20

COMMON SYSTEMS
AUDIBLE AND VISUAL ALARM CIRCUIT
WITH AISLE PILOT AND DISTINCTIE ALARMS

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit provides audible and visual signals and alarm switching equipment for toll switching offices, toll switchboards, step-by-step offices, or combination of any of these offices connected in the same alarm system.

1.02 It provides a distinctive alarm feature when there is more than one office connected in the same alarm system.

1.03 It provides audible and visual signals when connected to electronic switching systems or traffic service position systems alarm circuits.

1.04 It provides leads for scan points and control when connected to an Alarm Surveillance and Control (ASC) System.

2. GENERAL DESCRIPTION

2.01 This circuit is composed of a number of figures which are used in combinations to provide the desired visual and audible alarm signals for the particular installation.

SECTION II - DETAILED DESCRIPTION

1. MAJOR AUDIBLE ALARM SIGNAL

TOLL OFFICES FIG. 1, (K WIRING) (MFR DISC.) 3, AND 4

1.01 When ground is connected to the DL lead of Fig. 1, the DA relay operates. Relay DA operated, connects ground, when T wiring is used to the ST lead to start the relay interrupter circuit, when the alarms are installed in a toll office and the toll interrupter is required. At this time the DA relay of the connecting floor or floors operates, if the controlling alarm switch keys SW are operated. The DA relay operated also connects ground to the T lead, to operate the tone bar in an operating room if the AA key of Fig. 14 or 46 is operated. When S wiring is provided, the 60-IPM lead (Fig. 1) is connected to the IR lead of Fig. 35, to operate the IR relay, directly when Z wiring is furnished or through the contacts of the GM relay of Fig. 42 when W wiring is furnished. Relay IR operated, connects interrupted ground, over the TB lead of Fig. 1 to operate the tone bar of Fig. 4, directly or through the contacts of the TB relay of Fig. 3 if more than one tone bar is required. In wholly or partially unattended offices W wiring is furnished. In wholly attended offices Z wiring is furnished.

STEP-BY-STEP OFFICE FIG. 1, (J OR ZQ WIRING) (MFR DISC.) 3, AND 4

1.02 Operation in this case is similar to that in 1.01 except that ground on the DL lead operates relay DL in turn operating DA. Relay DL also connects ground to the CMJ lead to ASC system.

1.03 Interrupted ground on the S lead from the auxiliary alarm circuit causes the DA relay to operate and release at approximately 2-second intervals to cause interruptions in the 60-IPM operation of audible alarms. This provides a distinctive audible alarm as a connector disconnect signal. (The K wiring is rated Mfr Disc. in step-by-step offices as its use in offices with an auxiliary alarm circuit and alarm check circuit would result in premature and incorrect signals to the latter circuit for a connector disconnect alarm.)

TOLL OFFICES - FIG. 64

1.04 When ground is connected to the DL lead of Fig. 64, the DA relay operates. Relay DA operated:

(a) Connects ground to the LO and S leads to actuate a code signal in the major audible alarm circuit to give a distinctive alarm to indicate from which system the alarm originated.

(b) Grounds the T lead to Fig. 14 or 49 to operate the tone bar in the operating room provided the AA key is operated.

(c) Grounds the MJ lead to actuate an alarm in the alarm line circuit or alarm trunk circuit. When alarm switching relays per Fig. 68 are provided, the alarms are switched to other floors when the relays per Fig. 75 are operated.

1.05 Because 48-volts will always be available when more then one office is alarmed, those circuit figures providing the distinctive alarm feature are not arranged for -24 volt operation.

STEP-BY-STEP OFFICES - FIG. 65

1.06 When ground is connected to the DL lead of Fig. 65, the DL relay operates in turn operating the DA relay. With the DA relay operated the circuit functions the same as described in 1.04. Interrupted ground on the S lead from the auxiliary alarm circuit causes the DA relay to operate and release at approximately 2-second intervals to cause interruptions in the 60-IPM operation of audible alarms. This provides a distinctive audible alarm as a connector disconnect signal. Relay DL operated also connects ground to the CMJ lead to ASC system.

TOLL OFFICES - FIG. 78

1.07 When ground is connected to the DL lead of Fig. 78, the DA relay operates. Relay DA operated connects ground, when T wiring is used, to the ST lead to start the relay interrupter circuit; when S wiring is used, the 60-IPM lead is connected to the IR lead of Fig. 35 to operate the IR relay, directly when Z wiring is furnished or through the contacts of the GM relay when W wiring is furnished. The IR relay operated connects interrupted ground over the TB lead to Fig. 78 to operate the tone bar in Fig. 4. When more than one tone bar is provided, the interrupted ground is furnished through the contacts of the TB relay in Fig. 3. Relay DA operated also connects ground to lead D to Fig. 14 or 49 and if the AA key is operated, the tone bar in the operating room will also sound. The alarm will be extended to a distant office over lead MJ or A and will, when XH wiring is furnished, sound the alarm in the power

audible alarm circuit. If the alarm switching key is operated, the alarm will be extended to other floors.

STEP-BY-STEP AND COMBINED TOLL AND STEP-BY-STEP OFFICES - FIG. 79

1.08 A ground connected to the DL lead operates the DL relay. The DL relay operated operates the DA relay which functions as described in 1.07. The extension of the alarm to a distant office, to the operating room if the keys in Fig. 14 or 46 are operated, and to other floors if the SW key in Fig. 25 is operated, are controlled by the operated DL relay. Relay DL operated also connects ground on the CMJ lead to the ASC system.

1.09 An interrupted ground on the S lead from the auxiliary alarm circuit causes relay DA to operate and release at approximately 2-second intervals. This causes similar interruptions of the tone bar audible alarm signal. In this way, a distinctive audible alarm is provided as a connector disconnect alarm. This alarm will also be extended to other floors if the alarm switching key is operated.

OFFICES WITH 301C TYPE POWER PLANTS - FIG. 80

1.10 When a major power plant trouble occurs, ground is connected to the D lead of Fig. 80 to operate the D relay. The D relay operated, operates:

(a) The other floor lamps.

(b) The main aisle and aisle pilot lamps.

(c) The NV relay, Fig. 33.

The D relay also extends the alarm to a distant office over leads MJ or A. The NV relay operated operates the PF relay Fig. 15 which sounds the power failure alarm. Relay NV extends this alarm to all floors over the K leads. The PF operated extends the alarm to a distant office over the MJ or A leads and to the operating room when the key in Fig. 14 or 46 is operated.

