UNIVERSAL EMERGENCY SERVICE NUMBER 911

NO. 2 ELECTRONIC SWITCHING SYSTEM

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Printed in U.S.A.

FIGURES PAGE

FEATURE DEFINITION AND DESCRIPTION

1. DEFINITION

1.01 Nine-one-one (911) is the 3-digit telephone number that has been designated for public use throughout the United States in reporting an emergency and requesting emergency assistance. It is intended as a nationwide telephone number giving the public direct access to an emergency service bureau. The emergency service bureau receives all calls for emergency assistance and either dispatches emergency vehicles directly or transfers or relays calls to participating agencies for dispatch. The 911 bureau frequently is located within a police department although some communities locate the center in a fire department or in an independent agency which serves as a communications center.

1.02 In the No. 2 Electronic Switching System (ESS) the emergency service bureau (911) can be accessed from any telephone. Calls from dial tone first coin stations can be made without coin deposit.

1.03 Accessing an emergency service bureau from No. 2 ESS is possible when using any issue of the generic program and when the emergency service bureau is treated as an operator position or a multiline hunt group.

1.04 If optional bureau control features are required, which are; forced hold, forced disconnect of existing connections, emergency ringback capabilities and indications of the calling line supervisory state, then EF-1 or Issue 4 of LO-1 generic programs and trunk circuit, SD-2H186-01, are required.

1.05 Both the EF-1 and Issue 4 of the LO-1 generic programs provide the capability of either ringing or lamp indication to the bureau via the SD-2H186-01 trunk circuit.

2. DESCRIPTION

2.01 This document describes the universal emergency service number 911 feature which can be added to the No. 2 ESS office when the features of 1.04 are required. The hardware and software changes required to implement this feature are also discussed.

A. Customer (User) Perspective

2.02 When the customer requiring emergency service dials 911 (or any other 3- or 7-digit number that may be designated as an emergency service number by the telephone company, a network path is reserved between the calling customer and the emergency service bureau. Audible tone is returned to the calling customer while the attendant at the service bureau receives ringing or a lamp indication. When the service bureau answers, connections are set up between the customer and the bureau attendant (charging is optional). The bureau attendant can hold the connection with the calling party and perform certain control functions as long as the attendant remains off-hook. The attendant control functions may include: forcing a disconnect, alerting a calling party by initializing a ringback signal, or causing a line trace to be made at the central office in order to identify the calling party.

B. System Implementation

2.03 The following paragraphs describe the sequence of actions that occur when a call is placed to the 911 service bureau. Refer to Figure 1.

(a) When a local customer dials 911, a network path is set up between a ringing circuit and the 911 trunk, or the trunk is seized.

(b) The 911 trunk is placed in the bypass state and ringing is applied toward the service bureau. Another network path is set up between the calling line and a junctor circuit.

(c) The junctor circuit provides audible ringing tone to the calling line. A network path between the calling line terminal and the 911 trunk using a wire junctor is reserved. When ringing is tripped at the ringing circuit, by the answer of the service bureau attendant, the reserved path is used to connect the 911 trunk to the calling line.

(d) The 911 trunk is placed in the local talk state. The calling line is supervised at the (0) ferrod and the service bureau at the (1) ferrod of the 911 trunk. This then completes the path between the calling customer and the service bureau attendant enabling a conversation between the two parties.

