COMMON SYSTEMS SIGNALING ONE WAY RECEIVING CIRCUIT ONE WAY SENDING CIRCUIT ALARM CIRCUITS & JACK CIRCUITS FOR CIVIL AIR RAID WARNING SYSTEM

CHANGES

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

C.1 The test set preparation for relay (A) was changed from Grd. to B/G, and the test clip data was changed to add B(A) in the Conn. Bat. column.

C.2 The requirement to insulate 1T(AL2) was added for relay (AL2), and the reference to Test Note 1 for that relay was removed.

C.3 Test Note 1 was changed from "Release relay by operating (CA) key" to "Remove lead from B(A)".

C.4 Test Notes 6, 7 and 8 and the references thereto in the See Test Note column were added.

D. DESCRIPTION OF CIRCUIT CHANGES

D.01 Note 301 and the reference thereto in Fig. 1 were added.

D.02 Note 302 and the references thereto in Fig. 2 were added.

D.03 Note 202 and the references thereto in Figs. 5 and 55 were added.

D.04 The working limits were added.

D.05 The dial pulse receiving and code distributing circuit and the dial pulse receiving and control circuit were added in the connecting information for the "S" lead in Fig. 1.

D.06 The connecting information for the "S1" lead in Fig. 1 and the "S" and "S1" leads in Fig. 5 was changed to show the full title of the dial pulse receiving and code distributing circuit and to add the dial pulse receiving and control circuit.

D.07 Lead designation "R" was added to the "S1" lead in Fig. 5 and the reference "to line" was added in the connecting information.

D.08 The terminal numbers in Fig. 54 were changed to correct an error in the wiring diagram.

D.09 The connecting information in Figs. 51 and 55 was changed.

D.10 The Feature and Option Table was added as Note 103 in place of a Note 103 which read: "Provide "M" option for Crossbar No. 5 offices. Provide "K" option for offices other than Crossbar No. 5".

D.11 The Options Used Table was added.

All other headings under changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is designed to provide auxiliary units which are required at repeater offices in civil air raid warning networks.

2. WORKING LIMITS

2.1 The maximum conductor loop for proper operation of the (R) and (R1) relays in Fig. 1 is 1500 ohms.

2.11 The minimum insulation resistance shall not be less than 15,000 ohms.

3. FUNCTIONS

3.1 Signals received from a control point on the "T" and "R" leads of Fig. 1 are repeated into the loop circuit in the central office over the "S" and "S1" leads.

3.2 A lamp indication is provided whenever signals are originated at the control point.

3.3 Signals appearing in a loop circuit in which Fig. 2 is connected by means of the "S" and "S1" leads, or the "S" and "R" leads, are transmitted over the "T" and "R" leads of a branch circuit to a dial pulse receiving and code distributing circuit or a dial pulse receiving and control circuit in another office.

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3.4 An alarm is provided by Fig. 3 when a trouble condition causes a two-way repeater circuit to ground the "F" lead.

