

MISCELLANEOUS ALARM CIRCUIT

TELETYPEWRITER LINE CONCENTRATING UNIT NO. 101A

1. GENERAL

1.01 This section describes methods of testing the alarm features of the miscellaneous alarm circuit associated with the teletypewriter line concentrating unit No. 101A. The tests are as follows:

- (A) Test of Time Alarms on an Outward Call
- (B) Test of Time Alarms on an Inward Call
- (C) Test of Sequence Chain Battery and Ground Alarm Circuit

1.02 These tests should preferably be made during periods of no traffic, or in periods of very light traffic, since calls originated while the tests are in progress may be interfered with. If it becomes necessary to make any of these tests when there is a possibility of calls being originated, the tests should be conducted as rapidly as consistent with accuracy.

1.03 If there is a possibility of calls being originated while these tests are being made, the operator office should be advised as to the trunk circuit which will be used for test purposes.

1.04 In making tests, the test condition should not be continued for a longer time than necessary, to avoid the operation of the sequence chain battery and ground alarm.

1.05 In performing these tests, the aid of an assistant may be desirable, to observe the alarm lamps in the annunciator cabinet. The observation of the alarm lamps may not be required on each test cycle, however.

1.06 In performing these tests it is necessary to remove a few relay covers and those covers removed should be replaced as soon as the circuits have been tested.

1.07 In making patches at the concentrating unit equipment bay it is desirable in the interest of avoiding "hits" and other objectionable circuit conditions that patches be put up in the following sequence and taken down in the reverse order:

- 1. Test Circuit
- 2. Practice Circuit
- 3. Trunk Circuit
- 4. Subscriber Line Circuit

2. APPARATUS

Tests (A), (B) and (C)

2.01 No. 136B tools, as required.

Tests (A) and (B)

2.02 Test Circuit SD-70295-01.

2.03 Two 6P1A cords (Two pairs of P3E cords equipped at each end with a No. 247A plug).

3. METHOD

(A) Test of Time Alarms on an Outward Call

Sequence Circuit Fails to Seize Trunk

3.01 Using a 6P1A cord connect the TST A and B jacks of the test circuit to the A and B jacks of an unassigned subscriber line circuit patching to the test circuit first.

3.02 Block the ST relay of the lowest numbered idle trunk circuit in a released position with a No. 136B tool.

3.03 Operate the SUB SIDE OF TRK ANS key. The CALL lamp of the subscriber line, the NA lamp and SEQ BSY lamp should light immediately. At the end of approximately 3 seconds, the red SUB GR lamp, in the associated subscriber group sequence circuit, the S lamp in the miscellaneous alarm circuit and the minor alarm lamp in the annunciator cabinet should light. The minor alarm bell should ring. The SEQ BSY lamp should be extinguished and the CALL and NA and SUB GR lamps should remain lighted.

3.04 Operate the RLS SA key in the miscellaneous alarm circuit. The minor alarm bell should be silenced.

3.05 Release the SUB SIDE OF TRK ANS key. The CALL and NA lamps should be extinguished. Remove the No. 136B tool from the ST relay of the trunk.

3.06 Momentarily depress the SUB GR key. The SUB GR lamp should be extinguished.

3.07 Momentarily depress the RLS S key. The minor alarm lamp in the annunciator cabinet should be extinguished.

3.08 Restore the RLS SA key in the miscellaneous alarm circuit. The S lamp should be extinguished.

Failure In the Trunk Circuit

3.09 With the patch between the TST A and B jacks and the subscriber line A and B jacks referred to in 3.01 still up and using a 6PLA cord, connect first to the SEND and REC jacks of the test circuit and then to the SEND and REC jacks of the lowest numbered idle trunk circuit.

Note: When the trunk repeater is arranged for "Closed-loop" operation, the REV key associated with the test circuit should be operated if the armature of the S relay of the trunk circuit is connected to negative 130 volt battery for the marking condition.

3.10 Operate the SUB SIDE OF TRK ANS key of the test circuit. The LINE SIDE OF TRK SIG lamp in the test circuit, the CALL lamp of the subscriber line, the trunk BSY lamp the NA lamp and the SEQ BSY lamp in the miscellaneous alarm circuit should light immediately.

3.11 At the end of about 3 seconds the red TRK lamp of the trunk involved in the test should flash and the LINE SIDE OF TRK SIG lamp should be extinguished. The trunk BSY lamp should be extinguished, and the NA lamp, the CALL lamp, the TK lamp in the miscellaneous alarm circuit, and the minor alarm lamp in the annunciator cabinet should be lighted. The minor alarm bell should ring.

