FEATURE DOCUMENT

UNIVERSAL EMERGENCY SERVICE NUMBER 911

NO. 3 ELECTRONIC SWITCHING SYSTEM

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FEATURE DEFINITION AND DESCRIPTION

1. DEFINITION

1.01 The 3-digit telephone number 911 has been designated for public use throughout the United States in reporting an emergency or 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.

1.02 In the No. 3 Electronic Switching System (ESS) the emergency service bureau (911) can be accessed from any telephone served by this office. Calls from dial tone first coin stations can be made without a coin deposit.

1.03 The emergency service bureau is accessed and treated as if it were an operator position. This allows the emergency service bureau to be provided with the following features: ***service hold, forced disconnect, emergency ringback capability, denied origination,*** and ***indications of the calling line supervisory state.***

1.04 The emergency service bureau feature is provided with all versions of the No. 3 ESS system program and by a special application of an incoming trunk circuit, SD-3H220-01 (CPS-FB371).

2. DESCRIPTION

A. Customer (User) Perspective

2.01 Any customer that requires emergency service can dial 911 (or some 7-digit number as designated by the telephone company) to access the emergency service bureau. The call is handled by the No. 3 ESS as an outgoing call and is connected to the appropriate trunk circuit. The emergency service bureau is rung as if it were a standard station line and the calling party is given audible ringing. Upon answer, the talk path is made stable.

2.02 The bureau attendant has some control over the call as long as the attendant remains off-hook. If the call is locally originated and the caller goes on-hook before the bureau has the information it needs, the bureau can ring the caller back. If the caller goes off-hook before ringback occurs, the talk connection is reestablished. The bureau can also go on-hook to immediately disconnect a call. The bureau has no hold or ringback capability if the caller is on an incoming trunk at the No. 3 ESS. Locally originated calls can be traced if necessary by translations or a maintenance center TTY request for call trace.

B. System Implementation

2.03 To provide 911 service in a No. 3 ESS, an incoming trunk circuit is used as an outgoing trunk, and is rung as though it were a line. The circuit used for the 911 trunk is an incoming loop trunk equipped with wink start signaling, SD-3H220-01 (CPS-FB371). As many trunks as required are placed in a trunk group that is designated as one-way outgoing by setting the incoming digit translation field (ID_XLN) to zero in the trunk group's data block. To distinguish this outgoing trunk group from others, there is a special bit for 911 in the trunk group data block (SNG_WK) which is set for this trunk group only.

Terminating to the 911 Bureau

2.04 To access the emergency service bureau, the operating company has the option of providing 911 or a 7-digit code. If the customer can dial 911, the 3-digit translation produces a special route index which routes the call as though it were an outgoing call. If the customer must dial a 7-digit number, the call is handled as a local termination and the 4-digit translation provides the special route index. After selection of a trunk, pertinent data is stored in the transient call record (TCR) and a talk path, ringing circuit and ringing path are selected. Ringing is applied to the emergency service bureau and the customer is given audible tone. When answer occurs, the call is then made stable.

Bureau Control of Calls

2.05 When a call completes to the emergency service bureau, the control that the bureau has of that call is dependent on that call's point of origin.

2.06 If a calling customer is on an incoming trunk (with the No. 3 ESS office being used as the tandem office for this trunk) and goes on-hook after the bureau answers, the bureau is given

reorder tone. Since the bureau has no service hold condition on this type of call it must go on-hook. This causes the connection to be dropped immediately and leaves no way to reestablish the talk path.

2.07 If the calling customer is a locally originated line and goes on-hook after the bureau answers, a service hold condition is applied. An optional tip/ring reversal (provided by having the reverse tip and ring (RVSTR) bit in the office option words set) is done by changing the trunk state. This tip/ring reversal is required only if it is desired to light a lamp on a switchboard or keyset as a visual indicator that the caller went on-hook. The RVSTR bit should not be set when there is a carrier interface between the No. 3 ESS and the bureau because the tip/ring reversal cannot be done with a carrier interface. ***Low tone*** is then given to the bureau from a low tone circuit. This condition exists until one of three things occurs:

(a) The bureau goes on-hook causing the call to be disconnected immediately. The calling line is placed in the idle state.

