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TRANSLATOR, TRANSLATOR CONNECTOR AND
 TRANSLATOR PREFERENCE CONTROL TESTS

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CONTENTS

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|------------------------|---|
| 1. GENERAL INFORMATION | 6. TRANSLATOR TESTS (CROSS-CONNECTIONS) |
| 2. RECORDS | 7. TRANSLATOR PREFERENCE CONTROL AND TRANSLATOR CONNECTOR TESTS |
| 3. TEST EQUIPMENT | 8. TRANSLATOR TESTS |
| 4. FUSE VERIFICATION | 9. MISCELLANEOUS CIRCUITS |
| 5. TEST SETUP | |

1. GENERAL INFORMATION

1.1 Test Description

- 1.11 This section describes a method of testing the:
- (1) Translator Circuit, SD-27754-01;
 - (2) Translator Connector Circuit, SD-27755-01;
 - (3) Translator Preference Control Circuit, SD-27756-01; and
 - (4) Misc. Circuit for Translator Frame, SD-27818-01.

- 1.12 The Terminating Trouble Indicator (TTI) Circuit, SD-25284-01, is used for testing the features of these circuits. The tests specified should be performed during a period of light traffic.

- 1.13 Lamps on the TTI are used to check the operation of these circuits. When testing a particular feature, it is necessary to observe only those lamps which are associated with that feature and the lamps which indicate whether or not the call is completed satisfactorily. Other lighted lamps may be disregarded at this time.

- 1.14 Refer to Handbook 62, Section 225, for information on setting up test calls and lamp indications using the TTI.

2. RECORDS

- 2.1 Forms SD-4-1313 and SD-4-1315 are required for recording the results of these tests. For further information see Handbook 50, Section 3.

3. TEST EQUIPMENT

3.1 Cords Required

<u>Amt</u>	<u>ITE</u>	<u>Lgth</u>	<u>Cdrs</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
1	9548	9"	1	ITE-2455 Plug	ITE-2455 Plug	4023

3.2 Accessories Required

<u>Amt</u>	<u>Code or ITE</u>	<u>Description</u>	<u>With ITE</u>
2	ITE-8507	Alligator Clip	4023
As Req.	322A	Make-Busy Plug	4023
As Req.	329A	Make-Busy Plug	4023
1	R-3314	Stop Watch	4023
1	R-9572	Test Receiver	4023
1	ITE-4442	Volt-Ohmmeter	

4. FUSE VERIFICATION

4.1 Test Procedure - General

CAUTION: TO ELIMINATE A FIRE HAZARD, VERIFY THAT DIRECT GROUND IS NOT PRESENT ON THE ALARM BAR OR STUD ON A FUSE PANEL BEFORE INSTALLING ITS FEEDER FUSE.

NOTE: Use ITE-4442 Volt-Ohmmeter. To avoid damaging the meter, first verify that battery is not present on the alarm bar by using the voltmeter portion of ITE-4442. If clear, switch to the ohmmeter portion for the resistance reading which should be either infinity or approximately 600 ohms.

- 4.11 Fuse verification is, ordinarily, only required on fuse panels wired by the installer.

