trunk test panel (TTP) in conjunction with the maintenance center 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.

1.05 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.

1.06 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 or 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 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

Note: Equivalent apparatus may be substituted.

- 2.01** KS-14510 L1 volt-ohm-milliammeter (VOM).
- 2.02** KS-14510 L3 test leads (one red and one black).
- 2.03** One 262C-type (900 ohm) plug.
- 2.04** Two 2P4A cord assemblies consisting of a P2B cord, 3 feet long, and two 310 plugs.
- 2.05** Two 2W6A cord assembly consisting of a W2C cord, 10 feet long, with a 310 plug on one end and two 59-type cord tips on the other.
- 2.06** One 1025A headset consisting of a LB2 receiver, a W2FT cord, and a 310 plug.
- 2.07** Transmission measuring set (TMS), 23D, or equivalent. Equivalent apparatus must be capable of measuring power in 900-ohm circuits at

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1 kHz. The accuracy must be ±0.1 dB from -15 dBm to +10.0 dBm at 1 kHz.

Note: This item will not be required if the TTP is equipped with a TMS.

3. PREPARATION

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) Scan point number (SPN)
- (d) Directed scan point number (DSP)
- (e) The protector block assignment for the incoming trunk circuit.

Note: When the trunk enters the office through carrier equipment, it will not appear at the protector frame.

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

At the maintenance center TTY, type in:

A VY:TRK:aaa bbb!

aaa = TGN

bbb = MEMN.

The system response is as follows:

AR VY TRK aaa bbb

DSP ss rrbb
SPN ss rrbb

ss = scanner number

rr = scanner row

bb = bit in row

The bb bit represents the first ferrod sensor (0 for SPN and 2 for DSP) 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 and 1 for SPN or 2 and 3 for DSP). Refer to the output message manual (OM-2H200) for explanation of other data fields, if required.

3.03 Before proceeding with PREPARATION, instruct the switchboard operator that the trunk circuit under test is maintenance busy.

3.04 Use the protector block assignment from 3.01 to locate and remove the protector block assigned to the incoming trunk circuit.

Note: In order to perform these tests, the tip and ring leads coming into the circuit must be open. If the trunk circuit does not appear at a protector block, open the tip and ring leads into the trunk circuit in accordance with local procedures.

3.05 Using a 2W6A cord connect the trunk side appearance of the tip and ring of the incoming trunk circuit to the SP jack nearest the protector block.

Note: Ensure that no other connection is made to the SP jack in the office. If transmission measurements cannot be made via SP jack connect test equipment to trunk side appearance of the tip and ring instead of using SP jack.

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

STEP	ACTION	VERIFICATION
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All Tests

- 1 At telephone set on TTP—
Operate access trunk 1 key.

STEP	ACTION	VERIFICATION
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.
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 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.
4a	If the P & E is not lighted steadily— At ACCESS TRUNK 1 CONTROL— Depress RLS key.	
5a	Repeat Step 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.
4. METHOD		(2) Troubleshoot the circuit which failed
4.01 If the verification procedure fails or if a malfunctioning circuit is indicated during any part of these tests, proceed as follows.		(3) Replace faulty circuit components using standard repair procedures
(1) Discontinue the test		(4) Repeat the test that failed. If verification is successful, continue the test.

STEP	ACTION	VERIFICATION
A. Circuit State and Scan Point Operation		
7	Use the TTY printout obtained from 3.02 to determine the scanner number and scanner row of the SPN. The SPN is associated with ferrod sensors 0 and 1 of the incoming trunk circuit.	
8	At maintenance center TTY— For No. 2 ESS offices type in: UBRL TS:RSN:ssrr! ss = number of trunk scanner for SPN in	

