

TRAFFIC MANAGEMENT SYSTEMS
OBSERVING LINE CIRCUIT
FOR USE IN SXS LINE FINDER OFFICES
FOR OBSERVING ORIGINATING SERVICE
ON SUBSCRIBER LINES AND
FOR OBSERVING ON LOCAL SELECTORS
AT CENTRAL SERVICE OBSERVING DESK

CHANGES

D. Description of Changes

- D.01 Options J and H are added to Fig. A.
- D.02 Connecting information is added to Fig. 2.
- D.03 In Fig. 55 timer circuit 0 and 1 are reversed.
- D.04 In Fig. 52 connecting information is added for the line finder circuit.

F. Changes in CD SECTION III

- F.01 Under 4. CONNECTING CIRCUITS, add the following:

(g) Observing Line Circuit - SD-31354-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5224-AC

WE DEPT 45230-RWH-JTT-CC

CIRCUIT DESCRIPTION

CD-31347-01
ISSUE 6D
APPENDIX 5B
DWG ISSUE 20B
DISTN CODE 1S01

TRAFFIC MANAGEMENT SYSTEMS
OBSERVING LINE CIRCUIT
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CHANGES

D. Description of Changes

- D.01 Connecting information is added to Fig. 1 for direct connection to a line finder when associated with common point monitoring.
- D.02 Sketch A, application schematic, is added.
- D.03 Figures L and 51 are changed to reflect the above.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5224-AC

WE DEPT 45230-RWH-JTT-MLD

CIRCUIT DESCRIPTION

CD-31347-01
ISSUE 6D
APPENDIX 4B
DWG ISSUE 19B
DISTN CODE 1S01

TRAFFIC MANAGEMENT SYSTEMS
OBSERVING LINE CIRCUIT
FOR USE IN SXS LINE FINDER OFFICES
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CHANGES

B. Changes in Apparatus

B.01 Added

Figure J

first selectors as in 5.; however, Fig. J and E are used. Relay SL will operate and start timer T. If relays LF, YK, and A operate as described in 1. before the timer operates relay S, in 1.2 seconds, the call will be service observed. If relay S operates first, the call will not be service observed.

D. Description of Changes

D.01 Figure J is added.

D.02 Option M is designated and option K is added. Both are rated Standard.

D.03 Circuit Note 123 is added.

F.02 In SECTION III, under 3. FUNCTIONS, add the following:

3.15 To time duration of request for attachment to service observing attendant.

F. Changes in CD Sections

F.01 In SECTION II, add the following:

15. COMMON POINT MONITORING - FIG. J AND E

With common point monitoring, the point of monitoring is between the line finders and

F.03 In SECTION III, under 4. CONNECTING CIRCUITS, add the following:

(f) Circuit Pack Schematics - SD-32371-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5413-DAJ

WE DEPT 45230-RWH-JTT-MS

TRAFFIC MANAGEMENT SYSTEMS
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CHANGES

D. Description of Changes

- D.1 All features used for observing on accuracy of billing have been rated Mfr Disc. to agree with the local dial observing circuit. Therefore the following have been rated Mfr Disc.: Fig. 2, F, and G, and options V, Y, Z, and N.
- D.2 Circuit Notes 113, 114, 115, 116, and 117 have also been rated Mfr Disc.
- D.3 The wiring of the M or M1 lead in Fig. 1 and E is now designated N option and added to the Options Used Table.
- D.4 Circuit Notes 121 and 122 have been added.
- D.5 The title has been changed to agree with other Traffic Management Systems drawings.

F. Changes in Description of Operation

- F.1 In SECTION II part 13, change heading to read: 13. OPERATION WITH AMA OR ANI EQUIPMENT (MFR DISC.).
- F.2 In SECTION III part 3, the following paragraphs should be rated Mfr Disc.: 3.12 and 3.13.
- F.3 In SECTION III add 5. MANUFACTURING TESTING REQUIREMENTS as follows:
 - 5. MANUFACTURING TESTING REQUIREMENTS
 - 5.01 This circuit shall perform in accordance with the requirements specified in 3. FUNCTIONS and the Circuit Requirements Table.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5223-RWU-COR

