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COMMON SYSTEMS
MISCELLANEOUS CIRCUIT
OUTPULSER FRAME
AUTOMATIC NUMBER IDENTIFICATION - TYPE B
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

CHANGES

D. Description of Changes

- D.1 Circuit Note 106, relating to the maximum number of out-pulsers, per identifier group, that can be served, has been added. Also, Sheet Note 2 on Sheet 3 has been revised to show reference to outpulsers 7, 8, and 9.
- D.2 In FS11, the designation of leads 1 and 2 connecting to the alarm circuit has been interchanged to bring the circuit information into agreement with CAD 4 and the WECO T drawing. This change has been made without record by agreement with the Western Electric Company.
- D.3 CADs 6 and 9 have been revised and CAD 10 has been added.
- D.4 The designation "Type B" has been added after "Automatic Number Identification" in this title.
- D.5 The rating of this circuit has been changed to: AT&TCo Std, A&M Only for Panel and Step By Step No. 350A.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2341-MRM-RMW

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BA
1

CIRCUIT DESCRIPTION

CD-95820-01
Issue 2-D
Appendix 2-D
Dwg. Issue 4-D

COMMON SYSTEMS
MISCELLANEOUS CIRCUIT
OUTPULSER FRAME
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 This circuit was reissued to add coordinate numbering to the present consecutive numbering per CADS 1, 2, 4, 5, 6, 7, and 8. The coordinate numbering to be used for shop testing only.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-MEB-FBB-ML

COMMON SYSTEMS
MISCELLANEOUS CIRCUIT
OUTPULSER FRAME
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP-BY-STEP OFFICE

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

Relay TR1 (AJ5) - T option, App. Fig. 3

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The outpulser preference chain and alarm feature is modified to provide for a maximum of seven outpulsers in an

identifier group. Relay (TR1) is added as T option to App. Fig. 3.

D.2 Note 101 is changed to provide the MISC and TBS 1-1/3 amp. fuses on a one per identifier group basis and to add the TBS 1/2 amp. fuse, on a one per identifier group basis, to supply the +130V frame test battery.

D.3 These changes are made without record.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-HVK-FBB-DC

COMMON SYSTEMS
MISCELLANEOUS CIRCUIT
OUTPULSER FRAME
AUTOMATIC NUMBER IDENTIFICATION
CROSSBAR NO. 1, PANEL OR STEP BY STEP OFFICE

SECTION I - GENERAL DESCRIPTION

1. This circuit is designed for use in No. 1 Crossbar, Panel, and Step-By-Step offices, arranged for Automatic Number Identification. It provides the miscellaneous apparatus mounted on the Outpulser frame and includes the frame test battery, a talking line between ANI frames, a spare jack, a remote control jack for automatic testing, the alarm release key, a preference chain transfer and alarm, various fuse alarms, and other outpulser alarm indications.

SECTION II - DETAILED DESCRIPTION

1. FRAME TEST BATTERY - FS1

Test terminals are furnished on the frame to supply -48V battery, direct ground, and high resistance ground. Test battery jacks A and C (V option), or 48V and +130 (W option) are provided to supply battery and direct ground for use with test sets.

2. TALKING LINE BETWEEN ANI FRAMES - FS2 (CROSSBAR NO. 1 AND PANEL) FS13 (STEP-BY-STEP)

Communication may be established between two or more ANI frames by plugging telephone sets into the TEL jack (FS3) or the SWMN jacks (FS13) on the ANI frames. Talking battery is supplied through the connecting circuit. No arrangement for signaling is provided.

3. SPARE JACK - FS3

Jack B is provided for possible future requirements.

4. ALARM RELEASE KEY - FS4

Alarm relays in the outpulser circuit, when operated, lock under control of the (AR) key. These alarm relays may be released by the momentary operation of the (AR) key. When alarm transfer is not provided, Z wiring provides direct ground to the "AR" lead. Where alarm transfer is provided, Y wiring supplies the locking ground over the "LK" lead to permit retiring the alarms from a distant point.