3.12 Operate the RLS TKA key. The minor alarm bell should be silenced.

3.13 Release the SUB SIDE OF TRK ANS key. The NA and CALL lamps should be extinguished.

3.14 Momentarily operate the TRK key. The red TRK lamp should be extinguished.

3.15 Momentarily operate the RLS TK key. The minor alarm lamp in the annunciator cabinet should be extinguished.

3.16 Release the RLS TKA key. The TK lamp should be extinguished.

Sequence Circuit Fails to Restore to Normal

3.17 With the patches made as in 3.01 and 3.09 and using a No. 136B tool, block released the CH relay of that portion of the trunk sequence circuit associated with the trunk being used in the test.

3.18 Operate the SUB SIDE OF TRK ANS key. The same lamps that lighted as covered in 3.10 should light immediately.

3.19 At the end of approximately 3 seconds the red TRK lamp of the trunk used in the test should flash, and the SEQ and TK

lamps in the miscellaneous alarm circuit and the major and minor lamps in the annunciator cabinet should light. The trunk BSY lamp should be extinguished. The SEQ BSY lamp in the miscellaneous alarm circuit, the LINE SIDE OF TRK SIG lamp, the NA lamp and the CALL lamp should remain lighted. The major and minor alarm bells should ring.

3.20 Operate the RLS SEQ A and RLS TKA keys. The major and minor alarm bells should be silenced.

3.21 Release the SUB SIDE OF TRK ANS key. The CALL and NA lamps should be extinguished.

3.22 Remove the No. 136B tool from the CH relay. The LINE SIDE OF TRK SIG lamp should be extinguished.

3.23 Momentarily operate the TRK key. The red TRK lamp should be extinguished.

3.24 Momentarily operate the RLS TK key. The minor alarm lamp in the annunciator cabinet should be extinguished.

3.25 Release the RLS TKA key. The TK lamp should be extinguished.

3.26 Momentarily operate the RLS SEQ key. The major alarm lamp in the annunciator cabinet should be extinguished.

3.27 Release the RLS SEQ A key. The SEQ lamp should be extinguished.

(B) Test of Time Alarms on an Inward Call

3.28 Make sure that the trunk to be used is not busy by observing that the associated BSY lamp is extinguished. Operate the BSY key associated with the trunk circuit under test. The associated BSY lamp should light.

3.29 If not already made, make the patches in accordance with instructions covered in 3.01 and 3.09.

Sequence Circuit Fails to Seize a Director

3.30 Block released the ALL relay of the trunk portion of the sequence circuit, using a No. 136B Tool.

3.31 Operate the LINE SIDE OF TRK CALL key associated with the test circuit. The NA lamp, the trunk C DIS lamp and the SEQ BSY lamp in the miscellaneous alarm circuit should light immediately. After about 4 seconds the SEQ and S lamps in the miscellaneous alarm circuit and the major and minor lamps in the annunciator cabinet should light. All other lamps should remain lighted. The major and minor alarm bells should ring.

3.32 Operate the RLS SEQ A and RLS SA keys. The major and minor alarm bells should be silenced.

3.33 Release the LINE SIDE OF TRK CALL key and remove the No. 136B tool from the ALL relay. The NA, the trunk C DIS and SEQ BSY lamps should be extinguished.

3.34 Momentarily operate the RLS SEQ and the RLS S keys. The major and minor alarm lamps in the annunciator cabinet should be extinguished.

3.35 Release the RLS SEQ A and the RLS SA keys. The SEQ and S lamps should be extinguished.

Director Fails to Attain Normal Operating Speed - If Two Directors are Provided

3.36 If two directors are provided, operate the DIR TR key to position 1 and block the Al relay of the No. 1 director in its non-operated position with a No. 136B tool.

3.37 Operate the LINE SIDE OF TRK CALL key associated with the test circuit. The NA, the trunk C DIS and the SEQ BSY and CONN lamps should light immediately.

3.38 The A lamp associated with director No. 1, the DIR 1 lamp of the miscellaneous alarm circuit, the red TRK lamp and the minor alarm lamp in the annunciator cabinet should light in approximately 4 seconds. The NA, trunk C DIS and SEQ BSY and CONN lamps should be extinguished. The minor alarm bell should ring.

3.39 Operate the RLS DAL key of the miscellaneous alarm circuit. The alarm bell should be silenced. The DIR 1 lamp should remain lighted.

3.40 Restore the LINE SIDE OF TRK CALL key of the test circuit. The red TRK lamp should be extinguished. Block the Al relay of the No. 2 director in its non-operated position with a No. 136B tool.

3.41 Again operate the LINE SIDE of TRK CALL key associated with the test circuit. The NA, the trunk C DIS and the SEQ BSY and CONN lamps should light immediately.