2. MAJOR AUDIBLE SIGNAL FOR FLOOR FROM WHICH POWER PLANT ALARMS ARE SUPERVISED

TOLL - FIG. 2, (K WIRING) (MFR DISC.) 3, AND 4

2.01 When ground is connected to the DL lead of Fig. 2, the DA relay operates. Relay DA operated, connects ground, when T wiring is used, to the ST lead to start the relay interrupter circuit, when the alarms are installed in a toll office and the toll relay interrupter circuit is required. At this time the DA relay of the connecting floor or floors operates, if the controlling alarm switch keys SW are operated. The DA relay operated, also connects ground to the T lead, to operate the tone bar in an operating room if the AA key of Fig. 14 or 46 is operated. When S wiring is provided, the 60-IPM lead (Fig. 2) is connected to the IR relay, Fig. 35 directly when Z wiring is furnished or through the contacts of the GM relay of Fig. 42 when W wiring is furnished. Relay IR operated, connects interrupted ground, over the TB lead of Fig. 2, to operate the tone bar of Fig. 4, directly or through the contacts of the TB relay of Fig. 3 if more than one tone bar is required and connects ground to the MJ lead to the power audible alarm circuit to operate the power room major audible signal. In toll No. 4 offices, the interrupter periods for the tone bar operation are secured from the interrupter frame, in which case Fig. 35 and the 60-IPM lead of Fig. 2 are not required. When a major power plant trouble occurs, ground is connected to the D lead to operate the D relay. The D relay operated, operates relay NV Fig. 33 which in turn operates relay PF Fig. 15 directly (on all floors except floor from which power alarms are supervised) when G wiring is furnished or through the contacts of the BM relay of Fig. 43 when H wiring is furnished. Relay PF Fig. 15 operated in turn operates the power failure alarm, Fig. 16. Relay NV, Fig. 33 also operates the floor signals on all other floors in the alarm system except the one where the trouble exists. Relay D, Fig. 2 operated, operates the PE relay of Fig. 23, which lights an exit pilot on each floor. Relay D of Fig. 2 also operates the floor signals, by operating relay OF of Fig. 20, (directly or by operating relay AP Fig. 26 or relay MP Fig. 28). In wholly or partially unattended offices W wiring is furnished. In wholly attended offices Z wiring is furnished.

STEP-BY-STEP OFFICE - FIG. 2, (J OR ZQ WIRING) (MFR DISC.) 3, AND 4

2.02 Operation in this case is similar to that outlined in 2.01 except that ground on the DL lead operates the DL relay which in turn operates the DA. Operation of the DA functions as above except that it does not ground the T or B leads. Operation of the DL relay grounds the T and B leads and operates the DA relay. Relay DL operated connects ground to lead CMJ to the ASC system.

2.03 Interrupted ground on the S lead causes the DA relay to operate and release and produce a distinctive audible signal, as covered in 1.02, in switch rooms and power rooms.

TOLL OFFICES - FIG. 66

2.04 When ground is connected to the DL lead of Fig. 66, the DA relay operates. Relay DA operated:

(a) Connects ground to the LO and S leads to actuate a code signal in the major audible alarm circuit to give a distinctive alarm to indicate from which system the alarm originated.

(b) Grounds the T lead to Fig. 14 or 49 to operate the tone bar in the operating room provided the AA key is operated.

(c) Connects ground to the MJ lead to actuate an alarm in the alarm line circuit or alarm trunk circuit and grounds the MJ lead to the power audible alarm circuit to operate the power room major audible signal.

When a major power plant trouble occurs, ground is connected to the D lead to operate the D relay. The D relay operated, functions as described in 2.01.

STEP-BY-STEP OFFICES - FIG. 67

2.05 When ground is connected to the DL lead of Fig. 67, the DL relay operates in turn operating the DA relay. With the DA relay operated, the circuit functions as described in 1.04 and 1.05 except the T and B leads are grounded by the operation of the DL relay. Ground on the S lead causes the DA relay to operate and release as described in 1.06. Relay DL operated connects ground to the CMJ lead to the ASC system.

3. ALARM SWITCHING

ALARM SWITCHING KEY - FIG. 19 (MFR DISC.)

3.01 Operation of the SW key connects the major, minor, and distributing fuse audible signals of a floor to another floor or power room in accordance with the grouping in such a manner that an alarm which operates the audible signal to one floor will operate the audible signals of another floor, and when option YE is furnished grounds the CW or L lead to the power alarm cabinet lamp or the alarm switching pilot lamp SW. With option YD furnished and the alarm switching key operated, ground is closed over the SW lead to Fig. 68 to operate the SW relay. The SW key also interconnects the floor signal relays of the various floors so that the operation of an audible signal relay on one floor will operate the OF relay of the other floor.

ALARM SWITCHING RELAY - FIG. 68

3.02 When the alarm switching key of Fig. 19, 77, or 81 is operated, it grounds the SW lead of Fig. 68 to operate the SW relay. When the SW relay operates it connects the S1, S2, S3, S4, LO, and S5 (option XW) leads to the major audible alarm circuit so that the code signal actuated in the major audible alarm circuit will sound on both floors.

ALARM SWITCHING - CIRCUIT FIG. 75, AND 77 OR 81

3.03 Operation of the SW key Fig. 77 or 81 operates AS relay and connects the major, minor, and distributing fuse audible signals of a floor to another floor or power room in accordance with the grouping in such a manner that an alarm which operates the audible signal to one floor will operate the audible signals of another floor, and when option YX is furnished grounds the CW or L lead to the power alarm cabinet lamp, Fig. 45 or the alarm switching pilot lamp, SW, Fig. 69. With option Y the lamps are lighted on the nonoperate position of the key. With the option YD furnished and the alarm switching key operated, ground is closed over the SW lead to Fig. 68 to operate the SW relay. The SW key also interconnects the floor signal relays of the various floors so that the operation of an audible signal relay on one floor will operate the OF relay of the other floor.

3.04 Whenever 24-volts is used on one floor and alarms are switched to other floors via leads AG, PF, or DB, 24-volts must be used on all floors.

ALARM SWITCHING PILOT LAMP - FIG. 69

3.05 The SW lamp lights when the L lead is grounded by the operation of the alarm switching key SW, Fig. 77 or 81 and option YX is furnished. This lamp provides a visual indication that the alarm switching key is operated. When option YW is furnished the lamp will light in the nonoperated position of alarm switching key, Fig. 77 or 81.

4. AUXILIARY SIGNAL CIRCUIT FOR 803C POWER PLANT LOCATED OUTSIDE OF THE POWER ROOM

FIGURE 37 (MFR DISC.)

4.01 When a major failure of ringing power occurs, ground is connected to the RMJ lead and operates the A1 relay. At the same time ground is connected to the RJA lead

operating the A2 relay. The A2 relay operated, closes an auxiliary ground to operate the A1 relay. Relay A1 operated:

(a) Connects ground to the NV lead to operate the NV relay Fig. 33 which broadcasts the power failure alarm and lights the other floor lamps (on each floor other than the one in which the trouble occurs).

(b) Operates the aisle pilot relay AP Fig. 26 which in turn lights the aisle, main aisle, the exit pilot lamps as previously described.

When a minor alarm condition occurs in the power room, ground is connected to the RMN lead and operates the B1 relay and at the same time, ground is connected to the RMA lead operating the B2 relay. The B2 relay operated, closes an auxiliary ground to operate the B1 relay. Relay B1 operated, F wiring, functions as previously described for the A1 relay except that the minor audible alarm Fig. 5 and Fig. 7 will sound instead of the power failure alarm Fig. 16 and with F wiring omitted no ground is placed on A lead to alarm checking terminal circuit or 702A PBX alarm circuit.

FIGURE 72

4.02 When a major failure of ringing power occurs, ground is connected to the DF lead and operates the A1 relay. At the same time ground is connected to the D lead operating the A2 relay. The A2 relay operated, closes an auxiliary ground to operate the A1 relay. Relay A1 operated:

(a) Connects ground to the NV lead to operate the NV relay Fig. 33 which broadcasts the power failure alarm and lights the floor lamps on each floor.

(b) Operates the aisle pilot relay AP Fig. 26 which in turn lights the aisle, main aisle and exit pilot lamps as described in 7.03.