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STEP	ACTION	VERIFICATION
	<p>decimal (0-11) from Step 7. rr = number of scanner row for SPN in decimal (0-63) from Step 7.</p> <p>For No. 2B ESS offices type in:</p> <p>MON:TSSN ssrr;RDT LAMPS! ss = number of trunk scanner in decimal (0-11) from Step 7. rr = number of scanner row in decimal (0-63) from Step 7. RDT LAMPS = Direct the result to the DISPLAY BUFFER.</p>	<p>At maintenance center for No. 2 ESS or the System Status Panel (SSP) for No. 2B ESS—Scanner row containing specific scan points displayed on DISPLAY BUFFER lamps. Lamps associated with ferrod sensors connected to circuit under test are lighted.</p>
9	<p>At ACCESS TRUNK 1 CONTROL— Depress VM key.</p>	<p>At ACCESS TRUNK 1 CONTROL— VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted. At VOLTMETER— Meter indicates 0.</p>
10	<p>At VOLTMETER CONTROL— Operate TR REV key.</p>	<p>At VOLTMETER CONTROL— TR REV lamp lighted. At VOLTMETER— Meter indicates 0.</p>
11	<p>Depress FEMF key.</p>	<p>At VOLTMETER CONTROL— 100K lamp extinguished. FEMF lamp lighted. At VOLTMETER— Meter indicates 0.</p>
12	<p>Release TR REV key.</p>	<p>At VOLTMETER CONTROL— TR REV lamp extinguished. At VOLTMETER— Meter indicates 0.</p>
13	<p>Depress MET VM key.</p>	<p>At VOLTMETER CONTROL— FEMF lamp extinguished. MET VM lamp lighted. At VOLTMETER— Meter indicates 0.</p>
14	<p>Connect the incoming trunk circuit selected to the SP jack.</p>	
15	<p>At front of writing shelf— Connect VOM to SP jack using a 2W6A cord assembly. Use appropriate test leads to connect positive side of VOM to ring and negative side to tip wires of 2W6A cord assembly.</p>	<p>At VOM— Meter indicates between 42.75 and 52.5 volts on 60-volt scale.</p>

STEP	ACTION	VERIFICATION
	(White wire on 2W6A cord assembly is tip and blue wire is ring.)	
16	Disconnect 2W6A cord assembly from SP jack and test leads.	
17	Set PD GROUP switch to 0-5 position.	
18	At PERIPHERAL DECODER POINTS— Operate 2 key.	At PERIPHERAL DECODER POINTS— 2 lamp lighted.
19	Depress AT 1 key.	At circuit under test— Relay C operated.
20	At front of writing shelf— Connect VOM to SP jack using a 2W6A cord assembly. Use appropriate test leads to connect positive side of VOM to tip and negative side to ring wires of 2W6A cord assembly.	At VOM— Meter indicates between 42.75 and 52.5 volts on 60-volt scale.
21	Disconnect 2W6A cord assembly from SP jack.	
22	Insert 262C-type (900 ohm) plug into SP jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 extinguished.
23	Remove 262C-type (900 ohm) plug from SP jack.	Lamp associated with ferrod sensor 1 lighted.
24	At PERIPHERAL DECODER POINTS— Operate 1 key. Release 2 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted. 2 lamp extinguished.
25	Depress AT 1 key.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on 120-volt scale. At circuit under test— Relay B operated. Relay C released.
26	At front of writing shelf— Insert 262C-type (900 ohm) plug into ACCESS TRK-1 jack.	At VOLTMETER— Meter indicates 0. At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.
27	Remove 262C-type (900 ohm) plug from ACCESS TRK-1 jack.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on the 120-volt scale. At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted.

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STEP	ACTION	VERIFICATION
28	At PERIPHERAL DECODER POINTS— Operate 4 key.	At PERIPHERAL DECODER POINTS— 4 lamp lighted.
29	Depress AT 1 key.	At circuit under test— Relay E operated. Relay B remains operated.
30	At front of writing shelf— Connect headset to SP jack.	At headset— Audible ringing tone present.
31	At PERIPHERAL DECODER POINTS— Release 1 and 4 keys.	At PERIPHERAL DECODER POINTS— 1 and 4 lamps extinguished.
32	Depress AT 1 key.	At headset— Tone NOT present. At circuit under test— Relays B and E released.
33	At front of writing shelf— Remove headset from SP jack.	
34	At maintenance center TTY— For No. 2 ESS offices type in: UB SY:CLB! For No. 2B ESS office type in: STOP:UTIL!	Scanner row display removed from DISPLAY BUFFER.
35	Use the TTY printout obtained from 3.02 to determine the scanner number and scanner row of the DSP. The DSP is associated with ferrod sensors 2 and 3 of the incoming trunk circuit.	
36	For No. 2 ESS offices type in: UBRL TS:RSN:ssrr! ss = number of trunk scanner for DSP in decimal (0-11) from Step 35. rr = number of scanner row for DSP in decimal (0-63) from Step 35. For No. 2B ESS offices type in: MON:TSSN ssrr;RDT LAMPS! ss = number of trunk scanner in decimal (0-11) from Step 35. rr = number of scanner row in decimal (0-63) from Step 35.	Scanner row containing specific scan point displayed on DISPLAY BUFFER. Lamps associated with ferrod sensor 2 and 3 lighted.

