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CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENTCD-21355-01
Issue 2-D
Appendix 3-D
Dwg. Issue 5-DPANEL SYSTEM
TEST TRUNK SECOND SELECTOR CIRCUIT
FOR TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
IN GROUND CUT OFF RELAY OFFICES

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded By

E6434 Relay
R1061 RelayE6427 Relay
R1042 Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of the E6434 and R1061 relays
is rated "Mfr. Disc." to show realistic ratings for obsolescent apparatus.

D.2 Note 109 is added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3440-CEK-EWO-K1

10198

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CIRCUIT DESCRIPTION
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PANEL SYSTEM
TEST TRUNK SECOND SELECTOR CIRCUIT
FOR TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
IN GROUND CUTOFF RELAY OFFICES

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Silver plating indication is added for cams D, E, F, G, H, I, J, K, L, & M to agree with apparatus change, made for improved transmission.
- D.2 Note 108 added, regarding connections at seq. sw. magnets.

All other headings, No Change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 332

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PANEL SYSTEM
TEST TRUNK SECOND SELECTOR CIRCUIT
FOR TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
IN GROUND CUT-OFF RELAY OFFICES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO
ADDED OR REMOVED APPARATUS

- C.1 The test clip data for the various relays are brought up to date by changing them from "RU", "LL", "LU", etc., to "RT", "LB", "LT", etc. respectively.

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 A wiring change is made to insure that relay (T) locks up regardless of the time required by relay (H1) in operating. Under the new change, relay (T) is locked directly to cam (Y) instead of through the front contacts of relay (H1), as before.

The new wiring, designated "W", is superimposed upon "X" wiring, which is used when relays (AD) and (H1) are furnished. The portions of "X" wiring which are replaced by "W" wiring are designated "XX". "Z" wiring, which also is involved in the change, is separated from the main drawing.

Notes 106 and 107 are added to record the change.

- D.2 In circuit note 101, the expression "from 48 V. sig. bat." is added.
- D.3 In the circuit title, the expression "For Use With "B" Switchboard" is removed.

All other headings no change.

AMERICAN TELEPHONE & TELEGRAPH CO.,
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DEPT. 332-A

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PANEL SYSTEM
TEST TRUNK SECOND SELECTOR CIRCUIT
FOR TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
FOR USE WITH "B" SWITCHBOARD
IN GROUND CUT-OFF RELAY OFFICES

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 None.

B. CHANGES IN APPARATUS

B.1 None.

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE
APPLYING TO ADDED OR REMOVED APPARATUS

C.1 The test operate value for the (L) El26 relay formerly
was: op. .023 amp.

C.2 Test note 2 has been added and reference made to it at
the (L) relay.

C.3 The title of the requirements table has been changed from
"Test Circuit Second Test Selector (2nd TST SEL)" to
"Test Trunk Second Selector (TT 2nd SEL)".

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The connecting information has been changed from "To first
test selector circuit" to "To test trunk first selector
circuit".

D.2 The cross connecting diagram has been changed to show
terminals on the frame instead of a terminal block.

D.3 Prior to Issue 2-D the title of this circuit was:

PANEL SYSTEM
TEST CIRCUIT
SECOND TEST SELECTOR
FOR TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
FOR USE WITH "B" SWITCHBOARD
IN GROUND CUT-OFF RELAY OFFICES

DEVELOPMENT

1. PURPOSE OF CIRCUIT

- 1.1 This circuit is part of a selector train used to make connections between a test desk and a subscribers line, providing means for controlling the cut-off relay in the line circuit.

2. WORKING LIMITS

- 2.1 None.

OPERATION

3. FUNCTIONS

- 3.1 To select proper final group under control of the test trunk first selector and sender circuits.
- 3.2 To select idle trunk in the group.
- 3.3 To transmit ground pulses to the sender during selection.
- 3.4 To transmit an overflow signal to the test trunk first selector.
- 3.5 To put busy condition on the sleeve of the selected final circuit.
- 3.6 To provide a clear "T and R" lead from the test trunk first selector to the final selector after selection in this circuit is completed.
- 3.7 To keep "R and T", "SC" leads to final selector open during selection and trunk hunting in this circuit.
- 3.8 To remove ground from the sleeve while sequence switch is returning to normal.
- 3.9 To return to normal when released by the test trunk first selector circuit.
- 3.10 Arranged to disconnect from the final circuit without awaiting the subscribers release.