3.5 Line and loop jacks per Figs. 4 and 5 provide means for patching two-way repeaters or one-way signaling circuits.

4. CONNECTING CIRCUITS

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

4.1 Two-Way Repeater Ckt. - Balanced Loop SD-95681-01.

4.2 Two-Way Repeater Ckt. - Open and Closed Loop SD-95682-01.

4.3 Dial Pulse Receiving and Code Distributing Ckt. SD-95678-01.

4.4 Application Schematic SD-95684-01.

4.5 Repeating Coil Ckt. - SD-96452-01 or SD-95144-01* (Typical)

4.6 Type "C" Composite Set Ckt. SD-56166-01.

4.7 Type "E" Composite Set Ckt. or Type "E" Bypass Ckt. - SD-95144-01*.

4.8 Dial Pulse Receiving and Control Ckt. - SD-95685-01.

4.9 Alarm Circuits

4.91 Crossbar Office

4.911 Aisle Pilot Ckt. - SD-25087-01 (Crossbar No. 1)

4.912 Alarm Ckt. - SD-25671-01 (Crossbar No. 5)

4.92 Panel Office

4.921 Audible Alarm Ckt. for Floor Alarm Board - SD-21819-01.

4.922 Floor Alarm Board Miscellaneous and Aux. Alarm Ckt. - SD-21203-01 (Battery Cut-off)

4.923 Miscellaneous Alarm Ckt. - ES-226189 (Ground Cut-off)

4.93 Step-by-Step Office

4.931 Audible and Visual Alarm Ckt. - SD-96188-01 (SXS No. 1)

4.932 Pilot Lamp Ckt. - SD-31548-01 (SXS No. 1)

4.933 Audible Alarm Ckt. - SD-31551-02 (SXS No. 1 or 350A)

4.934 Pilot Lamp and Power Alarm Lamp Ckt. - SD-31753-01 (No. 350A)

4.935 Miscellaneous Alarm Ckt. for Aisle Pilots - SD-31970-01 (No. 355A)

4.936 Miscellaneous Alarm Ckt. for Alarm Control - SD-31980-01 (No. 355A)

4.94 Manual Office

4.941 Annunciator Circuit - SD-15443-01 (Typical)

* The actual title of SD-95144-01 is "V3 Telephone Repeater, Line and Balancing, Application Schematic".

DESCRIPTION OF OPERATION

5. ONE-WAY RECEIVING CIRCUIT (FIG. 1)

5.1 The (R) and (R1) relays in Fig. 1 are controlled by dial pulses received over the loop from the control point or the alternate control point. The (R) relay repeats these pulses to the two-way repeaters, one-way sending circuits and/or dial pulse receiving circuits which are connected together in the loop circuit at the repeater point, and those circuits then transmit the pulses to the other offices in the system. On the first pulse, the (R1) relay operates the (A) relay, which locks up under control of the CA key and lights the ALM lamp. This feature is provided to give the central office attendant a positive indication whenever a signal is originated at the control point. At the end of the pulsing, the lamp may be extinguished by momentarily operating the CA key.

5.2 The current in the loop between the control point and the repeater office is adjusted to approximately 24 mils by means of strapping on the A, B and C resistances.

6. ONE-WAY SENDING CIRCUIT (FIG. 2)

6.1 The one-way sending circuit is connected into the loop circuit at a repeater office whenever a one-way branch circuit is required to reach a dial pulse receiving and code distributing circuit or a dial pulse receiving and control circuit in another office - called a code sending office. Signals appearing in the loop circuit at the repeater office operate relay (S), which applies alternate battery and ground over the branch circuit to pulse the receiving relay at the distant office.

6.2 A one-way sending circuit may also be used to transmit pulses from one code sending office to another, but such arrangements should be carefully considered in order to avoid having too many warning stations dependent upon a single branch circuit, and to avoid exceeding the general system limitation that there should not be more than ten inter-office links between either control point and any code sending office.

6.3 The current in the line between the central offices is adjusted to approximately 24 mils by means of strapping on the A, D and E resistances. The C resistance is then made equal to the A resistance.

7. ALARM CIRCUIT (FIG. 3)

7.1 When a line or other failure occurs on the backbone circuit, one or more of the two-way repeaters connects ground to the "F" lead of Fig. 3, and relay (AL1) operates and connects ground or battery, as required, to the office alarm system. The operation of relay (AL1) also causes the operation of relay (AL2), which locks up under control of key CA and lights the ALM lamp. When the attendant answers the alarm and operates the ACO keys in the repeaters, the ground on the "F" lead is removed and the office alarms are silenced, but the ALM lamp remains lighted until the (AL2) relay is released by the momentary operation of the CA key.

7.2 When the trouble is cleared and the two-way repeaters return to normal, ground is again applied to the "F" lead and the cycle is repeated except that the ACO keys in the repeater must be released in order to silence the office alarms.

7.3 It may be noted that the keys and lamps in Fig. 3 have the same designations as those in Fig. 1, but it should not be too difficult to tell them apart as they are mounted on different units.

8. LINE JACK CIRCUIT (FIG. 4) AND LOOP JACK CIRCUIT (FIG. 5)

The line jack circuit, consisting of a line jack L and an equipment jack EQ1, and the loop jack circuit, consisting of a loop jack LP and an equipment jack EQ2, are associated with each two-way repeater and each one-way sending circuit. These jacks permit patching a spare repeater or sending circuit into the system when a unit fails, and they are used when testing the repeaters.

BELL TELEPHONE LABORATORIES, INC.

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