

MANUAL TEST OF INCOMING SELECTOR CIRCUITS

FROM KEY INDICATOR LOCAL AND KEY PULSING OR KEY INDICATOR TOLL OFFICES

USING TEST SET ES-20150-01 OR ES-239844

GROUND CUTOFF RELAY PANEL OFFICES

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1. GENERAL

1.01 This section describes a method of making tests of key indicator local and repeating incoming circuits and key pulsing and key indicator toll incoming circuits at the incoming frames in ground cutoff relay panel offices. These tests are made by means of the manually operated office, incoming and final selector test set (wagon type) per ES-20150-01 or ES-239844. The tests described are as follows:

- (A) Test Line Test with Compensating Resistance Only
- (B) Test Line Test of Two-Wire Incoming Circuits with Compensating Resistance and Capacity (Except Repeating Incoming)
- (C) Test Line Test of Repeating Incoming Circuits Using Test Networks
- (D) Busy Line Test
- (E) Bell Ringing Test
- (F) Chatter Test of Ring-up Relay in Toll Incoming Circuits (ES-20150-01 Only)
- (G) Test for Tone to Intercepting Operator on Toll Incoming Circuits

1.02 This section has been revised to add tests (D), (E), (F) and (G), to cover the testing of key pulsing toll incoming circuits and to include the checking of the trunk hunting feature of the incoming circuits. Also, more detailed information regarding the operation and functions of the various circuits involved in the tests is covered in this issue. This section cancels Section A263.325 since the information previously covered in that section is now included in this section as test (E).

1.03 The tests are intended for use in testing incoming circuits on a routine basis. They may also be used to check trouble conditions.

1.04 The tests are made at the incoming selector frames and the test set is connected to the proper jacks by means of patching cords. On tests to final multiple test lines, the test set applies

tests to the incoming L and A relays and the test line tests the tripping and supervisory features of the incoming.

1.05 Tests (A), (B) and (C) are test line tests. Test (A) is intended for use in testing incoming circuits over trunk loop conditions as regards resistance only. This test may also be used for making an operation test of the selection features of repeating incoming circuits (not marginal tests of L relay). Test (B) is intended for use in testing two-wire incoming circuits over maximum trunk loop conditions as regards both resistance and capacity. Tests (A) and (B) should be alternated on regularly scheduled test line tests of two-wire incoming circuits equipped with cutoff type jacks. If it is desired to make test (B) on two-wire incoming circuits equipped with bridging type jacks and serving other buildings it will be necessary to open the circuit by removing the heat coils at the main distributing frame in the terminating office. Test (A) can be made on circuits equipped with either type of jack.

1.06 Test (C) is intended for use in making tests of repeating incoming circuits where the test set is arranged to make marginal tests of the L relays of these circuits. If the circuits to be tested are equipped with bridging type jacks instead of cutoff jacks the heat coils must be removed during the test. If this is not practicable or if the test set is not arranged to make this test (no L-NO, L-HLD and L-REL keys provided), test (A) should be used for making an operation test of such circuits.

1.07 Failures of L relays of repeating incoming circuits which have been detected by test (A), should be checked by making test (C). If the test set is not arranged to make this test, the failures should be checked with a No. 35C test set, or equivalent.

1.08 Test (D) may be used when a rapid check test of the operation of the incoming circuit, without making a marginal test of the tripping and supervisory features, is desired.

1.09 Test (F) may be used to detect chatter conditions of the J-type ring-up relay in toll incoming circuits.

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1.10 Test (G) may be used to check the feature provided in toll incoming circuits to give a distinctive tone to the intercepting operator where the DSA switchboards are arranged for completion of intercepted calls.

1.11 The trunk hunting feature of incoming circuits may be checked during any of these tests, if desired, by making the first choice final circuits busy.

1.12 Any incoming circuit on which a failure is encountered when making a test, should be left busy until the trouble has been cleared.

2. APPARATUS

2.01 Office, Incoming and Final Selector Test Set per ES-20150-01 or ES-239844.

2.02 Three P3E Cords equipped with No. 110 Plugs.

2.03 Operator's Telephone Set.

2.04 No. 32A Test Set.

2.05 No. 184 Plugs, as required.

2.06 No. 893 Cord equipped with a No. 360 Tool and a No. 365 Tool on each end. (Test C.)

2.07 No. 528 Receiver equipped with R2AC Cord and No. 110 Plug (Test F).

3. PREPARATION

All Tests

3.01 Before starting the test on two-wire incoming selector circuits, arrange to have the trunks which are associated with the circuits to be tested, made busy at the originating office. The number of trunks to be made busy at one time should depend on the size of the trunk group and the volume of traffic at the time of testing. However, at no time should an entire trunk group be made busy.