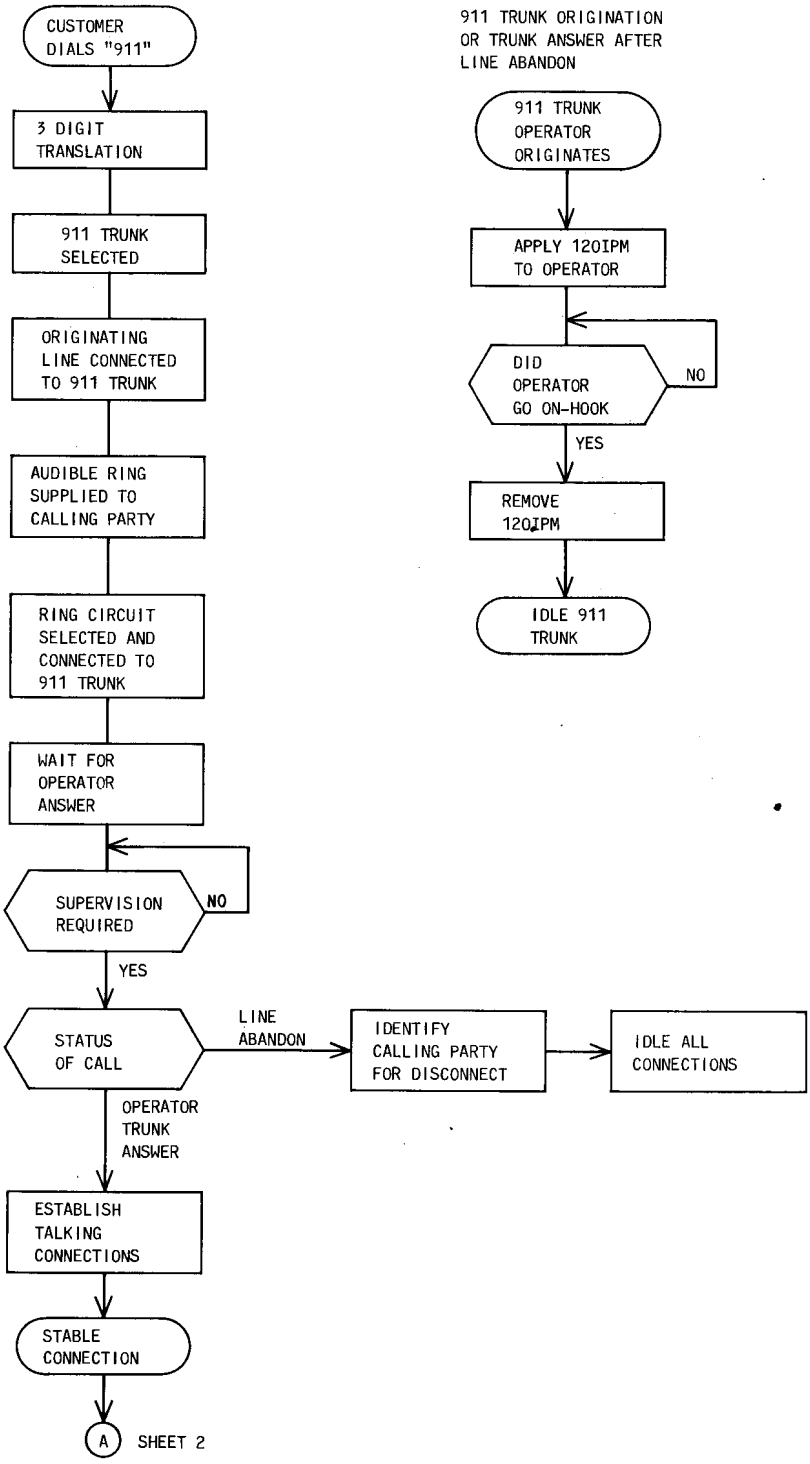


Fig. 1—911 Emergency Call Flow Diagram (Sheet 1 of 2)

