11

CROSSBAR SYSTEMS
NO. 3
ALARM CIRCUIT

CHANGES

D. Description of Changes

D.1 The FS1 has been revised to show the addition of X, S, and R options. Wiring formerly not designated has been designated Y option and rated Mfr Disc.

D.2 Circuit Notes 102, 104, and 105 have been revised.

D.3 Cross-Connection Note 401 and supporting information added.

D.4 CAD 1 revised; CAD 2 (Mfr Disc.) was formerly part of CAD 1.

D.5 CADs 3, 4, and 5 are added.

F. Changes in CD Sections

F.1 In SECTION II, change title of 1. to read:

1. MAJOR ALARM - FS1

F.2 In SECTION II, 1.01, change:

"... lead MJ in FS1, relay MJ- operates, ..."

To read:

"... lead MJ, relay MJ- operates, ..."

F.3 In SECTION II, change title of 2. to read:

2. MINOR ALARM - FS1

F.4 In SECTION II, 2.01, change:

"... lead MN in FS1, relay MN- operates, ..."

To read:

"... lead MN, relay MN- operates ..."

F.5 In SECTION III, 3.02, change:

Lights a major alarm lamp, a circuit lamp, ...

To read:

Lights a circuit lamp ...

F.6 In SECTION III, change 3.03 to read:

3.03 Lights a circuit lamp, and a frame lineup lamp all on the test frame for an indication of where the trouble is located, and sounds a minor audible alarm.

F.7 In SECTION III, 3.04, change:

... sounds a respective audible alarm.

To read:

... sounds a major audible alarm.

F.8 In SECTION III, change 4.01 (u) to read:

(u) CSACS/E2A Interconnection Circuit - SD-1P026-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5245-GFC

WE DEPT 25820-RET-GWC-BT

CROSSBAR SYSTEMS
NO. 3
ALARM CIRCUIT

CHANGES

D. Description of Changes

D.1 Diodes are added in series between the 2TR, 1TRO, and 1TR1 relays and their respective leads to eliminate a possible ground path from the alarm sending circuit to the CSACS E2A interconnection circuit. An audible alarm signal is added to complement the visual alarm signal for the -48 volt power plant circuit.

D.2 When a pickup alarm condition is received and released, the D fuse may fail because of the contact sequence of the AK24 relay presently used for the pickup alarm. To eliminate the possibility of a blown fuse and eroded contacts the AK24 relay is replaced by a AK49 relay which has the proper contact sequence to interrupt the ground over the PKU lead.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5245-HNS

WE DEPT-355-RET-KLF-JCM

CROSSBAR SYSTEMS
NO. 3
ALARM CIRCUIT

TABLE OF CONTENTS

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit provides audible and visual alarm signals for crossbar No. 3 offices. In conjunction with the

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alarm sending circuit or the Centralized Status, Alarm and Control System (CSACS) E2A remote circuit it provides for extending the alarms to a distant office. It also functions with circuits providing loop closures on alarm requests.

2. GENERAL DESCRIPTION OF OPERATION

2.01 A trouble in the switching equipment such as a time alarm, a busy alarm, or a blown fuse will result in connection of battery through a resistance or a lamp and resistance network to lead MJ or MN to FS1. The signal network will have one of three forms as follows depending on the conditions.

2.02 The fuse alarm network consists of a resistance in series with a parallel combination of a resistance and a 24-volt lamp.

2.03 A time alarm that is restricted to a single contact connects battery through a 48-volt lamp and a resistance in parallel to the alarm lead.

2.04 A time alarm that is not restricted to a single contact lights the circuit lamp in a local circuit and connects battery through a resistance to the alarm lead.

SECTION II - DETAILED DESCRIPTION

1. MAJOR ALARM

1.01 When resistance battery is connected to lead MJ in FS1, relay MJ- operates, lights the lamp at the test frame associated with that particular frame line up. Relay MJ- operated also operates relay MJA in FS2 which:

(a) Signals the alarm sending circuit through lead AO or the CSACS E2A remote circuit when provided for transfer of alarms to a distant test center through lead MJO.