(b) The customer goes off-hook and reestablishes the talk connection.

(c) The bureau operator flashes 200 to 1200 milliseconds. This causes the trunk to appear as an operator trunk requesting ringback. This results in the following, depending on the type of line calling the bureau.

(1) ***Single Party and PBX Lines***—If the customer remains on-hook, ringing is applied for four seconds. The call is made stable as though the customer reanswered. If the customer does not go off-hook, the entire process of calling party disconnect reoccurs and the bureau is again given low tone. If the customer goes off-hook just as ringback was about to occur, two seconds of receiver off-hook tone (ROH) is given and the bureau is reconnected.

(2) ***Multiparty Lines***—If the line is on-hook, four seconds of ringing is applied to all parties on the line. Two-party lines are rung one at a time, 4-party semiselective lines are rung two at a time, 4-party full selective lines are rung one at a time, 8-party semiselective lines are rung two at a time, and 8-party coded lines are rung four at a time. This is necessary since party identification is not available for 4- and 8-party service at this point. If the wrong party goes off-hook, that party must go back on-hook and the line rerung. This continues until the desired party is reached. If a party on the line goes off-hook just as ringback was about to occur, two seconds of ROH tone are given and the bureau is reconnected.

Originations From the 911 Bureau on a 911 Trunk

2.08 An off-hook from an idle 911 trunk is handled at first as a normal trunk origination. When the ID_XLD field in the group data block is checked, the trunk will be listed as an outgoing trunk. This causes the SNG_WK bit to be tested. When this reveals the trunk to be a 911 trunk, the trunk is connected to a junctor and given reorder for up to six minutes. If the trunk goes on-hook before the 6-minute time-out, the trunk is idled. However, if reorder is given for 6 minutes and the 911 trunk is still off-hook, a minor alarm is given and the following message is printed on the maintenance TTY:

tt REPT TRK gg mmm ddd ORG

The gg and mmm variables define the trunk group and member number, respectively. The ddd indicates that the message is in regard to the 911 bureau. After the initial time-out, the 911 trunk is put into the high and wet state.

3. FEATURE FLOW DIAGRAM

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

4. INTERACTIONS

4.01 All 911 calls originated in the No. 3 ESS office can be traced.

ATTRIBUTES

5. STATION/SYSTEM

5.01 The emergency service number 911 is provided on a per-office basis in No. 3 ESS with all versions of the system program.

