

ORIGINATING AND TERMINATING SENDER LOAD CONTROL TESTS NO. 1 CROSSBAR OFFICES

1. GENERAL

1.01 This section describes a method of testing originating and terminating sender load control features in No. 1 crossbar offices.

1.02 This section is reissued to delete the reroute test of subscriber senders on special service operator class calls, to include a terminating sender operation test when terminating sender timing control circuit functions and to make other minor changes. Due to the general nature of the changes the arrows usually used to indicate these changes have been omitted.

1.03 The tests covered in this section are as follows:

- (A) Subscriber Sender Load Signal
- (B) Subscriber Sender Load Control Alarm and Timing Features
- (C) Subscriber Sender Load Control Routing
- (D) Originating Marker Reroute when Subscriber Sender Timing Control Circuit Functions
- (E) Full Selector Terminating All Senders Busy Signal
- (F) Full Selector Terminating Sender Operation Test when Terminating Sender Timing Control Circuit Functions
- (G) Originating Marker Reroute when Terminating Sender Timing Control Circuit Functions

1.04 Test (A) requires that several subgroups of subscriber senders be removed from service and Tests (B) and (C) require that all subscriber senders equipped for load control be removed from service. These tests, therefore, should be made when the traffic load will permit removing the equipment from service.

1.05 The readings of the traffic registers associated with the sender timing control circuits should be recorded before and

after the tests are made since registrations due to these tests should not be included in the office records.

1.06 In Tests (B) and (E) it may be necessary to have an assistant.

1.07 When Tests (A), (B), (C), (E), (F) and (G) are made various sender load control signals are lighted at the "A" switchboard. Before the start of tests, inform the Traffic Department that tests are being made and that the signals should be disregarded. Inform the Traffic Department when the tests have been completed.

2. APPARATUS

- 2.01 One 716E or the replaced 528 Receiver and a W2AB Cord equipped with 360-Type Cord Tips (2W21A Cord).
- 2.02 One No. 411A Tool (test pick).
- 2.03 One KS-6278 Connecting Clip.
- 2.04 KS-3008 Stop Watch.
- 2.05 No. 322A (make-busy) Plugs.
- 2.06 Automatic Testing Circuit SD-25221-01.
- 2.07 Terminating Sender Test Circuit SD-25159-01.

3. PREPARATION

3.01 Tests (A), (B), (E), (F) and (G): Establish a talking circuit between the frames and the "A" switchboard in order to check the proper operation of the load control signals at the "A" switchboard.

4. METHOD

(A) Subscriber Sender Load Signal

4.01 The LC (load control) key at the originating trouble indicator should be normal so that the senders will not reroute calls during this test.

SECTION 216-753-501

4.02 At the sender make-busy frame insert No. 322A (make-busy) plugs into the subscriber sender GB jacks starting with the lowest numbered subgroup until the number of subgroups required to operate the terminating sender timing control circuit traffic register have been made busy.

4.03 Note that the following lamps light:

LR (load registration) white lamp at sender make-busy frame.

Associated LR (load registration) white lamp at the "A" switchboard.

BY red beehive lamp at the "A" switchboard.

4.04 Remove the plug from the GBO jack. The LR lamp at the sender make-busy frame should remain lighted. Momentarily operate the AR (alarm release) key on the sender make-busy frame and note that the LR lamp is extinguished.

4.05 Insert the plug into next highest GB jack beyond the sender subgroups previously made busy and note that the LR lamp lights again.

4.06 Repeat 4.04 and 4.05 until all sender subgroups have been tested.

4.07 Remove all plugs and momentarily operate the RL (release) key at the "A" switchboard. The LR lamp at the "A" switchboard should be extinguished and the red BY lamp should also be extinguished unless some other alarm is present.

(B) Subscriber Sender Load Control Alarm and Timing Features

4.08 At the sender make-busy frame, insert No. 322A make-busy plugs into the MB jacks of all senders equipped for load control.