(b) Operates the major audible alarm under control of the alarm sending circuit when alarms are not transferred.

2. MINOR ALARM

2.01 When resistance battery is connected to lead MN in FS1, relay MN- operates, lights the lamp at the test frame associated with that particular frame line up. Relay MN- operated also operates relay MNA in FS2 which:

(a) Signals the alarm sending circuit through lead A6 or the CSACS E2A remote circuit when provided for transfer of alarms to a distant test center through lead MNO.

(b) Operates the minor audible alarm under control of the alarm sending circuit when alarms are not transferred.

3. AUDIBLE ALARM - FS3

3.01 The audible alarm under control of the alarm sending circuit will give an audible signal when there is an alarm condition in the office and the alarms are not transferred to a distant office. The audible alarm signals are a steady 2900 Hz ±100 Hz for a major office and all power alarms, a steady 4500 Hz ±500 Hz for carrier alarms and a pulsating 2900 Hz ±100 Hz for minor office alarms. These alarms are activated by ground signals through the MJ, CF, and MN leads, respectively.

4. ALARM RELAY RESISTANCE BATTERY SUPPLY - FS4

4.01 Resistance battery is supplied over leads MJR and MNR to circuits which require loop closure on local alarm request. Relay RBT is normally held operated by "C" -48 volts ABS supply. Should the "C" -48 volt ABS supply fail or the ABS supply at the -48 volt power plant fail the RBT relay releases and transfers from -48 volt ABS supply to -48 signal supply for continuous operation of those circuits requiring resistance battery.

5. CARRIER ALARM AND TRANSFER CIRCUIT - FS5

5.01 When alarm sending is not in operation the CAT relay is operated by the alarm sending circuit over the CS lead. Ground loop closure through the carrier circuit over leads MNA and MN will operate relay CMN which provides ground to operate both a visual and an audible alarm. Ground loop closure through the carrier circuit over leads MJA and MJ causes similar action to be taken on a carrier major alarm.

5.02 When the office is unattended and alarm sending is in operation, CAT relay not operated provides for transfer of major and minor alarms from the carrier circuits. A major carrier alarm signals the alarm sending circuit or CSACS E2A remote circuit through ground on leads A1 or CFMJ, respectively. A minor carrier alarm signals the alarm sending circuit or CSACS E2A remote circuit through ground on leads A2 or CFMN, respectively.

6. VOICE ALARM AND TRANSFER CIRCUIT FOR USE WITH ANNOUNCEMENT CIRCUIT - FS6

6.01 Resistance battery from FS4 through the voice alarm and control circuit to operate the VMJ relay. Relay VMJ operated provides ground signals which:

(a) Lights the VA lamp in the test circuit.

(b) Extends the alarms to a distant building through the alarm sending circuit or the CSACS E2A remote circuit over lead A1 or lead ASMJ, respectively.

(c) Operates the audible alarm over lead MJ when the alarms are not transferred.

7. LOAD ALARMS - FS7

INCOMING REGISTER CIRCUIT GROUP BUSY LOAD ALARM

7.01 When all the incoming register of a group become busy, relay IRB operates and grounds the IRB lead to the test circuit. The IRB operated, opens the ground path for the LA capacitor to start the TMA time delay circuit. When the IRB relay remains operated for 9.6 to 11.4 seconds the LA relay is operated by a battery signal from the TMA time delay circuit. The LA operated locks the IRB operated through its own contacts and also locks the TMA time delay circuit operated under control of the AR relay in the alarm sending circuit. Relay LA operated also lights the LA lamp in the test circuit and gives a minor alarm for the frame line up in which the test circuit is located. It also grounds lead A5 to the alarm sending circuit for a distinctive load alarm indication rather than a minor office alarm. Relays LA and IRB operated provide a ground signal through lead IRB to the CSACS E2A remote circuit when provided.

