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CIRCUIT DESCRIPTION

CD-20141-C1
ISSUE 28B
APPENDIX 6D
DWG ISSUE 38D

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

D. Description of Changes

D.1 Provision is made for connection to the 2A and 3A Traffic Usage Recorder Circuits in Fig. 32 and 48.

F. Changes in CD Sections

F.1 Under CONNECTING CIRCUITS, add:

2A and 3A Traffic Usage Recorder Circuit - SD-96549-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2364-WMS-JEM

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

D. Description of Changes

D.1 In Fig. 52 the terminology is changed from Pushbutton to TOUCH-TONE.

F. Changes in CD Sections

F.1 Under CONNECTING CIRCUITS, add:

Announcement Trunk Circuit - SD-95777-01 (typical).

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DEPT 2364-WMS-JEM

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

Fig. 59

1 - Hubbell Recpt. - 7250-G

1 - CCP-275A - Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Fig. 59 was added to provide a 4-wire receptacle to accommodate the

KS-16941-L1 cord and cap which provides a connection from central office ground to the chassis of the traffic register camera. This ground is a protective feature which eliminates a personnel hazard in the event that a defective component connects ac potential to the handles and hood.

D.11 Ckt. Note 147 has been added and the Figs. and Options Table has been revised.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-DJC-FBB-ES

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

A.. CHANGED AND ADDED FUNCTION

A.1 Provision is made to connect the camera chassis to central office ground.

B. CHANGES IN APPARATUS

Fig.	Removed	Replaced by	Added
33	2 Hubbell Recpt. 7051	2 Hubbell Recpt. 7250-G	
34			Adapter KS-16980, L1
35	3-wire cord and cap	4-wire cord and cap	

D. DESCRIPTION OF CIRCUIT CHANGES

D.10 Fig. 34 is revised to provide a central office ground to the traffic register camera by means of a close coupled adapter per KS-16980, L1 comprising a 4-wire

receptacle and a 3-wire plug which connects to the existing 3-wire receptacle.

A lead from the "protective ground" terminal of the adapter receptacle terminates in a ring-type terminal which is secured under the head of a mounting plate screw. The adapter is held in place by means of a bracket and a self-tapping screw for which a hole must be drilled in the existing receptacle cover plate.

D.11 Fig. 33 is changed to show 4-wire receptacles (Hubbell 7250-G) in place of the 3-wire receptacles (Hubbell 7051) presently in use. The additional wire being used to accommodate a central office ground connection as a protective device on new cameras.

D.12 Fig. 35 is revised to show 4-wire cord and cap per KS-16941, L1 in place of the 3-wire cord and cap per KS-16017, L2 presently in use. The additional wire supplies a protective ground to the chassis of the traffic register camera.

D.13 Circuit Note 146 is added.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-DJC-FBB-SF

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

- A.1 Provision is made to record the number of compressed code calls per decoder.
- A.2 Provision is made to obtain an individual peg count of traffic offered to each code point which operates a common route relay.
- A.3 Provision is made to record the number of three digit common translator usages.
- A.4 Provision is made to record the total number of usages of a maximum group of 30 touch-tone calling signal to dial pulse converter circuits.
- A.5 Provision is made to record the number of usages of a maximum group of 30 pushbutton calling signal to dial pulse converter circuits on ten digit codes.
- A.6 Provision is made to record the number of start signals received by the three digit translator connector which do not receive service.
- A.7 Provision is made to record the total number of usages of the code compressor, this includes both service and test calls.
- A.8 Provision is made to record the total number of trouble overflows originating in a code compressor group.