3.42 The DIR 2 and DIR 1-2 lamps of the miscellaneous alarm circuit, the A lamp associated with director No.2, the red TRK lamp and the major alarm lamp in the annunciator cabinet should light in approximately 4 seconds. Check that the major and minor alarm bells ring. The NA, trunk C DIS and the SEQ BSY and CONN lamps should be extinguished.

3.43 Operate the RLS DA2 and RLS DA 1-2 keys of the miscellaneous alarm circuit. The major and minor alarm bells should be silenced, but all lamps should remain in the condition described in 3.42.

3.44 Restore the LINE SIDE OF TRK CALL key of the test circuit. The red TRK lamp

should be extinguished. Remove the No. 136B tools from the Al relays of both director circuits. Momentarily depress the RLS DIR 1, RLS DIR 2 and RLS DIR 1-2 keys and restore the RLS DAL, RLS DA2 and RLS DA 1-2 keys of the miscellaneous alarm circuit to normal. The DIR 1 and DIR 2 and DIR 1-2 lamps should be extinguished. Note that the alarm lamps in the annunciator cabinet are extinguished.

3.45 Momentarily depress the RLS keys of the director circuits. The A lamps should be extinguished.

3.46 Repeat the procedures covered in 3.36 to 3.39 using director 2 instead of director 1.

3.47 Repeat the procedures covered in 3.40 to 3.45 using director 1 instead of director 2.

Director Fails to Attain Normal Operating Speed - If one Director is Provided

3.48 Block the Al relay of the director in its non-operated position with a No. 136B tool.

3.49 Operate the LINE SIDE OF TRK CALL key of the test circuit. The NA, the trunk C DIS and the SEQ BSY and CONN lamps should light immediately.

3.50 The A lamp associated with the director, the DIR 1 lamp of the miscellaneous alarm circuit, the red TRK lamp, and the major alarm lamp in the annunciator cabinet should light in approximately 4 seconds. The NA, trunk C DIS and SEQ BSY and CONN lamps should be extinguished. The major alarm bell should ring.

3.51 Operate the RLS DAL key of the miscellaneous alarm circuit. The alarm bell should be silenced. The DIR 1 lamp should remain lighted.

3.52 Restore the LINE SIDE OF TRK CALL key of the test circuit. The red TRK lamp should be extinguished. Release the Al relay by removing the No. 136B tool. Momentarily operate the RLS DIR 1 key and restore the RLS DAL key of the miscellaneous alarm circuit to normal. The DIR 1 lamp of the miscellaneous alarm circuit and the alarm lamp in the annunciator cabinet should be extinguished. Momentarily depress the RLS key of the director circuit. The A lamp should be extinguished.

Director Ready Signal Does Not Reach the Loop Repeater

3.53 Remove the S relay from the connecting block of the loop repeater associated with the trunk circuit used for the test.

3.54 Operate the LINE SIDE OF TRK CALL key associated with the test circuit. The

3.54 (Continued)

NA, trunk C DIS and the SEQ BSY and CONN lamps should light. The LINE SIDE OF TRK SIG lamp should also light if the trunk circuit is arranged for "inverse neutral" operation.

3.55 The B and D lamps associated with the director in use and the DIR 1 or DIR 2 lamp of the miscellaneous alarm circuit should light in approximately 5 seconds. Check that the alarm lamp in the annunciator cabinet lights and that the minor alarm bell (or major alarm bell where only one director is provided) rings. The red TRK lamp associated with the trunk circuit should flash. The NA, trunk C DIS and the SEQ BSY and CONN lamps should be extinguished. If the LINE SIDE OF TRK SIG lamp was previously lighted it should remain lighted.

3.56 Operate the RLS DAL or RLS DA2 key of the miscellaneous alarm circuit. The alarm bell should be silenced and the DIR 1 or DIR 2 lamp should remain lighted.

3.57 Reinsert the S relay into the connecting block of the associated loop repeater. The LINE SIDE OF TRK SIG lamp if lighted should be extinguished. Restore the LINE SIDE OF TRK CALL key and momentarily depress the RLS DIR 1 or RLS DIR 2 key. Restore the RLS DAL or RLS DA2 key of the miscellaneous alarm circuit. The associated DIR 1 or DIR 2 lamp should be extinguished. Note that the alarm lamp in the annunciator cabinet is extinguished.

3.58 Momentarily depress the RLS key of the associated director circuit. The associated B and D lamps should be extinguished. Momentarily depress the TRK key of the trunk circuit. The associated red TRK lamp should be extinguished.

3.59 Repeat the procedure covered in 3.53 to 3.58, using the director not already employed. The desired director can be selected by operating the DIR TR key.