With YL wiring, ground is connected to the K lead to the power audible alarm circuit to sound the alarm in the power room. When a minor alarm condition occurs in the power room, ground is connected to the F lead and operates the B1 relay and at the same time ground is connected to the A lead operating the B2 relay. The B2 relay operated closes an auxiliary ground to operate the B1 relay. Relay B1 operated, functions as previously described for the A1 relay except that the minor audible alarm, Fig. 5 and Fig. 7 will sound instead of the power failure alarm, Fig. 16.

5. POWER FAILURE AUDIBLE SIGNALS

FIGURE 15 AND 16

5.01 The operation of a battery distributing fuse causes the operation of the PF relay Fig. 15 and the PF relay on the connecting floor or floors if controlling alarm switching keys SW are operated. The PF relay operated, connects ground to the T lead to operate the operating room tone bar Fig. 13, connects ground to the PF lead to the power audible alarm circuit when used in connection with a 301C power plant, and operates the power failure audible alarm Fig. 16. The H wiring (Mfr Disc.), Fig. 15, is used in connection with unattended offices not using an alarm check terminal circuit and Fig. 44. When this wiring is used in Fig. 15 and A in Fig. 16, the battery for the PF relay and PF bell is controlled through the contacts of the BM relay, Fig. 43. When the office is fully attended, B wiring is furnished in Fig. 16 and G in Fig. 15.

FIGURE 30 (MFR DISC.) AND 33

5.02 When a failure occurs in the power room, ground is connected to the DG lead operating the DF relay, Fig. 30. The DF relay, Fig. 30 operated also connects ground to the A lead to the 702A PBX alarm circuit or to the alarm checking terminal circuit when this circuit is installed in an unattended step-by-step office, operates the PF relay and the NV relay, Fig. 33. The PF relay operated, operates the power failure audible signal, Fig. 16 for the power room, connects ground on the CPMJ lead to the ASC system, and operates the F relay, Fig. 20 (directly or by operating relay AP Fig. 26 or relay MP Fig. 28) to light the exit pilot lamps and to light the other floor lamps if the alarm switching keys SW are operated. If this circuit is installed in an unattended office, W wiring is furnished and battery is supplied to the PF relay, Fig. 30 from the contacts of the BM relay, Fig. 43. When the NV relay, Fig. 33 operates, ground is connected to the K leads and operates the power failure alarm on each floor connected to the common systems. Also ground is connected to the P lead, Fig. 20 to operate the other floor signals on each floor other than the power room.

FIGURE 51 AND 33

5.03 When a failure of power room occurs, ground is connected to the DF or DG lead operating the DF relay, Fig. 51. The DF relay, operates the PF relay and the NV relay Fig. 33, and operates the PF relay Fig. 15 and the OF relay Fig. 20. The PF

relay operated, operates the power failure audible signal, Fig. 16 for the power room, connects ground to the CPMJ lead to the ASC system, and operates the F relay Fig. 20 (directly or by operating relay AP, Fig. 26 or relay MP, Fig. 28) to light the exit pilot lamps and to light the other floor lamps if the alarm switching keys SW are operated. If this circuit is installed in an unattended office, W wiring is furnished and battery is supplied to the PF relay, Fig. 51 from the contacts of the BM relay, Fig. 43. When the NV relay Fig. 33 operates, ground is connected to the K leads and operates the power failure alarm on all floors connected to the common systems (except the floor from which power alarms are supervised). Also, ground is connected to the P lead, Fig. 20 to operate the other floor signals on each floor other than the power room and the floor from which power alarms are supervised.

6. CODE SIGNALS

FIGURE 70

6.01 The bell is operated from ground on the B1 lead from the major audible alarm when only one bell is used or from ground on the B1, B2, B3, and B4 leads from Fig. 71 when more than one bell is used.

CODE AUXILIARY SIGNAL RELAY - FIG. 71

6.02 This figure is used when more than one bell is needed. The relay is operated from ground on the B1 lead from the major audible alarm circuit and in turn operates the bells used.

7. PILOT SIGNALS

EXIT PILOT SIGANLS - FIG. 21, 23, AND 24

7.01 Operation of a major, minor, distributing fuse, alarm battery supply, individual fuse or a service alarm operates the F relay, Fig. 20 which in turn operates the EP relay, Fig. 21 on all floors or operates the PE relay if connected on a power room floor. These relays operated light the exit pilot lamps EP Fig. 24 at each exit.

EXIT PILOT RELAY - FIG. 22

7.02 When ground is connected to the EP lead, relay OR, Fig. 22 operates. Relay OR, Fig. 22 operated, operates the OF relay Fig. 20 which in turn lights the other floor pilot lamp OF, Fig. 25. Relay OR, Fig. 22 operated also lights the exit pilot lamps EP, Fig. 24.

PILOT RELAY - FIG. 26

7.03 When a trouble condition exists in an aisle, the AP relay Fig. 26 of that aisle corresponding to the color of the lamp operates and lights the corresponding aisle pilot Fig. 27 and operates the MP relay Fig. 28. When this circuit is installed in a toll repeater office and main aisle pilots are not required, ground is connected to the DA lead Fig. 20 to operate the exit pilot lamps and to operate the other floor pilots if the controlling alarm switching keys, Fig. 19 or the alarm switching key and relay, Fig. 75 and 77 or 81 are operated. When this circuit is installed in an unattended office, W wiring is furnished and the battery for this relay is controlled through the contacts of the BM relay, Fig. 43.

AISLE PILOT LAMP - FIG. 27 AND 87

7.04 Operation of the AP relay Fig. 26 or ground directly from the trouble source lights the aisle pilot lamp in the aisle in which the trouble exists.

MAIN AISLE PILOT - FIG. 28 AND 29

7.05 When ground is connected to the MA, MG, MR, or MW lead, the MP, Fig. 28 relay operates indicating an alarm condition associated with a main aisle. The MP relay, Fig. 28 operated, lights the associated MP lamp, Fig. 29 in the main aisle. It also operates the F relay, Fig. 20 to light the exit pilots and the other floor lamp if the alarm switching keys SW are operated.

SERVICE ALARM MULTIPLE AISLE PILOT RELAYS - FIG. 34

7.06 This figure is furnished when it is required to light more than one aisle pilot lamp. In this case when one of the alarm circuits or circuit requiring alarm closes a ground to the A lead, the AM relay operates. The AM relay operated, operates the aisle pilot relays, Fig. 26 in as many aisles as is required.

8. MINOR AUDIBLE SIGNALS

MINOR AUDIBLE SIGNAL (CONTINUOUS) - FIG. 5 AND 7

8.01 When ground is connected to the F or AG leads or MN lead (when R wiring is furnished), the AA relay of the connecting floor or floors operates if the controlling alarm switching keys SW are operated. The AA relay operated, connects ground, when L wiring is used, to the T lead of Fig. 14 or

49 to operate the alarm signal in the operating room, if the AA key of Fig. 14 or 46 is operated. Ground from the make contact of the AL relay Fig. 50 also operates the AA relay when a minor power alarm occurs regardless of the position of the AA key. The AA relay operated, also connects ringing ground, directly if the office is fully attended or through the contacts of relay RM Fig. 48 if the office is wholly or partially unattended, to operate the minor audible signal, Fig. 7. Relay AA operated connects ground to the CMN or CPMN lead to the ASC system.