5. FUSE ALARMS - FS5, 6, 7, 8

5.1 -48 Volt Fuse Alarm (Crossbar No. 1 and Panel)

The operation of the 20 ampere feeder fuse followed by the operation of the

parallel 1-1/3 ampere pilot fuse, or the operation of any 1-1/3 ampere circuit fuse connects -48 volt battery to the "P" lead through the (20A) or (FA) resistor and the primary winding of the (FA) relay. The (FA) relay operates and locks to the (AR) key.

The (FA) lamp lights from ground over the "FL" lead. When the fuse is replaced, the (FA) lamp is extinguished and the (FG) lamp is lighted from ground over the "GL" lead.

The operated (FA) relay grounds the "OB" lead to make the associated outpulser circuit busy until the alarm release key is operated to restore the circuit to service.

The 20 ampere feeder fuse shall be replaced before its associated pilot fuse is replaced.

The 221 ohm series resistor is used to protect the alarm lead in case of a trouble ground.

5.2 -48 Volt Fuse Alarm (Step-by-Step)

The operation of the 20 ampere feeder fuse followed by the operation of the parallel 1-1/3 ampere pilot fuse, or the operation of any 1-1/3 ampere circuit fuse connects -48 volt battery through the (20A) or (FA) resistor to the primary winding of the (FA) relay in series with the (FAL) relay. The (FA) and (FAL) relay operate to light the (FA) lamp. Relay (FA) locks to the (AR) key. Relay (FAL) grounds appropriate leads to the alarm circuit.

When the fuse is replaced, the (FAL) relay releases extinguishing the (FA) lamp, lighting the (FG) lamp, and retiring the fuse alarm.

The operated (FA) relay grounds the "OB" lead to make the associated outpulser circuit busy until the alarm release key is operated to restore the circuit to service.

The 20 ampere feeder fuse shall be replaced before its associated pilot fuse is replaced.

The 221 ohm series resistor is used to protect the alarm lead in case of a trouble ground.

5.3 +130 Volt Fuse Alarm (Crossbar No. 1 and Panel)

the (FA2) resistor to the winding of the (FA2) relay. The (FA2) relay operates and connects -48 volt battery to the "p" lead through the (FA1) resistor and the primary winding of the (FA) relay. The (FA) relay operates and locks to the (AR) key.

The (FA) lamp lights from ground over the "FL" lead. When the fuse is replaced, relay (FA2) is released, the (FA) lamp is extinguished, and the (FG) lamp is light from ground over the "GL" lead.

The operated (FA) relay grounds the "OB" lead to make the associated outpulser circuit busy until the alarm release key is operated to restore the circuit to service.

5.4 +130 Volt Fuse Alarm (Step-by-Step)

The operation of a 0.5 ampere circuit fuse connects +130 volt battery through the (FA2) resistor to the winding of the (FA2) relay. The (FA2) relay operates and connects -48 volt battery through the (FA1) resistor to the (FA1) relay in series with the primary winding of the (FA) relay. The (FA) and (FA1) relays operate to light the (FA) lamp. Relay (FA) locks to the (AR) key. Relay (FA1) grounds approximate leads to the alarm circuit.

When the fuse is replaced, the (FA1) relay releases extinguishing the (FA) lamp, lighting the (FG) lamp, and retiring the fuse alarm.

The operated (FA) relay grounds the "OB" lead to make the associated outpulser circuit busy until the alarm release key is operated to restore the circuit to service.

5.5 -110 Volt and -24 Volt Fuse Alarm (Panel)

The operation of a 0.5 ampere circuit fuse connects -110 volt battery through the (FA3) resistor to the winding of the (FA3) relay or -24 volt battery through the (FA4) resistor to the winding of the (FA4) relay. The (FA3) or (FA4) relay operates to connect -48 volt battery to the "p" lead through the (FA1) resistor and the primary winding of the (FA) relay. The (FA) relay operates and locks to the (AR) key.