3.11 To return to normal when moved off by hand.

4. CONNECTING CIRCUITS

4.1 Test trunk first selector circuit.

4.2 Final circuit arranged for testing.

DETAILED DESCRIPTION

5. SEIZURE

When the circuit is seized by a test trunk first selector circuit and the latter has advanced into the selection position for this circuit, the (L) relay operates through (SS2-0) and (SS3-0) over the tip. The (L) relay operated, operates the (T) and (SW) relays. The (SW) relay operated, (a) operates the (H) relay which locks to the "S" lead, (b) closes the pulsing lead so as to open the pulsing lead when going to overflow without sending an extra pulse to the sender. The (L) relay locks to the "T" lead. The (H) and (T) relays operated advances the sequence switch to position 2. When (X) apparatus is used, the (H1) relay follows the operation of the (H) relay.

6. SELECTION

This circuit makes a selection which corresponds to group selection in the incoming selector circuit. As the switch passes through position 1-5/8, a ground closure on (SS3-X) through the 2-T and 1-T contacts of the (SW) relay is sent back over the "T" lead to the sender. The (T) relay operated, advances the switch as far as position 6. As the switch passes through position 5-5/8 a second ground closure is sent back to the sender. The (SW) relay is held operated as long as the (L) relay remains operated in positions 1 to 15 of the sequence switch. The (SW) relay operated, advances the switch to position 7. In position 7, the (T) relay advances the switch again and moves it as far as position 10. When the switch advances through position 9-5/8 a third pulse is sent back to the sender. If the sender is primed to open the fundamental circuit when three pulses are received the (L) relay will release. The (SW) relay remains operated through its own contact to ground on (SS2-X) and advances the switch to position 11. In position 10, the (T) relay is held by the secondary winding to ground on (SS3-Y). In position 10-1/4, 10-3/4 the primary winding of the (T) relay is connected to the sleeve lead of the first final in the group as follows: (T) relay winding 3T-4T (T) 4T-3T (OF) 1T-2T (CT) (SS2-Q) to the sleeve of the first final in the group on (SS4-R). Assuming that this final is busy, the (T) relay holds to the sleeve until the switch leaves position 10-3/4 and to (SS3-Y) until it leaves position 11. The (T) relay op-

erated, advances the switch to position 12. When the switch enters position 11-1/4, the (T) relay winding is connected to the sleeve of the second trunk in the group as follows: (T) relay primary winding 3T-4T (T) 2T-1T (OF) 4B-5B (CT) (SS2-N) to the sleeve of the second final in the group on (SS4-O). Assuming that this circuit is not in use, the (T) relay will release when the switch breaks position 11 and will stop the sequence switch in position 12. The (T) relay released, puts an immediate busy condition on the sleeve to make the selector circuit busy. The (T) relay released, operates the T-1 and this operates the (CT) relay which cuts the "T", "R" and "SC" leads through to the final circuit and opens the immediate make busy circuit to the sleeve cams. The sleeve of the final selector is now held busy as follows: (SS4-O), (SS3-N), 1B-2B (T-1), 4T-5T (T) and 1T-2T (H) to ground.

7. DISCONNECTION

When the test trunk first selector returns to normal upon disconnection, the ground on the "S" lead incoming to this circuit is removed, causing the (H) relay to release. The (H) relay released, (a) "Y" wiring returns the sequence switch to normal, (b) makes the sleeve lead "S" to the test trunk first selector busy by connecting ground to it from (SS1-Y), (c) removes the ground from sleeves of finals while the sequence switch is returning to normal. When "X" apparatus is used, the release of the (H) relay operates the (AD) relay during the slow releasing period of the (H1) relay. When the (AD) relay operates, its secondary winding is closed to the "SC" lead operating a relay in the final circuit which cancels the await subscribers release feature. The (AD) relay holds the (CT) relay operated and prevents the (R2) sequence switch from returning to normal until the final circuit opens the holding circuit of the (AD) relay.

8. OVERFLOW

If the circuit goes to overflow while trunk hunting, the (T) relay will be operated in the last position of the group (position 14 for the case assumed). The (T) relay operated in position 14, operates the (SO) relay, the (SW) relay having released. The function of the (SO) relay is to introduce a delay before operating the (OF) relay to prevent possible false operation of the (OF) relay due to cam variation. The (SO) relay operated, operates the (OF) relay. It will put ground back over the "SC" lead to the test trunk first selector and open the immediate make busy path to the sleeve so that if the circuit becomes idle, this selector will not put a busy condition on it. The ground sent back over the "SC" lead, causes the test trunk first selector to advance to the overflow position giving the test man an interrupted tone instead of a

steady tone. This current will remain in position 14 or any other of the last positions of the groups until disconnection takes place at the desk holding the operating circuit of the (CT) relay open.

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