4.09 Using a head receiver, momentarily connect battery to one of the five LC leads on the LC relay of the sender load register circuit. The major alarm should sound and the white O-RTA (originating route transfer alarm) lamp on the originating trouble indicator should light. Operate the O-RTA key. The major alarm should be silenced, the O-RTA lamp should be extinguished and the white O-RTG (originating route transfer guard) lamp should light.

4.10 Connect battery to the LC lead again and note that the O-RTA lamp lights while the battery is connected.

4.11 Connect battery to the other four LC leads and see that the O-RTA lamp lights in each case. The battery should be connected to the operating springs on the LC relay, thereby checking the circuit through the back contacts.

4.12 Block non-operated the RT relay of the originating sender load control traffic register circuit. Momentarily operate the ST relay of the load control circuit. The LC relay of the load control circuit should operate and lock and the O-RTA lamp should light.

4.13 Manually operate the CD relay momentarily and note that the LC relay releases and that the O-RTA lamp on the trouble indicator is extinguished.

4.14 Manually operate the CA relay of the load control circuit and note that the O-RTA lamp lights while the relay is operated. Release the CA relay.

Note: Instead of checking that the O-RTA lamp lights, it will be satisfactory to check for the ground on the LC relay with a head receiver.

4.15 Repeat test 4.14 on the CD relay and also on the CB and CC relays when they are furnished.

4.16 Remove the blocking tool from the RT relay. Insert No. 322A plugs into the subscriber sender GB jacks so as to cause the sender load circuit to function as covered in 4.02.

4.17 Operate the LC key at the originating trouble indicator. The white LCK lamp at the "A" switchboard and the O-RTA lamp should light.

4.18 Release the LC key. The LCK lamp should be extinguished and 5 to 12 seconds after the release of the LC key the O-RTA lamp should be extinguished. If the CB and CC relays are furnished, the release time should be 12 to 19 seconds. Check this time interval with the KS-3008 stop watch.

4.19 Remove the plugs from the sender MB and GB jacks. Release the O-RTA key.

(C) Subscriber Sender Load Control Routing

4.20 At the sender make-busy frame insert No. 322A make-busy plugs into the MB jacks of all senders equipped for load control. In the following tests, use the sender test frame as described in 216-251-501 covering the test of

subscriber and "A" switchboard key pulsing sender circuits. By means of the particular circuit feature connect the test frame to the first sender subgroup and to the first sender equipped for sender load control. The two tests covered below in 4.22 and 4.23 should be made on one sender before proceeding to test the next sender.

4.21 Operate the LC and the O-RTA keys at the originating trouble indicator. Block operated the CD relay of the load control timing circuit and make sure that the O-RTA lamp on the trouble indicator lights. This permits the test frame to apply a momentary circuit for operating the sender LC relay and thereby provides a check for its locking circuit.

4.22 Check that the operation of the LC key will have no effect on senders already handling calls and that the sender LC relay has released in the following manner:

(a) Set up a dial tone test call (class key No. 15) on the test frame simulating a call originated by a non-coin class of subscriber.

(b) Operate the ST key. Remove the make-busy plug from the MB jack associated with the sender under test. When dial tone is heard insert a No. 322A plug into the LC jack on the test frame. The dial tone should still be heard.

(c) Reinsert the make-busy plug into the sender MB jack. Release the ST key.

4.23 Where the senders are equipped to cancel the load control features when handling calls from coin box subscribers, check this feature as follows:

(a) Set up the test frame for a three digit operator test (class key 10) simulating a call originated by a coin box class of subscriber. Remove the plug from the LC jack and insert it into the LCC (load control cancelled) jack.

(b) Operate the ST key. Remove the make-busy plug from the sender MB jack. The sender should complete the call without attempting to reroute as indicated by an OK test on the test frame.

(c) Reinsert a make-busy plug into the sender MB jack and release the ST key.

(d) Remove the plug from the LCC jack.

