

**FEATURE DOCUMENT**  
**800 SERVICE—ORIGINATING SCREENING OFFICE FEATURE**  
**2-WIRE NO. 1 AND NO. 1A ELECTRONIC SWITCHING SYSTEMS**

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## INTRODUCTION

### 1. GENERAL INFORMATION

#### SCOPE

**1.01** This document contains information concerning the 800 Service—Originating Screening Office feature. This document and a companion document (231-090-275), which deals with terminating offices, provide total coverage for the 800 Service offering as applicable to No. 1 and No. 1A Electronic Switching Systems (ESSs). Coverage commences at the originating (calling) party and proceeds through the local and toll networks to termination at the 800 Service customer's premises. This document primarily addresses the 800 Service Originating Screening Office (OSO) feature, the interface with Common Channel Interoffice Signaling (CCIS), and the 800 Service Data Base.

#### REASON FOR REISSUE

**1.02** When this document is reissued, the reason for reissue will be stated in this paragraph.

#### FEATURE AVAILABILITY

**1.03** Coverage in this document is limited to the 1E7 (No. 1 ESS), the 1AE7 (No. 1A ESS), and later generic programs. For 800 Service with earlier generic programs, refer to Section 231-090-271. The OSO feature is an optionally loadable feature package contained in the following feature groups:

- CILC—Local CCIS, 2-Wire
- CI2W—Toll CCIS, 2-Wire
- CIHL—Toll CCIS, HILO 4-Wire.

Refer to Fig. 1 and Table A. The OSO feature is also available with base restarts, 1E(B6)7/1AE(B6)7, of the 1E6/1AE6 generic programs as part of the local or toll CCIS feature group.

### 2. DEFINITION/BACKGROUND

#### DEFINITION

**2.01** The **800 Service—Originating Screening Office** feature provides single number direct distance dialing (DDD) calling and improved routing

by use of the CCIS direct signaling. This feature allows a customer to receive and pay for calls from specified numbering plan areas (NPA). No charge is made to the originating (calling) party for these calls.

#### BACKGROUND

**2.02** The term 800 Service is a marketing name given to the INWATS feature. It is important to note that these terms are synonymous. Both terms are used in the context of this document due to translations, set cards, data base, etc, using the INWATS term. The 800 Service term is used in reference to the feature or for customer identification and explanation.

**2.03** The 800 Service feature is available as an interstate or intrastate offering. The tariff associated with the interstate offering is approved by the Federal Communications Commission (FCC) and applies to Wide Area Telecommunications (WATS) calls which cross state and/or international boundaries. Intrastate offerings are approved by local and/or state regulatory agencies. Since these tariffs may change, this document avoids references to tariff-related items.

#### A. Customer Benefits

**2.04** The following is a listing of 800 Service vertical services that the 800 Service data base may provide. They are based on the fact that the 800 Service data base is given the 800 number and the area code from which each call originates, and returns an unlisted 10-digit DDD number identifying the terminating party. The actual offering and packaging of these capabilities depends on marketing, rate-and-tariff, and legal considerations. The routing and service capabilities are applicable to both interstate and intrastate 800 Service offering. The 800 Service data base is an external 3B processor associated with signal transfer points (STPs) in the CCIS network.

**2.05 800 Service by Area Code:** Since the originating area code is known at the time of the call screening operation, it is possible to tariff the 800 Service feature based on an area code. A customer could buy just one area code or any set of area codes (WATS BAND) as desired. This should be attractive to direct marketers or customers doing business in selective locations.