7.02 When alarms are released the AR relay in the alarm sending circuit operates. This closes the ground path for the LA capacitor, through a make contact of the LA relay, over lead AR2 and releases the LA relay if it is operated. Releasing the LA relay retires the minor alarms and extinguishes the LA lamp and if no incoming register group is busy the IRB relay releases and the IRB lamp is extinguished.

7.03 Originating register circuit group busy load alarm operates in the same manner as the incoming register group busy load alarm described in 7.01 and 7.02 except relay ORB operates to start the alarm sequence.

7.04 Outgoing sender and connector circuit group busy load alarm operates in the same manner as the incoming register group busy load alarm described in 7.01 and 7.02 except relay SDRB relay operates to start the alarm sequence.

MARKER GROUP LOAD ALARM

7.05 When all markers become busy, relay AMB operates and grounds the AMB lead and lights the AMB lamp in the test circuit. Relay AMB operated also breaks the ground path to start the TM time delay circuit. When the AMB remains operated for 46 seconds to 54 seconds the TM relay is operated by a battery signal from the TM time delay circuit. Relay TM operated locks the TM time delay circuit operated under control of the AR relay in the alarm sending circuit. Relay TM operated also lights the MBA lamp in the test circuit and gives a minor alarm for the frame line up in which the test circuit is located. It also grounds lead A5 to the alarm sending circuit for a distinctive load alarm indication rather than a minor office alarm. Relay TM operated provides ground through lead CMB to the CSACS E2A remote circuit when provided.

7.06 The AMB is a slow-release relay (190 to 390 milliseconds). If a marker is released then reseized within this interval the slow-release relay would remain operated. This eventually will cause a load alarm, if markers are reseized as soon as they become idle.

7.07 When alarms are released the AR relay in the alarm sending circuit is operated. This closes the ground path over the AR2 lead for the TM capacitor, through a make-contact of the TM relay and returns the timing circuit to normal. With the timing circuit normal the TM relay releases and retires the minor alarm and extinguishes the AMB lamp and if no markers are busy the MB relay releases and extinguishes the MB lamp.

8. CONNECTOR CIRCUITS ALARM - FS8

8.01 This figure provides an alarm when either the marker connector circuit or the line, line switch, and connector circuit is busy. The CONA relay is operated by resistance battery through loop closure on alarm request. Relay CONA operated provides ground signals for a major audible alarm when alarms are not transferred and a ground through lead A1 to the alarm sending circuit or through lead COMJ to the CSACS E2A remote circuit when alarms are transferred.

9. OUTSENDER LINK TRUNK IDENTIFIER ALARM CIRCUIT - DS9

9.01 This figure provides loop closure on alarm request for the outsender link trunk identifier circuit. Relay OSLTI operated provides a ground for the audible alarm when alarms are not transferred, and a ground over lead A4 to the alarm sending for a minor alarm indication when alarms are transferred.

10. POWER ALARM CONTROL CIRCUIT - FS10

MAJOR POWER ALARMS

10.01 A major alarm condition in the ringing and tone power plant, +48 volt DC converter circuit, ±130 volt power plant circuit or -48 volt power plant circuit is signaled by ground on lead D, D3, D1, or D2, respectively. When RTMJ, COMJ, or FA1 relay operates, a ground signal is sent to:

(a) The alarm sending circuit through lead A0 or to the CSACS E2A remote circuit through lead MJP when alarms are transferred to a distant test center.

(b) Operates the major audible alarm over lead MJ when alarms are not transferred.

(c) Light the PWR lamp in the test circuit.

(d) The test circuit over leads RTA, CONV, or PMJ, respectively, for trouble indications.

(e) The CSACS E2A remote circuit when provided for transfer of alarms to a distant test center through leads RTMJ, CVMJ, or PMJ, respectively.

MINOR POWER ALARMS

10.02 A minor alarm condition in the ringing and tone power plant, ±130 volt power plant circuit or -48 volt power plant circuit is signaled by ground on lead A, A1, or A2, respectively. When RTMN, COMN, or RFA relay operates, a ground signal is sent to:

(a) The alarm sending circuit through lead A1 or the CSACS E2A remote circuit through lead MNP when alarms are transferred to a distant test center.