MINOR AUDIBLE AUXILIARY SIGNAL FOR FLOOR FROM WHICH 301C POWER PLANT ALARMS ARE SUPERVISED - FIG. 6

8.02 When ground is connected to the F lead Fig. 5, this ground is transmitted over the MN lead to the power audible alarm circuit to ring the minor alarm in the power room. When a minor audible power plant trouble occurs in the power room, ground is connected to the A lead and the MN leads and operates the AA relay Fig. 5 and the A relay, Fig. 6. The AA relay, Fig. 5 operated, functons as previously described in 8.01 and the A relay operated, connects ground to the OF relay, Fig. 20 (directly or by operating relay AP Fig. 26 or relay MP, Fig. 28 and light the other floor lamp on all other floors except the power room floor and to operate the PE relay, Fig. 23 which in turn lights the exit pilot lamps on each floor. The A relay of Fig. 6 operated, also connects ground to the T lead to operate the tone bar in the operating room if the AA key of Fig. 14 or 46 is operated.

AUXILIARY MINOR AUDIBLE SIGNAL RELAY - FIG. 32 (MFR DISC.)

8.03 When ground is connected to the AG lead, relay AL, Fig. 23 operates. Relay AL Fig. 32 operated, operates the AA relay, Fig. 5 which sounds the minor audible alarm. Relay AL, Fig. 32 operated also operates the F relay, Fig. 20 (directly or by operating relay AP, Fig. 26 or relay MP Fig. 28) which in turn lights the exit pilot lamps and brings in the other floor pilots provided the alarm switching keys SW are operated.

AUXILIARY MINOR AUDIBLE SIGNAL RELAY - FIG. 50

8.04 Figure 50 replaces Fig. 32 to permit operation of minor power alarm signals and the OF lamp (on the floor from which power alarms are supervised) with the power room grouping key in Fig. 19 or 77 normal.

8.05 When ground is connected to the AG or F leads, relay AL Fig. 50 operates. This relay operated, operates the AA relay Fig. 5 which sounds the minor audible alarm. Relay AL, Fig. 50 operated also operates the F relay Fig. 20 (directly or by operating relay AP Fig. 26 or relay MP Fig. 28) which in turn lights the exit pilot lamps and brings in the other floor pilots provided the alarm switching keys SW are operated. Closure of upper contacts 3 and 4 of the AL relay operate the AA relay of Fig. 5 (where this relay is located on the floor from which power alarms are supervised) with or without the SW key operated; closure of lower contacts 3 and 4 of the AL relay perform similar functions in the case of the OF relay of Fig. 20 and OF lamp of Fig. 25.

INTERMITTENT MINOR AUDIBLE SIGNAL RELAYS - FIG. 53 (MFR DISC.)

8.06 When the trouble source grounds lead T, relay T operates and with option L- will sound the operating room signal if key AA is closed. Relay T also connects ringing ground through a capacitor to operate relay RT under control of machine ringing current. Relay RT will then apply intermittent closures to sound the minor audible signal which was described for continuous operation in 8.01.

9. ALARM BATTERY SUPPLY AUDIBLE SIGNALS

ALARM BATTERY SUPPLY AUDIBLE SIGNAL - FIG. 9, (MFR DISC.) 10, AND 39

9.01 Operation of an alarm battery supply fuse on any floor or in the power room operates the AB relay over the AB lead. The AB relay operated, rings the AB subset Fig. 10, transfers the battery supply for Fig. 11 or 12 or 38 or 41 and 13 from ABS battery to signal battery of Fig. 9, connects ground to the T lead to operate the tone bar in an operating room where the AA key of Fig. 14 or 46 is operated.

9.02 If Fig. 39 is provided (that is, if more than one tone bar signal, Fig. 13 is required per building) the AB relay operated transfers the battery supply for Fig. 39 from ABS battery to signal battery and operates the TB1 relay in Fig. 39.

ALARM BATTERY SUPPLY - AUXILIARY AUDIBLE SIGNAL RELAY AND INTERRUPTER GROUND SUPPLY - FIG. 9 (MFR DISC.) 13, 39, 40, 46, AND 49

9.03 Ground on the AB lead of Fig. 9 operates relay AB and in turn the TB1 relay of Fig. 39. Operation of the TB1 relay transfers the battery supply for Fig. 11,

12, 38, 40, or 41, 46, and 49 from ABS battery to signal battery and operates audible alarms, Fig. 13 as covered in 9.01 and 9.02 except that the ground interruptions over the S leads of Fig. 11, 12, 38, or 41 operate and release the IG relay of Fig. 40 which in turn supplies interrupted ground over separate S leads to a maximum of 8 audible alarms. Relay AB operated connects ground on the CABS lead to the ASC system.

ALARM BATTERY SUPPLY AUDIBLE SIGNAL - FIG. 76, 10, AND 39

9.04 Operation of an alarm battery supply fuse on any floor or in the power room operates the AB relay over the AB lead. The AB relay operated, rings the AB subset Fig. 10, transfers the battery supply for Fig. 11 or 12 or 38 or 41, and 13 and Fig. 48 from ABS battery to signal battery to insure that an operated fuse could never prevent the associated apparatus from functioning, connects ground to the CABS lead to the ASC system and connects ground to the T lead to operate the tone bar in an operating room when the AA key of Fig. 14 or 46 is operated.

9.05 If Fig. 39 is provided (that is, if more than one tone bar signal, Fig. 13 is required per building), the AB relay operated transfers the battery supply for Fig. 39 from ABS battery to signal battery and operates the TB1 relay in Fig. 39.

10. TOLL AUDIBLE SIGNALS

TOLL SWITCHING SYSTEM NO. 4 TYPE - AUDIBLE SIGNALS - FIG. 11, 13, AND 14 OR 46, AND 49

10.01 When the AA key, Fig. 14 or 46 is operated and ground is connected to the T lead, the tone bar Fig. 13 is operated directly or through Fig. 39 and 40. When the MA interrupter makes on its back contact, the MA relay operates and holds to the ground connected to the E lead and opens the circuit to the tone bar releasing it. When the MA interrupter makes on its front contact, the tone bar again operates. If ground continues on the T lead, the tone bar will sound after each complete cycle of the MA interrupter. When ground is removed from the T lead, all operated relays will release and the tone bar will be silenced. If the AA switch in Fig. 14 or 46 is released, the MA relay release and the tone bar will be silenced.

TOLL AUDIBLE ALARM RELAY CIRCUIT - FIG. 41 AND 47

10.02 With the AA key, Fig. 14 or 46 operated, a ground connected to the E lead operates the M relay Fig. 41. The M relay operated, operates the tone bar Fig. 13 directly or through Fig. 39 and 40 and also operates the MB relay Fig. 47. The MB relay operated in turn operates the MA relay. The MA relay operated, opens the circuit to the M relay which releases and opens the circuit to the tone bar. This cycle of operation continues as long as ground is connected to the E lead and causes the tone bar to sound approximately every two minutes. When the AA key is released or the trouble has been removed, the operated relays release.

11. STEP-BY-STEP AUDIBLE SIGNAL - FIG. 12, 13, AND 14 OR 46, AND 49

11.01 With the AA key Fig. 14 or 46 operated and ground connected to the T lead, the M relay, Fig. 12 will operate and sound the tone bar Fig. 13 directly or through Fig. 39 and 49. The M relay operated, prepares a path to operate the MA relay when ground is closed to the S lead from the common timing circuit. The MA relay locks under control of the M relay. The S lead is grounded 6 seconds and immediately after the I lead is grounded for 6 seconds. The I lead grounded, operates the tone bar, Fig. 13. These interruptions are supplied once per minute. Therefore, the A tone bar signal sounds once per minute after the MA is released or the trouble is cleared. If a toll office is installed in the same building with a step-by-step office, Fig. 12 is used to provide the interruptions for the audible operating room signal in the toll operating room.