STEP-BY-STEP SYSTEMS
OBSERVING LINE CIRCUIT
FOR OBSERVING ORIGINATING SERVICE
ON SUBSCRIBER LINES AND
FOR OBSERVING ON LOCAL SELECTORS
FROM CENTRAL SERVICE OBSERVING DESK
FOR USE IN LINE FINDER OFFICES

CHANGES

B. Changes in Apparatus

B.1 REMOVED

REPLACED BY

C1 601A Capacitor,
Q Option

C1 601B Capacitor,
P Option

CR1 420R Diode }
CR4 420N Diode } Q Option

CR1 446 E Diode }
CR4 446M Diode } P Option

D. Description of Changes

- D.1 The C1 capacitor is replaced by a new code which will increase the LF relay operate time when associated with Fig. H for use in No. 355A offices.
- D.2 Diodes CR1 and CR4 in Fig. H are replaced by a diode of a preferred code.
- D.3 Options P and Q are designated.
- D.4 Circuit Note 120 is added.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2363-CEH-RJJ

STEP-BY-STEP SYSTEMS
OBSERVING LINE CIRCUIT
FOR OBSERVING ORIGINATING SERVICE
ON SUBSCRIBERS LINES AND
FOR OBSERVING ON LOCAL SELECTORS
FROM CENTRAL SERVICE OBSERVING DESK
FOR USE IN LINE FINDER OFFICES

CHANGES

B. Changes in Apparatus

<u>B.1</u>	<u>REMOVED</u>	<u>REPLACED BY</u>
	CR 3 456B Diode	CR 3 446 F Diode

D. Description of Changes

- D.1 The CR 3 diode is replaced by a 446F diode because the 456B diode is not available at this time.
- D.2 Circuit Note 101 is revised. It formerly read:
Furnish one 1-1/3 amp fuse from 48V battery for each 20 observing line circuits except Fig. H. Furnish one 1-1/3 amp fuse from 48V battery for each 60 Fig. H.
- D.3 Circuit Note 119 is revised. It formerly read:
Provide Fig. H and option R for No. 355A offices. Prior to issue 15D, Fig. H and option R were not designated or shown. Option S was not designated and was part of the circuit.
- D.4 Fuses are designated A and B.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2363-CEH-RJJ, Jr

STEP-BY-STEP SYSTEMS
OBSERVING LINE CIRCUIT
FOR OBSERVING ORIGINATING SERVICE
ON SUBSCRIBER LINES AND
FOR OBSERVING ON LOCAL SELECTORS
FROM CENTRAL SERVICE OBSERVING DESK
FOR USE IN LINE FINDER OFFICES

<u>TABLE OF CONTENTS</u>	<u>PAGE</u>	<u>TABLE OF CONTENTS</u>	<u>PAGE</u>
<u>SECTION I - GENERAL DESCRIPTION</u>	1	13. OPERATION WITH AMA OR ANI EQUIP- MENT	4
1. PURPOSE OF CIRCUIT	1	14. OPERATION WITH FIG. H (NO. 355A OFFICE)	6
<u>SECTION II - DETAILED DESCRIPTION</u>	1	<u>SECTION III - REFERENCE DATA</u>	6
1. CALL ORIGINATED - SUBSCRIBER LINE	1	1. WORKING LIMITS	6
2. SUBSCRIBER LINE ASSOCIATED WITH FIRST SELECTOR BY LINE FINDER - FIG. A OR FIG. E AND V OPTION	2	2. FUNCTIONAL DESIGNATIONS	6
3. MESSAGE REGISTRATION - FIG. A	2	3. FUNCTIONS	6
4. SUBSCRIBER LINE ASSOCIATED WITH FIRST SELECTOR BY LINE FINDER - FIG. B	2	4. CONNECTING CIRCUITS	7
5. OBSERVING ON FIRST SELECTORS - FIG. C	2	<u>SECTION IV - REASONS FOR REISSUE</u>	7
6. OBSERVING ON INCOMING SELECTORS - FIG. D	3	A. CHANGED AND ADDED FUNCTIONS	7
7. SUBSCRIBER LINES EQUIPPED WITH 48- VOLT MESSAGE REGISTRATION OVER A FOURTH WIRE - FIG. E AND Y OPTION	3	B. CHANGES IN APPARATUS	7
8. MESSAGE REGISTRATION - FIG. E AND Y OPTION	3	D. DESCRIPTION OF CHANGES	7
9. SIMULTANEOUS CALLS ON MORE THAN ONE LINE OR SELECTOR	3	<u>SECTION I - GENERAL DESCRIPTION</u>	
10. RELEASE OF INDIVIDUAL OBSERVING LINE CIRCUIT	4	1. PURPOSE OF CIRCUIT	
11. TEST TO INSURE THAT AN INDIVIDUAL OBSERVING LINE CIRCUIT IS LOCKED TO THE COMMON OBSERVING CIRCUIT ONLY AT THE TIME OF THE ORIGINA- TION OF A CALL OR SEIZURE OF A SELECTOR	4	This circuit is designed for use in con- nection with a common observing circuit at the local office end and a trunk and position circuit at a central observing bureau, for observing originating traffic on subscriber lines and for observing on local selectors in step-by-step line finder offices. It is also used in SXS AMA or ANI offices to pro- vide service observing features to modify the AMA tape entry on service observed calls, gaining access to the AMA equipment.	
12. TERMINATING TRAFFIC	4	<u>SECTION II - DETAILED DESCRIPTION</u>	
		1. CALL ORIGINATED - SUBSCRIBER LINE	
		When a call is originated on a subscriber line that is connected up for observation, the LF relay of the associated individual	