**2.06 One Number 800 Service:** Since the 800 Service data base receives the originating area

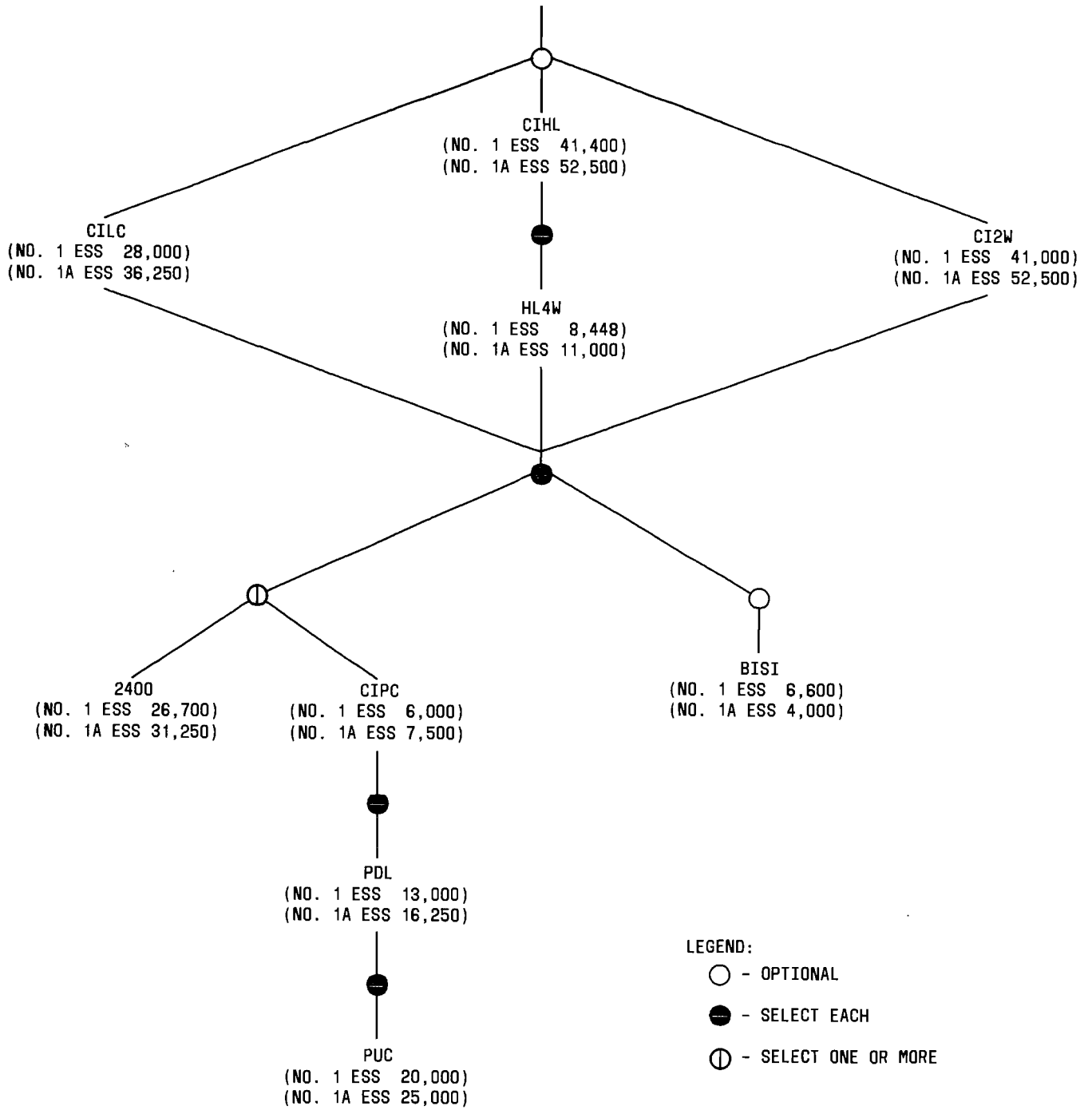


Fig. 1 — Software Feature Group Dependencies

**TABLE A**  
**SUMMATION OF FEATURE GROUPS**

FEATURE GROUP	ACRONYM	FEATURE PACKAGE	ACRONYM	PROGRAM STORE WORDS	
				NO. 1	NO. 1A
LOCAL CCIS	CILC	COMMON CCIS	CCISC	23,000	31,000
		LOCAL CCIS	CCISLC	2,000	2,700
		CCIS 2-WIRE	CCIS2W	1,000	1,400
		INWATS OSO	IWOSO	2,000	2,700
TOLL CCIS 2-WIRE	CI2W	COMMON CCIS	CCISC	23,000	31,000
		TOLL CCIS	CCISTL	15,000	20,000
		CCIS 2-WIRE	CCIS2W	1,000	1,400
		INWATS OSO	IWOSO	2,000	2,700
TOLL CCIS HILO	CIHL	COMMON CCIS	CCISC	23,000	31,000
		TOLL CCIS	CCISTL	15,000	20,000
		CCIS HILO	CCISHL	1,400	1,900
		INWATS OSO	IWOSO	2,000	2,700
CCIS PUC-DL	CIPC	CCIS PUC-DL	CCISPC	6,000	7,500
PUC-DL	PDL	PUC-DL	PUCDL	13,000	16,250
PUC	PUC	PUC	PUC	18,300	22,900
		DIAGNOSTIC LANGUAGE	DIAL	1,700	2,100
2400 BIT/SECOND DATA LINK	2400	COMMON DATA LINK EQUIPMENT	2400 DL	19,000	23,750
		CCIS 2400 DL	CCIS 24	6,000	8,000
		DIAGNOSTIC LANGUAGE	DIAL	1,700	2,100
HILO 4-WIRE SWITCHING	HL4W	HILO 4-WIRE SWITCHING	HL4W	8,448	11,000

TABLE A (Contd)

## SUMMATION OF FEATURE GROUPS

FEATURE GROUP	ACRONYM	FEATURE PACKAGE	ACRONYM	PROGRAM STORE WORDS	
				NO. 1	NO. 1A
BUSY/IDLE STATUS INDICATOR	BISI	BUSY/IDLE STATUS INDICATOR	BISI	4,000	5,000
		CUSTOMER ORIGINATED RECENT CHANGE LOG	CLOG	1,400	1,900
		RECENT CHANGE ADMINISTRATION	RCAD	1,200	1,600

code, the data base can determine whether the call originated in the same state as the termination point of the call. The 800 Service data base could return one of two telephone numbers, depending on whether the call is interstate or intrastate. These two conditions would still exist for tariff reasons, but one 800 number could be used by a customer to simplify advertising while the data base analyzes and routes the call accordingly.

**2.07 800 Service Call Distribution (Area Code):** The 10-digit unlisted telephone number that the data base returns can depend on the originating area code. A customer could have as many locations as there are area codes receiving calls to a single 800 Service number. This avoids establishing multiple 800 Service numbers and is an advantage to the customer.

**2.08 800 Service Call Distribution (Clock/Calendar):** Call distribution could also depend on the time of day or the day of the week. At night or on weekends, all calls could be routed to a single location rather than be distributed. This service allows for more economical continuous coverage for large 800 Service feature customers.

**2.09 Permanent 800 Number:** The actual 800 directory number would no longer have any

geographical or banding significance. It would serve as a pointer into the 800 Service data base. A customer could move a business location across state boundaries or change the form of the service without changing the toll-free number.

**2.10 Customized 800 Numbering:** Since geographical significance is removed, number customization may occur if available, eg, 800-CALL-IRS. This advantage assists 800 Service customers with easy to remember advertising.

**2.11 800 Service Attempt Counting by Area Code:** A monthly listing of all calls to a customer's 800 number, itemized by area code, could be available to the customer. This could aid in evaluating new product marketing or measuring response to an advertising campaign by area code.

**2.12 Part Time 800 Service Line:** A customer's 800 Service line may be denied access during specific hours of the day, eg, evening or weekends, at the customer's request. These calls may be stopped at the first CCIS office that the call encounters and routed to an announcement to explain the closing.

**2.13 Alternate Routing:** If an 800 Service line group terminates in a CCIS office (No. 1/1A ESS), the busy/idle status of the line group may be

reported to the data base. This occurs if the terminating end office has the Busy/Idle Status Indicator (BISI) feature. See reference A(11) in Part 18. If all lines of a destination of an 800 Service number are busy, then the following treatment may occur.

- A busy signal is returned, resulting in an early termination of the call.
- An unlisted 10-digit number of an alternate destination for the busy 800 Service number may be used.
- Overflow the 800 number to an alternate 800 number with the restriction that both numbers must have a common NXX. This can be used for overflowing from priority (unlisted) or special purpose numbers to nonpriority general purpose numbers.

#### B. Network Benefits

**2.14** The following is a list of network benefits of using the OSO to route 800 Service calls.

**2.15 *Busy/Idle Status Indicator (BISI) Feature:*** If a local No. 1/1A ESS office has the BISI feature, it will report the busy/idle status of the 800 Service line groups to the appropriate data base. When all 800 Service simulated facilities groups are busy, the OSO will return busy tone to the calling party. This feature relieves the voice network from being used between the OSO office and the terminating office when a busy condition exists at the 800 Service number. See reference A(11) in Part 18.

**2.16 *Vacant Codes:*** Since the 800 number screening operation is done at the 800 Service data base, vacant codes are detected earlier and with less administration.

**2.17 *Elimination of Terminating Screening Office:*** Prior to the CCIS 800 Service feature, terminating screening offices (TSOs) were required to determine whether or not the 800 Service customer had purchased the originating area of the call. This created a routing and switching penalty over normal DDD routing. The OSO feature and the 800 Service data base eliminate the need for TSOs and provide the screening and routing required to switch the 800 Service calls.

**2.18 *Elimination of Routing Codes:*** The OSO feature requires 10 routing codes compared to

44 routing codes prior to 1E7/1AE7 generic programs.