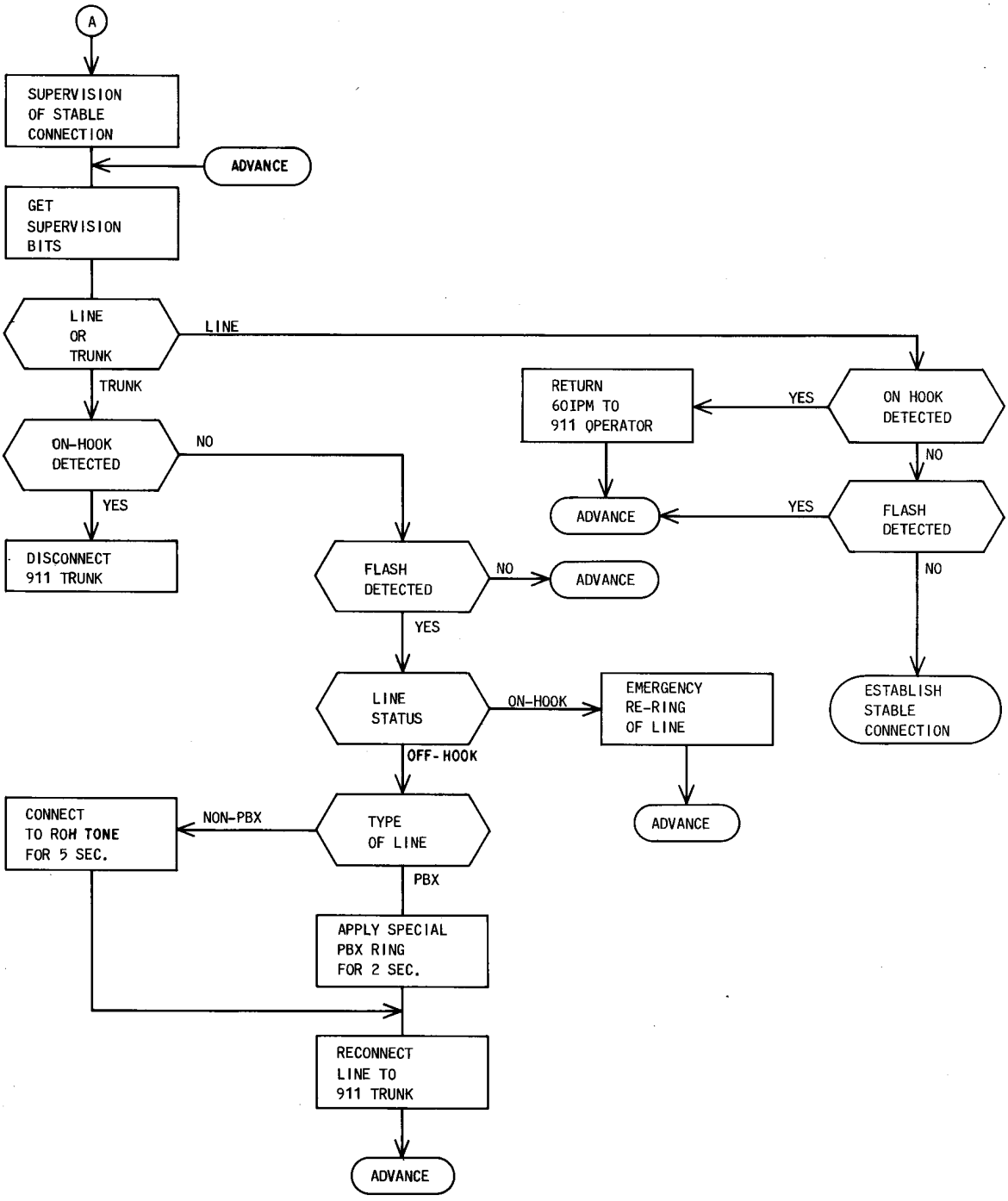


Fig. 1—911 Emergency Call Flow Diagram (Sheet 2 of 2)

2.04 These actions are accomplished by use of standard hardware (such as 3CL board). Additional features included in LO-1, Issue 4 and EF-1 generic programs for the universal emergency service number are described in the following paragraphs. These features require the line access trunk circuit (SD-2H186-01).

Bureau Controlling Incoming Calls

2.05 The bureau holding the calling party has the ability to signal the calling party. A 425- to 1500-millisecond flash on the bureau trunk will result in one of the following depending on the type of line calling the bureau:

(a) ***Single Party Line***—If the station is on-hook, the regular ringing circuit is connected to the line and audible ring returned to the operator. If the station is off-hook, the station is disconnected from the 911 trunk and connected to receiver off-hook (ROH) tone and the operator to audible for ***five*** seconds after which the line is disconnected from the tone and reconnected to the 911 trunk.

(b) ***PBX Line***—If the PBX line is on-hook, the special ringing circuit is connected and an audible ring is returned to the operator. If the PBX line is off-hook, the special ringing circuit is applied to the line in the PBX ringing state and an audible ring is returned to the 911 operator for two seconds, after which the ringer is disconnected and the line is reconnected to the 911 trunk.

(c) ***Multiparty Lines***—If the line is on-hook, normal ringing is applied to ***all parties*** on the line. Two-party lines are rung simultaneously, while 4- and 8-party lines are rung two or four at a time. This is necessary since party identification is not available at this point. The 911 trunk is given audible tone in either case. If the line is off-hook, ROH tone is applied to the line and audible tone to the 911 trunk for five seconds, after which, the line is reconnected to the 911 trunk.

Bureau Forced Disconnect

2.06 The service bureau has the ability to force a disconnect by releasing from the connection independent of calling line status after the standard disconnect timing (11 seconds). The path is then released and all circuits are placed in the idle state.