- 4.12 On shop wired and fused fuse panels, inspect the panel for missing or operated fuses. If a fuse is missing or operated, test the fuse terminal for the absence of low resistance ground. Clear any grounded condition and install the proper fuse. At the completion of this test all fuse panels should be fully equipped with proper fuses. These may be either the proper specified type or a dummy.
- 4.13 The operation of relays in circuits when fuses or potentials are applied is normal in some circuits. Oscillation, chatter and signs of overheating should be analyzed and cleared immediately.
- 4.14 ITE-4442 Volt-Ohmmeter should be used to verify all potentials at fused terminals to insure that polarity and voltages are correct. Many errors are caused by the use of the R-9572 Test Receiver on potentials other than -48 volts. Handbook 100, TMO-4442, provides full instructions for the use of the volt-ohmmeter.
- 4.14 When the R-9572 Test Receiver is used, avoid placing it directly on the ear.
- 4.2 Fusing Tests
- 4.21 Using fuses of the correct type, as indicated by the circuit drawing and fuse panel designations, install the fuses listed in Table A one at a time. Verify that each fuse is associated with the correct circuit and is free from cross with other unfused posts on the panel.
- 4.3 Fuse Alarms
- 4.31 *Connect -48V battery through test receivers R-9572 to the alarm bar for the 20 ampere frame fuse. Observe that the major alarm sounds and that lamps 20A and the associated aisle pilot light. Lamp FA and AL do not light.*
- 4.32 *Disconnect the battery from the alarm bar and observe that the alarm is silenced, the lighted lamps extinguished, and lamp AL lights. Momentarily operate key AR to extinguish lamp AL.*
- 4.33 *Connect -48V battery through test receiver R-9572 to the frame fuse panel alarm bar. Observe that the major alarm sounds, that lamp FA and the associated aisle pilot lights. Lamps 20A and AL do not light.*
- 4.34 *Remove the battery and observe that the alarm is silenced, the aisle pilot and FA lamps are extinguished and lamp AL lights. Momentarily operate key AR to extinguish lamp AL.*
5. TEST SETUP
- 5.1 At the Terminating Trouble Indicator:
- (1) Operate key FS.
- (2) Set switch F to a position representing any working Incoming Link Frame.
- (3) When office code is required, operate key OAB.
- (4) When NS codes are required, insert 329A make-busy plugs into jacks NSS as required.
6. TRANSLATOR TESTS (CROSS-CONNECTIONS)
- 6.1 Verification of Translator Cross-Connections
- 6.11 Description
- 6.111 When the terminating sender recognizes a DID call, the sender passes a DID mark to the terminating marker. The marker bids for a translator through the translator preference control and establishes connection via the translator connector circuit. As soon as connection is established, the marker passes the 4-digit called station number to the translator registration relays and the office code to the number series relays.
- 6.112 The translator is used to change a called station number to its corresponding directory number (number group address) which gives its line location for completing the call. The marker then releases the translator and uses the new 4-digit directory routing number as an address in a particular number group to establish linkage between incoming and LLP trunks and between the LLP trunk and an idle dial pulse outsender.
- 6.113 On a translator cross-connection test, the translator simulates the called station number through operated TRT-, HT-, TT-, and UT- switches. After setting the switches, the TRT key is operated to operate connector relays TR- and TRA- which connects the test circuitry to the translator being tested. The translator then operates and shows its output on its display lamps. This readout is automatically converted to one-

TABLE A

SD	FUSE DESIGNATION	POTENTIAL	AMPERAGE	TEST LOCATION
27754-01	A	-48V	1/2	Resistor BC
27754-01	B	-48V	1/2	Lead B Timer T
27754-01	C	-48V	1 1/3	L Relay TH-0
27754-01	D	-48V	1 1/3	L Relay T-0
27754-01	E	-48V	1 1/3	B Relay HA-0
27754-01	F	-48V	1 1/3	L Relay TST
27754-01	G	-48V	1 1/3	L Relay TLKA
27754-01	H	-48V	1 1/3	L Relay DR
27754-01	J	-48V	1 1/3	2L Relay THT-0
27754-01	K	-48V	1 1/3	2L Relay TT-0
27754-01	L	-48V	1 1/3	2L Relay CRT-0
27754-01	M	-48V	1 1/3	Lamp TH-0
27754-01	N	-48V	1 1/3	L Relay NS-0
27754-01	P	-48V	1 1/3	B Relay HB-0
27754-01	R	-48V	1 1/3	B Relay TWA-0
27754-01	S	-48V	1 1/3	B Relay TWC-0
27755-01	A	-48V	1 1/3	B Relay TA
27755-01	B	-48V	1 1/3	Resistor THL
27756-01	A	-48V	1 1/3	L Relay CB-0
27756-01	B	-48V	1 1/3	L Relay TMB-0
27756-01	C	-48V	1 1/3	Lead B Timer TM

out-of-ten basis. However, if a mutilated output occurs, the DR key may be operated while holding the TRT key operated which gives a direct read-out on the display lamps.