**2.19 *Improved Network Management:*** The 800 Service data base keeps track of call attempts against each 800 number and rapidly identifies any 800 Service calls which are causing a focused overload. Special INWATS code controls are implemented by the 800 Service data base to prevent overloading of the data base. The data base activates these controls by sending a network management direct signaling message to the OSOs.

**2.20 *Elimination of 10s Blocks:*** The requirements of 10s block usage caused 10 numbers to be assigned to the same band, creating packing problems, and forced customers to change numbers when changing bands. The new 800 Service feature eliminates these problems.

**2.21 *Simplification of Directory Assistance:*** One 800 number for both interstate and intrastate calls, 800 Service call distribution, and permanent 800 numbers all simplify the 800 Service directory assistance.

### DESCRIPTION

#### 3. USER OPERATION

##### CUSTOMER

**3.01** A customer subscribes to the 800 Service feature by specifying NPAs from which calls are to be accepted. The quantity of 800 Service lines is the same as the number of simultaneous calls in progress desired by the customer. Various arrangements of customer facilities are available with the 800 Service Terminating feature [reference A(10) in Part 18].

**3.02** From the customer's perspective, the only difference between an 800 Service call (800 number) and regular DDD calling is that the call is charged to the customer receiving the call rather than to the customer placing the call.

**3.03** The advantages provided to the 800 Service customer are linked to the greater inherent flexibility that the CCIS network, including data bases, offers over the current 800 Service feature. (See customer benefits in Part 2.) An example of this new flexibility is that a customer's location can change without changing the assigned 800 Service number.

**TELEPHONE COMPANY**

**3.04** All 800 Service numbers are supported by the 800 Service data bases and the routing of the calls is performed by the OSO routing method. All 800 Service numbers must be assigned unlisted 10-digit DDD numbers, supported within the data bases, for return to the OSO for routing.

**3.05** Data verification of the remote 800 Service data bases by the telephone company is provided by local teletypewriter (TTY). The telephone company craft personnel can obtain the current data base information for an 800 number. The input message IN-WATS- is used to test the data base. The output message response is IWTSTSUC or IWTSTFL. See references in Part 18B for further details.

**3.06** Code controls are initiated automatically to prevent overloading the switching network, the CCIS network, and the 800 Service data bases. The controls automatically time out if not periodically regenerated by the data base. Queries to the related data base are limited to one query per given time period.

**3.07** If a CCIS failure message is returned by a signal transfer point (STP), a 5-digit control of 800-XX form is activated. A control for each XX is available so the entire network can be protected in the event of a data base failure. A CCIS failure control remains in effect for  $2.5 \pm 0.5$  minutes.

**3.08** For network management messages (sent automatically by the 800 Service data base when it recognizes a focused overload), a 6-digit (800-XXX) or 10-digit (800-XXX-XXXX) control is activated. Sixteen network management controls are available. This control remains in effect for  $5 \pm 0.5$  minutes. These controls can also be initiated by craft personnel at the OSO with input message INW-ACT-. (See references in Part 18B.)

**3.09** More than one code control may affect a given number. The priority of implementation of code controls is 10-digit first, then 6-digit, and finally, 5-digit controls. Once a code control is found for a number, code controls of lower priority are ignored.

**3.10** The ability to list all active CCIS code controls on a local TTY is provided by use of input messages IWCC-NM- and IWCC-FL-. (See references in Part 18B for details.)

**4. SYSTEM OPERATION****HARDWARE**

**4.01** There is no unique hardware for the 800 Service feature using the CCIS network. For CCIS associated hardware, refer to A (13) in Part 18.

**OFFICE DATA STRUCTURES****A. Translations**

**4.02** The INWATS service area translator (Fig. 2) maps the 800 Service area (00Y,  $Y \neq 0$ ) into the originating NPA. When an incoming trunk group receives traffic from more than one NPA, 800 Service calls coming from those NPAs are of the form O0Y-NXX-XXXX. The Y digit uniquely identifies the NPA from which such calls originate.

**4.03** The changes to the rate and route pattern translator (Fig. 3) are as follows.

(a) Call type 18, formerly invalid home NPA, is now defined to mean 800 Service data base query; it is required after digit collection is complete.

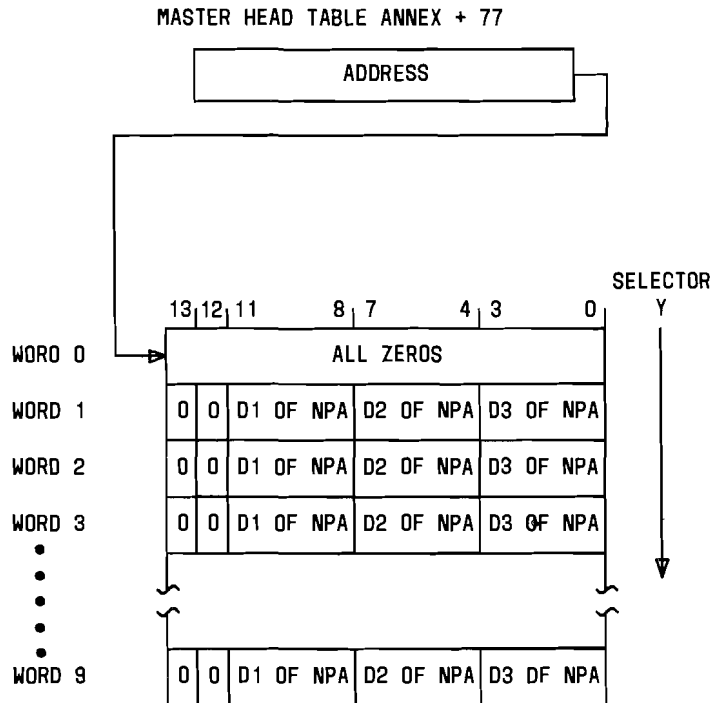
(b) Call type 18 appears as a type 7 primary translation word (PTW), a call identification word (CIW), or word 0/1, type 5, of the RRP auxiliary block (Fig. 3).

**4.04** Two pseudo route indices are added to the pseudo route index (PRI) translator. These PRIs point to the unauthorized 800 Service announcement trunk groups. PRI 90 (4FPRI090) is assigned to the 2-wire announcement trunk group and PRI 91 (4FPRI091) is assigned to the HILO 4-wire announcement trunk group. This announcement is used when the 800 Service data base query indicates that the NPA of the originating call is not allowed to complete to the dialed 800 Service number.

**4.05** The 3-digit index to the NPA translator is required for the OSO feature. This translator is used by the OSO to determine the originating NPA of a call given the rate center (RAC) in which the call originated (Fig. 4).