B. CHANGES IN APPARATUS

B.1 Added

- Fig. 52
2 - 14LK Message Registers
2 - 185A Contact Protection Networks
- Fig. 53
1 - 14LG Message Register
- Fig. 54
1 - 14LG Message Register
- Fig. 55
1 - 14LG Message Register
1 - 185A Contact Protection Network
- Fig. 56
1 - 14LG Message Register

Fig. 57

- 1 - 14LG Message Register

Fig. 58

- 1 - 14LG Message Register
-
- 1 - 185A Contact Protection Network

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Fig. 52 provides two peg count registers. One PBC register is provided per 30 pushbutton calling signal to dial pulse converter circuits to record the total number of usages of the group of pushbutton calling signal to dial pulse converter circuits. One IODC register is provided per 30 pushbutton calling signal to dial pulse converter circuits to record the number of usages of the group of pushbutton signal to dial pulse converter circuits on ten digit codes.
- D.2 Fig. 53 provides for a register per decoder circuit to record the number of compressed code calls per decoder.
- D.3 Fig. 54 provides for a register per code point per trunk group (maximum 80 per decoder) to obtain an individual peg count of traffic offered to each code point which operates a common route relay.
- D.4 Fig. 55 provides for a register per code compressor to record the total number of usages per code compressor, this includes both service and test calls.
- D.5 Fig. 56 provides a register per three code compressors to record the total number of trouble overflows originating in a code compressor group.
- D.6 Fig. 57 provides a register per three-digit translator connector group to record the number of start signals received by the three-digit translator connector which do not receive service.
- D.7 Fig. 58 provides a register per three-digit common translator to record the number of 3-digit common translator usages.
- D.8 Leads "PC" and "PCA", Fig. 46, were formerly designated "PR" and "PRA" respectively.

D.9 Circuit Note 145 has been added.

4. CONNECTING CIRCUITS

4.42 Pushbutton Calling Signal to Dial Pulse Converter Circuit - SD-21976-01.

4.43 Decoder Circuit for Use With 3-Digit Senders - SD-21277-01.

4.44 Code Compressor Circuit - SD-96527-01.

4.45 3-Digit Translator Connector Circuit - SD-96529-01.

4.46 3-Digit Translator Circuit Common to Marker and/or Decoder Group - SD-96530-01.

4.47 Announcement Trunk Circuits - SD-95859-01 and SD-95862-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-SL-FBB-AP

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

- A.1 Provision is made to record the total number of calls handled by the ANI outpulser.
- A.2 Provision is made to record the number of operator identified calls (ANI).
- A.3 Provision is made to record the number of plant test calls (ANI).
- A.4 Provision is made to record the number of calls offered to ANI trunks.
- A.5 Provision is made to record the number of requests for auxiliary senders by subscriber senders (DDD).
- A.6 Provision is made to record the number of alerts received through the Central Office Group Alerting Circuit.
- A.7 Provision is made to record the number of times the dial coin zone trunks fail to get an operator on overtime calls.
- A.8 Provision is made to record the number of double connection releases per subscriber sender group.

B. CHANGES IN APPARATUS

B.1 Added

Fig. 42
1 - 14LG Message Register

Fig. 43
1 - 14LG Message Register

Fig. 44
1 - 14LG Message Register

Fig. 45
1 - 14LG Message Register

Fig. 46
1 - 14LH Message Register
1 - 185A Network

Fig. 47
1 - 14LG Message Register

Fig. 50
1 - 14LG Message Register

Fig. 51
1 - 14LG Message Register

B.2 Superseded

Superseded By

KS-14359	KS-16493, L1
Mag. Ctr.	Mag. Ctr.
"S" Option	"K" Option
Fig. 21	Fig. 21

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Fig. 42 provides for a register per outpulser to record the total number of calls handled by the ANI outpulser.
- D.2 Fig. 43 provides for a register per ANI identifier group to record the number of operator identified calls.
- D.3 Fig. 44 provides for a register per ANI identifier group to record the number of plant test calls.
- D.4 Fig. 45 provides ANI trunk seizure registers to record the number of calls offered to ANI trunks.
- D.5 Fig. 46 provides for a register per auxiliary sender link per auxiliary sender group to record the number of requests for auxiliary senders by subscriber senders (DDD).
- D.6 Fig. 47 provides for a register per central office group alerting circuit to record the number of alerts received through the central office group alerting circuit.
- D.61 Circuit Note 142 has been added.
- D.7 Fig. 51 provides for a register per group of coin zone trunks to record the number of times the dial coin zone trunks fail to get an operator on overtime calls.
- D.8 Fig. 50 provides for a register per group of subscriber senders to record the number of double connection releases per subscriber sender group.
- D.9 Figs. 48 and 49 have been added to provide connections to the TUR register shown on the traffic register cabinet circuit.
- D.91 Fig. 32 has been rated "A & M Only".
- D.92 Circuit Note 143 has been added.
- D.10 The bracket in Fig. 41 formerly specified "To Ans Time Rcdr Ckt."