- 6.114 As soon as the TRT key is released, the translator restores to normal making it ready for another test call.
- 6.12 Test Procedure - Translator Cross-Connections
- 6.121 From the Office Records, locate the translator cross-connections information. This information lists the called station numbers together with the corresponding directory numbers which are required to verify all of the WECO installed cross-connections. The correct lamp indication corresponds to the directory number and arbitrary digit which is listed.
- 6.122 At the Translator Preference Control, block relays TMB-0 and 1 operated. At the Translator, verify lamps TMB-0 and 1 are lighted.
- 6.123 At the translator,
 - (1) Set on the THT-, HT-, TT-, UT-, and, when required, NST- switches a called station number which is to be tested.

(2) Operate key TRT-0. Verify that the lighted lamps TH-, H-, T-, U-, and CR- display the directory number and arbitrary digit which corresponds to the called station number.

(3) If the lighted lamps TH-, H-, T-, U-, and CR- do not display the correct indication, operate key DR. The lamps which are now lighted display a direct readout of the operated relays THT-, HT-, TT-, and UT- on a one or three-out-of-five basis and of the operated relays CRT- on a two-out-of-six basis. For the correct directory number and arbitrary digit, determine which of these relays should or should not have operated. If the lamp display does not agree with the relays which should have been operated, clear the trouble as required.

(4) Depending on the options furnished when the DID-LLP feature is provided and on the called station number which was used, lamps DL (0-4), DL4A, A, and B may or may not light.

(5) Restore key TRT-0 to normal and operate key TRT-1. Repeat part (2) and, if required, parts (3) and (4).

- 6.124 Repeat Step 6.123 until all of the called station numbers required to verify all of the WECO installed cross-connections have been tested.

7. TRANSLATOR PREFERENCE CONTROL AND
TRANSLATOR CONNECTOR TESTS

7.1 Translator Preference Advance

7.11 Insert a 329A make-busy plug into jack TMB-0. Verify lamp TMB-0 is lighted at the Translator Frame.

7.12 At the TTI:

(1) Operate key MT-.

(2) Set switches TH-, H-, T-, and U- to any working DID-LLP station number.

(3) Operate key ST.

7.13 Verify lamp TRSL-1 lights momentarily and lamp TRK is lighted.

7.14 Momentarily operate key RL. Verify all lamps are extinguished.

7.15 Repeat Steps 7.11 through 7.14 changing the key MT- operated until all even numbered markers have been tested.

7.16 On the last even numbered marker used for test, at the TTI, insert a make-busy plug into jack TCMB for Translator 1. Repeat Steps 7.11 through 7.14.

7.17 Remove 329A make-busy plug from jack TMB-0 and insert it in jack TMB-1.

7.18 Repeat Steps 7.11 through 7.14 changing the key MT- operated until all odd numbered markers have been tested. For these tests, verify lamp TRSL-0 lights momentarily and lamp TRK is lighted.

7.19 On the last odd numbered marker used for test, at the TTI, insert a make-busy plug into jack TCMB for Translator 0. Repeat Steps 7.11 through 7.14. Remove 329A make-busy plugs from jacks TCMB (0 & 1) and TMB-1.

7.2 Transfer Start - Relay TS Fails to Operate

7.201 At the TTI, insert a 322A make-busy plug into marker make-busy jack DB- corresponding to the first even numbered marker being used for test.

7.202 At the Translator Preference Control Circuit, block normal relay TS-0 associated with the marker being used for test.

7.203 At the TTI:

(1) Operate key MT- corresponding to the marker being used for test.

(2) Set switches TH-, H-, T-, and U- to any working DID-LLP station number.

(3) Operate key ST.

7.204 Verify that within 700 milliseconds, lamp TRSL-1 lights momentarily and lamp TRK is lighted.

7.205 Momentarily operate key RL. Verify that all lamps are extinguished.

7.206 At Translator Preference Control Circuit, remove blocking tool from relay TS-0. At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher even numbered marker being used for test.