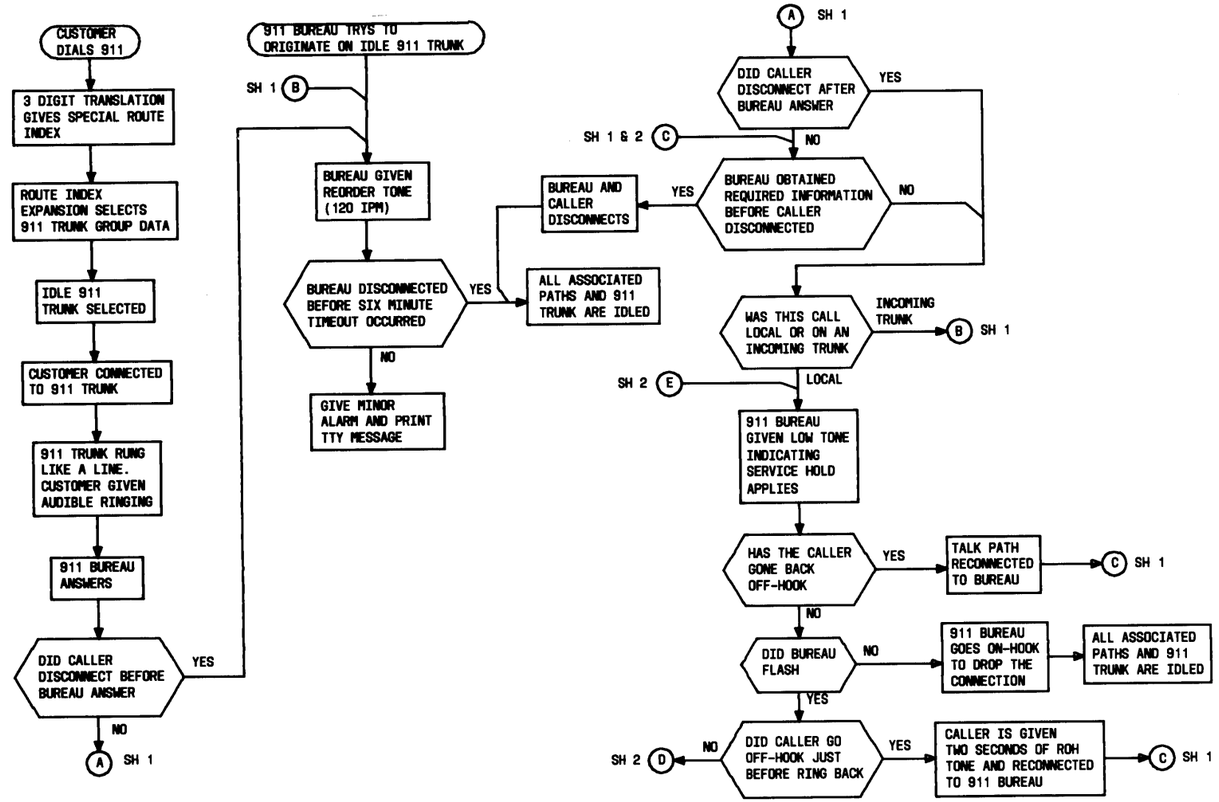


Fig. 1—Universal Emergency Service Number 911 Feature Flow Diagram (Sheet 1 of 2)