- D.11 Circuit Note 144 has been added.
- D.12 The Options Used table has been revised.

4. CONNECTING CIRCUITS

- 4.36 Auxiliary Sender Link Circuit - SD-21537-01.
- 4.37 Outpulser Circuit, Automatic Number Identification - SD-95811-01.

- 4.38 Central Office Group Alerting Circuits - SD-95883-01.
 - 4.39 Panel Outgoing Trunk Circuits, ANI, SD-21972-01, SD-21974-01.
 - 4.40 Traffic Register Cabinet Circuit - SD-95531-01.
 - 4.41 Outgoing Trunk Circuit for Dial Coin Zone Service - SD-96518-01.
- All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-SL-FBB

PANEL SYSTEMS
MISCELLANEOUS REGISTERS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 Provision is made to record the number of times subscriber senders in a common group time out because of intersender timing.

A.2 Provision is made to record the number of times trunks of the Line Concentrator Identifier circuit are seized.

A.3 Provision is made to record the number of times all trunks of the Line Concentrator Identifier circuit are busy.

A.4 Provision is made to record the number of calls originating on lines or trunks associated with the Answering Time Recorder when equipped with a Traffic Weighting Applique circuit and to record the number of calls where the answering time exceeded the predetermined limit.

B. CHANGES IN APPARATUS

B.1 Added

Fig. 37

(IT) 14LE Mess. Reg.
(ITE) E6133 Relay

Fig. 38

1 - 14LG Mess. Reg.

Fig. 39

(LCI) 392A Key, 6A Key Lever

Fig. 40

1 - 14LG Mess. Reg.

Fig. 41

(N) 14 LH Mess. Reg.
(D) 14LH Mess. Reg.
(S) 14LH Mess. Reg.
3 185A Networks

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Figure 37 provides for a register common to a group of subscriber senders to record the number of calls routed to overflow when a sender times out because of intersender timing.

D.2 Figs. 38 and 39 provide for a peg count register, under key control, to record the number of times trunks of the Line Concentrator Identifier circuit are seized.

D.3 Fig. 40 provides for an overflow register to record the number of times all trunks of the Line Concentrator Identifier are busy.

D.4 Fig. 41 provides for registers for the Answering Time Recorder circuit when equipped with a Traffic Weighting Applique circuit to record the number of originated calls, the number of timed calls, and the number of calls that exceeded the predetermined limit.

D.5 Circuit note 101 is modified to include reference to Figs. 37, 39, 40 and 41 and circuit notes 140 and 141 are added.

D.6 Figs. 37 to 41 are added to the "Options Used" table.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.01 Automatically records the connections handled by a trunk group, selector group, sender group or decoder.

1.02 Records the calls lost on account of all paths being busy.

1.03 Permits the operator to register the number of calls handled, and provides means for checking.

1.04 Records the number of times a link goes thru down drive position while sender hunting and for operating the link down drive alarm.