The (FA) lamp lights from ground over the "FL" lead. When the fuse is replaced relay (FA3) or (FA4) is released, the (FA) lamp is extinguished, and the (FG) lamp is lighted from ground over the "GL" lead.

The operated (FA) relay grounds the "OB" lead to make the associated outpulser circuit busy until the alarm release key is operated to restore the circuit to service.

6. TIMEOUT ALARM LAMP - FS9

Lamp (TA) lights if the overall timer in the associated outpulser functions. This

lamp remains lighted until the alarm is restored.

7. TROUBLE TICKETER TIMEOUT LAMP - FS10

Lamp (TTT) lights if the trouble ticketer timer in the associated outpulser functions. This lamp remains lighted until the alarm is restored.

8. PREFERENCE CHAIN TRANSFER AND ALARM - FS11

8.1 Since trouble in the outpulser preference circuit might cause the blocking of one or more outpulsers in the identifier grove, the preference circuits in the outpulser are provided in duplicate with automatic and manual transfer arrangements.

8.2 The automatic arrangement will be described first. The two ends of the (CH) relay are connected to two ground chains on the outpulser preference relays. If no outpulser is connected to an identifier, both chains will be closed, preventing the operation of relay (CH). When any outpulser is using the preference circuit, the (CH) relay does not operate because both chains are open.

8.3 However, if no outpulser is using the circuit and one of the chains becomes open, the (CH) relay operates in series with one half of the (CH) resistance to ground on the other chain. The (CH) relay operates the (ATR) relay which locks to the (AR) key. The (ATR) relay operates the (TR) relay, transferring the preference to the emergency preference circuit in the outpulser. The (ATR) relay also lights the (CH) lamp and grounds the "CH" lead to cause a minor alarm to be sounded. This alarm can be silenced by means of the (AR) key or the alarm transfer circuit.

8.4 Manual transfer may be accomplished by operating the (TR) locking key, causing the (TR) relay to be operated to use the emergency preference chain in the outpulser. The operation of the (TR) key also causes the (CH) relay winding to be applied to the chain circuits of the emergency preference chain in the outpulser.

8.5 Should a trouble occur while the preference relays are manually transferred the (CH) relay will operate operating the (ATR) relay, which locks. With the (TR) key operated, the operation of the (ATR) relay will release the operated (TR) relay to transfer back to the regular preference chain in the outpulsers.

8.6 At all times when the (ATR) relay is operated, the (CH) relay is disconnected from the preference ground chains by means of break contacts on the (ATR) relay. The (ATR) relay when operated, is locked either to the (AR) key or through the (AR) key to the alarm transfer circuit, if

provided via the "LK" lead. Therefore, it is possible to release any preference chain transfer alarms from the (AR) key or from the alarm transfer circuit.

9. REMOTE CONTROL JACK - FS12

Control leads "RC" and "AV" from the outpulser identifier test circuit (OIT), are brought out to the (RC) jack. A 32A test set can be used for remote operation of the outpulser identifier test circuit and the automatic trunk test circuit.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

None

2. TAKING EQUIPMENT OUT OF SERVICE

2.1 CH Relay

The (CH) relay may be removed from service by blocking the (ATR) relay normal and insulating contacts 6B and 7B. In doing this the circuit will not transfer or give an alarm in case of a chain failure on either the regular or emergency preference chain in the outpulsers.

2.2 ATR Relay

The (ATR) relay may be removed from service by blocking the (CH) relay non-operated. Removing the (ATR) relay from service will prevent any transfer from one chain to the other in case of failure.

2.3 TR Relay

The (TR) relay may be removed from service by blocking the (TR) relay operated, if operated; or nonoperated, if nonoperated. The (ATR) relay should also be blocked non-operated to prevent any transfer while the (TR) relay is out of service.