12. SERVICE ALARM AUDIBLE SIGNAL - FIG. 7, 17, 18, AND 82

12.01 When ground is connected to the SV lead, the SA relay, Fig. 17 operates and if the controlling keys SV, Fig. 18 or 82 are operated, the SA relay on the connecting floor or floors operates. When the SV key is operated and option YG is furnished, the CW lead is grounded to light the power alarm cabinet lamp, Fig. 45. The SA relay operated also connects ringing ground directly if the office is fully attended or through the contacts of relay RM, Fig. 48 if the office is wholly or partially unattended, to operate the minor audible signal Fig. 7.

13. FLOOR SIGNALS - FIG. 20 AND 25

13.01 Operation of a major, minor, distributing fuse alarm, battery supply, individual fuse or service alarm will operate the F relay, Fig. 20. The F relay operated, opens the operating path for the OF

relay of same floor and operates the OF relay of the adjacent floors if the controlling alarm switching keys SW are operated and operates the EP relay, Fig. 21 or if connected in a power room will operate the PE relay Fig. 23. The operation of an alarm on one floor operates the F relay corresponding to that floor and operates the OF relay of all connecting floors. A major or minor power alarm operates the OF relay from make contacts on the DF relay Fig. 51 or AL relay Fig. 50, respectively. The OF relay operated, lights the OF lamp, Fig. 25.

14. RINGING MACHINE POWER FAILURE RELAY - FIG. 31 AND 30 OR 51

14.01 When a ringing machine is located outside the power room, a failure of ringing machine power operates the RP relay, Fig. 31, which in turn operates the DF relay, Fig. 30 or 51, to sound the power failure audible signal alarm on all floors, and prevents the operation of the F relay for the power room by removing ground from the GR lead to Fig. 30 or 51.

15. STEP-BY-STEP OR TOLL INTERRUPTER RELAY - FIG. 35

15.01 When the 60-IPM supply is connected to the IR relay through the operation of the DS relay, Fig. 1 or 2 or Fig. 78 or 79 from the ground on the auxiliary alarm circuit, the relay operates and releases with the interruptions to provide an interrupted ground which causes the major audible signal to function. If more than one major alarm is required per floor, Fig. 3 is furnished. In this case the TB relay, Fig. 3 operates and releases from the interrupted ground on the IR relay, through the contacts of DA relay of Fig. 1 or 2, or Fig. 78 or 79.

16. STEP-BY-STEP PERMANENT SIGNAL AUDIBLE ALARM - FIG. 8 AND 36

16.01 When there is a permanent signal connected on any of the associated circuits provided with such an alarm, ground is connected to the AF or PS lead and operates the PS relay Fig. 36 causing the associated buzzer Fig. 8 to operate as an audible signal and closes ground over the D lead to the alarm checking terminal circuit when this circuit is installed in an unattended step-by-step office. The permanent signal alarm is not arranged to group to any other floor.

17. OPERATING ROOM AUDIBLE RELAY - TONE BAR SIGNAL - FIG. 13 AND 38 (MFR DISC.) AND 14 OR 46, AND 49

17.01 With the AA key, Fig. 14 or 46 operated and a ground connected to the E lead, the tone bar Fig. 13 is operated, directly or through Fig. 39 and 40, and when the MA interrupter makes on its back contact MA relay operates. When the MA interrupter breaks on its back contact, the MD relay operates and closes a path to operate the MC relay which locks to ground on the E lead. The MD relay operated, closes a circuit to shunt down the MA relay when the MA interrupter again makes on its back contact. When the MA interrupter breaks its back contact the MD relay releases. When the MA interrupter again makes on its back contact a path to operate the tone bar through the break contact of the MD relay and the make contact of the MC relay. If the ground continues on the E lead the tone bar will sound after each two complete cycles of the MA interrupter. When the ground is removed all operated relays will release and the tone bar will be silenced.

18. GROUND, BATTERY, AND RINGING SUPPLY CUT-THROUGH RELAYS AND ALARM CONTROL - FIG. 42, 43, 44, 48, 52, AND 89

18.01 These figures are used only in wholly or partially unattended offices and are used to connect ground, battery and ringing supply to the various controlling relays. They are so arranged that when the office is unattended, the alarm switch in Fig. 44 is released or the ASC interface and control circuit opens the B to G and C to GG lead loops in Fig. 89. This causes the GM, BM, RM, and AG relays, in Fig. 42, 43, 48, and 52, respectively, to release, in turn, opening the ground or battery for the operation of the audible signals and for the lighting of some of the visual signals. Relay RM, Fig. 48, released opens the continuous ringing supply to Fig. 7, 8, and 10.

18.02 When the office is attended, and Fig. 44 provided, the ALM switch is operated and the A lamp Fig. 44 is lighted as an indication that battery, ground, and ringing supplies are closed to the various relays throughout the alarm system. No indication is given when ASC returns control of the alarms to the office.

19. POWER ALARM CABINET LAMPS - FIG. 45

19.01 When ground is connected from the various alarm circuits to the CW lead, a lamp is lighted in the alarm cabinet. This lamp indicates to the maintenance employee that some particular circuit is in trouble. This lamp is shown only for step-by-step offices and for uncombined toll offices.

20. AUDIBLE ALARM CUT-OFF KEY - FIG. 46 AND 49

20.01 These figures are provided when more than one tone bar signal per building

is necessary. Types of alarms which result in ground on any T lead which connects to the primary winding of the AA1 relay, Fig. 49 will operate all AA1 relays in the building and associated tone bar signals, Fig. 13 if associated AA keys are operated. That is if an alarm of this type is broadcast to all floors where AA keys are operated. Other types of alarms which ground the T leads to the secondary winding of the AA1 relay, Fig. 49 operate only one AA1 relay, Fig. 49 and the audible alarm for only the associated floor when the AA key, Fig. 46 is operated.

20.02 Operation of the AA key, Fig. 46 provides battery to Fig. 49, the AA1 relay of which operates through its primary or secondary winding to ground on any T lead. The AA1 relay operated, closes battery through the B1 lead to a tone bar signal and by grounding the E lead starts an interrupter which causes interrupted ground to be furnished to the tone bar signal.

21. COMMON ALARM RELAY - FIG. 54 (MFR DISC.)

21.01 When a circuit requiring alarms applies battery through a resistor and lamp network to lead 1 it operates relay CA which in turn grounds lead 2 and 3. If it is assumed that the designation of the lead from the connecting circuit is RDL, lead 2 is designated R and will light the red pilots, and lead 3 is designated DL and will sound the major audible signal.

22. FLOOR ALARM CABINET GUARD LAMP - FIG. 66 (MFR DISC.)

22.01 This lamp lights when the alarm signals are retired and is extinguished when the trouble is cleared.

23. INTERRUPTER FRAME MOTOR STOP ALARM - FIG. 56, 57, 62, (MFR DISC.) AND 63 (MFR DISC.)

23.01 When an interrupter frame motor stops it grounds lead S1 which:

(a) In a crossbar No. 1 office operates relay MA, Fig. 62 which signals the miscellaneous frame circuits to open the stalled interrupter contacts, and ground lead S2.

(b) In a crossbar tandem office operates relay MSI, Fig. 63 which signals the overflow trunk circuits to open the stalled interrupter contacts, and grounds lead S2.

(c) In a toll No. 4 office Fig. 62 and 63 are omitted.