1.05 Records the number of times a group of key pulsing senders becomes busy.

1.06 Records the number of times an allotter goes to overflow.

1.07 Indicates the time between traffic register readings.

1.08 Lights a line group overload lamp when option T is used.

1.09 Determines the total time the sender load has exceeded a fixed percentage of busy senders.

- 1.10 Records the number of dial tone speed tests made and the times dial tone was delayed more than three seconds during these tests.
- 1.11 Records the number of times an auxiliary line circuit is seized.
- 1.12 Records the number of times an incoming intercepting trunk is seized.
- 1.13 Records the number of times an auxiliary sender is seized for a seven digit or ten digit direct distance dialed call.
- 1.14 Records the number of times an announcement line is seized to give a subscriber access to an announcement machine.
- 1.15 Records the number of busy conditions encountered by the Traffic Usage Recorder in scanning a particular group of circuits.
- 1.16 Records the number of scanning cycles completed by the Traffic Usage Recorder for each group of circuits assigned to a camera group of registers.
- 1.17 Records the number of busy conditions encountered by each detector of the Traffic Usage Recorder.
- 1.18 Photographs traffic registers under control of the Traffic Register Camera Control circuit or the Traffic Usage Recorder circuit.
- 1.19 Records the number of times a coin zone operator trunk circuit is seized for initial calls and overtime calls.
- 1.20 Records the number of times the Answering Time Recorder has observed the answering time of a call.
- 1.21 Records the number of times the answering time exceeds the desired limit on a call.
- 1.22 Records the number of times the auxiliary sender encounters a stuck sender or partial dial condition.
- 1.23 Records the number of calls routed to overflow when a subscriber sender times out because of intersender timing.
- 1.24 Records the number of times trunks of the Line Concentrator Identifier circuit are seized.
- 1.25 Records the number of times all trunks of the Line Concentrator Identifier circuit are busy.
- 1.26 Records the number of calls originated on lines or trunks associated with the Answering Time Recorder equipped with a Traffic Weighting Applique circuit, the

number of timed calls and the number of calls where the answering time exceeded the predetermined limit.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.1 To provide registers for recording the items listed in Paragraph 1.

4. CONNECTING CIRCUITS

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

4.01 Incoming and cordless selector circuits such as ES20069-01, ES20070-01, SD21514-01.

4.02 District and office selector circuits such as ES21030-01 and SD21534-01.

4.03 Local operating room desk jack and extension cord circuit such as ES254361.

4.04 Peg count checking circuit such as ES10725-01.

4.05 Sender circuit such as ES20033-01.

4.06 Final selector circuit such as ES239664.

4.07 Key indicator incoming circuit such as ES226713.

4.08 Link circuit such as SD21714-01.

4.09 Trip circuit such as SD21713-01.

4.10 Group busy signal circuit such as ES20021-01, ES20400-01.

4.11 Dial monitoring circuit such as SD21458-01.

4.12 Decoder circuit such as SD21277-01.

4.13 Make busy key and alarm circuit such as SD90622-01.

4.14 Link down drive alarm circuit such as SD21478-01.

4.15 Key set circuit such as SD90460-01.

4.16 Position dial circuit such as SD90462-01.

4.17 Monitoring and observing jacks circuit such as SD90564-01.

4.18 Start circuit such as SD21713-01.

4.19 Clock circuit such as ES20016-01.

- 4.20 Line load control circuit such as SD96387-01.
- 4.21 Subscriber sender group busy signal circuit such as ES240098.
- 4.22 Sender load register circuit such as SD21937-01.
- 4.23 Sender load indicating circuit such as SD21942-01, SD21952-01.
- 4.24 Dial Tone speed register circuit - SD96403-01.
- 4.25 Auxiliary Line Circuit - SD95607-01.
- 4.26 Incoming Intercepting Trunk Circuit - SD95715-01.
- 4.27 Trip, Start and Allotter Circuit for intercepting trunk finders such as SD21561-01.
- 4.28 Traffic Usage Recorder circuit, SD95738-01.
- 4.29 Traffic Register Camera Control circuit, SD95797-01.
- 4.30 Announcement Line and Alarm circuit, SD96496-01.
- 4.31 Auxiliary Sender circuit, SD96479-01.
- 4.32 Coin Zone Operator Trunk Ckt., SD95851-01.
- 4.33 Answering Time Recorder circuit, SD96235-01.
- 4.34 Subscriber Sender Circuit such as SD-21193-01.
- 4.35 Line Concentrator Identifier Circuit - SD-95739-01.

DESCRIPTION OF OPERATION

5. SELECTOR OVERFLOW REGISTER (FIGURE 1)

When a selector elevator reaches the overflow terminals, the register operates.