Status of Calling Party

2.07 The service bureau has the capability of determining the status of the calling party by the following procedures:

(a) If the bureau attendant answers after the calling party has abandoned the call, a 120-interruptions per minute (ipm) tone is transmitted to the bureau attendant.

(b) A 60-ipm tone is transmitted to the bureau if the calling party goes on-hook while the 911 trunk is off-hook. This tone is continuous until the bureau attendant disconnects, or initiates a ringback signal, or the calling party goes off-hook.

Emergency Ringback

2.08 The service bureau attendant can initiate emergency ringback to the local calling party by sending an on-hook flash (425 to 1500 ms) from the service bureau. When the flash is received, the calling line is rerung in the same manner as emergency ringback from a recording completing operator.

3. FEATURE FLOW DIAGRAM

3.01 A feature flow diagram giving the functional operation of the universal emergency service number 911 is shown in Figure 1.

4. INTERACTIONS

4.01 All 911 calls can be traced in the No. 2 ESS office because the bureau can hold the originating line.

4.02 Call forwarding to the 911 bureau is not permitted.

4.03 The "911" number cannot be put in the speed calling list.

ATTRIBUTES

5. STATION/SYSTEM

5.01 The 911 emergency service is provided on a per-office basis in No. 2 ESS as part of EF-1 or Issue 4 of LO-1 generic programs.

6. LIMITATIONS

6.01 The following features can only be provided on a local terminating basis:

- Bureau Controlling Incoming Calls
- Forced Disconnect
- Status of Calling Party
- Emergency Ringback.

Additional limitations include the following working limits:

- External circuit loop resistance not to exceed 1300 ohms
- Insulation resistance must be 15,000 ohms or greater
- Battery voltage should range from 42.75 to 52.5 volts.

7. RESTRICTION CAPABILITY

7.01 Normal screening and routing capabilities apply. Refer to the Translation Guide, TG-2H.

8. COST DATA

8.01 The program cost for implementing these features is 170 program store words. Additional costs include additions in the translations and installation of the new trunk circuit (SD-2H186-01).

INCORPORATION INTO SYSTEM

9. PLANNING

9.01 A new trunk circuit J2H018DZ (SD-2H186-01) must be installed in the No. 2 ESS offices so that tones and ringing options can be provided.

9.02 There may be more than one emergency service bureau within the serving area of a No. 2 ESS. The No. 2 ESS has the ability of directing calls from any telephone in its serving area to the specific emergency service bureau. In order to associate a telephone with a specific 911, it may be necessary to add additional screening tables to provide for adequate route information.

10. HARDWARE ENGINEERING

10.01 A new miscellaneous trunk circuit (SD-2H186-01) is required for connecting the No. 2 ESS directly to the 911 service bureau. This circuit in conjunction with EF-1 or Issue 4 of LO-1 generic program, provides the tones required for indicating the calling party status.

11. SOFTWARE ENGINEERING

11.01 An Office Data Administration (ODA) run is necessary to define the new 911 trunk group.

11.02 The following Translation Input Forms must be completed if the SD-2H186-01 is used. These forms must be submitted to WECo Regional Center using normal schedule procedures.

- ***Form ESS 2202-2***—Trunk Group Table is used to provide the means of establishing a trunk group number for each trunk group entering or leaving the office including all service circuit groups and for "dummy" or future growth trunk groups. This form is completed to identify a 911 trunk group and assign the trunk group number. Trunk order code (TOC) 67200 is used to define a 911 trunk.
- ***Form ESS 2204***—Trunk Feature Table provides information outlining distinct features that are available to the selected trunk group as indicated on Form 2202-2. The 2204 form defines the emergency ring option.
- ***Form ESS 2300***—Three- and Six-Digit Translation Table is the starting point for establishing routing and the subsequent treatment for all 3- and 6-digit NNX and NPA codes. This form provides a sequential listing of all dialable codes and provides the initial code reduction when all codes of similar treatment are assigned into code

groups. The emergency service bureau code number is identified by this form.

- ***Form ESS 2301***—Rate and Route Table is used to coincide with the appropriate line and trunk class code with its proper charge index and route index. This form is also used to set up the internal line screening codes. The charge index points to the charge table 2302.

- ***Form ESS 2303-2***—Route Index Expansion Table is used to define the routing information for an office.