If the stalled motor is associated with the interrupters which normally operate the major audible signals one or two Fig. 57 are used depending on the number of signals required and ground from S2 lead of Fig. 62 or 63 or S1 lead of the interrupter frame circuit will operate relay IT which transfers to interrupters which are associated with a different motor, and grounds lead S2 to the interrupter frame circuit which returns ground on lead S operating relay S, Fig. 56 which operates the audible and visual signals as previously described for the connecting figures and grounds lead MS which lights a lamp on the interrupter frame.

23.02 The operation of a key on the interrupter frame will release relay S retiring the alarm signals and will light a guard lamp at the interrupter frame and also a lamp in the floor alarm cabinet, Fig. 55, which is associated with the entire group of interrupter frames. When the motor is again started relays MS or MSI and IT will release and relay S will reoperate again operating the audible and visual signals. Release of the key at the interrupter frame will retire the alarm signals thus restoring the circuits to normal.

24. INDIVIDUAL ALARM RELAY - FIG. 58 (MFR DISC.) AND FIG. 61 (MFR DISC.)

24.01 This figure is used where the connecting circuit places a dc or superposed dc potential on the connecting lead but where the circuit lamp cannot be lighted in series with the alarm relay. When battery is connected to lead 1, it operates relay 1A which operates relay AR in Fig. 61 which lights the aisle and main aisle pilots for the connecting circuit and sounds the required audible signal in a manner similar to that described for Fig. 54. Relay AR also connects battery through a contact of relay 1A to light the 2G or 2Y lamp in the connecting circuit.

25. RINGING FUSE ALARM RELAY - FIG. 59 (MFR DISC.) AND FIG. 61 (MFR DISC.)

25.01 The operation of a ringing fuse places ringing current on lead 1 operating relay RF which causes relay AR in Fig. 61 to operate and produce the audible and visual signals as described for Fig. 58.

26. MARKER FUSE ALARM RELAY - FIG. 60 (MFR DISC.)

26.01 When a marker fuse operates relay MF operates lighting a red aisle pilot and sounding the major audible signal. When

the fuse is removed, relay MF releases retiring the alarm signals and lights guard lamps. When the fuse is replaced the operation of a key at the marker frame will extinguish the guard lamps.

27. UNATTENDED OFFICE - EXTENSION OF ALARMS

27.01 When an office is partially or wholly unattended connections are furnished to the alarm checking terminal circuit, the 702A PBX alarm circuit, the alarm line circuit or the alarm trunk circuit at Fig. 1, 2, 5, 6, 9, 15, 36, 37, 51, 78, 79, and 80. Except for the alarm line circuit the alarm signals will be transmitted whether or not the office is attended. With alarm line circuit the signals are transmitted only when the office is unattended since relay RM in Fig. 48 must be released in order to apply ground to the connecting leads.

27.02 When an office is arranged for (ASC) connections are furnished to the E2A SAC remote application schematic from Fig. 1, 2, 5, 9, 15, 30, 51, 65, 69, and 76. The alarm signals are transmitted whether or not the office is attended.

28. ALARM FOR ANNOUNCEMENT SYSTEM NO. 4A AUDICHRON CONVERTER - FIG. 73

28.01 If the regular power supply of the audichron converter fails and the load is transferred to the battery driven machine, ground is connected to the C lead, operating the AS relay. The AS relay operated lights the green aisle pilot lamp and operates the ac auxiliary signal under control of the ACO relay normal. When the ACO key is operated the ACO relay operates and locks under control of the AS relay, removing the ac signal and the green aisle pilot lamp indication and lighting the GUARD lamp. When the trouble is cleared, the AS and ACO relays release and the guard lamp is extinguished.

29. PICK UP ALARM - FIG. 74 (MFR DISC.)

29.01 During the 6-second ringing cycle ground is connected to the PKU lead for approximately 1/4 second and during the other 5-3/4 seconds the PKU and PUA leads are connected together. If a PKU lead becomes grounded in the trunk circuits, when the PKU and PUA leads are connected together, this ground will operate the PU1 relay. The PU1 relay operated, operates the PU2 which in turn operates the PU3. The PU3 relay operated lights the PUA lamp and connects ground over the DF and R leads to the associated alarm circuit to give audible and visual signals. During the 1/4-second interval when the PKU and PUA leads are not connected together, the PU1 and PU2 relays will release but before the slow-release relay PU3 has released, ground from the PKU lead will be reconnected to the PU3 relay through the upper back contact of the PU2 relay released, so that the PU3 relay will remain operated through out the cycle until the trouble ground on the PKU lead is removed. A trouble ground on the trunk side of the resistance lamp in the PKU lead will operate the PU1 relay, but the potential at the common point on the ringing machine side of the resistance lamp will be substantially 48-volts, preventing premature operation of pickup relays connected to other resistance lamps.

30. CONNECTION TO ELECTRONIC SWITCHING SYSTEMS OR TRAFFIC SERVICE POSITION SYSTEMS ALARM CIRCUITS

FIGURE 85

30.01 When alarm grouping to or from this circuit and the alarm circuits in electronic switching systems or traffic service position systems is required, Fig. 85 is provided. Grounds on the PF, AB, MN, or MJ leads through loop closures in the connecting alarm circuits function the power failure audible alarm, the alarm battery supply audible alarm, the minor audible alarm, or the major audible alarm, respectively, in this circuit. When the leads PF, AB, MN, or MJ are grounded by this circuit, relays will be operated in the connecting alarm circuit and the corresponding alarms will be operated in that office.

30.02 When ground is connected to lead FS or EP1 through a loop closure in the connecting alarm circuit, the other floor pilot lamps or the exit pilot lamps in this circuit will light.

30.03 When this circuit connects ground to the EX lead, an exit pilot will light in the connecting alarm circuit.

30.04 The transmission of these alarms from this circuit to the connecting alarms is under control of the alarm switching key in this circuit, the control if the transmission of the connecting alarms to this circuit is under control of the grouping feature in the connecting alarm circuit.

FIGURE 86

30.05 When the electronic switching system or traffic service position system power alarms are not supervised in their own areas, grounds on the PMN or PMJ leads

through closures in the connecting alarm circuit will function the minor audible alarm or the power audible alarm, respectively, in this circuit; grounds on the PEP1 or FSA leads, through closures in the connecting alarm circuit, will light the exit pilot lamp or the other floor pilot lamps in this circuit.

31. PAIRED ALARM LEADS

FIGURE 83

31.01 When alarm circuits such as carrier alarms, which are sensitive to noise or provide alarm functions on a loop closure basis, require various alarm functions in this circuit, Fig. 83 is provided. Closures will operate relays to function the major, minor, or alarm battery supply audible alarms and will also light the various colored aisle pilot lamps.

FIGURE 88

31.02 When the 100-type power plant is not located in the power room, grounds on lead PMJ or PMN through closures on the connecting circuit will function the power and minor audible alarms, respectively, in this circuit. Grounds on lead PMJV or PMNV through closures in the connecting circuit will light the aisle pilot lamps in this circuit.

32. STEP-BY-STEP OFFICE CONNECTION TO ALARM SURVEILLANCE AND CONTROL SYSTEM

32.01 When an office is partially or wholly unattended, the office may be arranged for connection to ASC by the use of Fig. 89 and WA option in the various figures. The alarm status signals are transmitted to ASC whether the office is attended or not. When ASC assumes control of the alarm system, the P1 or P2 leads to the various audible relays are intermittently grounded for a short period of time to indicate ASC assumption of control.