(b) See 10.01 (b) and (c).

(c) The test circuit over leads RTA, CONV, or RFA, respectively, for trouble indications.

(d) The CSACS E2A remote circuit when provided for transfer of alarms to a distant test center through leads RTMN, CVMN, or RFA, respectively.

AC COMMERICAL POWER FAILURE

10.03 When AC commerical power fails the ACF relay is operated by a ground signal from the -48 volt power plant circuit after a delay of approximately 13 seconds. Relay ACF operated, signals the alarm sending circuit over lead A0 or the CSACS E2A remote circuit over lead ACF when alarms are transferred to a distant test center. Operated relay ACF also operates the major audible alarm over lead MJ when alarms are not transferred. Ground signals are sent to the test circuit through leads ACF for trouble indications and lead AB to light the PWR lamp.

11. ABS FUSE ALARM CONTROL CIRCUIT - FS11

11.01 When a -48 volt ABS fuse on the PRTD operates, it connects battery through the FA resistor to the winding of the FA relay. Operation of the FA relay connects resistance battery through a make-contact and brings in a major alarm over the MJ lead FS1 associated with the line-up in which the PRTD circuit is located and lights the ABS lamp in the test circuit. The FS11 also provides for alarming of the alarm battery fuse in the -48 volt power plant circuit. When the fuse operates, the PABS lamp lights and the PABS relay operates to send out the same signals as for an ABS fuse in the PRTD circuit except that the ABS lamp will not light. Operation of either the FA relay or the PABS relay applies ground through lead ABS to the CSACS E2A remote circuit when provided for transfer of alarms to a distant test center.

11.02 The FAA relay is normally held operated by the "A" -48 volt ABS fuse.

Should either the A-ABS fuse in the PRTD circuit fail or the ABS fuse in the -48 volt power plant fail, the FAA relay releases and transfers from the ABS supply to a -48 volt signal for continuous operation of a majority of the circuit. When the FAA relay releases or the PABS relay operates a ground signal is sent to the test circuit to operate the ALST relay for alarm start indication.

12. REGISTER AND SENDER TIME-OUT ALARM - FS12

12.01 The ALM leads of FS12 are common to all registers and senders. Any register or sender circuit whose internal timing circuit functions will connect ground to the ALM lead. This causes DLA relay to operate which starts the timing interval. When the RSTO relay operates it lights the R-S-TOA lamp in the test circuit and closes the circuit between resistance battery FS4 and aisle alarm FS1 to cause a major alarm indication to be given as stated in 1. The time constant of the DL capacitor and the DL resistor is such that operation of the RSTO relay will not be reached during the normal integrated time intervals of all senders and registers, but only in the event that one of these circuits fails to release within the prescribed interval (12.65 to 14.75 seconds) and continues to maintain a ground on the ALM lead.

12.02 Whenever there is no ground present on ALM lead the DLA relay releases. This closes the ground path for the DL capacitor and prevents the RSTO relay from operating or releases it, if it has operated. Releasing the RSTO relay retires the major alarm and extinguishes the R-S-TOA lamp.

13. PICKUP ALARM - FS13

13.01 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 PU relay. The PU relay operated, operates the PU1 which in turn operates the PU2. The PU2 relay operated lights the PUA lamp, sends ground to the CSACS E2A remote circuit through lead PU, and closes the circuit over the MJ lead to the alarm circuit to bring in major alarm indications. During the 1/4-second interval when the PKU and PUA leads are not connected together, the PU and PU1 relays will release but before the slow-release PU2 relay has released, ground from the PKU lead will be reconnected to the PU2 relay through the upper back contact of the PU1 relay, released, so that the PU2 relay will remain operated throughout 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 PU 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. One FS13 is provided for all markers served by the same ringing machine.