observing line circuit per Fig. A, B, or E operates through normal contacts of the S relay, and through the PBX key when furnished, in parallel with the line relay over the subscriber loop. The LF relay operated, connects the "G" lead through normal contacts of the A relay and primary winding of the YK relay over the "B" lead to battery in the common observing circuit. If the common observing circuit is in a condition to accept originated calls and is not already locked to another individual observing line circuit associated with a subscriber line, direct ground is encountered on the "G" lead and the YK relay operates through its primary winding. The YK relay operated, closes a locking path through its secondary winding and make contacts, in parallel with the winding of the A relay and over the "F" lead through a relay in the common observing circuit to ground. This closure operates the A relay of the individual observing line circuit and the relay in the common observing circuit, which disconnects battery from the "B" lead and primary windings of all the YK relays and thereby prevents the operation of another YK relay. The operation of the YK relay opens the series locking path for the YK relays of all succeeding circuits, closes the tip and ring of the line through make contacts to the common observing circuit, and connects the "G" lead through another set of make contacts to the "P" lead, to operate a relay in the common observing circuit to close the timing leads in that circuit. The A relay operated, closes paths from the make contacts of the S relay to the "M1" and "S" leads to the common observing circuit, disconnects the "G" lead from the primary winding of the YK relay and closes the "TN" and "U" leads to operate the proper register relays in the common observing circuit.

2. SUBSCRIBER LINE ASSOCIATED WITH FIRST SELECTOR BY LINE FINDER - FIG. A OR FIG. E AND V OPTION

As soon as a line finder has found the subscriber line on which a call has been originated, the sleeve of the line is grounded and the SL relay operates in parallel with the subscriber cutoff relay. The operation of the SL relay operates the S relay, which connects ground over the "S" lead and the sleeve of the line circuit over the "M1" lead to the common observing circuit and disconnects the LF relay from the ring (or from the tip of the line in case the PBX key is operated in Fig. A) thereby releasing the LF relay. The LF relay released, disconnects the ground over the "G" lead from

the "P" lead, which removes the shunt from a relay in the common observing circuit, allowing the relay to operate.

3. MESSAGE REGISTRATION - FIG. A

As described in 2., the SL relay of Fig. A operates in parallel with the subscriber cutoff relay when the sleeve of the line is grounded by the line finder. At the time the called subscriber answers, ground is momentarily removed from, and positive message register booster battery is connected to the sleeve of the calling line and through make contacts of the S and A relays over the "M1" lead to a polarized relay in the common observing circuit, which operate in parallel with the subscriber message register to indicate that message registration has taken place.