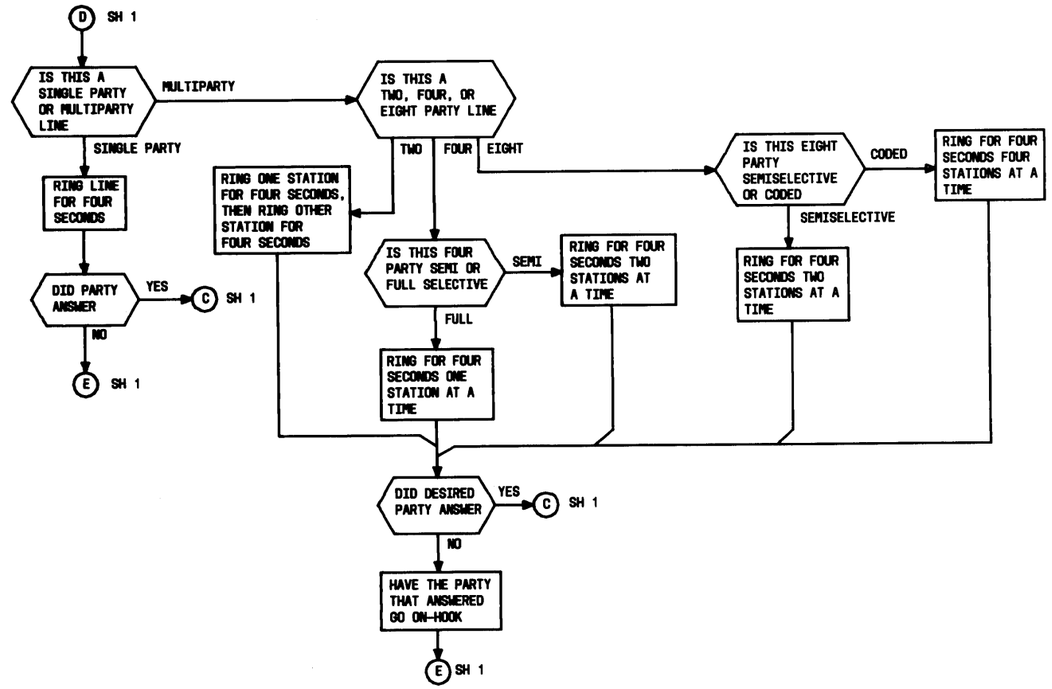


Fig. 1—Universal Emergency Service Number 911 Feature Flow Diagram (Sheet 2 of 2)

6. LIMITATIONS

6.01 The following feature limitations apply to the emergency service bureau:

- Call control can be provided only for locally originated calls.
- Tip/ring reversal cannot be provided when carrier facilities are used between the No. 3 ESS and the emergency service bureau.
- The bureau cannot originate a call on a 911 trunk. Reorder is returned when an idle 911 trunk is seized.

Additional working limitations include the following:

- The 911 trunk requires a minimum leakage resistance of 10,000 ohms.
- The maximum allowable customer loop resistance is 1300 ohms or 4000 ohms over a loop trunk.
- The range over carrier facilities is a function of the carrier used.

7. RESTRICTION CAPABILITY

7.01 Normal screening and routing capabilities apply. See Translation Guide, TG-3.

8. COST DATA

8.01 The program requirements for implementing this feature is 450 words of program store. Additional requirements include additions in the translations and installation of trunk circuits SD-3H220-01 (CPS-FB371) for 911 trunks.

INCORPORATION INTO SYSTEM

9. PLANNING

9.01 Sufficient universal trunk circuits SD-3H220-01 (CPS-FB371) should be engineered to provide for a 911 trunk group.

9.02 The distance between the No. 3 ESS office and the 911 bureau may be great enough to require carrier facilities. When this occurs, the 911 trunk must be treated as a foreign exchange (FX) trunk. The 911 trunk circuit will connect to a D1 channel unit, SD-97209-02, or D3 channel, SD-3C126-01, for T carrier, or an F-type SF unit, SD-1C231-01, for other carrier systems such as N1. A D1 channel unit SD-97208-02, D3 channel unit, SD-3C125-01, or F-type SF unit, SD-1C230-01 will be used at the 911 bureau end. Refer to Figure 2 for details.

10. HARDWARE ENGINEERING

10.01 A standard universal trunk circuit SD-3H220-01 (CPS-FB371) is used to provide trunking to the 911 bureau. Refer to the Traffic Facilities

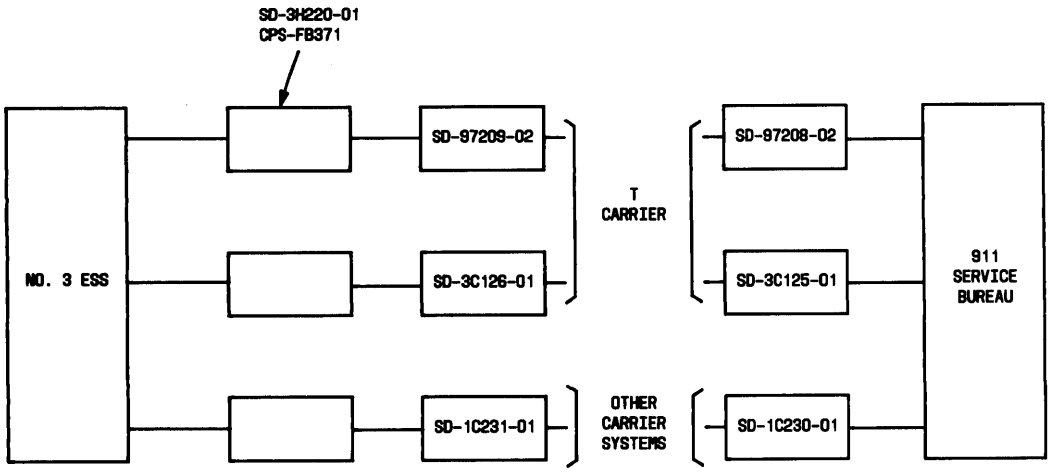


Fig. 2—911 Service Bureau with Carrier Facilities

Practices (TFP), Division D, Section 131(6) for more information.