- ***Form ESS 2304***—Code Group Translation Table is a group of 3- and 6-digit office codes that are to be routed and charged identically.

12. COMPATIBILITY

12.01 Refer to J2H031A—Trunk and Service Circuit Engineering Specification for information concerning compatibility of other trunk circuits that will provide 911 emergency service.

13. OFFICE DATA

13.01 The new trunk circuit can interface with either a switchboard or a regular telephone instrument at the emergency service bureau when a No. 2 ESS customer dials 911.

13.02 In order for the No. 2 ESS to operate with the 911 trunk, the translators must be defined as shown in Figure 2.

13.03 Figure 2 shows the translation layout for accessing the 911 trunk group data. The two new bits in the trunk group expansion are used to define the new 911 trunk group using the SD-2H186 trunk and the 911 bureau ring option. Multiple trunk groups may be provided if necessary.

Trunk Group Data

13.04 Ring option (bit 13 word 0)—Setting this bit will cause the 911 attendant to be rung in the same manner as any other telephone. If this bit is zero, a lamp will be operated at the attendant position. This alerts the operator that a call is awaiting answer.

13.05 The 911 trunk (bit 14 word 0)—Setting this bit identifies this trunk group as one used for 911 emergency service. The program tests this bit after receiving supervision (on-hook, off-hook wink) from the attendant or calling party in operator type calls. Refer to Figure 2 for the translations layout.

13.06 The 3-digit translator must be set up to identify the 911 service code in the same manner as a recording completing operator code is identified. The translator program uses bits in the trunk group data to differentiate between the emergency and nonemergency type calls.

14. GROWTH/RETROFIT PROCEDURES

14.01 In order to add a 911 trunk group to an existing office, translation input forms must be submitted to the regional center in a normal manner (see 11.01).

15. TESTING

15.01 The 911 trunk would be tested as a line from the trunk test frame. Refer to Section 232-141-505, ***Line Access Trunk Circuit With or Without Reverse Battery Supervision,*** for all testing procedures of the SD-2H186-01 trunk circuit.