3.60 If only one director is provided the procedure as covered in 3.53 to 3.58 should be carried out and 3.59 omitted.

Director Ready Signal Reaches the Loop Repeater But The Calling Signal Does Not Register In The Director

3.61 Remove the G relay from the connecting block of one of the director circuits. Operate the LINE SIDE OF TRK CALL key associated with the test circuit. The director will be connected to the trunk and send the "director ready" signal. The NA, the LINE SIDE OF TRK SIG, the trunk C DIS the SEQ BSY, and CONN lamps should light immediately.

3.62 The C lamp associated with the director in use, the DIR 1 or DIR 2 lamp of

the miscellaneous alarm circuit should light, the red TRK lamp should flash and the LINE SIDE OF TRK SIG lamp should be extinguished in approximately 5 seconds. Check that the alarm lamp in the annunciator cabinet lights and that the minor alarm bell (or major alarm bell where only one director is provided) rings. The NA, trunk C DIS, SEQ BSY, and CONN lamps should be extinguished.

3.63 Operate the RLS DAL or RLS DA2 key of the miscellaneous alarm circuit. The alarm bell should be silenced and the DIR 1 or DIR 2 lamp should remain lighted.

3.64 Reinsert the G relay into its connecting block. Restore the LINE SIDE OF TRK CALL key and momentarily depress the RLS DIR 1 or RLS DIR 2 key. Restore the RLS DAL or RLS DA2 key of the miscellaneous alarm circuit. The Associated DIR 1 or DIR 2 lamp should be extinguished. Note that the alarm lamp in the annunciator cabinet is extinguished.

3.65 Momentarily depress the RLS key of the associated director circuit. The associated C lamp should be extinguished. Momentarily depress the TRK key of the trunk circuit. The TRK lamp should be extinguished.

3.66 Repeat the procedure covered in 3.61 to 3.65 using the director not already employed, by removing the G relay from that director.

3.67 If only one director is provided the procedure as covered in 3.61 to 3.65 should be carried out and 3.66 omitted.

Failure of Director Circuit to Complete its Functions in 10 Seconds

3.68 Operate LINE SIDE OF TRK TTY key and then the LINE SIDE OF TRK CALL key. The director will be connected to the trunk and send the "director ready" signal and the NA, LINE SIDE OF TRK SIG, the trunk C DIS, SEQ BSY and CONN lamps should light immediately. Approximately 12 seconds after the operation of the LINE SIDE OF TRK CALL key a group of approximately 4 ("T" or "S") characters will be received followed by the LINE SIDE OF TRK SIG lamp being extinguished. The red TRK lamp of the trunk circuit should then light.

3.69 Release the LINE SIDE OF TRK CALL key. The red TRK lamp should be extinguished.

3.70 Operate the LINE SIDE OF TRK TTY key and then the LINE SIDE OF TRK CALL key. Check to see if the director used in 3.68 is again used by observing on which director the motor started in each test. The same lamps that were referred to in 3.68 should light immediately. Pulse FIGS. followed by the number of the line to which the test circuit is patched. All lamps except the trunk BSY should be extinguished,

3.70 (Continued)

the LINE SIDE OF TRK SL should light and the SUB SIDE OF TRK CALL lamp should flash.

3.71 Release the LINE SIDE OF TRK CALL key and restore the trunk BSY key. All lamps should be extinguished.

3.72 Repeat 3.68 to 3.71 using the other director, if two directors are provided.

(C) Test of Sequence, Battery and Ground Chain Alarm Circuit

3.73 With the patches referred to in 3.01 and 3.09 still up, using a No. 136B tool, block released the H relay, in the subscriber group sequence start circuit.

3.74 Operate the SUB SIDE OF TRK ANS key of the test circuit. The CALL lamp of the subscriber line used in the test and the NA lamp should light immediately.

3.75 At the end of approximately one minute the SEQ GRD, SEQ BAT, and the SEQ lamps in the miscellaneous alarm circuit and the major alarm lamp in the annunciator cabinet should light. The major alarm bell should ring. The CALL and NA lamps should remain lighted.

3.76 Operate the RLS SEQ A key. The major alarm bell should be silenced.

3.77 Restore the SUB SIDE OF TRK ANS key. The CALL, NA, SEQ GRD and SEQ BAT lamps will be extinguished.

3.78 Remove No. 136B tool from the H relay in the subscriber group sequence start circuit.

3.79 Momentarily operate the RLS SEQ key. The major alarm lamp in the annunciator cabinet will be extinguished.

3.80 Release the RLS SEQ A key. The SEQ lamp should be extinguished.

3.81 At the completion of the tests remove the patch from the TST A and B jacks and the subscriber line A and B jacks, removing the plug from the line circuit jacks first. Remove the patch from the trunk SEND and REC and test circuit SEND and REC jacks, removing the plug from the trunk jacks first. Restore all test circuit keys to normal.

4. REPORTS

4.01 The required record of these tests should be entered on the proper form.

Bell Telephone Laboratories, Inc.