**B. Parameters/Call Store**

**4.06** Parameter word INWRQB (CCIS INWATS request blocks) is a program store word which



## NOTES:

1. SELECTOR INTO SUBTRANSLATOR = Y FROM THE ODY CODE THAT IS RECEIVED ON THE INCOMING TRUNK GROUP WHEN THE 800 SERVICE NUMBER REQUIRES THE ODY-XXX-XXXX FORM.
2. Y = 0 IS NOT VALID.
3. D1 D2 D3 = ORIGINATING NPA IN BINARY CODED DECIMAL WHERE "0" IS STORED AS BCD 10.
4. WHEN "ODY" IS UNASSIGNED, BITS 0 THROUGH 13 ARE SET TO ZERO.
5. 14-BIT SUBTRANSLATOR MAY NOT FOLLOW ACTUAL BIT POSITIONS FOR EITHER NO. 1 OR NO. 1A ESS.

Fig. 2—Service Area Translator

contains the call store address of a table of 2-word request blocks. The quantity of request blocks (64) and the call store address are included in this parameter word (Fig. 5). The table is 128 words long (2 \* 64). Request blocks are used to store information during the processing of an 800 Service data base query and to associate replies with specific 800 Service calls or tests.

**4.07** Parameter word FAILCC (CCIS INWATS failure code control table) is a program store word which contains the call store address of the CCIS INWATS failure code control table. The word

(Fig. 6) also contains the number of 1-word blocks (100).

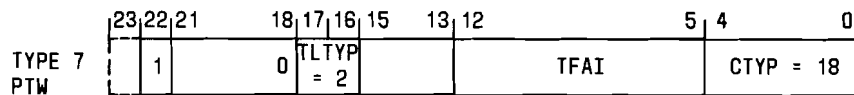
**4.08** Parameter word NMCCT (CCIS INWATS network management code control table) is a program store word which contains the call store address of the NMCCT table. This word (Fig. 7) also contains the number of (3-word) code control blocks (16) for a total of 48 words.

**4.09** Nine Compool defined words associated with the OSO feature are:

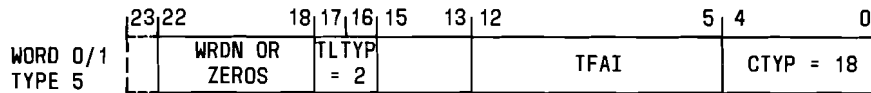
- FAILUSE—Number of active CCIS failure controls



## (a) Call identification words



## (b) Auxiliary block



\* BIT 23 EXISTS IN NO. 1A ESS ONLY.

## LEGEND:

TLTYP = TOLL TYPE INDICATOR.  
TFAI = TOLL FOREIGN AREA INDEX.  
CTYP = CALL TYPE.  
WRDN = WORD SIZE OF AUXILIARY BLOCK.

**Fig. 3—Rate and Route Pattern Translation Changes**

- NMUSE—Number of active network management controls
- IWIDX—Last used request block index
- RQBTIM—Last timed request block index
- TEST—4-word buffer to store INWATS test related data
- IWCOND—Success or failure condition of an INWATS query.

**4.10** Call registers are affected by an increase of 1/2-second holding time by the OSO feature. The call registers affected are: CCIS incoming registers (CIR), by-link senior registers (SXOR), and originating registers (OR).

**4.11** Set cards associated with the above registers are detailed in references C(1) and C(2) in Part 18. They are:

- NOR—Number of originating registers including incoming registers
- CIR—Number of CCIS incoming registers

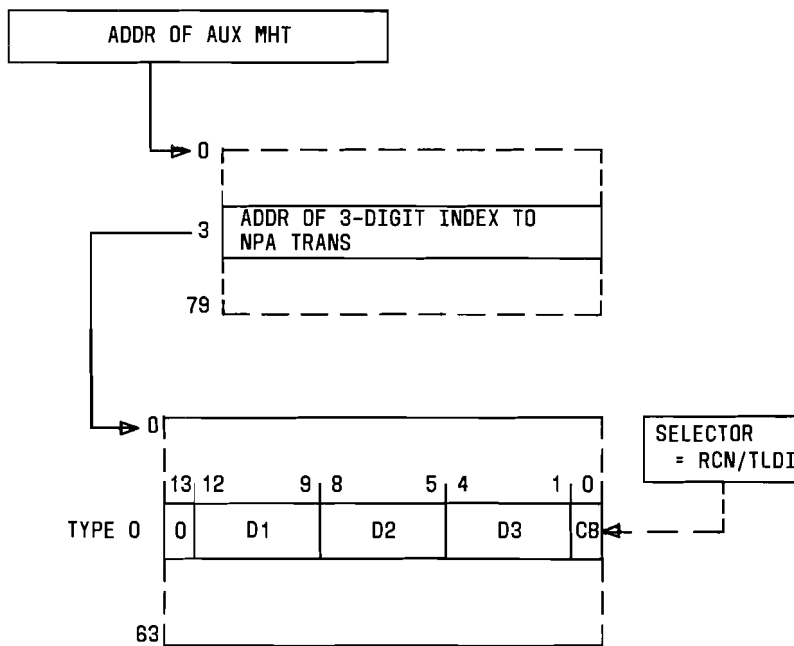
- SXOR—Number of by-link dialing senior registers.

**FEATURE OPERATION**

**4.12** Figure 8 illustrates the routing for an 800 Service call using the CCIS feature. The following numbers in parentheses correspond with the various stages of the call in Fig. 8.

- (1) As in the present 800 Service feature, the caller dials a 10-digit number of the format 800-NXX-XXXX.
- (2) If the local office is not arranged to function as an OSO, the call is routed to a toll OSO. If the local office is arranged to function as an OSO, the local office functions in exactly the same manner as a toll OSO. (With the 1E7/1AE7 generic program, the OSO function is migrated toward incorporation in the local ESS office.)
- (3) By examining the first three digits of the call, the OSO determines that it is an 800 Service call. The OSO then defers call setup and deter-

MASTER HEAD TABLE + 27



NOTES:

1. SELECTOR IS THE RATE CENTER NUMBER/TLDI (TOLL DIGIT INDEX).
2. 14 BIT SUBTRANSLATOR MAY NOT FOLLOW ACTUAL BIT POSITIONS FOR EITHER NO. 1 OR NO. 1A ESS.