ADMINISTRATION

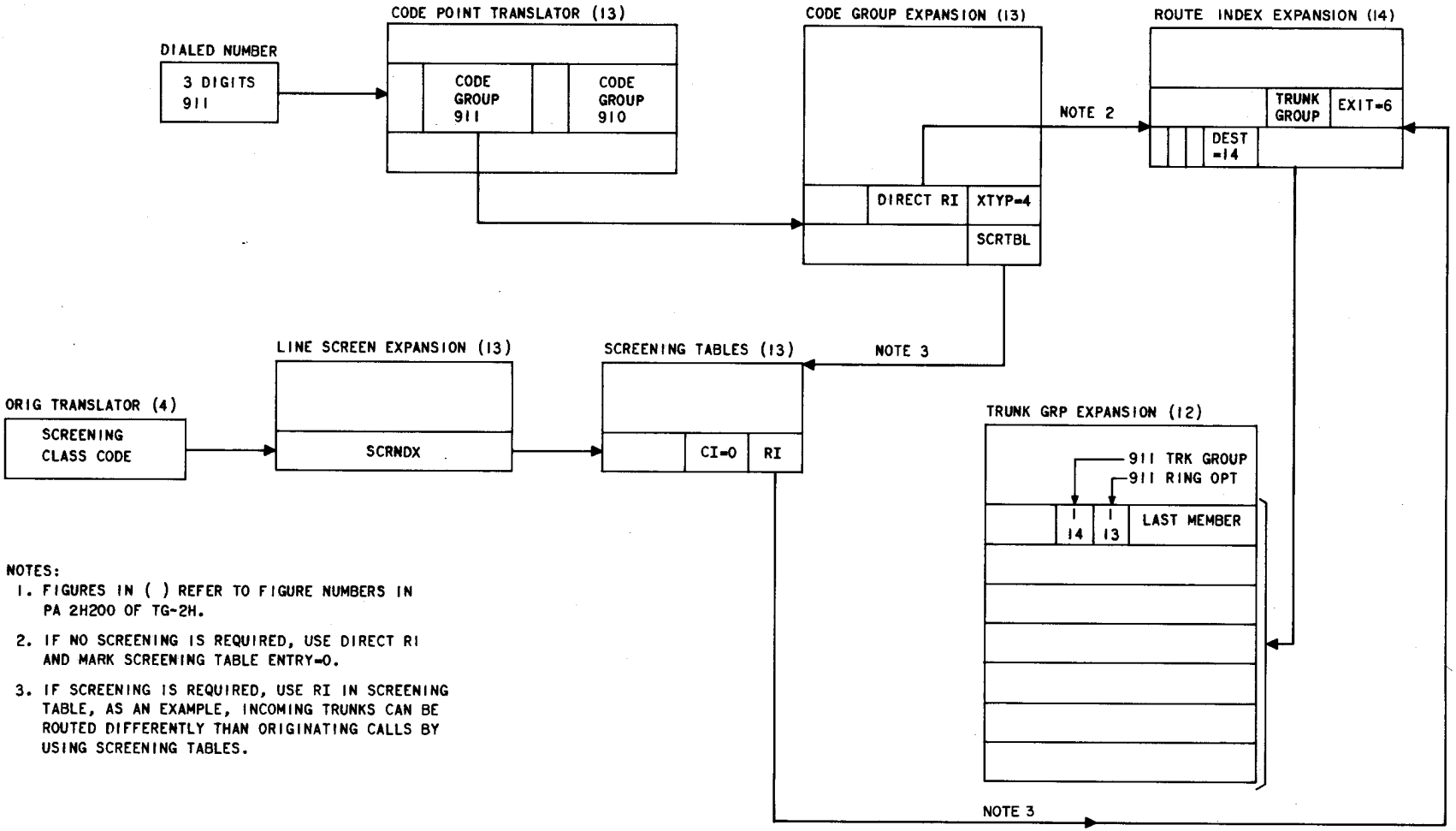
16. MEASUREMENTS

16.01 Traffic measurements are available in the standard form of a peg count, usage count, overflow count, and maintenance usage count based on the trunk group number assigned to the 911 trunk.

17. RECORD KEEPING

17.01 The following list of ODA Translation Administration Records must be completed and a record of the same maintained:

- ESS 2202-R Trunk Group Record
- ESS 2300-R Three- and Six-Digit Record
- ESS 2301-R Rate and Route Record
- ESS 2303-R Route Index Record



NOTES:

1. FIGURES IN ( ) REFER TO FIGURE NUMBERS IN PA 2H200 OF TG-2H.
2. IF NO SCREENING IS REQUIRED, USE DIRECT RI AND MARK SCREENING TABLE ENTRY=0.
3. IF SCREENING IS REQUIRED, USE RI IN SCREENING TABLE, AS AN EXAMPLE, INCOMING TRUNKS CAN BE ROUTED DIFFERENTLY THAN ORIGINATING CALLS BY USING SCREENING TABLES.

Fig. 2—Translation of 911 Code

- ESS 2304-R Code Group Translation Record.

18. CHARGING

18.01 The telephone company may optionally charge the calling subscriber for the calls made to the 911 emergency service bureau in both coin and noncoin stations.

AVAILABILITY

19. NEW INSTALLATIONS

19.01 The 911 emergency service can be provided with either EF-1 or Issue 4 of the LO-1 or subsequent generic program which is currently available for No. 2 ESS offices. The new trunk circuit SD-2H186 became available in the fourth quarter of 1973 for incorporation of the additional features discussed in this document.

20. GROWTH/RETROFIT

20.01 The 911 emergency service is available with EF-1 and Issue 4 of LO-1 generic programs.

SUPPLEMENTARY INFORMATION

21. GLOSSARY

21.01 The following list defines abbreviations and nonstandard terms used in this section:

ROH—Receiver Off-Hook
ODA—Office Data Administration
PBX—Private Branch Exchange

22. REASONS FOR REISSUE

22.01 This is the initial issue of this document.

23. REFERENCES

23.01 Major references to the supporting documentation for this section are listed as follows:

- TG-2H—No. 2 ESS Translation Guide
- SD-2H186-01—Line Access Trunk Circuit
- CD-2H186-01—Circuit Description of the SD-2H186-01
- J2H018DZ—Line Access Trunk Circuit
- GL 73-03-206 dated—March 29, 1973—911 Emergency Service
- GL 73-09-013 dated—September 6, 1973—No. 1 ESS—Development of New Features for Universal Emergency Service Number 911
- GL 74-12-121 dated—December 17, 1974—911 Emergency Service