3.02 When testing three-wire toll incoming circuits equipped with separate test and make-busy jacks, make the circuits to be tested busy by inserting No. 184 plugs into the MB jacks at the incoming frame.

Note: Do not insert a make-busy plug into the MB jack of a circuit which is off-normal.

3.03 With all test set keys except the numerical keys normal, connect jack B-GRD of the test set to jack A on the incoming frame jack panel.

Note: To avoid possible grounding of the battery supply leads, connect the cord to the test set first and when disconnecting remove the cord from the test set last.

3.04 If a toll incoming selector is under test, connect jack ± of the test set to jack B on the incoming frame jack panel.

3.05 Operate the test set keys when testing the different incoming circuits as follows:

Incoming Circuits	Operate Test Set Keys	
	ES-20150-01	ES-239844
Two-wire key indicator local or repeating	2W-IKI	2KI
Two-wire key pulsing or key indicator toll	2W-TKI	2WI
Three-wire key indicator toll	3WI	3WI

3.06 When using test set ES-20150-01 to test local key indicator incoming circuits having a 350 ohm resistance in series with the A relay windings, operate the KI-350 key.

3.07 Operate the REV key when testing toll incoming circuits which supply battery on the tip and ground on the ring for trunk closure.

3.08 If it is desired to check the trunk hunting feature of the incoming circuits during these tests, make the first choice final circuits busy by inserting No. 184 plugs into the TMB (or MB) jacks at the final frame.

3.09 All covers of relays in the incoming circuit should be in place during the period the test of the circuit is in progress.

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

3.10 Operate the TEL (telephone set) key and connect an operator's telephone set to the TEL jacks of the test set in order to check for tone or the audible ringing signal, or to talk to the intercepting operator.

Note: When using test set ES-239844, the TEL key should not be operated until after selections have been completed. When testing local key indicator incomings, the TEL key should not be operated at any time during the test if its operation disconnects the battery and ground supply in the test set from the tip and ring leads to the incoming.

4. METHOD

All Tests

4.01 Connect jack TST of the test set to the T (or TMB) jack of the incoming circuit to be tested.

Note: To avoid releasing a service connection, do not connect to a T jack of the cutoff type or to a TMB jack if the associated selector is off-normal.

(A) Test Line Test with Compensating Resistance Only

4.02 With the L-NO and L-HLD or L-REL keys normal, if provided, operate the compensating resistance keys so that the resistance furnished by the test set added to that wired in the incoming circuit, if provided, will give the total compensating resistance values listed below. No capacity should be introduced in the circuit by the test set.

<u>Resistance of L Relay</u>	<u>Total Compensating Resistance Required for Test</u>
1000 ohms	1500 ohms
500 ohms (206 type relay in repeating incomings)	900 ohms

Note: In those cases where the test set is not arranged to provide the exact amount of resistance required, the next lowest value which it is possible to obtain should be used.

4.03 Depress keys in the TH, H, T and U rows of numerical keys corresponding to the number of the final multiple test line used for testing incoming selectors.

Note: In offices having immediate ringing a separate final multiple test line is provided for testing toll incomings.

4.04 Momentarily operate the ST (start) key to start the test. The TST lamp lights as an indication that the test is in progress.

4.05 Observe the incoming selector during the test and note any irregular operations, such as sluggish up-drive, slipping sequence switch drive disc, etc.

4.06 Incoming and final selections are made in accordance with the operated test set keys to select an idle final multiple test line or one of the other test lines.

Note 1: If the trunk hunting feature is being checked, the steady lighting of the OF (overflow) lamp indicates that the incoming failed to trunk hunt and has selected one of the final circuits made busy. The OF lamp also lights if the incoming selector goes to overflow due to all trunks being busy or to understepping on group selection, or if the final selector goes to telltale.

Note 2: When testing repeating incoming circuits under test (A), if a failure occurs on a circuit during selections, make test (C), if possible, to determine whether apparatus readjustments are required.