LEGEND:

- D1 = DIGIT ONE IS FROM THE ORIGINATING NPA ASSOCIATED WITH THE RATE CENTER/TLDI
- D2 = DIGIT TWO
- D3 = DIGIT THREE
- CB = CODE BLOCKING

Fig. 4—3-Digit Index to NPA Translator

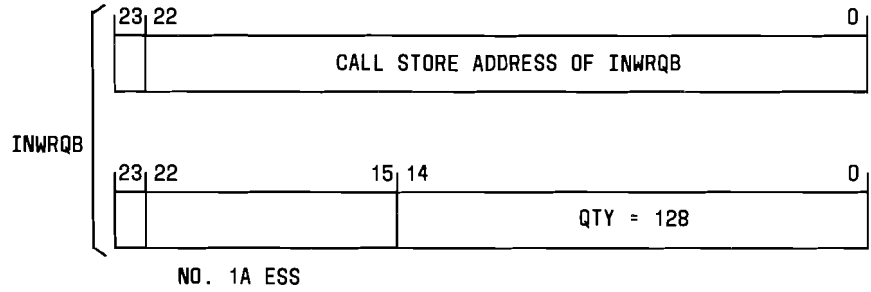
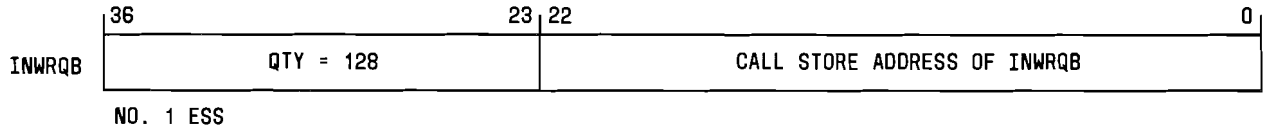
mines the identity of the originating NPA. This is determined from either the incoming trunk group identity or from the 00Y code (Y indicates the NPA). After determining the originating NPA, the OSO routes a QUERY to either of the signal transfer points (STPs) with which the OSO is associated. The QUERY consists of all 10 digits of the 800 number (800-NXX-XXXX) plus the identification of the originating NPA.

(4) The home STP examines the first six digits of the called number, which is contained in the CCIS message, to determine the primary data base for the 800-NXX code dialed, then sends the QUERY directly to the STP at the primary data

base location. If the primary data base is temporarily out of service, the STPs will route the QUERY to the STP at the secondary data base.

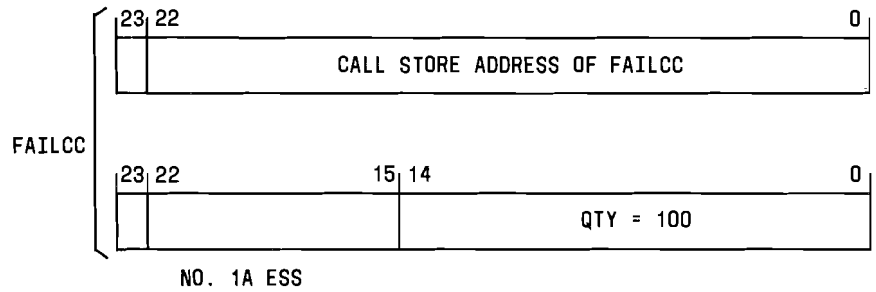
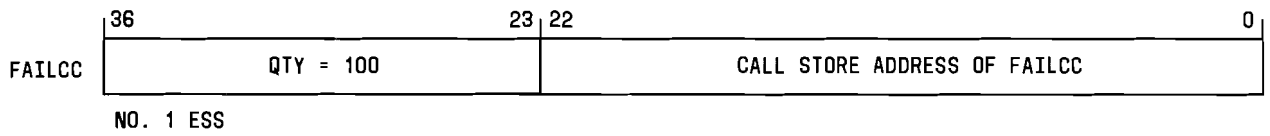
(5) The STP at the data base then passes the QUERY to the data base.

(6) The data base determines whether the 800 Service number is permissible from the NPA in which the call originated. If the call is permissible, the data base composes a REPLY consisting of a 10-digit number of the format NPA-NXX-XXXX, NPA-0XX-XXXX, or NPA-1XX-XXXX. Different REPLIES can result, depending on the 800 Service customer's characteristics. The data base passes



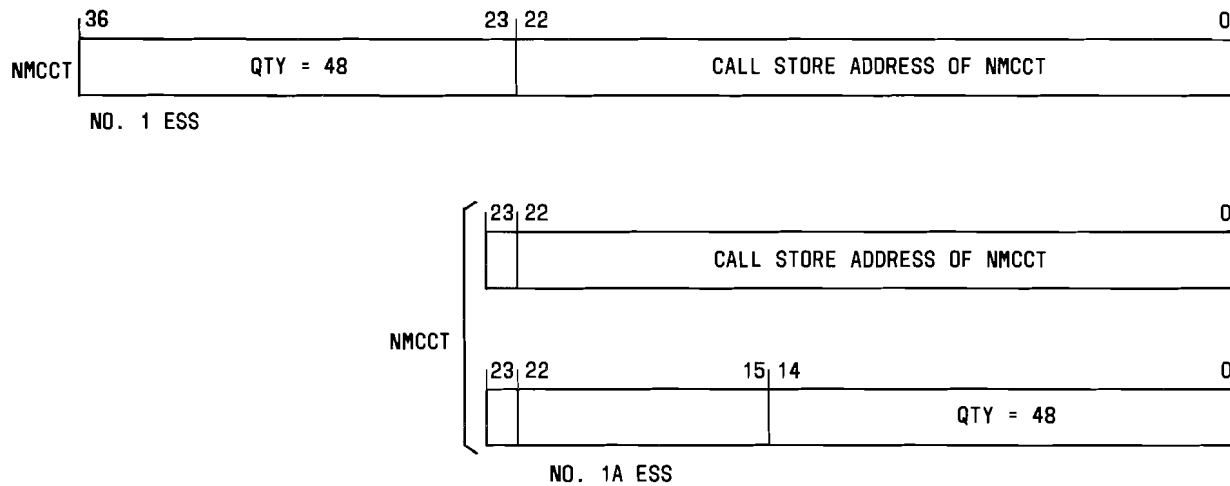
INWRQB = CCIS INWATS REQUEST BLOCKS

Fig. 5—Parameter Word INWRQB



FAILCC = CCIS INWATS FAILURE CODE CONTROL TABLE

Fig. 6—Parameter Word FAILCC



NMCCT = CCIS INWATS NETWORK MANAGEMENT CODE CONTROL TABLE

Fig. 7—Parameter Word NMCCT

the REPLY to the STP, and the STP sends it to the OSO over the CCIS network.

(7) The OSO routes the call in accordance with normal DDD procedures toward the destination indicated by the digits in the REPLY. REPLIES will **not** consist of a 10-digit number in the following cases: vacant code (NXX), vacant line number, nonpurchased NPA, and 800 Service line group busy. If the REPLY **does not** consist of a 10-digit number, the OSO routes the call to the appropriate tone or announcement or sends a failure message back to the originating office for setup to tone or announcement. Other reasons for routing to announcement at the OSO are:

- No INWATS request blocks available at the OSO
- Failure message returns from STP
- No REPLY from data base within 3 seconds (time-out)
- Signal link failure
- Data base overload
- Call blocked by network management controls.

## CHARACTERISTICS

### 5. FEATURE ASSIGNMENT

- 5.01 The OSO feature is provided on a central office rate center basis.