STEP	ACTION	VERIFICATION
	RDT LAMPS = Direct the result to the DISPLAY BUFFER.	
37	Establish a connection to the switchboard from the local office to perform the following tests. Advise operator that a test is being conducted and her assistance is required.	
38	Request switchboard operator to apply a positive signal to the CC or T connector.	At DISLAY BUFFER— Lamps associated with ferrod sensors 2 and 3 extinguished.
39	Request switchboard operator to remove positive signal from the CC or T connector.	Lamps associated with ferrod sensors 2 and 3 lighted.
40	Request switchboard operator to apply a negative signal to the CC or T connector.	Lamp associated with ferrod sensor 2 extinguished.
41	Request switchboard operator remove negative signal from the CC or T connector.	Lamp associated with ferrod sensor 2 and 3 lighted.
42	<p>At maintenance center TTY— For No. 2 ESS offices type in:</p> <p>UB SY:CLB!</p> <p>For No. 2B ESS offices type in:</p> <p>STOP:UTIL!</p> <p>Note: If transmission loss measurements are to be Test B.</p> <p>Note: If transmission loss measurements are to be performed, proceed to Test B.</p>	Scanner row display removed from DISPLAY BUFFER.
43	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— VM lamp extinguished. SUPV lamp extinguished. EQPT ST lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
44	At telephone set on TTP— Operate green release key.	
45	Disconnect cord connecting trunk side appearance of the tip and ring of the incoming trunk circuit and the SP jack.	
46	Replace protector block or restore the tip and ring lead connection opened in preparation.	

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STEP	ACTION	VERIFICATION
47	Instruct the switchboard operator that the trunk is returned to service.	
B. Transmission Loss Measurements		
7	At front of the writing shelf— Using 2P4A cord, connect TRANS MEAS—DBM-0 jack to SP jack.	
	<i>Note:</i> The minor alarm will sound, to release the alarm, depress the ALARM RELEASE key on the SYSTEM STATUS PANEL.	
8	At ACCESS TRUNK 1 CONTROL— Depress XMSN key.	At ACCESS TRUNK 1 CONTROL— XMSN lamp lighted.
9b	If TTP is equipped with TMS— At TRANSMISSION MEASURING CONTROL— Set TEST SET switch to TMS position. Set MEASURE switch to MEAS 1 position. Set SEND switch to OFF position.	
10c	If TTP is not equipped with TMS— At front of writing shelf— Using 2P4A cord, connect external TMS to TM-1 jack.	
11	At TMS— Set ADD DBM switch to 0 position.	
12	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
13	Depress AT 1 key.	At TMS— Meter indicates between 0 and -0.5 dB. Note level for reference use. At circuit under test— Relay A operated.
14	At PERIPHERAL DECODER POINTS— Release 0 key. Operate 1 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished. 1 lamp lighted.
15	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.85 dB less than reference level in Step 13. At circuit under test— Relay B operated. Relay A released.
16	At PERIPHERAL DECODER POINTS— Operate 0 and 2 keys.	At PERIPHERAL DECODER POINTS— 0 and 2 lamps lighted.

STEP	ACTION	VERIFICATION
17	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.5 dB less than reference level in Step 13. At circuit under test— Relays A and C operated. Relay B remains operated.
18	At PERIPHERAL DECODER POINTS— Release 0, 1, and 2 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 2 lamps extinguished.
19	Depress AT 1 key.	At circuit under test— Relays A , B, and C released.
20	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— EQPT ST lamp extinguished. XMSN lamp extinguished. SUPV lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
21	At telephone set on TTP— Operate green release key.	
22	At front of writing shelf— Disconnect cord from SP jack and TRANS MEAS-DBM-jack.	
23c	If TTP is not equipped with TMS— At front of writing shelf— Disconnect cord from external TMS and TM-1 jack.	
24	Disconnect cord connecting trunk side appearance of the tip and ring of the incoming trunk circuit and the SP jack.	
25	Replace protector block or restore the tip and ring lead connection opened in preparation.	
26	Instruct switchboard operator that trunk is returned to service.	