14. PERMANENT SIGNAL ALARM CIRCUIT FOR INCOMING TRUNKS FROM STEP-BY-STEP - FS14

14.01 When a called party disconnects first an on-hook signal is returned to the calling end. Since the connecting step-by-step office does not provide facilities with which to release the called customer line in the event the calling end stays on, a minor alarm is signaled and lamp IPS is lighted.

14.02 With the return of an on-hook signal to the calling end, the incoming trunl circuit operates relay IPS. Relay IPS operates IPS lamp, returns a permanent signal alarm to the connecting step-by-step office, and will await disconnect by the calling party before restoring the trunk circuit to normal.

15. INTERRUPTER ALARM CIRCUIT -FS15

15.01 This figure provides a major alarm for the 60- or 120-IPM interrupter circuit under any of the following conditions:

(a) Failure of a primary relay.

(b) Failure of a secondary relay.

(c) An open lead from the ringing and tone power plant circuit.

(d) A trouble ground on a lead from the ringing and tone power plant circuit. (60 or 120 IPM only).

15.02 The INT relay is operated by resistance battery from the 60- or 120-IPM interrupter circuit. Relay INT operated provides ground signals for a major

audible alarm and to light the IPM lamp at the test frame when alarms are not transferred. When alarms are transferred, relay INT operated signals the alarm sending circuit or the CSACS E2A remote circuit through a ground on lead A1 or INT, respectively.

16. CALLING LINE IDENTIFICATION ALARM - FS16

16.01 This figure provides an alarm when a call is completed to a customer who has received nuisance calls and has requested identification of the originating station.

16.02 A marker setting a call to a line marked for call tracing, grounds lead CLI and operates relay CLI. If the office alarms are not transferred, relay CLI operated connects ground to the MJ lead causing a major audible alarm to sound. Relay CLI operated also locks to ground on lead LK2 until the alarm release key is operated. With alarms transferred, the CLI relay operated connects ground to lead A3A to provide a distinct tone signal to the alarm sending circuit and also connects ground through lead CLI to the CSACS E2A remote circuit when provided for transfer of alarms to a distant test center.

17. TROUBLE PERMANENT SIGNAL OVERFLOW COUNTER ALARM CIRCUIT - FS17

17.01 This circuit provides an alarm indication for the trouble permanent signal overflow counter circuit. With a ground signal present on lead PSCA from the trouble permanent signal overflow counter circuit, relay PSCA will operate to bring in a major audible alarm by a ground signal through lead MJ when alarms are not transferred. Relay PSCA operated signals the alarm sending circuit through lead A1A or the CSACS E2A remote circuit when provided for transfer of alarms to a distant test center through lead PS.

18. MARKER TIME-OUT AND TROUBLE RECORD START ALARM CIRCUIT - FS18

18.01 Whenever a marker circuit attempts to connect to the trouble record, whether successful in the attempt or not, the circuit requesting the trouble recorder connects a ground through lead MN to operate the MMN- relay. Relay MMN- operated connects a ground through lead:

(a) MN to sound a minor audible alarm when alarms are not transferred.

(b) TREC to light the TREC lamp on the test circuit.

(c) A4 to the alarm sending circuit or MN to the CSACS E2A remote circuit when alarms are transferred to a distant test center.

18.02 Operation of the TRT and TA relays in the marker circuit connects a ground through lead MJ1 to operate the MMJ- relay. Relay MMJ- operated connects a ground through lead:

(a) MJ to sound a major audible alarm when alarms are not transferred.

(b) A2 or A3 to the test circuit for the purpose of indicating which frame line up the alarm is in by lighting either the LNT or TST lamp, respectively.

(c) TA- to the test circuit for an alarm indication.

(d) A3 to the alarm sending circuit or lead MJ to the CSACS E2A remote circuit when alarms are transferred to a distant test center.