4.24 Advance the test circuit to the next sender equipped for load control.

4.25 Repeat 4.22 to 4.24 until all the senders have been tested.

4.26 Release the LC and O-RTA keys at the originating trouble indicator.

4.27 Remove the plugs from the MB jacks of the senders that have been tested. Remove the blocking tool from the CD relay of the timing circuit. Make sure that the plug has been removed from the LC (or LCC) jack of the test frame so that calls will not be rerouted after the senders are restored to service.

(D) Originating Marker Reroute when Subscriber Sender Timing Control Circuit Functions

4.28 In the following test, use the originating trouble indicator in the manner described in Section 216-261-501 covering the use of the originating trouble indicator for testing originating markers.

4.29 Operate the SLC (sender load control) key and set up a test call but with no office code keys operated.

4.30 Operate a DT key and the ST key and determine from the indicator lamps that the proper district and office frames were selected, one of the proper trunks was seized, channel test was completed and the proper charge function was performed in accordance with information which may be obtained from the cross-connection charts.

4.31 Momentarily operate the RL key and release the DT key. Operate the DT key for the next marker and repeat 4.30 until all markers have been tested.

(E) Full Selector Terminating All Senders Busy Signal

4.32 Block non-operated the T1 relay of the terminating sender timing control circuit.

4.33 Make busy all but one of the terminating sender subgroups by inserting No. 322A plugs into the associated MB jacks at the terminating trouble indicator frame.

4.34 Momentarily insert a plug into the remaining subgroup and observe that the TSB relay and, if provided, the TSBI relay of the timing circuit operates while the plug is in the jack.

4.35 The minor alarm should be given. The red FSB (full select busy) or white TB (ter-

SECTION 216-753-501

minating busy) lamp at the terminating trouble indicator should light. The associated LR lamp at the "A" switchboard should light.

4.36 Remove the MB plugs from the MB jacks at the terminating trouble indicator frame.

4.37 Momentarily operate the ASB (all sender busy) key at the terminating trouble indicator frame. The alarm should be silenced and the TB or FSB lamp should be extinguished.

4.38 Momentarily operate the RL key at the "A" switchboard and note that the LR lamp is extinguished.

4.39 Remove the blocking tool from the T1 relay.

4.40 Repeat the above tests as required where there is more than one group of senders serving other terminating units.

(F) Full Selector Terminating Sender Operation Test When Terminating Sender Timing Control Circuit Functions

4.41 Check that the associated RT (route transfer) keys at the originating trouble indicator are normal. Where there is more than one originating marker unit involved, this applies to all units.

Note: This test should be performed during periods of very light traffic, to eliminate the possibility of sending false overflow signals to the originating senders.

4.42 Block operated the TSB relay if one sender group is provided with load control. Block operated both the TSB and TSB1 relays if two sender groups are provided with load control. The TLC (terminating load control) lamp at the Terminating Trouble Indicator should light.

4.43 Check that the RT relay in the timing control circuit operates in 5 to 12 seconds or 12 to 19 seconds depending on whether or not the T5 and T6 relays are provided. Use the KS-3008 stop watch to check this time interval.

4.44 The red DL (busy delay) lamp at the "A" switchboard should light.

4.45 The IT relay operates and the OFA and OF-relays operate if provided.

4.46 If OFA and OF- relays are not provided proceed with 4.60.

4.47 Block non-operated all OF- relays.

4.48 Make busy the individual senders associated with the lowest numbered OF relay.

4.49 Remove the blocking tool from the lowest numbered OF relay.

4.50 Operate the proper terminating sender test frame keys for trunk disconnect test TD class key No. 5, and set up the test frame on the first sender to be tested.

4.51 Remove the MB plug, from the sender to be tested, while the MGB key is operated momentarily and reinsert the MB plug after the test frame has gained access to the sender.

4.52 Observe the test frame progress lamps and note that trunk disconnect takes place during incoming group selections.

Note: Trouble is indicated if any selection beyond incoming group is made.