32.02 When ASC is in control of the alarm system the audible alarms are disabled by opening the loop closures from the B to G and C to GG leads causing the relays in Fig. 42, 43, 48, and 52 to release. Release of relay BM, Fig. 43, removes battery from the various audible alarm relays and release of relay RM, Fig. 48, removes the 20-Hz continuous ringing supply from the audible alarm relays Fig. 7, 8, and 10.

33. ALARM INDICATIONS

AUDIBLE ALARMS

33.01 Vibrating bell indicates power failures.

33.02 The 245-cycle tone bar indicates major alarms.

33.03 The S1A-50 tone ringer indicates minor alarms.

33.04 Subset bells with 1-55A and 1-58A gongs indicate service alarms.

33.05 Subset bells with 1-56A and 1-59A gongs indicate alarm battery supply alarms.

33.06 Single-stroke bell indicates distinctive major alarms.

33.07 The 980-cycle tone bar is used in the operating room and indicates power failures, major, and minor alarms.

33.08 The 4C buzzer indicates permanent signal alarms.

VISUAL ALARMS

33.09 Other floor (OF) lamps indicate that the Alarm originated on another floor.

33.10 Exit pilot (EP) lamps indicate the other floor from which the alarm originated.

33.11 Main aisle (MA) lamps indicate the main aisle in which the trouble occurred.

33.12 Aisle pilot (AP) lamps indicate the aisle in which the trouble is located.

33.13 The circuit in trouble usually has a trouble lamp on the frame to indicate the bay on which the circuit in trouble is located.

34. RETIREMENT OF ALARMS

34.01 Alarms may be retired by:

(a) Clearing the trouble.

(b) Operating an alarm cut-off key.

(c) Operating an alarm release key in the circuit associated with the alarm.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 None.

3. FUNCTIONS

3.01 To provide audible signals for each floor.

3.02 To provide aisle pilot and main aisle pilot lamps to indicate the location of the trouble on each floor.

3.03 To provide means for grouping together certain alarms on different floors for one or more systems.

3.04 To provide exit pilots and other floor pilot lamps to indicate the floor on which trouble occurs.

3.05 To provide for distinctive major audible alarm by means of a code to indicate in which system the trouble has occurred.

3.06 To provide leads for scan points and control when used with ASC systems.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a keysheet the connecting information thereon is to be followed.

4.02 This circuit connects to any circuit which requires an alarm and which provides at least two leads for the alarm: one for the audible and one for the visual. See Notes 102 and 106 for connecting lead designations for type of alarm required.

COMMON SYSTEMS

(a) Emergency Alarm Circuit - SD-96049-01, SD-90560-01.

(b) 60-Cycle Supply Alarm for 6-Volt Lamps - SD-95005-01.

(c) Common Timing and Alarm Circuit - SD-90482-01.

(d) Central Office Control and Distributing Circuit - SD-96035-01.

(e) Interrupter Alarm and Transfer Circuit - SD-95099-01.

(f) No Such Number Tone Supply - SD-96357-01.

(g) Ringing Circuit - SD-96083-01.

(h) Signaling Circuit - SD-90437-01.

(i) Signal Supply, Alarm and Distributing Circuit - SD-95072-01.

(j) Power Supply Alarm Circuit - SD-95081-01.

(k) Plug-Up Panel - Auxiliary Signal Circuit - SD-90594-01.

(ℓ) Repeater Battery Supply Circuit - SD-90516-01.

(m) Announcement Desk No. 1 or 1B Distributing and Alarm for Intermediate Office - SD-90256-01.

(n) Announcement Desk No. 1 or 1B Distributing and Alarm for Terminal Office - SD-90260-01.

(o) Announcement Desk No. 1 or 1B Repeater Alarm Circuit - SD-90255-01.

(p) Announcement System No. 3A Control Circuit - SD-96249-01.

(q) Announcement Desk No. 1B, Low-Voltage Alarm Circuit for Speech and Tone - SD-96286-01.

(r) 100-Type Plant Discharge Circuit - SD-80720-01.

(s) Major Audible Alarm Circuit - SD-95454-01.

(t) Information Desk Trunk Alarm Circuit - SD-90001-01.

(u) Information Desk Allotter Circuit - SD-90003-01.

(v) Information Desk Start Circuit - SD-90006-01.

(w) Information Desk Allotter Alarm Circuit - SD-90009-01.

(x) Announcement System 4A Application Schematic - SD-95159-01.

(y) Annunciator Circuit - SD-90105-01.

(z) Common Systems Alarm Trunk Circuit - SD-95310-01.

(aa) Common Systems, Sender Attachment Delay Recorder Circuit - SD-96531-01.

(ab) Common Systems Major Audible Alarm Circuit - SD-95798-01.

(ac) E-Type Signaling Filter and Fuse Alarm Circuit - SD-96602-01.

(ad) T1 Carrier Application Schematic - SD-97080-02.

(ae) PBX AIOD Fuse Alarm and Miscellaneous Circuit - SD-1C006-01.

(af) Electronic Dial Tone Speed Register - SD-3B504-01.

TOLL SWITCHING SYSTEM NO. 4 TYPE

(a) Alarm Receiving Circuit - SD-95418-01.

(b) Floor Alarm Frame Fuse and Time Alarm Circuit - SD-68067-01.

(c) No. 5 Toll Switchboard Fuse Alarm Circuit - SD-96153-01.

(d) Floor Alarm Frame Miscellaneous and Auxiliary Alarm Circuit - SD-68073-01.

(e) Interrupter Frame Circuit - SD-68058-01.

(f) Power Alarm Circuit Miscellaneous and Auxiliary Alarm - SD-68070-01.

(g) Power Alarm Circuit DC and Miscellaneous - SD-68071-01.

(h) Extension Alarm Circuit - SD-95310-01.

TOLL

(a) Fuse Alarm Circuit for Fuses Mounted in Switchboard Sections - SD-63649-01.

(b) Alarm Circuit for Indicating Blockage in Pneumatic Tubes - SD-90648-01.

(c) Carrier Repeating Testing Circuits - SD-62459-01.

(d) 1000-Cycle Supply Alarm - SD-55548-01.

(e) Stabilized 130-Volt Supply No Voltage, Fuse Alarm - SD-95081-01.

(f) Low Insulation Alarm Circuit - SD-62489-01.

(g) Alarm Transfer and Distributing Circuit for 30-, 60-, 120-IPM Interrupters - SD-95099-01.

(h) Transfer Circuit for 30-, 60-, or 120-IPM Interrupter - SD-95078-01.

(i) Cable Gas Pressure Alarm - SD-55211-01.

(j) 65B1 - TTY Switchboard No Voltage Fuse Alarm - SD-63876-01.

(k) Low Insulation Alarm for Maximum Leakage Resistance of 5 Megohms - SD-62489-01.

(l) Main Power Supply Alarms - AC Power Alarm - SD-80731-01, DC Power Alarm - SD-80729-01, Power Audible Alarm - SD-80730-01.

(m) Toll Switchboard Alarm Line Circuit - SD-55135-01.

(n) Toll Power Audible Alarm - SD-81061-01.

(o) Power Audible Alarm Circuit - SD-81472-01.

(p) Auxiliary Charging Circuit - SD-81016-01.

(q) 410B 130-Volt Power Supply - SD-81295-01.

(r) 500-Type Motor Alternator - SD-81350-01.

(s) Audible and Visual Alarm Circuit (TH Radio) - SD-59864-01.