7.207 At Translator Preference Control Circuit, block normal relay TS-0 associated with the marker now being used for test.

7.208 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now being used for test.

7.209 Repeat Steps 7.203, Part (3), through 7.208 until all even numbered markers have been tested.

7.210 After the last even numbered marker has been tested, remove blocking tool from relay TS-0, release key MT-, and remove 322A make-busy plug from jack DB-.

7.211 At the TTI, insert a 322A make-busy plug into jack DB- corresponding to the first odd numbered marker being used for test.

7.212 At the Translator Preference Control Circuit, block normal relay TS-1 associated with the marker being used for test.

7.213 Repeat Step 7.203 and verify that within 700 milliseconds, lamp TRSL-0 momentarily lights and lamp TRK is lighted.

7.214 Momentarily operate key RL. Verify that all lamps are extinguished.

7.215 At the Translator Preference Control Circuit, remove blocking tool from relay TS-1. At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher odd numbered marker being used for test.

- 7.216 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now being used for test.
- 7.217 Repeat Steps 7.213 through 7.216 until all odd numbered markers have been tested.
- 7.218 After the last odd numbered marker has been tested, remove blocking tool from relay TS-1, release key MT-, and remove 322A make-busy plug from jack DB-.
- 7.3 Transfer Start - Relay TS Operated
- 7.301 At the TTI, insert a 322A make-busy plug into marker make-busy jack DB- corresponding to the first even numbered marker being used for test.
- 7.302 At the Translator Connector Circuit, block normal relay TA associated with the marker being used for test for Translator 0.
- 7.303 At the TTI:
- (1) Operate key MT- corresponding to the marker being used for test.
 - (2) Set switches TH-, H-, T-, and U- to any working DID-LLP station number.
 - (3) Operate key ST.
- 7.304 Verify that within 700 milliseconds, lamp TRSL-1 lights momentarily and lamp TRK is lighted.
- 7.305 Momentarily operate key RL. Verify that all lamps are extinguished.
- 7.306 At the Translator Connector Circuit, remove blocking tool from relay TA. At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher even numbered marker being used for test.
- 7.307 At the Translator Connector Circuit, block normal relay TA associated with the marker now being used for test for Translator 0.
- 7.308 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now under test.
- 7.309 Repeat Steps 7.303, Part (3), through 7.308 until all even numbered markers have been tested.
- 7.310 After the last even numbered marker has been tested, remove blocking tool from relay TA, release key MT-, and remove 322A make-busy plug from jack DB-.
- 7.311 At the TTI, insert a 322A make-busy plug into jack DB- corresponding to the first odd numbered marker being used for test.
- 7.312 At the Translator Connector Circuit, block normal relay TA associated with the marker being used for test for Translator 1.
- 7.313 Repeat Step 6.303 and verify that within 700 milliseconds, lamp TRSL-0 momentarily lights and lamp TRK is lighted.
- 7.314 Momentarily operate key RL. Verify that all lamps are extinguished.
- 7.315 At the Translator Connector Circuit, remove blocking tool from relay TA. At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher odd numbered marker being used for test.
- 7.316 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now under test.
- 7.317 Repeat Steps 7.313 through 7.316 until all odd numbered markers have been tested.
- 7.318 After the last odd numbered marker has been tested, remove blocking tool from relay TA, release key MT-, and remove 322A make-busy plug from jack DB-.
- 7.4 Second Trial
- 7.401 At the Terminating Marker Applique, block relay TST2 normal. At the TTI:
- (1) Insert a 322A make-busy plug into marker make-busy jack DE- corresponding to the first even numbered marker being used for test.
 - (2) Operate key MT- corresponding to the marker being used for test.
 - (3) Set switches TH-, H-, T-, and U- to any blank station number in the DID Translator.
 - (4) Insert a 329A make-busy plug into translator make-busy jack TMB-0. Verify lamp TMB-0 is lighted at the Translator Frame.