19. EMERGENCY REPORTING AUXILIARY LINE ALARM CIRCUIT - FS19

19.01 When the ALB relay in the emergency reporting auxiliary line circuit operates, a ground signal through lead MJ to operate relay ERL. When ERL relay operates it closes the circuit between lead MJR from the resistance battery circuit and lead MJ to the MJ3 relay of FS1 to bring in a major alarm as described in 1. When both the ALB relay and the ERL relay operate, it closes the ground path through the ERL lead to light the ERL lamp in the test circuit.

20. MESSAGE REGISTER ALARM CIRCUIT - FS20

20.01 When resistance battery is connected to the MR relay through lead MJ from the message register circuit, the MR relay operates and applies ground through lead A1 to the alarm sending circuit or through lead MR to the CSACS E2A remote circuit when alarms are transferred to a distant test center. Ground through lead A1 gives an indication at the test frame for the frame line up that the trouble is in and ground through lead MR to the test circuit to light the MR lamp. Ground through the MJ leads provides and alarm indication to the test circuit and to sound a major audible alarm when alarms are not transferred.

21. TROUBLE RECORDER ALARM - FS21

21.01 Resistance battery through lead TM from the test circuit will cause the TST relay to operate. Relay TST operated provides ground through the following leads:

(a) A2 to the alarm sending circuit.

(b) TRMN and MNO to the CSACS E2A remote circuit when alarms are transferred to a distant test center.

(c) A3 to indicate which frame line up the alarm is in.

(d) MN to sound a minor audible alarm when alarms are not transferred.

22. ALARM SENDING FAILURE ALARM - FS22

22.01 A ground through lead ASF from the alarm sending circuit will operate the ASF relay. A locking path for the ASF relay is provided by the LK2 to the alarm sending circuit. Relay ASF operated provides ground through leads ASF and MJ to the test circuit for an alarm indication and through the other MJ lead to sound a major audible alarm when alarms are not transferred. Ground through lead A1 to the alarm sending circuit for transfer of alarms to distant test center.

23. ALARM RELAY CIRCUIT FOR USE WITH CROSSBAR NO. 5 AISLE PILOT CIRCUIT - FS23

23.01 This figure provides alarms for the crossbar No. 5 aisle pilot circuit mounted on frames outside of the crossbar No. 3 module. Ground through the MJ1 lead will cause the MJO relay to operate and ground will be applied to the MJA lead to operate the MJA relay in FS2 and sends out alarms as in 1.01 (a) and (b). The MNO relay operates in the same manner and sends out alarms as described in 2.01 (a) and (b).

24. MARKER FIRST AND SECOND TRIAL AND USAGE ALARMS FOR USE WITH CENTRALIZED STATUS, ALARM AND CONTROL SYSTEM - FS24

24.01 Ground through the PCO or PC1 leads from the marker will cause either the PCO or PC1 magnetic counter to operate. A normally open contact in the magnetic counter closes during application of the pulse which advances the counter from 9 to 0 and operates the PCO or PC1 relay. Relay PC- operated sends a ground through lead PC- to the CSACS E2A remote control circuit. Ground through leads 1TRO, 1TR1, and 2TR from the marker circuits will cause their respective relays to operate and sends ground to the CSACS E2A remote control circuit. The 2TR, 1TRO, 1TR1, PCO, and PC1 relays lock operated under control of the LK2 lead to the alarm sending circuit for release of the alarms.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 None.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

Designation	Meaning
1TRO	Marker O First Trial
1TR1	Marker 1 First Trial
2TR	Marker Second Trial
ACF	AC Failure
AMB	All Markers Busy
ASF	Alarm Sending Failure
CAT	Carrier Alarm Transfer
CLI	Calling Line Identification
CMJ	Carrier Alarm Major
CMN	Carrier Alarm Minor
COMJ	Converter Alarm Major
COMN	Converter Alarm Minor
CONA	Connector Alarms
DLA	Delay Alarm
ERL	Emergency Reporting Line
FA	Fuse Alarm for ABS Fuses in PRTD Circuit
FAA	Fuse Alarm Auxiliary
FA1	Fuse Alarm for -48V Power Plant Circuit
INT	60 or 120 Interrupter Alarm