4. SUBSCRIBER LINE ASSOCIATED WITH FIRST SELECTOR BY LINE FINDER - FIG. B

As soon as a line finder has found the subscriber line on which a call has been originated, the sleeve of the line is grounded and the S relay operates in parallel with the subscriber cutoff relay. The S relay operated, connects ground over the "S" lead to the common observing circuit and disconnects the LF relay from the ring or from the tip of the line in case the PBX key is operated, thereby releasing the LF relay. The LF relay released, disconnects the ground over the "G" lead from the "P" lead, which removes the shunt from a relay in the common observing circuit, allowing the relay to operate.

5. OBSERVING ON FIRST SELECTORS - FIG. C

When a first selector that has been connected up for observation, is associated with a subscriber line by a line finder, the sleeve of the selector is grounded and the S11 relay operates, which in turn operates the SL relay. The SL relay operated, operates the slow operate S relay and connects ground on the "G" lead through normal contacts of the A relay and primary winding of the YK relay, over the "B" lead to battery in the common observing circuit. This closure operates the YK relay which locks and functions as described in 1. The S relay operated, locks to ground on the front contact of the S11 relay, opens the operating path for the slow release SL relay and connects ground over the "S" lead to the common observing circuit as an indication that the central office apparatus is ready to receive

dial pulses. The S relay is made slow operate and the SL relay slow release, in order to provide sufficient time to lock the individual observing line circuit to the common observing circuit and operate a relay in the common observing circuit before the ground on the "G" lead is disconnected from the "P" lead by the release of the SL relay.

6. OBSERVING ON INCOMING SELECTORS - FIG. D

When an incoming selector that has been connected up for observation, is seized over an interoffice trunk, the LF relay operates through normal contacts of the S relay and over the trunk loop in parallel with the A relay of the selector. The LF relay operated, operates the SL relay which connects ground on the "G" lead through normal contacts of the A relay and primary winding of the YK relay, over the "B" lead to battery in the common observing circuit. This closure operates the YK relay which locks through its secondary winding in parallel with the winding of the A relay and functions as described in 1. The operation of the SL relay also connects ground over the "S" lead to the common observing circuit to prepare that circuit for pulsing and connects the winding of the S relay to the sleeve of the selector. As soon as the sleeve of the selector is grounded, the S relay operates, locks through its make contacts to the grounded sleeve of the selector and opens the operating path of the LF relay which releases and opens the circuit of the slow release SL relay which also releases. The SL relay is made slow release in order to provide sufficient time to lock the individual observing line circuit to the common observing circuit and operate a relay in the common observing circuit before the ground on the "G" lead is disconnected from the "P" lead by the release of the SL relay.

7. SUBSCRIBER LINES EQUIPPED WITH 48-VOLT MESSAGE REGISTRATION OVER A FOURTH WIRE - FIG. E AND Y OPTION

As soon as a line finder has found the subscriber line on which a call has been originated, the sleeve of the line is grounded and the SL relay operates in parallel with the subscriber line cutoff relay. The operation of the SL relay operates the S relay which connects ground over the "S" lead, connects the "A" lead over the "M1" lead to the common observing circuit and disconnects the LF relay from the ring releasing

the LF relay. The LF relay released, disconnects the ground over the "G" lead from the "P" lead, which removes the shunt from a relay in the common observing circuit, allowing the relay to operate.

8. MESSAGE REGISTRATION - FIG. E AND Y OPTION

As described in 7., the SL relay of Fig. E operates in parallel with the subscriber line cutoff relay when the sleeve of the line is grounded by the line finder. At the time the called subscriber answers, a relay in the auxiliary line or trunk circuit operates momentarily and 48-volt battery is connected to the "M1" lead through the make contacts of the S and A relays. A polar relay in the common observing circuit follows the relay in the auxiliary line or trunk circuit. Operation of the polar relay furnishes tone to the service observing operator indicating that message registration has taken place.