- 7.402 At Translator 0, using cord ITE-9548, connect punchings BLK and CHG together. These punchings are terminals 11 and 10 respectively at Terminal Strip AC-A.
- 7.403 At the TTI:
- (1) Momentarily remove the 329A make-busy plug from translator make-busy jack TMB-0 and operate key ST.
 - (2) Reinsert this plug immediately when lamp TRSL-1 lights.
- 7.404 Verify that:
- (1) Lamp TRSL-0 lights momentarily.
 - (2) A display indicating translator trouble is recorded.
 - (3) Lamp TRSL-1 lights momentarily.
- 7.405 Momentarily operate key RL. Verify that all lamps are extinguished.
- 7.406 At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher even numbered marker being used for test.
- 7.407 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now under test.
- 7.408 Repeat Steps 7.403 through 7.407 until all even numbered markers have been tested.
- 7.409 After the last even numbered marker has been tested, remove cord ITE-9548 from terminals 10 and 11 of Terminal Strip AC-A, remove the 329A make-busy plug from translator make-busy jack TMB-0 and insert it in jack TMB-1. Remove the 322A make-busy jack from jack DB-.
- 7.410 At the TTI, insert a 322A make-busy plug into jack DB- corresponding to the first odd numbered marker being used for test. At the Translator, verify that lamp TMB-0 is extinguished and lamp TMB-1 is lighted.
- 7.411 At Translator 1, using cord ITE-9548, connect punchings BLK and CHG together. These punchings are terminals 11 and 10 respectively at Terminal Strip AC-A.
- 7.412 Operate key MT- corresponding to the marker being used for test.
- 7.413 At the TTI:
- (1) Momentarily remove the 329A make-busy plug from translator make-busy jack TMB-1 and operate key ST.
 - (2) Reinsert this plug immediately when lamp TRSL-0 lights.
- 7.414 Verify that:
- (1) Lamp TRSL-1 lights momentarily.
 - (2) A display indicating translator trouble is recorded.
 - (3) Lamp TRSL-0 lights momentarily.
- 7.415 Momentarily operate key RL. Verify that all lamps are extinguished.
- 7.416 At the TTI, remove the 322A make-busy plug from jack DB- and insert it in jack DB- for the next higher odd numbered marker being used for test.
- 7.417 At the TTI, release key MT- for the marker previously under test and operate key MT- for the marker now under test.
- 7.418 Repeat Steps 7.413 through 7.417 until all odd numbered markers have been tested.
- 7.419 After the last odd numbered marker has been tested, remove cord ITE-9548 from terminals 10 and 11 of Terminal Strip AC-A, remove the 329A make-busy plug from jack TMB-1, and remove the 322A make-busy plug from jack DB-. Verify that lamp TMB-1 is extinguished.
8. TRANSLATOR TESTS
- 8.1 Verification of Translator
- 8.11 Description
- 8.111 The description presented in Paragraphs 6.111 and 6.112 remains valid at this time.
- 8.112 On a translator test, the Terminating Trouble Indicator (TTI) simulates the called station number through operated TH-, H-, T-, and U- switches. After setting these switches and performing the additional functions necessary to make a test call, key ST is operated and the translator now operates. Both the input to the translator and its output are shown by a lamp display at the TTI.