3. FUNCTIONAL DESIGNATIONS

3.1 Relays

ATR	- Automatic Transfer
CH	- Chain Alarm
FA, FA1-4	- Fuse Alarm
TR	- Transfer

3.2 Keys

AR	- Alarm Release
TR	- Transfer

3.3 Jacks

48V	- -48 Volt Battery
+13D	- +130 Volt Battery
A	- -48 Volt Battery
B	- Spare
C	- +130 Volt Battery

RC	- Remote Control
SWMN	- Switchmans Talking Line
TEL	- Telephone

3.4 Lamps

FA	- Fuse Alarm
FG	- Fuse Guard
TA	- Timeout Alarm
TMT	- Trouble Ticketer Timeout
CH	- Chain Alarm

4. FUNCTIONS

4.01 To provide battery and ground terminals for testing.

4.02 To provide battery and ground at jacks for use with test sets.

4.03 To provide a line for talking between ANI frames.

4.04 To provide a spare jack for future requirements.

4.05 To provide a means for retiring alarms manually at the outpulser frame or by the alarm transfer circuit.

4.06 To provide an automatic and manual means of transferring from regular to emergency outpulser preference circuits or vice versa.

4.07 To cause a minor alarm when automatic transfer of outpulser preference occurs.

4.08 To provide a time alarm indication at the outpulser frame if the overall timer functions.

4.09 To provide a trouble ticketer timeout indication at the outpulser frame if the trouble ticketer does not complete its functions in the required time.

4.10 To provide visual and audible alarm signals when a frame fuse operates.

4.11 To provide a remote control jack for automatic testing purposes.

5. CONNECTING CIRCUITS

5.01 Local Frame Line Ckt. (No. 1 CBR, Panel - BCO) SD-96379-01 (Panel - GCO) ES-20360-01.

5.02 Outpulser Ckt. (No. 1 CBR, Panel, SxS) - SD-95811-01.

5.03 Floor Alarm Frame, Fuse and Time Alarm Ckt. (No. 1 CBR) SD-25046-01.

5.04 Floor Alarm Board, Fuse and Time Alarm Ckt. (Panel, BCO) SD-21201-01.

5.05 Alarm Transfer Circuit (No. 1 CBR) SD-25885-01.

- 5.06 Alarm Transfer Circuit (Panel - BCO)
SD-20733-01, (Panel - GCO) SD-20736-01.
- 5.07 Switchmans Talking Line Circuit (SxS)
SD-32021-01.
- 5.08 Miscellaneous Alarm Circuit (Panel,
GCO) SD-20241-01*.
- 5.09 Floor Alarm Frame, Miscellaneous and
Suxiliary Alarm Circuit (CBR No. 1)
SD-25047-01.
- 5.10 Floor Alarm Board, Miscellaneous and
Auxiliary Alarm Circuit (Panel, BCO)
SD-21203-01.
- 5.11 Audible Alarm Circuit for Floor Alarm
Board (Panel) SD-21819-01.
- 5.12 Audible and Visual Alarm Circuit
(SxS No. 1) SD-96188-01*.
- 5.13 Pilot Lamp and Power Alarm Lamp
Circuit, (SxS 350A) SD-31573-01*.
- 5.14 Miscellaneous Alarm Circuit, Permanent
Signal Timing Circuit (SxS 355A) -
SD-32192-01*.
- 5.15 Outpulser-Identifier Test Circuit -
SD-95815-01.

*Typical Circuits.

SECTION IV - REASONS FOR REISSUE

This circuit is reissued without record to incorporate minor changes.

B. CHANGES IN APPARATUS

B.1 Jack A (238A) and Jack C (246A) are designated V option in App. Fig. 1. Jack 48V (238A) and Jack +130 (246A), W option, are added to App. Fig. 1.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Jacks A and C are designated V option for use in No. 1 Crossbar and Panel Offices.

D.2 Jacks 48V and +130, W option, are added for use in step-by-step offices.

D.3 Lead ANI to the aisle pilot lamp ckt. and the pilot lamp ckt. is added to follow the more standard arrangement and have a correspondence in the color of the cabinet and aisle pilot lamps in step-by-step offices.

D.4 The connection of leads E- and P- to the TR relay is interchanged to agree with the outpulser circuit.

All other headings under Changes, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

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