### 6. LIMITATIONS

#### OPERATIONAL

- 6.01 Only one INWATS test may be active in an OSO at any one time.
- 6.02 Conventional network management code blocks will not take effect for 800 Service numbers. Also, 800 Service calls are not available on private line networks.

#### ASSIGNMENT

- 6.03 Not applicable.

### 7. INTERACTIONS

- 7.01 Not applicable.

### 8. RESTRICTION CAPABILITY

- 8.01. Code controls are implemented on a priority basis, see paragraph 3.09.

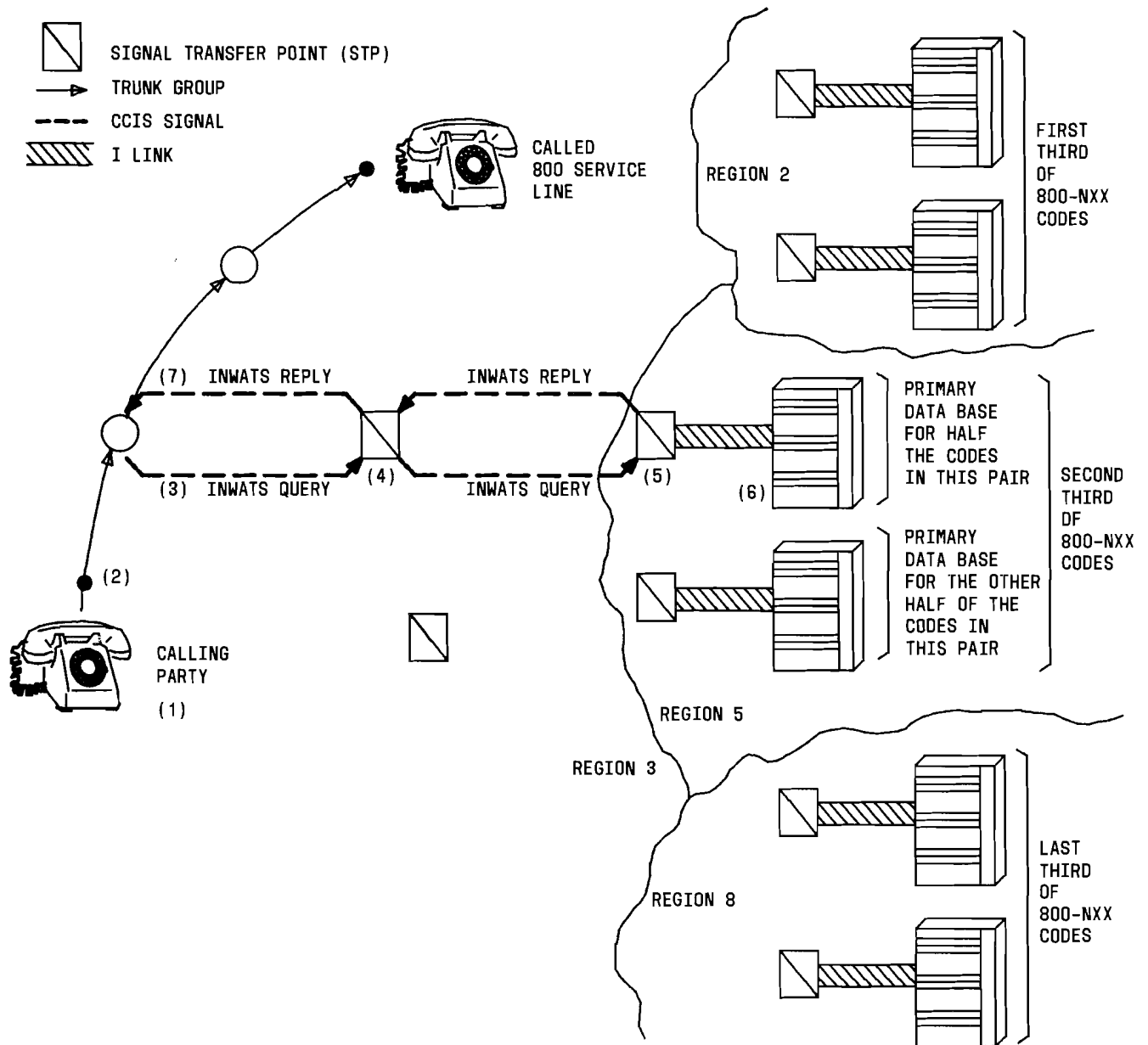


Fig. 8—CCIS 800 Service Routing

**INCORPORATION INTO SYSTEM**

**9. INSTALLATION/ADDITION/DELETION**

**9.01** Figure 9 shows the procedures to establish the 800 Service feature in an OSO.

**9.02** The routing translations for the home NPA in an OSO should not result in an invalid call type from 3-digit translation. If valid routing information is currently associated with the home NPA, this information need not be altered. Otherwise, the 3-digit translation of the home NPA should be modified to result in foreign area translation. In this case, the foreign area translation should result in a "local" call type (ie, call type 5 and a normalized office code).