9. SIMULTANEOUS CALLS ON MORE THAN ONE LINE OR SELECTOR

When simultaneous calls are originated on several subscriber lines or selectors that are connected up for observation, the LF relays of the individual observing line circuits per Fig. A, B, and E or the SL relays of the individual observing line circuits per Fig. C or D operate as previously described. The LF or SL relays operated, connect ground from the "G" lead through their make contacts, normal contacts of the A and primary windings of the associated YK relays and over the "B" lead to battery in the common observing circuit. This closure causes the operation of each of the YK relays associated with the operated LF or SL relays. The operation of each YK relay however opens the series locking path for all succeeding YK relays and as soon as battery is removed from the "B" lead by the operation of a relay in the common observing circuit in series with the winding of the A relay and secondary winding of the YK relay of the lowest numbered individual observing line circuit connected in parallel to the "F" lead to the common observing circuit, all the YK relays release except the one associated with the lowest numbered individual observing line circuit. This circuit arrangement insures that only one individual observing line circuit is locked to the common observing circuit at a time.

10. RELEASE OF INDIVIDUAL OBSERVING LINE CIRCUIT

When an individual observing line circuit that has been locked to the common observing circuit is released automatically or under control of an operator at the central observing bureau, ground is removed from the "F" lead and ground through a high resistance test relay is connected to the "G" lead by the operation of the release relay in the common observing circuit. The removal of ground from the "F" lead causes the YK and A relays of the individual observing line circuit and a relay in the common observing circuit to release. The YK and A relays released, disconnect the T, R, and S terminals of the subscriber line or selector from the common observing circuit, and open the "TN" and "U" leads to the register relays in the common observing circuit.

11. TEST TO INSURE THAT AN INDIVIDUAL OBSERVING LINE CIRCUIT IS LOCKED TO THE COMMON OBSERVING CIRCUIT ONLY AT THE TIME OF THE ORIGINATION OF A CALL OR SEIZURE OF A SELECTOR

The release of the relay in the common observing circuit that was operated in series with the YK and A relays of the individual observing line circuit, connects battery to the "B" lead. If there are one or more calls in progress at this time on any of the subscriber lines or selectors that are connected up for observation and the LF or SL relays of the individual observing line circuits have not yet been released, the "G" lead is connected through the contacts of these relays to the primary windings of the associated YK relays. Battery on the "B" lead from the common observing circuit is therefore connected through the primary windings of the YK, normal contacts of the A and make contacts of the LF or SL relays that are operated and over the "G" lead to ground through the high resistance test relay in the common observing circuit. This closure operates the high resistance test relay in the common observing circuit, but the YK relays of the individual observing line circuits are marginal and do not operate under this condition. The operation of the high resistance test relay in the common observing circuit, holds the release relay operated and prevents direct ground from being connected to the "G" lead to lock an individual observing line circuit to the common observing circuit, until all the operated LF or SL relays of the individual observing line circuits have released and permitted the

high resistance test relay of the common observing circuit to release and open the holding path for the release relay. When this condition occurs, that is, all LF or SL relays of the individual observing line circuits and the test and release relays of the common observing circuit have released, direct ground is connected over the "G" lead from the common observing circuit to the armatures of all the LF or SL relays of the individual observing line circuits. The next call originated on any one of the subscriber lines or selectors that are connected up for observation, is locked to the common observing circuit by the operation of the LF or SL relay of the individual observing line circuit associated with that particular line.

12. TERMINATING TRAFFIC

Terminating calls on subscriber lines that are connected up for observation, are prevented from being locked to the common observing circuit by the operation of the SL relay of Fig. A or E or the S relay of Fig. B in parallel with the subscriber cutoff relay, at the time the line is seized and made busy by the connector. The operation of the SL relay of Fig. A or E operates the S relay which performs the same functions as the S relay of Fig. B, that is, disconnects the LF relay from the tip or ring of the line as the case may be and prevents its operation. The SL and S relays of Fig. A, B, and E remain operated until the busy condition is removed from the sleeve of the subscriber line.

13. OPERATION WITH AMA OR ANI EQUIPMENT

For service observing in offices equipped with AMA or ANI equipment, Fig. 2 and G are used to control entry of the service observed indication on the AMA tape. This entry is made, either locally or at the CAMA point, only when the service observing operator obtains access to the line being observed. If the circuit is to be used for combined service observing (regular) and complaint observing, where occasional access of the SO operator to complaint observed lines is desired Fig. 2 and F are used. In operation circuit Fig. 2 is the same as covered in the preceding paragraphs, with the exception of means of controlling tape entry.