Designation	Meaning
IPS	Incoming Bylink Permanent Signal
IRB	Incoming Register Busy
LA	Load Alarm
MJ-	Major Alarm
MN-	Minor Alarm
MJA	Major Alarm Auxiliary
MNA	Minor Alarm Auxiliary
MMJO	Marker 0 Major Alarm
MMNO	Marker 0 Minor Alarm
MMJ1	Marker 1 Major Alarm
MMN1	Marker 1 Minor Alarm
MR	Message Register
ORB	Originating Register Busy
OSLT1	Outsender Link Trunk Identifier Alarm
PABS	Fuse Alarm for ABS Fuse in -48V Power Plant
PCO	Marker 0 Peg Count
PC1	Marker 1 Peg Count
PSCA	Permanent Signal Overflow Counter Alarm
PU,PU1,PU2	Pickup Alarm
RBT	Resistance Battery Transfer
RFA	Rectifier Failure Alarm
RSTO	Register Sender Time Out Alarm
RTMJ	Ringing and Tone Power Plant Major Alarm
RTMN	Ringing and Tone Power Plant Minor Alarm
SDRB	Senders Busy
TM	Time Delay Marker Busy Alarm
TST	Trouble Recorder
VMJ	Voice Alarm Major

2.02 Timers

Designation	Meaning
DL	Registered Sender Alarm Delay
TM	Marker Load Alarm Delay
TMA	Registers and Senders Load Alarm Delay

3. FUNCTIONS

3.01 Responds to separate or simultaneous alarm signals of major or minor grades from various circuits in the office.

3.02 Lights a major alarm lamp, a circuit lamp, and a frame line-up lamp all on the test frame for an indication of where the trouble is located and sounds a major audible alarm.

3.03 Lights a minor alarm lamp, a circuit lamp, and a frame line-up lamp all on the test frame for an indication of where the trouble is located and sounds a major audible alarm.

3.04 Lights the power alarm lamp in the test frame when either a major or minor power alarm is detected and sounds a respective audible alarm.

3.05 Signals the different grades of alarms to the alarm sending circuit and silences the audible alarms when the alarm sending is set to transmit the alarms to an attend office.

3.06 This circuit may be used with the CSACS E2A remote circuit instead of the alarm sending circuit for transferring alarms to an attended office.

4. CONNECTING CIRCUITS

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

(a) Test Circuit - SD-26411-01.

(b) Alarm Sending Circuit - SD-26442-01.

(c) Alarm Transfer and Release Circuit - SD-26465-01.

(d) Marker Circuit - SD-26384-01.

(e) Voice Alarm and Control Circuit - SD-26390-01.

(f) Line, Line Switch, and Connector Circuit - SD-26382-01.

(g) Marker Connector Circuit - SD-26389-01.

(h) Emergency Reporting Auxiliary Line Circuit - SD-26449-01.

(i) Outgoing Sender Link and Trunk Identifier Circuit - SD-26395-01.

(j) Incoming Register Circuit - SD-26386-01.

(k) Originating Register Circuit - SD-26385-01.

(ℓ) Outgoing Sender and Connector Circuit - SD-26387-01.

(m) Traffic Register Circuit - SD-26437-01.

(n) -48V Power Plant Circuit - SD-26452-01.

(o) -48V Rectifier Circuit - SD-26451-01.

(p) Interrupter Circuit 60 or 120 IPM - SD-26407-01.

(q) Message Register Circuit - SD-26408-01.

(r) Trouble Permanent Signal Overflow Counter Circuit - SD-26405-01.

(s) Power, Ringing and Tone Distributing Circuit - SD-26414-01.

(t) Trunk Circuit (Typical) - SD-26425-01.

(u) CSACS/E2A Interconnection Circuit - SD-1P028-01.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This alarm equipment shall be capable of meeting all the requirements of the Circuit Requirements Table.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5245-LCB

WE DEPT 355-RET-KLF-MH