11. SOFTWARE ENGINEERING

11.01 To implement the Universal Emergency Service Number 911 feature and to define the new 911 trunk group, the following translation input forms should be completed. These forms must be submitted to WECo Regional Center using normal schedule procedures.

- Form ESS 3202-3—Trunk Group Table is used to provide the means of establishing a trunk group number for each trunk group entering or leaving the office. This form defines the trunk group as being outgoing and the circuits as being FB-371 (circuit code = 3).

- Form ESS 3204-1—Trunk Feature Table provides information outlining distinct features that are available to the selected trunk group. This form defines the trunk group as being a 911 trunk group and having service hold.

- Form ESS 3300-1—Three- and Six-Digit Translations is the starting point for establishing routing and the subsequent treatment for all 3- and 6-digit NNX and NPA codes. The emergency service bureau code number is identified by this form.

- Form ESS 3300-2—Three- and Six-Digit Translations Search Type defines a search table which is accessed when no entry can be found in the local or foreign area translator for a NXX or NPA number. This table lists the 3-digit NXX or NPA number and its appropriate code index.

- Form ESS 3301-1—Rate and Route Table is used to coincide with the appropriate line and trunk class code with its proper charge index and route index.

- Form ESS 3303-3—Route Index Expansion Table is used to define the routing information for an office. Use entry type 7 for SO-2, Issue 2 or earlier. For SO-2, Issue 3 or later, entry type 18 is recommended.

- Form ESS 3304-1—Code Index Table is used to define the type of call, what screening table to access for the charge index and route index, and if a direct route index exists.

12. COMPATIBILITY

12.01 There are no compatibility problems between this feature and other No. 3 ESS features.

13. OFFICE DATA

A. Translations

13.01 Figure 3 shows the general translation layout for accessing the 911 trunk group. Three bits in the trunk group data block and one in the office option words define the 911 trunk group and its main features.

13.02 Nine-one-one (911) service is provided by the No. 3 ESS using an incoming loop trunk circuit with wink start signaling as an outgoing trunk. The trunks assigned to the 911 trunk group are designated as one-way outgoing by setting the incoming digit translation (ID_XLN) to zero in the trunk group's data block (Figure 4, bits 11 through 9 word 5). To distinguish this outgoing trunk from others, there is a special bit in the trunk group data block (SNG_WK) which is set for this group only (Figure 4, bit 6 word 6). This bit allows 911 ringback and also acts as a check bit in preventing originations from idle 911 trunks.

13.03 The service hold condition is obtained by setting the HOLD bits in the trunk group data block to 1, 0 (Figure 4, bits 15 and 14 word 4). When the service hold condition is applied to a local call, the 911 bureau can rering those local callers who go on-hook before all essential information is obtained via a flash of the switchhook.

13.04 If it is desired to light an indicator lamp on a switchboard or keyset when the caller goes on-hook before the 911 bureau does, the RVSTR bit in the office option words (Figure 5, bit 1 word 1) must be set. This causes the 911 bureau to be given a tip/ring reversal by changing the trunk state. This tip/ring reversal causes the lamp to light.