6. DISTRICT AND OFFICE OVERFLOW REGISTER (FIGURE 2)

When a district or office selector elevator reaches the overflow terminals, its sequence switch advances to overflow position and momentarily connects ground to the tip, operating relay (L) which locks up until the register is completely operated. The register contact then closes, short-circuiting the winding of relay (L), which releases. If ground has been disconnected from the tip terminal, the register releases.

7. GROUP REGISTER (FIGURE 3)

When any circuit of the group becomes busy ground is connected to lead "GR", operating relay (L) which locks up until the register contact closes. Closure of the register contact short circuits relay (L), which releases. When ground is disconnected from lead "GR", the register releases.

8. "A" OPERATOR'S PEG COUNT CIRCUIT (FIGURE 4)

Operation of the key operates relay (L) which locks up until the contact of the register closes. When the register is completely operated, its contact short circuits the winding of relay (L), which releases. If the key has been released, the register releases.

9. ALL CIRCUITS BUSY REGISTER (FIGURE 5)

When all circuits of the group are busy, ground is connected to lead "PB", operating the register.

When line group overload signal is specified option T is used. Operation of the register under this condition connects ground to lead "G". This causes a lamp in the line load control circuit to light indicating an overload condition. When the overload condition is removed the register releases removing ground from lead "C" and extinguishing the lamp.

10. GROUP REGISTER (FIGURE 6)

With the peg count battery key, Figure 25, operated, when ground is connected to lead "GR", relay (L) operates and locks up until the register contact closes. Closure of the register contact short-circuits relay (L), which releases. When ground is removed from lead "GR", the register releases.

11. ALL SENDERS BUSY REGISTER (FIGURE 7)

When all senders in the group are busy, the register operates, operating alarms at the sender monitor position.

12. LOCAL TANDEM SENDERS ALL SENDERS BUSY REGISTER (FIGURE 8)

When all local tandem senders are busy, ground is connected to lead "SB", operating the register and operating alarms at the sender monitor position.

13. GROUP BUSY REGISTER (FIGURE 9) (MFR. DISC.)

Lead "PBR" is connected to ground thru normally closed contacts in circuits

of a group. The peg count battery key, Figure 25, is provided for disconnecting the battery except during periods of traffic study. With the key operated, relay (L) is normally operated and prevents operation of the register. When all circuits of a group become busy, ground is disconnected from lead "PBR", releasing relay (L) which operates the register. When "X" wiring is furnished, operation of the register operates the group busy signals.

14. GROUP BUSY REGISTER (FIGURE 10)
(MFR. DISC.)

Lead "PBR" is connected to ground thru normally closed contacts in circuits of a group, so that relay (L) is normally operated and prevents operation of the register. When all circuits of a group become busy, ground is disconnected from lead "PBR" and relay (L) releases, operating the register. When "X" wiring is furnished, operation of the register operates the group busy signals.

15. PEG COUNT CHECKING CIRCUIT (FIG. 11)

Relay (P) operates when a peg count checking plug is inserted in the switchboard monitoring jack. Ground is then connected to lead "C" whenever the peg count key, Figure 4, is operated, operating a separate register associated with a plug which is inserted in the peg count checking jack. With this arrangement, the Chief Operator may check an operator's peg count while monitoring on the same operator's talking circuit.

16. LINK DOWN DRIVE REGISTER (FIGURE 12)

When a link returns to normal during sender hunt, ground from the "Z" commutator operates relay (DD) which closes the circuit of the register. When "V" wiring is furnished, the operated register operates the link down drive alarm. The (DD) relay is slow to release in order to hold over the opening in the "Z" commutator segment and prevent double registration.

17. ALL TRUNKS BUSY REGISTER, GROUP BUSY REGISTER (FIGURES 13 AND 20)

Lead "PBR" is connected to ground thru normally closed contacts in circuits of a group, so that relay (L) is normally operated and prevents operation of the register. When all circuits of the group become busy, ground is disconnected from lead "PBR" and relay (L) releases, operating the register. When "Y" wiring is furnished, operation of the register operates the sender group busy signals. Jack (TST) is furnished to facilitate testing relay (L).