In an AMA or ANI office the calling subscribers number is identified by means of a tone superimposed on the sleeve or "MR" lead of the subscriber line circuit by an

oscillator under control of an identifier. When the service observing circuit is connected to a subscriber line and the subscriber originates a call the service observing operator may gain access to the line. If the call originated by the subscriber routes through the AMA or ANI equipment, and the service observing operator is monitoring on the call, the tape entry control feature becomes operative. When the AMA, or ANI equipment identifies the calling line number, identification tone is placed on the sleeve lead of the switch trains at the AMA or ANI trunk circuit. This tone is picked up at the distributing frame on the S or MR terminal of the service observing shoe and routed through this line observing circuit and service observing circuit, to the common number and class circuit in AMA offices, or the service observing network circuit in ANI offices. This tone path is completed only when the service observing operator is monitoring the call. If the tone path is completed back to the Common Number and Class Circuit or service observing network circuit, it is connected to a service observing detector in the associated identifier which furnishes information for performing the AMA tape with the appropriate service observed indication.

C-R key set to the C position, provides means for marking the AMA tape on all calls originated by a particular subscriber and which route through the AMA equipment while providing occasional monitoring of these calls. In this case the tone is routed directly back to the common number and class circuit from the sleeve of "MR" lead without the necessity of this circuit gaining access to the service observing operator. With the C-R key in the regular R position, operation is as previously covered for service observing. For complaint observing in AMA offices an additional key T is provided, so that a call originated by the particular party of two-party lines will perforate the service observed indication on the AMA tape, only if the T key is operated to permit the indication for that party. With the T key in normal position the indication will be perforated on calls originated by any subscriber other than the tip party of two-party message rate lines or the tip party of two-party flat rate lines. If the service observing shoe is on a two-party line and the T key operated to TMR or TFR then a call originated by the ring party of the line will not give a service observed indication. Calls originated by the tip party of message rate lines or the tip party of flat rate lines will give the indication if the T key is operated to the TMR or TFR position respectively. Routing of the tone through this circuit is covered in the next paragraph.

The complaint observing (A&M) arrangement Fig. 2 and F of this circuit, with the

Routing of tone received when complaint or regular observing on subscriber is as follows:

TYPE OF SO	TYPE OF SUB	TYPE OF OFFICE	TONE RECEIVED ON	C-R KEY SET TO*	T KEY SET TO	TONE ROUTED	
						TO CKT	ON LEAD
Regular	Tip Pty 2 Pty MR Line	AMA or ANI	MR Lead	REG	---	SO CKT	OTE/OTO ††
Regular	All Other Subscribers	AMA or ANI	S	REG	---	SO CKT	ORE/ORO §
Complaint J	Tip Pty 2 Pty MR Line	AMA	MR Lead	CPT	TMR	COM NO. & CL CKT	ORE/ORO †
Complaint J	Tip Pty 2 Pty FR Lines	AMA	S	CPT	TFR	COM NO. & CL CKT	OTE/OTO**
Complaint	All Other Subscribers	AMA	S	CPT	Normal	COM NO. & CL CKT	ORE/ORO †

* C-R and T keys in AMA office only.

† In AMA offices tone on this lead will be detected in the identifier service observing detector only when the identifier is hunting in the ring field for line identification tone.

‡ In ANI offices tone on this lead will be detected by the identifier service observing detector whether the identifier is hunting in the tip or ring fields for line identification tone.

§ In AMA or ANI offices tone on this lead will be detected by the identifier service observing detector whether the identifier is hunting in the tip or ring fields for line identification tone.

¶ The ring subscriber on 2-party lines will not pass tone through the "ORE/ORO" lead unless the T key is normal.

** Tone on this lead will be detected in the identifier class detector only when the identifier is hunting in the tip field for line identification tone.

14. OPERATION WITH FIG. H (NO. 355A OFFICE)

When the subscriber line is connected for observation Q1 is on, which keeps transistors Q2 and Q3 turned off. This same condition exists when no loop is connected. Q1 is held on by resistor R9, which provides the necessary condition for Q1 to operate.