13.05 Calls to the 911 bureau are routed by the proper route index entry type. In those

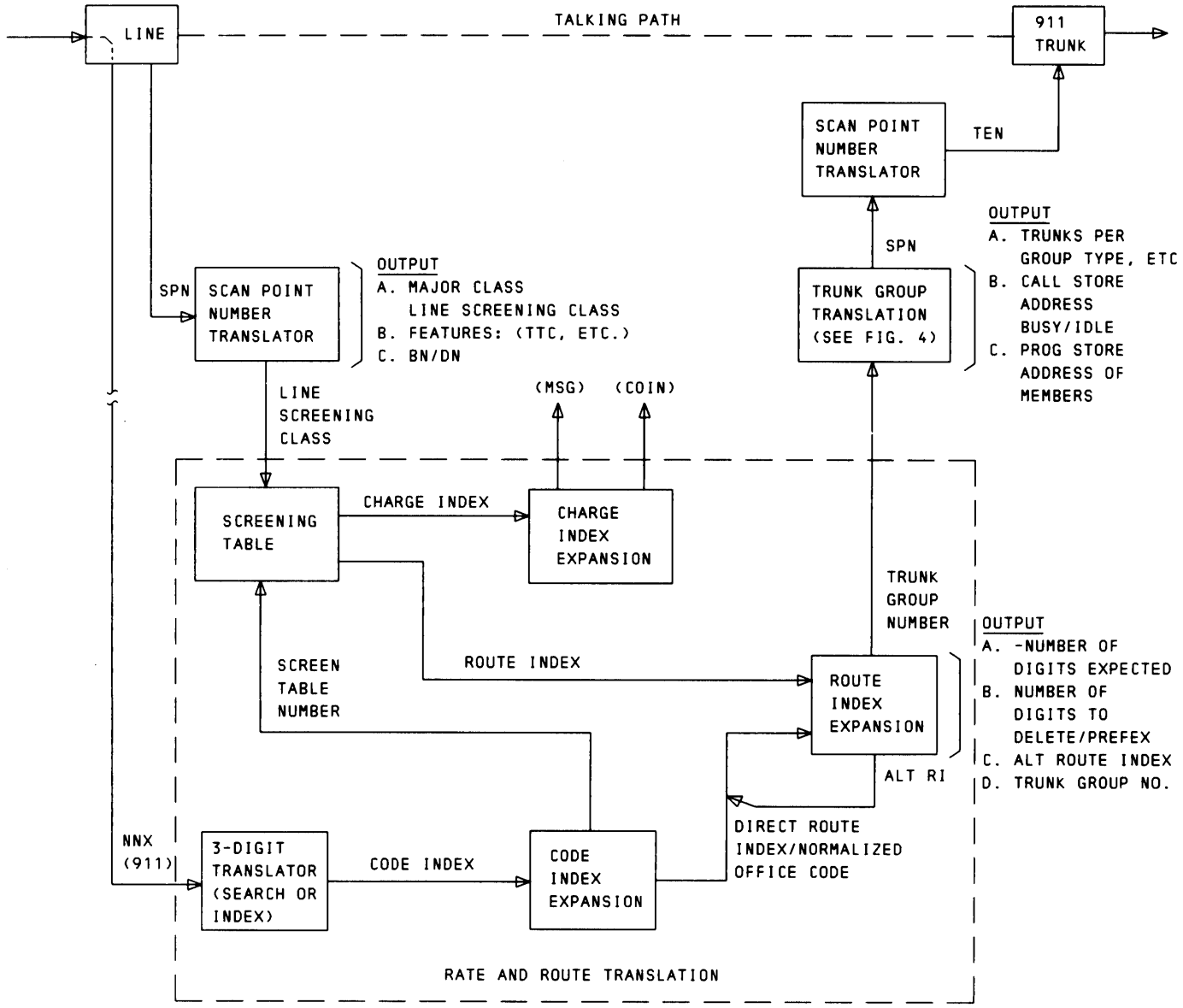


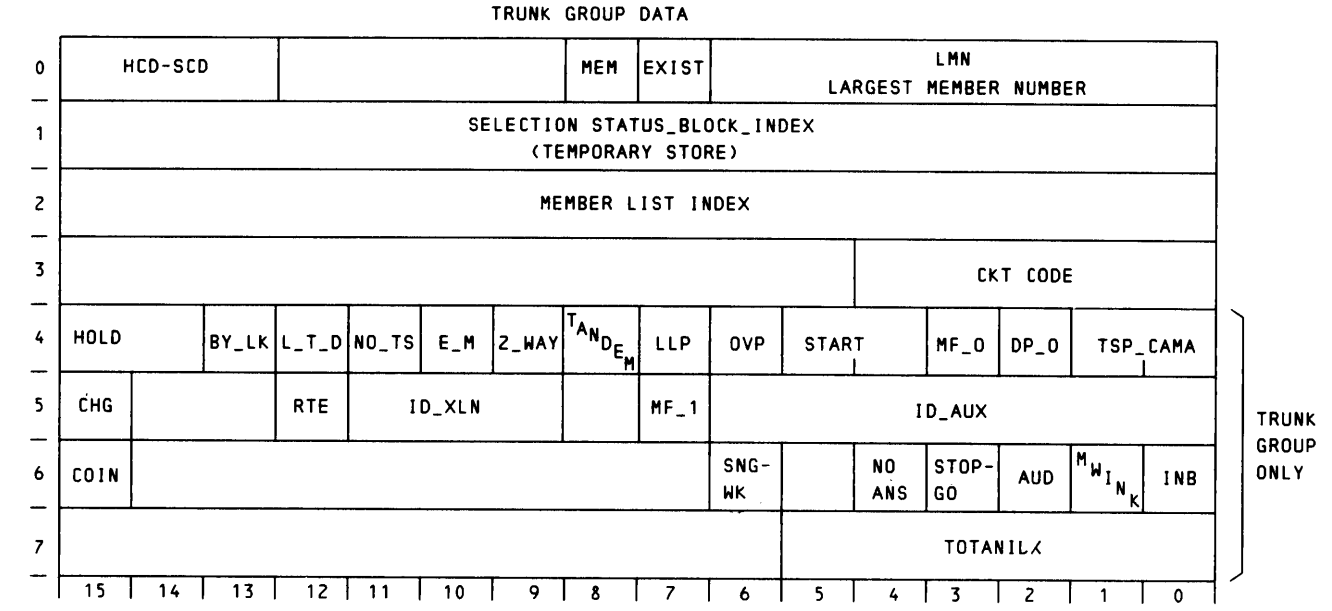
Fig. 3—Translation of 911 Call

offices with SO-2, Issue 2 or earlier, an entry type of 7 (interoffice-all digits received) is used. In those offices with SO-2, Issue 3 or later, an entry type of 18 (no outpulsing trunk group) is recommended. However, entry type 7 can still be used if desired.