18. DECODER PEG COUNT REGISTER (FIGURE 14)
(MFR. DISC.)

During periods of traffic study, key (P) is operated, connecting ground to the peg count counting relays in the decoder circuit. When the decoder has functioned ten times, ground from key (P) is connected by the counting relay to lead "PC" operating relay (L), which locks up until the register is completely operated. Closure of the register contact short circuits the winding of relay (L), which releases. If ground has been disconnected from lead "PC" the register releases. The register readings are to be multiplied by 10.

19. "A" SWITCHBOARD SPECIAL SERVICE TRUNK OVERFLOW REGISTER (FIGURE 15)

When a district or office selector goes to overflow at a group of special service trunks, the selector stops with the brushes on the overflow terminals and its sequence switch momentarily connects ground to the tip, operating relay (L) which locks up until the contact of the register closes. Relay (L1) operates, operating the overflow alarm. When the register is fully operated, it short-circuits the winding of relay (L), which releases. The (L1) relay and register are held under control of the tip ground, if the original operating circuit has not been broken. If the ground has been disconnected before relay (L) is shunted down by the register, release of relay (L) releases the register and releases relay (L1), which disconnects the overflow alarm.

20. LINK DOWN DRIVE REGISTER (FIGURE 16)

When a link returns to normal during sender hunt, ground from the "Z" commutator operates relay (L), which locks up until the contact of the register closes. Relay (L1) operates, operating the link down drive alarm. When the register is fully operated, it short circuits relay (L), which releases. The (L1) relay and the register are held under control of the "Z" commutator ground if the original operating circuit has not been broken. If ground has been disconnected from lead "MR", the register and relay (L1) release.

21. PEG COUNT CHECKING RELAY (FIGURE 17)

Relay (P) operates when a peg count checking plug is inserted in the switchboard monitoring jack. Operation of relay (P) operates a relay in the position dial circuit or key set circuit to connect the operator's telephone circuit to the monitoring circuit. Relay (P) also closes the circuit so that ground is connected to lead "R" whenever the peg count key, Fig-

ure 4, is operated, operating a separate register in the peg count checking circuit.

22. KEY PULSING SENDER GROUP BUSY REGISTER (FIGURES 18 AND 20)

Relay (L) is held operated while any sender of the group is idle. When all senders of the group are busy, relay (L) releases. If there is no common group of senders, release of relay (L) operates the register. If a common group of senders is furnished, release of relay (L) prepares the circuit for operating the register when all senders of the common group become busy. Jack (TST) is furnished to facilitate tests of relay (L).

23. KEY PULSING SENDER GROUP BUSY RELAY (FIGURES 19 AND 20)

Relay (L) is held operated while any sender of the common group is idle. When all senders of the common group are busy, relay (L) releases, operating the register of any individual sender group, all senders of which are busy. Jack (TST) is furnished to facilitate tests of relay (L).

24. DECODER PEG COUNT REGISTER (FIGURE 21)

During periods of traffic study, key (P) is operated, connecting ground to the peg count relay in the decoder circuit. When the decoder functions, ground from key (P) is connected to lead "PC", operating the magnetic counter.

25. SUBSCRIBERS LINK OVERFLOW REGISTER (FIGURE 22)

When all links common to a start circuit become busy, with one or more districts idle, and another call is originated in that group, ground is connected to lead LB, operating the register.

When line group overload signal is specified option T is used. Operation of the register under this condition connects ground to lead "G". This causes a lamp in the line load control circuit to light indicating an overload condition. When the overload condition is removed the register releases removing ground from lead "G" and extinguishing the lamp.

26. DISTRICT GROUP OVERFLOW REGISTER (FIGURE 23)

When all district selectors common to a start circuit become busy, and another call is originated in that group, ground is connected to lead "DB" operating the register.