When a subscriber originates a call the potential drop across the line relay reverse biases diode CR2 turning off Q1. Transistor Q1 off, turns Q2 on, which turns on Q3, operating relay LF. Seizure of the Service Observing Circuit is the same as in 1., until the S operates. When S operates it opens the input to Q1, which permits Q1 to reoperate. Q1 operating turns Q2 off which releases Q3 and relay LF.

distributing frame terminals by means of a plug and cord.

3.02 To provide means for automatically connecting one subscriber line or step-by-step selector at a time, to the trunk to the central observing bureau and excluding all others, if there is an idle position at the observing bureau that is occupied.

3.03 To prevent a subscriber line or step-by-step selector from being connected to the trunk to the central observing bureau, if all observing positions are busy or occupied.

3.04 To transmit a signal to the common observing circuit when a call is originated on a subscriber line or a selector is seized.

3.05 To connect the T, R, S, and A terminals of a subscriber line or the T and R terminals of a step-by-step selector, to the common observing circuit.

3.06 To close the register circuit for identifying the particular individual observing line circuit that is connected to the trunk to the central observing bureau.

3.07 To provide a key for reversing the LF relay of the individual line circuit from the ring to the tip side of the line when observing on PBX trunks on which the tip and ring are reversed.

3.08 To transmit a signal to the common observing circuit as soon as the sleeve is grounded, when observing on

SECTION III - REFERENCE DATA

1. WORKING LIMITS

	Sub Fig. A,E	Supv Fig. B	Trk Supv Fig. D
Max Ext Ckt Loop	1500 ω	1500 ω	1450 ω
Min Ins Res	15000 ω	15000 ω	30000 ω

2. FUNCTIONAL DESIGNATIONS

None.

3. FUNCTIONS

3.01 To connect to a subscriber line or a step-by-step selector at the

step-by-step pay station lines or on first selectors.

3.09 To release from the common observing circuit, automatically or under the control of an operator at the central observing bureau.

3.10 To provide for testing the individual observing line circuits after an observing connection has been released, in order to insure that an individual observing line circuit may be locked to the trunk to the central observing bureau, only at the time a call is originated on the associated subscriber line circuit or during a definite interval after the selector is seized, when observing on step-by-step selectors.

3.11 To prevent individual observing line circuits from being locked to the common observing circuit, that are associated with subscriber lines on which terminating traffic is taking place.

3.12 To route line identification tone to AMA identifiers via the Common Number And Class Circuit on service observed calls to permit service observed entries on the AMA tape either on all calls originated by the line being observed (complaint observing) or only on calls monitored by the service observing operator (regular observing).

3.13 To route line identification tone to ANI identifiers via the service observing circuit to provide a service observed indication on the AMA tape at the distant CAMA office.

3.14 To provide for detection of a subscriber organization in a No. 355A office without reducing the working limit of the line circuit.

4. CONNECTING CIRCUITS

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

- (a) Service Observing Circuit - SD-90647-01, SD-90242-01.

- (b) Subscribers Line Circuit - SD-31259-01, SD-32133-01, SD-31777-01.

- (c) Step-by-Step First and Incoming Selector Circuit - SD-30200-01.

- (d) Auxiliary Line Circuit - SD-32082-01.

- (e) Common Number and Class Circuit - SD-31961-01.

SECTION IV - REASONS FOR REISSUE

A. CHANGED AND ADDED FUNCTIONS

- A.1 Provide for detection of a subscriber origination in a No. 355A office without reducing the working limit of the line circuit.

B. CHANGES IN APPARATUS

B.1 Added:

Connector 910A
ED-33043-()

D. DESCRIPTION OF CHANGES

- D.1 Fig. H was added to provide subscriber line observing in No. 355A offices without reducing the line circuits working limit.
- D.2 Circuit Note 119 was added and Circuit Note 101 was changed.
- D.3 Option 5 was added. Prior to Issue 15D this option was part of the circuit.
- D.4 Option R was added to provide connections to Fig. H.
- D.5 Circuit Note 117 was changed to show use with 3- or 4-wire jack multiple.
- D.6 Option Used Table revised.
- D.7 In Fig. 2 a designation was added to show connection to Fig. E, located at leads "T", "R", "A", "S", "M", "YK", and "G".
- D.8 A cross reference was added to Circuit Note 113 at Fig. 2.

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