B. Recent Change (RC) Messages

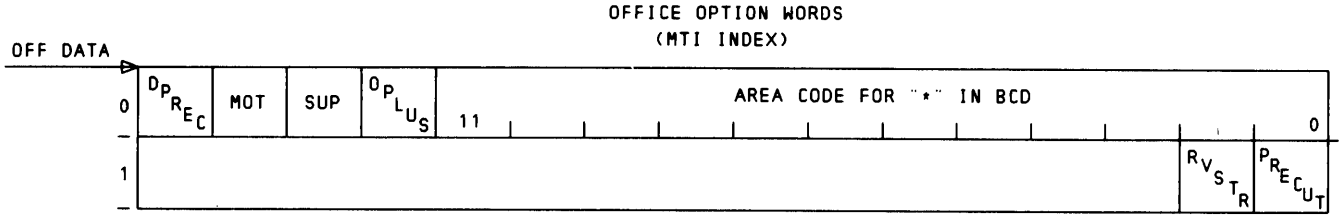
13.06 The following RC messages are used for this feature. Refer to the Input Message Manual for details of these messages and their keywords.

RC	EXPLANATION OF MESSAGE
RC:GRP	Used to specify the trunk features for a group.
RC:LINE	Used to add, change, or remove individual ***line*** information including telephone numbers used for special routing.
RC:OFFICE	Defines the office options.