4.07 After selections have been completed, the incoming circuit advances to the awaiting sender and reverse battery position. The test set checks that the incoming applies reverse battery to tip and ring conductors (ground on tip and battery on ring). The OF lamp lights momentarily as an indication that this test was satisfactory.

Note: With the REV key operated, the test set checks for battery on tip and ground on the ring.

4.08 When the incoming advances out of the awaiting sender position to the trunk closure position, the IO-OK (incoming OK) lamp is lighted.

Note 1: When testing three-wire toll incomings the test set checks for battery on the sleeve of the incoming during trunk closure. In this case the IO-Ok lamp lights as an indication of a satisfactory test.

Note 2: When using test set per ES-239844, operate the TEL key if it is desired to listen to the audible ringing signal or any tone indications or to listen to the progress of a call. With this key operated the signals are heard in the telephone set receiver but no lamp supervisory signals are obtained. This check should be omitted on local key indicator incomings under certain conditions as covered in 3.10.

4.09 When a local or repeating incoming is in the trunk closure position, the KI (key indicator) lamp lights and an operate test is applied to the A relay through both windings in series. If this test is satisfactory the incoming advances to the ringing position and connects ringing current to the test line.

Note 1: In the case of toll two-wire or three-wire circuits the incoming completes trunk closure and advances to the ringing and talking position at which time the IO-OK

lamp is extinguished. Then operate and release the R+ or + KI key. This applies a ringing current operate test to the R2 (ring-up) relay in the incoming. For three-wire toll incomings not equipped with J type relays, use the + key instead of the R+ key. The (IO-OK) lamp lights during the interval that the ringing key is operated. If the operate test of the R2 relay is satisfactory the incoming connects ringing current to the test line.

Note 2: The test set ES-239844 does not apply a marginal test to the A relay of local or repeating incoming circuits.

4.10 The final multiple test line checks for ringing ground and for immediate ringing. A check is also made for the open period between immediate ringing and machine ringing.

Note 1: The check for immediate ringing or for the open period is omitted if the incoming is not arranged for immediate ringing.

Note 2: Some test lines are not arranged to check for ringing ground.

4.11 Check that the audible ringing signal is heard in the telephone set receiver for at least one ringing interval.

Note: When using test set per ES-239844, restore the TEL key to normal after listening to the audible ringing signal if it is desired to observe the lighting of the supervisory lamps.

4.12 As soon as the test line receives machine ringing current from the incoming circuit it functions to apply a non-operate (pre-trip) test to the R (trip) relay in the incoming. The failure of this test is indicated by rapidly interrupted ringing tone instead of the audible ringing signal in the telephone set receiver.

Note 1: On final multiple test lines arranged for four-party selective ringing and equipped with a resistance instead of a condenser in series with the primary winding of the PW relay, a check is made for the polarity of the superimposed ringing current corresponding to the final choice in which the test lines are located.

Note 2: The earlier type of final multiple test lines are not arranged to transmit interrupted ringing tone.

4.13 The test line then advances and applies an operate (trip) test to the R relay. If the R relay fails to operate on

this test, the audible ringing signal will continue to be heard in the telephone set receiver.

4.14 If the tripping tests are satisfactory a local or repeating incoming advances to the talking position. Toll incomings remain in the ringing and talking position. The test line makes a check to determine if the talking battery received from the incoming is of the proper polarity. The failure of this test is indicated by the stopping of the test set.

Note: The earlier test lines are not arranged to make this check.

4.15 The test line then advances and applies a long pulse of soak current to the incoming S (supervisory) relay. This pulse is followed by a release test and two soak-release tests. A second long pulse is applied by the test line, followed by an open circuit release test and two operate-open circuit release tests.

Note: The earlier test lines are arranged to apply soak current to the supervisory relay followed by a release test. The test line then advances and applies an operate and a release test alternately to the supervisory relay until disconnection.

4.16 During the supervisory relay tests, the lighting of the KI or IO-OK lamp should be observed. If these tests on local and repeating incomings are satisfactory the IO-OK lamp remains lighted and the KI lamp is extinguished six times. The dark periods consist of one long interval followed by two short intervals, then another long interval followed by two short intervals. After the last dark interval the KI lamp remains lighted. In the case of key pulsing or key indicator toll circuits the IO-OK lamp should light six times. This series of flashes consists of one long flash followed by two short flashes, then another long flash followed by two short flashes. The lamp then remains extinguished.