When line group overload signal is specified option T is used. Operation of the register under this condition connects ground to lead "G". This causes a lamp in

the line load control circuit to light indicating an overload condition. When the overload condition is removed the register releases removing ground from lead "G" and extinguishing the lamp.

27. CLOCK PEG COUNT REGISTER (FIGURE 24)

With the peg count battery key, Figure 25, operated, relay (C) operates, operating relay (T) at each closure of the clock contacts. Operation of relay (T) operates the register, which records the elapsed time since operation of the key and the time between readings of the peg count registers.

28. PEG COUNT BATTERY KEY (FIGURE 25)

Battery for Figures 6, 9 and 24 is furnished by this figure. The key is operated to connect battery to the registers only when peg count observations are to be made.

29. SENDER LOAD REGISTER (FIGURE 16)

When the sender load register or indicating circuit connects ground to the "MR" lead as a result of a predetermined percentage of the senders in a group becoming busy, relays (L) and (L1) and the register operate, with the low resistance (L) relay in series with the windings of the (L1) relay and the register which are in parallel. The (L) relay which is relatively fast operate, connects another circuit to ground to the "MR" lead thereby locking itself operated until the register operates and short-circuits the (L) relay winding, and it releases. The register remains operated until the (L) relay has released and ground has been removed from the "MR" lead by the sender load circuit. Thus the operation of the register is insured when ground is connected to the "MR" lead for sufficient time to operate the (L) relay.

The operation of the (L1) relay connects ground to the "LR" lead to operate other circuits which lock in audible and visual signals indicating a sender load condition. The (L1) relay remains operated until the (L) relay is released and the circuit over the "MR" lead is open.

30. DIAL TONE SPEED TEST REGISTER (FIGURES 26 AND 27)

When key (ST) Figure 27 is operated, ground is connected to leads "T" and "R" to the Dial Tone Speed Register Circuit and causes that circuit to start testing the associated subscriber lines for dial tone. As each subscriber's line is tested, a momentary ground is connected to lead "T" causing register (T) Figure 26 to operate and release and register the number of tests made.

When the dial tone speed register circuit encounters a subscriber's line on which it has to wait more than three seconds for dial tone, the Dial Tone Speed Register Circuit connects a momentary ground to lead "D" causing register (D) Figure 26 to operate and release and register the number of slow dial tone conditions encountered.

31. AUXILIARY LINE CIRCUIT PEG COUNT (FIGURE 3)

When a relay in the auxiliary line circuit operates due to irregular operation the "P" lead to the register circuit is grounded. Ground on the "P" lead operates relay (L) which locks up until the register is completely operated. Closure of the register short circuits relay (L) which releases. If ground has been disconnected from the "P" lead the register releases.

32. INCOMING INTERCEPTING TRUNK PEG COUNT (FIGURE 3)

When the "MR", "OR" or "TOR" leads from the trunk are grounded the (L) relay operates and locks up until the register is completely operated. Closure of the register short circuits relay (L) which releases. If ground has been disconnected from the "MR", "OR" or "TOR" lead the register releases.

33. OVERFLOW REGISTER FOR INTERCEPTING TRUNK FINDER ALLOTTER (FIGURE 28)

When the allotter reaches overflow position, the register is operated and locks up thru its own contact, until the allotter is again available for calls.

34. AUXILIARY SENDER PEG COUNT (FIGURE 29)

When an auxiliary sender is seized, ground is connected to lead 10D or 7D to score the appropriate register for 10 digit or 7 digit direct distance dialed calls.

35. TRAFFIC USAGE RECORDER (FIGURE 32)

35.1 Usage Register (U)

Each time the Traffic Usage Recorder Circuit encounters a busy condition in scanning a particular group of circuits, the Usage register assigned to that group of circuits is operated.

35.2 Group Cycle Count Register (GCC)

The (GCC) register scores the number of 100 second cycles of operation of the Traffic Usage Recorder Circuit during one-half or one-hour intervals for each group of circuits assigned to a camera group of registers.

35.3 Detector Group Usage Register (DGU)

The (DGU) register scores the number of busy circuit conditions encountered by each detector in the Traffic Usage Recorder Circuit. The total of the (DGU) operations accordingly equals the total of the (U) operations.