LEGEND:
ID_XLN 000 = TRUNK IS ONE WAY OUTGOING
SNG_WK 1 = WINK (USED BY 911 SERVICE FOR RING BACK)
HOLD 10 = SERVICE HOLD

Fig. 4—Trunk Group Data Block



LEGEND:
RVSTR 1 = THE 911 TRUNKS IN OFFICE
DO REVERSE TIP AND RING

Fig. 5—Office Option Words

RC:RTI — Defines routing entries for 911

RC:CKT — Defines the 911 trunk circuits and puts them in the slow scan list.

13.07 In those offices with SO-2, Issue 3 or earlier programs, the SNG_WK and RVSTR bits cannot be recent changed if 911 is implemented after cutover of the office. These bits can only be changed via an overwrite procedure. For this overwrite procedure, refer to the local WECo

Regional Center. These bits are RC changeable with SO-2, Issue 4 and later.

14. GROWTH/RETROFIT PROCEDURES

14.01 The Universal Emergency Service Number 911 feature is a standard No. 3 ESS feature and is available with all versions of the system program.

15. TESTING

15.01 Tests may be performed on 911 trunks by using the Trunk and Line Test Panel (TLTP). Refer to Section 233-135-105 for operating and testing procedures.

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 trunks.

17. RECORD KEEPING

17.01 The following records should be completed and maintained:

- ESS 3202-3 Trunk Group Table
- ESS 3204-1 Trunk Feature Table
- ESS 3300-1 Three- and Six-Digit Translations
- ESS 3300-2 Three- and Six-Digit Translations Search Type
- ESS 3301-1 Rate and Route Table
- ESS 3303-3 Route Index Expansion Table
- ESS 3304-1 Code Index Table

18. CHARGING

18.01 Charging for calls made to the 911 bureau is a telephone company option.

AVAILABILITY

19. NEW INSTALLATIONS

19.01 The 911 emergency service is available with all versions of the No. 3 ESS system program.

20. GROWTH/RETROFIT

20.01 This is a standard feature and is available with all versions of the system program.

SUPPLEMENTARY INFORMATION

21. GLOSSARY

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

- Transient Call Record (TCR)—A call store register designated for storage of information concerning calls in progress.
- Trunk and Line Test Panel (TLTP)—The equipment unit of the No. 3 ESS used for making normal transmission and operational tests on trunks and lines.
- Private Branch Exchange (PBX)—A switching system which provides internal telephone communications between stations located on a customer's premises as well as between those stations and exterior networks.
- Receiver Off-Hook (ROH) Tone—An audible signal sent over a customer's line to attract attention when there is a continuing off-hook condition but the station is not in use.
- Teletypewriter (TTY)
- Foreign Exchange (FX) Trunk—A trunk facility between a PBX or centrex system and a central office which is outside the local service area of the PBX or centrex system. Such facilities permit local service to and/or from the distant "local service area."
- T Carrier—A short haul carrier system which employs time division multiplexing for transmission of voice over a trunk.

- D1 and D3 channel—Equipment modules used in T1 carrier systems for transmitting and receiving.

- F-Type SF Unit—A type of single frequency signaling unit designed to pass signals for telephone trunks over voice frequency transmission line facilities without impairing the normal use of these facilities for speech.

- N1 Carrier—A short haul carrier which uses frequency modulation for transmission of voice.

22. REASONS FOR REISSUE

22.01 This is the initial issue of this document.

23. REFERENCES

23.01 The following documents may be referred to for supplementary information.

- PD-3H156-01 911 Service Program (EMERG)

- Translation Guide, TG-3

- Traffic Facilities Practices, Division D, Section 13

- SD-3H220-01, FB371—Universal Trunk Circuit

- PA-3H300—Office Data Tables Layout Specification No. 3 ESS

- Bell System Practices:

  233-135-105—Trunk and Line Test Panel

  233-190-024—Trunking Arrangements

  233-152-135—Traffic and Plant Measurements No. 3 ESS