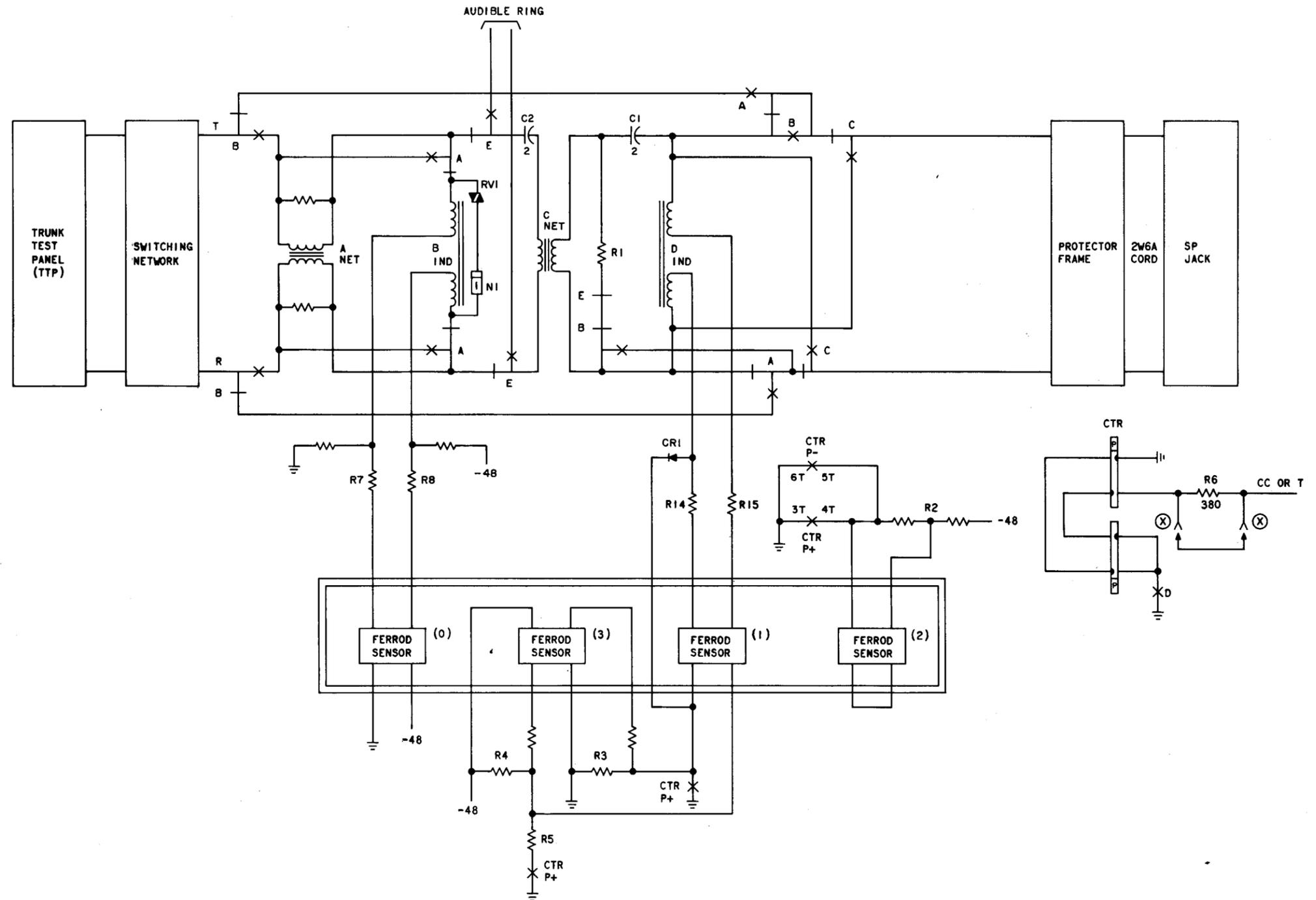


Fig. 1—Incoming Trunk Circuit (SD-2H108)