Note 1: The KI lamp may be extinguished or the IO-OK lamp lighted momentarily when ringing is tripped and would occur previous to the first long dark interval or flash. This does not indicate a trouble condition and such an interval should be disregarded.

Note 2: With the earlier test lines, the KI lamp is extinguished and flashed or the IO-OK lamp is lighted and flashed at regular intervals until disconnection.

4.17 After the supervisory relay test has been completed, the test line advances and connects a tone to the incoming

circuit as an indication that all tests have been completed satisfactorily by the test line. This tone is heard in the telephone set receiver as a tick tock tone.

Note: The earlier test lines are not arranged for the tick tock tone, and the proper lamp signals during the supervisory relay test should be taken as an indication of the satisfactory completion of the test.

4.18 Momentarily operate the DISC (disconnect) key. The incoming and final selector circuits and the test set restore to normal. Observe that the trip magnet operates during the down-drive of the incoming selector. As the final selector returns to normal the test line advances and restores to normal. All lamps are extinguished.

Note 1: When testing two-wire toll key indicator incomings requiring battery and ground disconnect supervision, momentarily operate the DISC key and after the incoming advances to the awaiting release position, operate the TKI-D (toll key indicator disconnect) key and hold it operated until the selector rod starts to down-drive. The test set ES-20150-01 applies an operate test to the A relay in the incoming. If this test is satisfactory the incoming restores to normal.

Note 2: In the earlier incoming circuits the trip magnet is not arranged to operate during the down-drive period.

Note 3: The BY lamp should light during the return to normal of a three-wire toll incoming as an indication that the circuit has applied a busy condition to the sleeve during this interval.

Repeat Test

4.19 To repeat this test, momentarily operate the ST key after the test set has restored to normal. After the tests on the circuit have been completed, momentarily operate the DISC key or the DISC and TKI-D keys to restore the test set and associated circuits to normal.

Disconnection

4.20 If any of the other tests are to be made on the incoming under test, restore any keys not required to be operated for the next test.

4.21 If no further tests are to be made on the circuit under test and the same test is to be made on other circuits on the same side of the frame, disconnect the plug from the T (or TMB) jack and reconnect it

to the corresponding jack of the next circuit to be tested. The proper compensating resistance keys should be operated for the incoming circuit to be tested.

Note: Before disconnecting the test set from an incoming circuit, observe that the incoming is normal.

4.22 When testing is completed on the last circuit, restore all operated keys to normal and disconnect all cords. Then remove the No. 184 plugs from the MB jacks, if provided, or arrange to have the busy trunks made available for service at the originating office. Any heat coils that have been removed should be replaced.

(B) Test Line Test of Two-Wire Incoming Circuits With Compensating Resistance and Capacity (Except Repeating Incomings)

4.23 The purpose of this test is to add capacity to the fundamental circuit during incoming and final selections to simulate maximum trunk loop conditions in order to test the circuit for overstepping. This test should not be made on repeating incoming circuits.

Note: When testing incoming circuits serving other buildings and the circuits are equipped with bridging instead of cutoff jacks, it will be necessary to open the trunk circuit during the test by removing the heat coils at the main distributing frame in the terminating office.

4.24 With the L-NO and L-HLD or L-REL keys normal, if provided, operate the compensating resistance and capacity keys to provide the proper values as follows:

Test Set	Compensating Resistance in Circuit	
	200 Ohms or Less	More Than 200 Ohms
ES-20150-01 or ES-239844 with 1.38 MF key	(1300-r) ohms 1.38 MF key	(1300-r) ohms 1.38 MF key
ES-20150-01 with FCR key	FCR key	(1300-r) ohms 1.25 MF
ES-239844 with FCR key	FCR key	*(1500-r) ohms
ES-239844 without FCR or 1.38 MF keys		*(1500-r) ohms *(1500-r) ohms

Note 1: In the table, the letter "r" refers to the compensating resistance wired in the incoming circuit under test. This value should be subtracted from the 1300 or 1500 ohm values to determine the compensating resistance required and the keys to be operated.

Note 2: The asterisk (*) indicates that the compensating resistance keys should be operated in the MF (capacity) direction. This connects both resistance and capacity in the circuit.

Note 3: In those cases where the test set is not arranged to provide the exact amount of resistance required, the next lowest value which it is possible to obtain should be used.

4.25 Proceed in accordance with 4.03 to 4.22. The compensating resistance and capacity values required should be checked for each circuit tested.

