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GIRCUIT DESCRIPTION SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-21554-01 Issue 6-B Dwg. Issue 7-B

PANEL SYSTEM INTERCEPTING AND VERIFICATION REQUEST TRUNK CIRCUIT FROM FINAL MULTIPLE FOR USE WITH TRUNK FINDER AND OUTGOING TRUNK CIRCUIT TO CENTRAL "A" SWITCHBOARD

CHANGES

- C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS
- C.l Test Note 2 added to avoid chatter of relay (SL).
- D. DESCRIPTION OF CIRCUIT CHANGES

D.l Option "V" for vacant and unassigned numbers is shown on the cross connection figures by reversal of the tip and ring on the jumper side.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used to connect certain types of calls to an intercept operator or to the intercept Announcement Machine.

2. WORKING LIMITS

- 2,1 None.
- 3. FUNCTIONS

3.01 To start a trunk finder hunting for this circuit as soon as this circuit is seized by a final selector.

3.02 To mark the "H" terminal of this circuit on the trunk finder multiple in order to cause the trunk finder to stop on the proper terminals.

3.03 To free the trip, start and allotter circuit for use on other calls as soon as a trunk finder finds this circuit.

3.04 To hold the trunk finder under control of the calling subscriber prior to the answer of the intercepting operator.

3.05 To prevent a reseizure of this circuit until freed by the trunk finder, in case the final selector drops off first.

3.06 To prevent starting another trunk finder when the trunk finder drops off first.

- 3.07 To provide for PBX hunting on the sleeve.
- 3.08 To provide a talking path from the final selector to the trunk finder.
- 3.09 To provide locked-in visible alarms and to cause an audible alarm to be sounded in case the ring conductor becomes grounded while this circuit is normal.

3.10 To provide means for removing the locking path of the alarm relay, transferring the audible alarm path to the back contacts of the alarm relay and silencing the audible alarm until the alarm relay is released.

3.11 To provide a visible guard signal while the audible alarm path is transferred to the back contacts of the alarm relay.

3.12 To disconnect the alarm relay from the ring conductor while this circuit is in use.

- 3.13 To connect the following calls to an intercept operator:
- (a) Verification request.
 - (b) Calls to lines on which the number has been changed.
 - (c) Calls to lines which have been denied service due to non-payment.
 - (d) Calls to lines which have X been disconnected.

3.14 To connect calls for vacant or unassigned numbers, to the intercept Announcement Machine merely by reversing tip and ring leads.

4. CONNECTING CIRCUITS'

When this circuit is listed on a key sheet the connecting information thereon is to be followed.

4.1 Standard battery cut-off final selector circuits - SD-21200-01.

4.2 Ground cut-off final selector circuits - ES-239664.

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4.3 Intercepting trunk finder and outgoing trunk circuit - SD-21560-01.

4.4 Trip, start and allotter circuit for intercepting trunk finders -SD-21561-01.

- 4.5 Floor alarm board, miscellaneous and auxiliary alarm circuit -SD-21203-01.
- 4.6 Subscriber line circuit, Line Link and connector circuit - SD-25553-01.
- 4.7 Line Choice Connector Circuit -SD-25275-01.
- 4.8 Number Group Connector Circuit SD-25276-01.

DESCRIPTION OF OPERATION

5. SEIZURE

When this circuit is seised by a final selector, relay (SL) operates and locks to the "S" lead, operating relay (SL) if Figs. 1 and B are provided. The operation of relay (SL) or relays (SL) and (SL1) grounds lead "A" to the trip start and allotter circuit, causing a trunk finder to hunt for this circuit, and connects lead "H" from the trip, start and allotter circuit through to lead "H" to the "H" terminal of this circuit on the multiple bank in the trunk finder and outgoing trunk circuit. Relay (SL) also removes battery through relay (GT) from the ring conductor.

6. CIRCUIT FOUND BY TRUNK FINDER

When the trunk finder finds this circuit and stops on the proper terminals, ground is connected to lead "S" from the trunk finder, operating relay (CO) which locks to relay (SL) in Fig. A or 4 or (SL1) in Fig. B. Relay (CO) opens leads "A" and "H" to the trip, start and allotter circuit, thus freeing that circuit for use on other calls, and grounds lead "H" of the trunk finder, holding the trunk finder under the control of the calling end until the operator answers. Relay (CO) also prepares a future make-busy path for the final terminals of this circuit, opens the operate path of relay (SL) and provides another open in the operate path of relay (GT) so as to prevent this relay from operating falsely to ground on the ring from the trunk finder in case the calling end disconnects first. The tip and ring leads are permanently connected from the final terminals to the trunk finder terminals to provide a talking path when the intercepting operator answers.