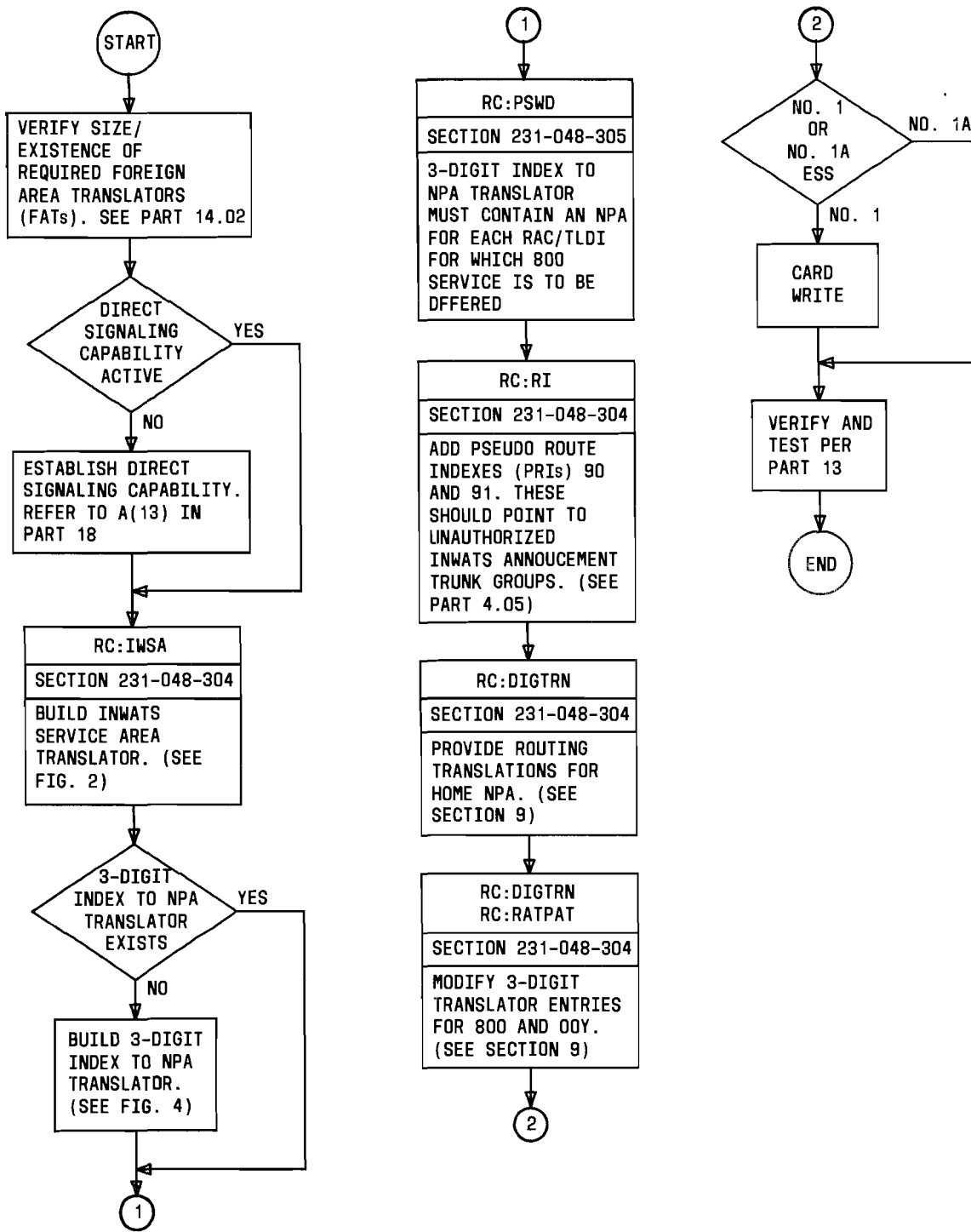


Fig. 9—Establishing 800 Service in an OSO

This will allow 800 Service calls (only) to complete in the home NPA.

**9.03** The 3-digit translations for dialed codes 800 and 00Y should be modified as follows.

(a) Modify the 3-digit translations for each rate center (RAC) in which 800 Service is to be offered. The entry associated with dialed code 800 should be the rate and route pattern number of a CIW which contains call type 18. Use RC:RATPAT to build the rate and route pattern translator. It should contain call type 18 and a toll foreign area index (TFAI). The TFAI is the index of the appropriate foreign area translator for 800-XXX.

(b) Modify the toll 3-digit translation for each toll digit index (TLDI) for which 800 Service is to be offered. The entry associated with dialed codes 800 and 00Y (Y = 1, ..., 9) should be the rate and route pattern number of a CIW which specifies call type 18 (as above).

**9.04** For offices choosing to assign 10-digit unlisted numbers of the form NPA-0/1XX-XXXX to 800 Service customers, an increase in the size of associated foreign area translators is required to handle the 0XX and 1XX codes.

**9.05** The following is a list of set cards that are affected by the 800 Service OSO feature:

DESIGNATION	TITLE
FAILCC	CCIS INWATS failure code control table
CIR	CCIS call registers
SXOR	By-link senior registers
INWRQB	INWATS request blocks
NMCCT	Network management code control table
9FIWOSO	INWATS OSO.

## 10. HARDWARE REQUIREMENTS

**Note:** This part contains cost factors and determination of quantities. Central Office Equipment Engineering System (COEES) Planning

and Mechanized Ordering Modules are the recommended procedures for developing these requirements. However, for planning purposes or if COEES is not available, the following guidelines may be used.

**10.01** No unique hardware is required for the 800 Service feature; however, service circuit usage is increased on tone and recorded announcement circuits (SD-1A221-01, J1A033DT or SD-1A221-05, J1A088DT).

**10.02** Quantities of tone and announcement circuits must be provided to serve the existing usage and expected additional usage from the 800 Service feature.

**10.03** Busy-tone circuits are engineered on a P.001 high day criterion. Additional hundred call second (CCS) on busy-tone circuits due to OSO =  $N * 0.25 * 0.9 * 9.0 \div 100$ .

Where N = number of 800 Service calls served by OSO and assuming:

- 0.25 = Portion of 800 Service calls reaching busy
- 0.9 = Portion of 800 Service calls returned to OSO due to the BISI feature
- 9.0 = Average holding time on busy-tone circuits.

**10.04** Recorded announcement circuits may be engineered as follows.

(a) **Vacant Code Announcement (VCA)** circuits are engineered on a P.01 average busy-season busy-hour criterion. For offices without VCA circuits, assume 2 percent of the busy-hour 800 Service calls are to vacant and unassigned codes and numbers with each having an 18-second holding time. Additional CCS on VCA circuits due to OSO =  $P.01 (N * 0.02 * 18) \div 100$ .

(b) **Reorder and no circuits available announcement** circuits are not engineered. Six circuits are supplied per office if trunk-to-trunk connections are provided.

(c) **Unauthorized 800 Service announcement** circuits are supplied at a minimum of four per office.

**10.05** Receivers are engineered at an additional 1/2-second holding time on dial-pulse or multifrequency interoffice receivers for each 800 Service incoming call from non-CCIS subtending offices, and on customer digit receivers for each locally originated 800 Service call. This is required for data base inquiry.

**10.06** Data link engineering is as follows:

(a) Determination of the number of data link pairs (A-links) required at the peak of the engineering interval depends on the expected number of trunks converted to CCIS and the busy-hour 800 Service calls served by the office. Currently, data links are provided for labeled traffic on a basis of 2250 CCIS trunks per data link pair. The direct signaling used by the OSO feature is nonlabeled traffic.

(b) The CCIS Network Administration Center (CNAC) converts the expected 800 Service (direct signaling) traffic to equivalent CCIS trunks by assuming 12.5 busy-hour calls are served by a CCIS trunk. The equivalent CCIS trunks are added to actual CCIS trunks and the sum is divided by 2250 to determine the number of data link pairs required.

**10.07** The additional quantities of service circuits will generate additional trunk link network terminal requirements. Usage impact should be insignificant.

## 11. SOFTWARE REQUIREMENTS

**Note:** This part contains cost factors and determination of quantities. Central Office Equipment Engineering System (COEES) Planning and Mechanized Ordering Modules are the recommended procedures for developing these requirements. However, for planning purposes or if COEES is not available, the following guidelines may be used.

### MEMORY

#### A. No. 1 ESS

##### Fixed

**11.01** The following memory is required whether or not the 800 Service feature is used.

- (a) **Base generic program (program store):** Approximately 50 words (IWOSO) are required.