(C) Test Line Test of Repeating Incoming Circuits Using Test Networks

4.26 This test is for the purpose of making a check test of the selection features of repeating incoming circuits.

Note 1: If the compensating resistance wired in the circuit under test exceeds 500 ohms, it will be necessary to short-circuit this resistance with the No. 893 cord during the test. This cord should be used only at the front of the frame to avoid leaving it connected when the circuit is restored to service.

Note 2: When testing repeating incoming circuits serving other buildings and the circuits are equipped with bridging jacks instead of cutoff jacks, it will be necessary to open the trunk circuit during the test by removing the heat coils at the main distributing frame in the terminating office.

4.27 With all compensating resistance keys and the 1.38 MF key normal, operate the L-HLD (L relay hold) key. This arranges the test set to make a hold test of the L relay. Then proceed as described in 4.03 to 4.18. The hold test of the L relay is made during final selections (selection beyond).

4.28 After the test set and associated circuits have returned to normal, restore the L-HLD key to normal and operate the L-REL (L relay release) key. Then proceed as described in 4.04 to 4.22. The release test of the L relay in the incoming is made during incoming brush and group selections and final selections. This test checks the L relay for its ability to release quickly enough to avoid overstepping.

(D) Busy Line Test

4.29 This test is for the purpose of checking the operation of the incoming on a busy line condition. Since the final selector is directed to a busy line

instead of a final multiple test line, marginal tests are not made on the trip and supervisory relays.

4.30 Operate the compensating resistance keys as described in 4.02. Depress keys in the TH, H, T and U rows of numerical keys corresponding to the number of the permanently made busy final terminal. Then proceed with the test as described in 4.04 to 4.09. All tests covered in these paragraphs are made. As the incoming advances to the ringing position, busy-back current from the final circuit causes ringing to be tripped and the incoming S relay operates and releases in accordance with the busy-back interruptions to flash the KI or the IO-OK lamp. Observe that the lamp flashes at the busy-back rate. Then proceed in accordance with 4.18 to 4.22.

(E) Bell Ringing Test

4.31 This test is used to supplement the test line test in checking the ringing on party lines and for making rapid ringing tests. The final multiple test line used in the test line tests, checks only for the ringing current applied to the particular final choice in which the test lines are located.

Note: In four-party offices, two bell ringing test lines are provided, one for each of final groups 0-499 and 500-999 or equivalent, to provide for checking the two ringing choices. Ordinarily, when this test follows a test to a final multiple test line it will be necessary to check only the ringing choice not tested by the final multiple test line. However, in offices arranged for four-party selective ringing and the final multiple test lines are equipped with a condenser instead of a resistance in series with the PW relay, a ringing polarity check is not made during test line tests. In this case a bell ringing test for both ringing choices will be required to check the polarity of the positive and negative superimposed current supplied by the incoming circuit. The test line is equipped with two subsets for this purpose, each subset having gongs of a different tone. In offices having individual, two-party selective or four-party semi-selective ringing, only one subset is provided.

4.32 Connect test line jack C to bell set jack D on the incoming frame jack panel. This connects the subset or subsets used for ringing tests to the final terminals used in making the test.

Note: Where two bell ringing test lines are provided, jack C is common to both test lines.

4.33 Operate the compensating resistance keys as described in 4.02. Then depress keys in the TH, H, T and U rows of numerical keys to correspond to the number of the bell ringing test line which is associated with the ringing choice to be tested.

4.34 Proceed with the test as described in 4.04 to 4.09. The incoming connects ringing current to the test line associated with the subset or subsets.

4.35 Observe that the test line bell rings in accordance with the ringing current provided for the final choice in which the test line is located. Also observe that the audible ringing signal is heard in the telephone set receiver.

Note: When using test set per ES-239844, restore the TEL key to normal after observing the audible ringing signal for at least one ringing interval.

4.36 Momentarily operate the DISC key. The incoming and final selector circuits and the test set restore to normal. The TST lamp is extinguished.

Note: The BY lamp lights during the return to normal of a three-wire incoming circuit.

4.37 To make a test of the other ringing choice on circuits arranged for four-party ringing, proceed in accordance with 4.33 to 4.36 using the bell ringing test line number associated with the ringing choice to be tested.

Repeat Test

4.38 To repeat this test, momentarily operate the ST key after the test set has restored to normal. The test proceeds as described in 4.34 to 4.36.