(t) K and L Carrier Application Schematic Carrier Supply Circuits - SD-59007-01.

(u) Broadband Carrier Telephone Application Schematic - K and L Carrier - SD-59108-01.

(v) L-Type Multiplex Carrier Test and Alarm Panel Circuit - SD-50224-01.

(w) N3 Carrier Application Schematic - SD-97188-01.

(x) N3 Carrier Supply Application Schematic - SD-99735-01.

(y) N2 Carrier Telephone Application Schematic - SD-97256-02, SD-97118-01, SD-97256-01.

(z) N1 Carrier Telephone Application Schematic - SD-95121-01, SD-97031-01.

(aa) 0 and ON Carrier Telephone Application Schematic - SD-95150-01.

STEP-BY-STEP

(a) Switch Trouble Alarm for Line Finders - SD-31514-01.

(b) Switch Trouble Alarm for Selectors - SD-31515-01.

(c) Switch Trouble Alarm for Connectors - SD-31516-01.

(d) Switch Trouble Alarm for B Switchboard - SD-31517-01.

(e) Switch Trouble Alarm for Outgoing Trunks - SD-31518-01.

(f) DC Power Fuse Alarm - SD-31519-01.

(g) DC Voltage Control Alarm - SD-31544-01.

(h) DC Power Circuit Breaker Alarm - SD-31545-01.

(i) DC Power Miscellaneous Alarm - SD-31546-01.

(j) Miscellaneous Tone and Tone Alarm Circuit - SD-31521-01.

(k) Extension Alarm Circuit - SD-31418-01.

(ℓ) Common Timing Circuit - SD-31558-01.

(m) Motor Stop and Guard Circuit - SD-31553-01.

(n) AC Power Alarm Circuit - SD-31559-01, SD-31560-01.

(o) Coin Control Trunk Alarm Circuit - SD-31227-01.

(p) Fuse Alarm Circuit for Relay Rack Alarm Frame - SD-31613-01.

(q) Alarm Circuit Ringing and Coin Control Supply - SD-31618-01.

(r) Alarm Circuit Ringing Coin Control and Associated Power Supply - SD-31617-01.

(s) Emergency Ringback Alarm - SD-31717-01.

(t) Test Circuit for Testing Substation Ringers - SD-31141-01.

(u) Eight-Party Interrupter and Alarm Circuit - SD-31336-01.

(v) Interrupter and Alarm Circuit - SD-31494-01.

(w) Code Ring Interrupter and Alarm - SD-31187-01.

(x) Information Desk No. 3 Miscellaneous Alarm - SD-31477-01.

(y) Alarm Circuit for PBX Trunks - SD-31785-01.

(z) Alarm Checking Terminal Circuit - SD-31835-01.

(aa) Cable Insulation Alarm Circuit - SD-96348-01.

(ab) Coin Trunk Timed Release Circuit - SD-31861-01.

(ac) Auxiliary Alarm Circuit - SD-31866-01.

(ad) Step-By-Step Line Insulation Test Control Circuit - SD-32219-01.

(ae) Step-By-Step Intertoll Dialing Office with CAMA Alarm Circuit - SD-32266-01.

(af) Miscellaneous Circuit for Identifier Frame - SD-95819-01 (Typical ANI Circuit).

(ag) Step-By-Step ANI Type C- Miscellaneous Circuit SD-32381-01.

(ah) Step-By-Step With Common Control Alarm Circuit - SD-32361-01.

(ai) Step-By-Step Manual OGT Test Frame Test Circuit - SD-32349-01.

(aj) Step-By-Step Miscellaneous Circuit For OGT Frames - SD-32526-01.

(ak) ROTL-3 Central Control Unit - SD-35065-01.

PBX

(a) 702A PBX Alarm Circuit - SD-66612-01.

NO. 5 CROSSBAR

(a) Alarm Circuit - SD-25671-01.

(b) Aisle Pilot Circuit - SD-25087-01.

PRIVATE SERVICE SYSTEMS

(a) Data Testboard Alarm Circuit - SD-1G036-01.

(b) Air-Ground Voice Communication Alarm Circuit - SD-1G052-01.

(c) Air-Ground Voice Communication 2-Way Trunk Circuit for Dual Facility at Direction Center - SD-95804-01.

(d) Air-Ground Voice Communication 2-Way Trunk Circuit for Dual Facility at Radio Site - SD-95805-01.

CROSSBAR NO. 1 OR TANDEM

(a) Aisle Pilot Circuit - SD-25087-01.

ELECTRONIC SWITCHING SYSTEMS

(a) No. 1 ESS Office Alarm Circuit - SD-1A158-01.

(b) No. 101 ESS Maintenance Center Circuit - SD-1H052-01.

(c) No. 101 ESS Power Distribution and Fuse Alarm Circuit - SD-1H064-01.

TRAFFIC SERVICE SYSTEMS

(a) TSPS No. 1 Office Alarm Circuit - SD-1B036-01.

DATA SYSTEMS

(a) B1 Data Carrier Terminal Application Schematic - SD-73020-01.

ALARM SURVEILLANCE AND CONTROL SYSTEMS

(a) E2A, Telemetry System SAC Remote Applications Schematic - SD-1C543-01.

(b) Step-by-Step Interface and Control Circuit for ASC Systems - SD-35025-01.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This circuit shall perform in accordance with the specifications of 3. FUNCTIONS and those of the Circuit Requirements Table.

SECTION IV - REASONS FOR REISSUE

B. Changes in Apparatus

B.01	Superseded	Superseded By
	AA - Bryant 3952 Key - Fig. 14	AA - Bryant 3972 Key - Fig. 14
	ALM - Bryant 3952 Key - Fig. 44	ALM - Bryant 3972 Key - Fig. 44
	AA - Bryant 3952 Key - Fig. 46	AA - Bryant 3972 Key - Fig. 46
	SW - Bryant 3952 Key - Fig. 81	SW - Bryant 3972 Key - Fig. 81
	SV - Bryant 3952 Key - Fig. 82	SV - Bryant 3972 Key - Fig. 82

D. Description of Changes

D.01 Connecting information is changed in Fig. 1, 2, 5, 9, 15, 30, 51, 65, 67, and 76 to remove reference to CSACS interconnect circuit for common systems and add E2A SAC remote application schematic.

D.02 Connecting information is changed on Fig. 1, 2, 78, 79, and 89 to delete reference to CSACS interface and control circuit and add interface and control circuit for ASC systems. This change is due to a title change in the connecting circuit SD-35025-01.

D.03 Figures 5 and 9 are changed to add information indicating the diodes are a part of a component assembly.

D.04 Equipment Note 225 is changed to delete reference to CSACS and add information pertaining to input terminals 11-20 on the assembly.

D.05 Circuit Note 105 is changed to delete reference to Centralized Status Alarm and Control System (CSACS) and add Alarm Surveillance and Control (ASC) Systems.

D.06 The title of Fig. 89 is changed to formerly read For CSACS Control of Alarm Transfer.

D.07 In Fig. 14, 44, 46, 81, and 82 the code of the key is changed from Bryant 3952 to Bryant 3972 on a line-out basis. The 3952 key is no longer manufactured.

D.08 Figures 116 and 118 are changed to add connecting information to the component assembly.

D.09 Figures 113, 114, 121, 132, 144, 146, 164, 166, 173, 174, and 175 are changed to add leads for the ASC system application.

D.10 Figure 183 is rated Mfr Disc.

D.11 Figure 184 is changed to cover connection to the component assembly.

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