- 8.113 The additional functions necessary to make a test call and the resulting lamp display will be shown in connection with the particular test being performed.
- 8.114 When key RL is operated, the TTI releases and all lamps are extinguished which makes the TTI ready for another test call.
- 8.12 Test Procedure - Translator Tests
- 8.121 From the Office Records, locate the translator cross-connection information.
- 8.122 Using this information:
- (1) Determine three called station numbers which exercise all of relays TH, H, T, and U (0-7). An example would be called numbers 1603, 2594 and 7862.
 - (2) When Number Series Translation is required, determine the called station numbers which will exercise all of relays NS (0-4).
 - (3) When applicable, determine a called station number which is listed as unused for the initial installation.
 - (4) For a called station number which is used on the initial installation, determine the correct TW-- cross-connection.
 - (5) For the called station numbers selected in Parts (1) through (4), determine and correlate to the called station number the directory number (number group address), delete digit, arbitrary digit, class relay to be operated, and the office A/B or number series information applicable.
 - (6) For convenience, put this information into test chart form.
- 8.123 Using the Test Setup of Paragraph 5, at the TTI:
- (1) Insert a 322A make-busy plug into marker make-busy jack DB- corresponding to the marker to be used for test.
 - (2) Operate key MT- corresponding to the marker.
 - (3) Set switches TH-, H-, T-, and U- to the called station number to be used for test as indicated in Paragraphs 8.124 through 8.131.
- 8.124 Using one of the called numbers determined in Paragraphs 8.122, Part (1) and, if applicable, Part (2), make a test call by operating key ST.
- 8.125 For these test calls, the display lamps lighted which indicate a satisfactory call are:
- (1) (A, B, C, D) (0, 1, 2, 4, 7) on a two-out-of-five basis which corresponds to the TH-, H-, T-, and U- switches operated respectively.
 - (2) THC (0, 1, 2, 4, 8) and (HC, TC, UC) (0, 1, 2, 4, 5) on a one or three-out-of-five basis which corresponds to the number group address respectively of the PBX. This number depends on the called number used for test and was determined in Paragraph 8.122, Part (5).
 - (3) DLT (0-4) - delete digit information.
 - (4) CR (0, 1, 2, 4, 7) on a two-out-of-five basis shows the arbitrary digit information. When no arbitrary digit is required no CR lamps are lighted.
 - (5) CL (0-5, 9, 35) - class relay operated.
 - (6) A/B - office indication.
 - (7) NSS (0-4) - number series information if applicable to the test call made.
 - (8) Various progress and check lamps such as LLP, TRSL, TRU 0/1, TRK, TLK, and TLKA should be lighted.
- 8.126 When lamp RSC lights, the call is complete. Operate key RL. Verify all lamps are extinguished.
- 8.127 Repeat Paragraphs 8.124 through 8.126 until all of the called numbers determined in Paragraph 8.122, Part (1) and, if applicable, Part (2) have been tested.
- 8.128 Using the called number determined in Paragraph 8.122, Part (3), make a test call by operating key ST. Verify that the applicable lamps of Paragraph 8.125 are lighted and that lamp BLK is lighted.
- 8.129 When lamp RSC lights, the call is complete. Operate key RL. Verify all lamps are extinguished.

- 8.130 Using the called number determined in Paragraph 8.122, Part (4), remove the TW-- cross-connection at the RR-- route relay punching and connect it to cross-connect punching CHG (T.S. AC-A, terminal 10). Make a test call by operating key ST. Verify that the applicable lamps of Paragraph 8.125 are lighted and that lamp CHG is lighted.
- 8.131 When lamp RSC lights, the call is complete. Operate key RL. Verify all lamps are extinguished. Restore the TW-- cross-connection to its original connection on the RR-- route relay punching.
- 8.132 Restore the TTI to normal by removing all test connections and restoring all key and switches to normal.
9. MISCELLANEOUS CIRCUITS
- 9.1 Test Battery Jack and Supply
- 9.11 Using the R-9572 Test Receiver, check test battery terminals and tip of jack A for presence of -48 volts.
- 9.12 Using R-9572 Test Receiver, check test terminal G for direct ground and terminal HRG for a high resistance ground.
- 9.2 Remote Control Jack
- 9.21 Using R-9572 Test Receiver, check the sleeve of jack F for direct grounds.
- 9.22 Make a continuity and cross test of the tip and ring leads of the F jack to all associated F jacks and to the Terminating Trouble Indicator.
- 9.3 Spare Jack
- 9.31 Make a continuity and cross test of the tip, ring and sleeve leads of the B jack to all associated B jacks and to the Main Distributing Frame.
- 9.4 Frame Line Telephone Jacks
- 9.41 Connect an operator's telephone set (ITE-9650) to the frame line telephone jack. Make a talking test of the circuit.

*Lines Presented in Script Indicate
New or Changed Information*

Manager, Crossbar Product Engineering
Control Center

Reason for Reissue:
To add tests for the Miscellaneous Circuit
for Translator Frame.