Disconnection

4.39 At the completion of this test proceed in accordance with 4.20 to 4.22.

(F) Chatter Test of Ring-up Relay in Toll Incoming Circuits (ES-20150-01 Only)

4.40 This test is used to check the J-type ring-up (R2) relay in toll incoming circuits for chatter conditions by the listening method. To apply full voltage ringing current to the relay the test set must be equipped with a \pm key.

4.41 Operate the compensating resistance keys as described in 4.02. Then depress keys in the TH, H, T and U rows of numerical keys to correspond to the number of the bell ringing test line.

4.42 Proceed with the test as described in 4.04 to 4.08. The IO-OK lamp lights and is extinguished as the incoming advances to the ringing and talking position.

4.43 Connect a test receiver to test line jack C on the incoming frame jack panel. This connects the test receiver to the test line from the final multiple.

4.44 Hold the test receiver away from the ear and then operate and release the \pm ringing key several times. This applies full ringing voltage to the test line. A click will be heard each time the key is operated to apply ringing current. Observe that ringing current is then heard in the receiver but that no further clicks are heard during the continuous application of ringing current. A series of clicks occurring during the interval the ringing key is held operated is probably due to faulty adjustments of the incoming ringing relays and should be investigated.

4.45 Momentarily operate the DISC key. The incoming circuit and the test set restore to normal.

Disconnection

4.46 At the completion of this test disconnect the test receiver and then proceed in accordance with 4.20 to 4.22.

(G) Test for Tone to Intercepting Operator on Toll Incoming Circuits

4.47 This test is for the purpose of checking the tone feature in the toll incoming circuits. This feature provides a tone on toll calls answered by the intercepting operator.

4.48 Operate the compensating resistance keys as described in 4.02. Then depress keys in the TH, H, T and U rows of numerical keys to correspond to the number of a final terminal which is connected to an intercepting trunk.

4.49 Proceed with the test as described in 4.04 to 4.09. The IO-OK lamp lights and is extinguished as the incoming advances to the ringing and talking position.

4.50 Observe the progress of the call by means of the telephone set receiver. As the intercepting operator answers on the connection, ringing is tripped and the incoming functions to apply tone to the operator. This tone is not heard in the receiver.

4.51 As soon as the operator challenges on the connection, ask her whether the tone signal was received on the call.

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If the tone signal was received satisfactorily, restore the circuits to normal in accordance with 4.18.

Note: When using test set per ES-239844, restore the TEL key to normal before restoring the circuits to normal.

Disconnection

4.52 At the completion of this test proceed in accordance with 4.20 to 4.22.

5. SPECIAL FEATURES

Trouble Restore

5.01 Momentarily operate the DISC key or the DISC and TKI-D keys when it is desired to restore the test set to normal after the test set has blocked on a trouble condition

Step-by-Step Advance

5.02 The step-by-step control feature permits canceling the automatic advance of the test set in those cases where it is desired to advance the test set by steps during the progress of a test in order to make observations on a particular test.

5.03 Operate the STP (step-by-step) key and then momentarily operate the ST key to start the test. The test set stops after each of certain selections consisting of incoming brush and group selections and final brush and tens selections have been completed.

5.04 To advance the test set under this condition, momentarily operate the ST key. After the desired selections have been checked, restore the STP key to normal and the test set proceeds with the remaining operations of the test.

Remote Control

5.05 This feature provides a convenient means of starting a test, of advancing the test set in steps and of restoring the test set to normal while observing the operation of the incoming circuit.

5.06 With the test set keys required for a particular test in an operated position, insert the plug of a No. 32A test set into the EX-K (extension key) jack of the test set. If it is desired to control the test in steps, operate the STP key.

5.07 To start the test or to advance the test set in steps where the STP key is operated, momentarily depress the WH (white) key of the No. 32A test set. This simulates the operation and release of the ST key of the selector test set.

5.08 To restore the test set to normal on a satisfactory test or if the test set blocks on a trouble condition, momentarily depress the RED key of the No. 32A test set. The operation of this key simulates the operation and release of the DISC key of the selector test set. To repeat the test after the test set restores to normal, momentarily depress the WH key.

Note: To disconnect on two-wire toll incoming circuits requiring battery and ground disconnect supervision, momentarily depress the RED key and then operate the TKI-D key of the selector test set until the selector down-drives.

6. REPORTS

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