4.53 Advance the test frame to the next sender to be tested and repeat 4.51 to 4.52 until all senders associated with the operated OF-relay have been tested.

4.54 Block non-operated the operated OF- relay.

4.55 Remove the MB plugs from the senders associated with the OF- relay which was blocked non-operated in 4.54.

4.56 Make busy the senders associated with the next higher numbered OF relay.

4.57 Remove the blocking tool from the next higher numbered OF relay.

4.58 Proceed as described in 4.51 to 4.57 until all senders associated with OF- relays have been tested.

4.59 Remove the blocking tools from the OF-relays.

4.60 Remove the blocking tool or tools from the TSB or the TSB and TSB1 relays. The RT and, if provided, the OFA and OF- relays release immediately.

4.61 After 28 to 58 seconds the T3 and IT relays release and the DL lamp at the "A" switchboard is extinguished. Use the KS-3008 stop watch to check this interval.

4.62 Restore the test frame to normal.

(G) Originating Marker Reroute when Terminating Sender Timing Control Circuit Functions

- 4.63 In the following test, use the originating trouble indicator in the manner described in Section 216-261-501 covering the use of the trouble indicator for testing originating markers.
- 4.64 Block operated the RT relay or the RT and RTI relays, in the terminating sender timing control circuit associated with the markers to be tested.
- 4.65 Using the office code for the terminating equipment involved, set up a test call on the trouble indicator.
- 4.66 Check for the absence of false closure of RT key contact as follows: Operate the DT key and the ST key and determine from the indicator lamps that a channel to one of the local incoming trunks has been selected.
- 4.67 Momentarily operate the RL (release) key and repeat 4.66 until all markers have been tested.
- 4.68 Make the originating marker busy so that it cannot be seized while the RT key is operated. Operate the RT (route transfer) key associated with the marker that has been made busy. The following signals should be given:
- (a) The red LC (load control) lamp corresponding to the marker under test should light at the "A" switchboard.
 - (b) The white T-RTA (terminating route transfer alarm) lamp on the originating trouble indicator frame should light.
 - (c) The white RTR (route transfer) lamp corresponding to the office code under test should light at the originating trouble indicator.
- 4.69 Operate the T-RTA key at the originating trouble indicator. The white T-RTG (terminating route transfer guard) lamp should light.
- 4.70 Operate the ST key. The call should be routed to an overflow trunk. Momentarily operate the RL key.
- 4.71 Check the locking circuit of the marker RT relay as follows: Operate the ST key again and immediately release the RT key while the marker is performing its functions. The call should be connected to the overflow trunks. Momentarily operate the RL key.
- 4.72 With the release of the RT key associated with the marker under test the LC, RTR and T-RTA lamps should be extinguished. Restore the marker to service.
- 4.73 Make busy the next marker and operate the associated RT key. The associated LC lamp, the RTR and T-RTA lamps should light again.
- 4.74 Repeat 4.70 to 4.73 until all markers have been tested.
- 4.75 Where a marker RT relay is cross-connected to transfer two routes, set up a test call for the second route and repeat 4.68 to 4.74 making sure that the markers are made busy before the associated RT keys are operated.
- 4.76 If there is more than one RT relay per marker for terminating sender load control, repeat tests 4.65 to 4.73 for each relay.
- 4.77 Restore all equipment to normal as follows:
- (a) Remove blocking tools from terminating sender timing control circuit RT or RTI relays. Check that these relays are released by momentarily operating the RT key of an idle marker associated with each terminating sender timing control circuit, and noting that the RTR and the T-RTA lamps do not light.
 - (b) Release the T-RTA key and note that the T-RTG lamp is extinguished.

5. REPORTS

- 5.01 The required record of these tests should be entered on the proper form.
- 5.02 The overload register readings should be noted before and after the tests are made and these readings should be forwarded in accordance with local instructions.