35.4 Camera Control (Fig. 33)

The Camera Control relay (CC) is operated by the Traffic Usage Recorder Circuit when photographs are to be taken. This relay controls two cameras on a register bay. A maximum of 18 relays may be multiplied to the same lead.

36. TRAFFIC REGISTER CAMERA CONTROL (FIGURE 34)

The camera control relay (CCP-) is operated by the Traffic Register Camera Control Circuit when photographs are to be taken. This relay controls only one camera. A maximum of two cameras can be mounted on a register bay.

37. ANSWERING TIME RECORDER (FIGURE 30)

37.1 Total Calls Register (TC) and Delayed Answer Register (DA)

Each time the answering time recorder is observing the answering time on a call, ground is supplied to operate the (TC) register in the Traffic Register Cabinet Circuit. Each time the answer time exceeds the desired limit on a call, ground is supplied to operate the (DA) register in the Traffic Register Cabinet Circuit.

38. ANNOUNCEMENT SYSTEM NO. 2D PEG COUNT (FIGURE 31)

When an announcement line is seized to give a subscriber access to an announcement machine, lead "PC" is ground to operate the (ALA) register.

39. COIN ZONE OPERATOR TRUNK CIRCUIT (FIGURE 3)

When the coin zone operator trunk circuit is seized on an initial call, lead "PC1" grounded, operates relay (L) which locks and operates its register.

When the trunk is seized on an over-time call, lead "PCO" grounded, operates relay (L) which locks and operates its register.

40. AUXILIARY SENDER STUCK SENDER AND PARTIAL DIAL (FIG. 36)

When the auxiliary sender encounters a stuck sender condition, lead "G" is grounded to operate the (SS) register.

When the auxiliary sender encounters a partial dial condition, lead "PD" is grounded to operate the (PD) register.

41. INTERSENDER TIMING PEG COUNT
(FIGURE 37)

When a subscriber sender times out because of intersender timing, ground is connected momentarily to the "ITR" lead. Ground on the "ITR" lead operates the (ITE) relay which in turn operates the (IT) register. In case of short closure of ground on the "ITR" lead from the subscriber sender, but long enough to operate the (ITE) relay, the (ITE) relay will lock to ground under control of the (IT) register. When the (IT) register operates, the (ITE) relay releases, in turn releasing the (IT) register.

42. LINE CONCENTRATOR IDENTIFIER - TRUNK
SEIZURE PEG COUNT (FIGURES 38 AND 39)

When the (LCI) key, Figure 39, is operated battery is furnished to the associated peg count registers and when a trunk of the Line Concentrator Identifier is seized and ground is connected to the "PC" lead, the associated register operates.

43. LINE CONCENTRATOR IDENTIFIER - ALL
TRUNKS BUSY OVERFLOW REGISTER (FIGURE
40)

When all trunks of the Line Concentrator Identifier circuit have been allotted and are busy, ground is connected to the "PB" lead operating the register.

44. ANSWERING TIME RECORDER WITH TRAFFIC
WEIGHTING APPLIQUE CIRCUIT (FIGURE
41)

44.1 Timed Calls Register (S)

At the end of each interval in which the Answering Time Recorder is observing the answering time on a call, ground is connected to the "S" lead operating the (S) register.

44.2 Total Calls Register (N)

During the read out operation of the Traffic Weighting Applique circuit ground is connected to the "TC" lead from the Answering Time Recorder circuit to operate the (N) register once for each call that originated during the timing interval. Ground connected to the "FA" lead each time the (N) register operates assists the Traffic Weighting Applique circuit in its read out operation.

44.3 Delayed Answer Register (D)

If the calls are to be counted as delayed answer calls then each time the (N) register operates during the read out operation, ground is connected to the "DA" lead operating the (D) register. Ground connected to the "RL" lead each time the (D) register operates assists the Traffic Weighting Applique circuit in its read out operation.

BELL TELEPHONE LABORATORIES, INCORPORATED

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