7. DISCONNECTION

If the calling end disconnects first, relay (SL) releases when the final selector drops off, connecting battery through resistance (A), (Fig. 4, A, or B) to the sleeve terminal to hold this circuit busy. If Fig. 1 is provided with either Fig. A or Fig. B, ground through resistance (B) is also connected to the sleeve terminal. Relay (SL) also releases relay (SL1) if prowided. The release of relay (SL) or relays (SL) and (SL1) opens the locking path of relay (CO) which remains held from the trunk finder, and removes ground from lead "H" to the trunk finder. If the intercepting operator has not answered, this causes the trunk finder to release, releasing relay (CO). If the operator has answered, removal of ground from lead "H" performs the useful function. When relay (CO) releases, due to the release of the trunk finder at any time after relay (SL) is released, the circuit is restored to normal. If the trunk finder is released by the operator before the calling end has disconnected, relay (CO) remains locked to relay (SL) or (SL1) until the calling end disconnects. When this occurs, relays (SL) and (CO) release, restoring the circuit to normal. Relay (SL1), if provided, releases at this time.

8. GROUND ALARM

In case the ring conductor of this circuit should become grounded due to a trouble condition, the supervisory relay of the incoming selector would operate falsely on calls to this circuit. In order to bring this condition to the attention of the maintenance force as soon as it occurs the equipment in Fig. 2 is provided, one per 20 Figures 1. When the trouble ground occurs, relay (GT) operates. Relay (GT) is made sensitive enough so that it will operate on any resistance to ground which might operate the supervisory relay of any in-coming selector circuit. Relay (GT) operates relay (GA), which locks under control of key (GA), when "W" wiring is used, lights the (GA) lamp and the (GP) aisle-pilot lamp and grounds lead "GA" to the floor alarm board miscellaneous and auxiliary alarm circuit, causing an audible alarm to sound and a lamp on the floor alarm board to light. When the maintenance man answers this alarm, he will operate the (GA) key, lighting the guard lamp (GD), extinguishing the aisle pilot lamp and removing ground from lead "GA" thus silencing the audible alarm. Relays (GT) and (GA) will remain operated and the (GA) lamp will remain lighted until the trouble is cleared or until the (CO) or (SL) relay of the circuit in trouble is operated. With relay (GA) released and key (GA) operated, the audible alarm will sound and the aisle pilot lamp will be lighted until the key is restored.

9. "X" AND "Y" WIRING

When this circuit is used as the first or intermediate trunk in a PBX group, "Y" wiring is used in order to cause the final selector to "PBX" hunt". "X" wiring is used

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when this circuit is used as the last trunk in a PBX group. If Fig. 4 is provided, "X" wiring is also used where PBX hunting is not required.

10. "V" OPTION

Provision is made to segregate vacant and unassigned numbers at the final multiple. This is done to enable the trunk finder to route calls for vacant or unassigned numbers, to the intercept Announcement Machine. This is accomplished by the addition of "V" option to Fig. 1 and Fig. 4. Segregation of a vacant or unassigned number is accomplished by the reversal of the tip and ring connections. Ringing on the tip lead is used by the outgoing intercept trunk as a signal that call had been directed to an unassigned or vacant number.

11. "T" OPTION

"T" option is furnished in Fig. A or Fig. B to prevent occasional overstepping of battery cut-off final selectors on certain individual lines or the last line of a PBX group. The (SL) resistance in parallel with the (SL) relay winding increases the potential at the sleeve, thereby assuring a heavier current flow and increasing the speed of operation of the marginal relay in the final selector circuit.

12. FIGURE 5 (SPECIAL)

When this trunk is chosen at the number group connector circuit the terminating marker connects ground to the "ANS" lead which operates the (S) relay and through its make contacts operates the (SL) relay of Figs. A or B and the line holding magnet over the "ALS" lead. The circuit then functions the same as if it was seized by a final selector.

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