(b) **Fixed parameters (program store):** The requirements are 1 word each for parameter words INWRQB, FAILCC, AND NMCCT.

(c) **Compool defined words (call store):** Nine words are required.

##### Conditional

**11.02** The following memory is required when the 800 Service feature is activated.

(a) **Optionally loadable feature packages (program store):** See Table A.

(b) **Call Store:** Words required are as follows:

- 128 words required for INWATS request blocks
- 100 words for CCIS failure code control table
- 48 words for network management code control table
- 20 words per CCIS incoming register (shared)
- 20 words per originating register (shared).

##### Variable

**11.03** See Part 14.

#### B. No. 1A ESS

##### Fixed

**11.04** The memory listed below is required whether or not the 800 Service feature is used.

(a) **Base generic program (program store, file store):** Approximately 100 words (IWOSO) are required.

(b) **Fixed parameters (unduplicated) call store, file store):** Two words each are required for parameter words INWRQB, FAILCC, and NMCCT.

(c) **Compool defined words (duplicated call store):** Nine words are required.

##### Conditional

**11.05** The following memory is required when the 800 Service feature is activated.



(a) **Optionally loadable feature packages (program store, file store):** See Table A.

(b) **Duplicated call store:** This cost data is the same as paragraph 11.02.

#### Variable

11.06 See Part 14.

#### REAL TIME IMPACT

11.07 The data base query for each 800 Service call adds 600 cycles (No. 1 ESS) or 1200 cycles (No. 1A ESS) to call processing requirements. That is, 800 Service calls served by the data base are 13 percent more expensive (in machine cycles per call) than 800 Service calls that do not query the data base.

11.08 The cycle times for No. 1 ESS are as follows: 5.5 microseconds (0 percent speedup), 5.24 microseconds (5 percent speedup), or 5.0 microseconds (10 percent speedup). Clock speedup is available with 1E7 and base restarts of the 1E6 generic programs. The cycle time for No. 1A ESS is 0.7 microsecond.

#### 12. DATA ASSIGNMENTS AND RECORDS

##### TRANSLATION FORMS

12.01 The following translation forms are utilized for the 800 Service feature. A complete description of the forms is given in reference C(4) in Part 18.

(a) ESS 1326—INWATS Service Area Record: This form is used to map the INWATS service area into the originating NPA.

(b) ESS 1507—Supplementary Rate Center Record: This form is used by the OSO feature to determine the originating NPA of a call given the rate center in which it originated.

##### RECENT CHANGES

12.02 The following recent change message formats are affected by the OSO feature.

RC MESSAGE	FUNCTION
RC:RATPAT	Keyword CTYP (call type) is changed to allow the value of 18 to

#### RC MESSAGE

#### FUNCTION

indicate "INWATS Data Base Query". Keyword DESEP (destination separation of revenue class) is required for CTYP 18. For further details, refer to A(1) in Part 18.

RC: IWSA

Builds NPAs in the INWATS service area translator. Keywords associated with this message are NPA and YDIG. See reference A(1) in Part 18 for further details.

#### 13. TESTING

13.01 Teletypewriter input and output messages, found in references in Part 18B, may be used to verify the various translations for the OSO feature.

(a) V-OSO input message verifies the contents of the INWATS service area translator. The system response should be OK followed by a TR107 output message.

(b) IN-WATS input message verifies the data stored at the data base. This is considered the INWATS test. The system response should be OK followed by an IWTSTSUC or IWTSTFL output message.

#### 14. OTHER PLANNING TOPICS

14.01 The Network Management Center coordinates the 00Y codes in all local areas. Careful consideration in code assignments must be followed.

14.02 For some period after enhanced 800 Service is initially offered, the 800 Service data base will not have full information for all 800 Service numbers. During this transition period, OSO must be able to route 800 Service calls in both the enhanced and conventional manner. This requires additional translation words as follows.

(a) For offices with toll 6-digit translators, add 200 words in the **foreign area translator** to allow for 800-XXX instead of 800-NXX 6-digit translations.

(b) For offices without toll 6-digit translators, add 1000 words to allow for an 800-XXX **foreign area translator**.

(c) A 1000-word toll foreign area translator is required if the 800 code is changed to an 00Y code due to 800 Service calls to an OSO via trunks which carry traffic from multiple NPAs.

### ADMINISTRATION

#### 15. MEASUREMENTS

15.01 The following traffic measurement counts (TMC 128) are available in a No. 1/1A ESS central office on the hourly H and C, selected quarter-hour DA15, and special studies S traffic schedules. The equipment group on office count numbers (EGOs) and definitions are as follows.

EGO	DEFINITION
000	<b>INWATS Queries Sent Peg Count</b> —Counts the number of times an INWATS query is sent to the 800 Service data base.
001	<b>Successful Replies Peg Count</b> —Counts the number of times a successful reply, which contains a 10-digit DDD number, is sent from the 800 Service data base.
002	<b>Ineffective Attempts Peg Count</b> —Counts the number of times an ineffective attempt message, which indicates a call should be terminated, is sent from the 800 Service data base. The reason for the termination is coded within the message.
003	<b>Time-Outs for Replies Peg Count</b> —Counts the number of failures to receive replies to 800 Service data base queries within the allotted time period of 3 seconds.
004	<b>Calls Reaching Office Peg Count</b> —Counts the number of 800 Service calls that reach the OSO.
005	<b>INWATS Calls Blocked by Network Management Peg Count</b> —Counts the number of

EGO	DEFINITION
	times a call is blocked by INWATS network management code controls. Code controls limit the number of queries allowed to be sent to the 800 Service data base.
006	<b>INWATS Calls Blocked by CCIS Failures Peg Count</b> —Counts the number of times a call is blocked by a CCIS failure code control or a CCIS failure.
007	<b>INWATS Request Block Peg Count</b> —Counts the number of times an INWATS request block is seized.
008	<b>INWATS Request Block Overflow Count</b> —Counts the number of failures to seize an INWATS request block. This is caused by not having an idle request block available.
009	<b>INWATS Request Block Usage Count</b> —Count taken at 10-second intervals of the number of INWATS request blocks that are currently being used.

#### 16. CHARGING

##### AUTOMATIC MESSAGE ACCOUNTING

- 16.01 It is important to note that 800 Service calls are toll free to the originating customer.
- 16.02 There is no AMA billing at the OSO. For statistical purposes, a V10 entry type is recorded for all 800 Service calls originating in the OSO (including Centrex/ESSX-1 originations) and for calls from incoming centralized automatic message accounting (CAMA) trunks. See Table B for details of the V10 entry. See reference A(10) in Part 18 for AMA billing.

##### UNIFORM SERVICE ORDER CODES

- 16.03 Not applicable.

TABLE B

## AMA V10 ENTRY TYPE

INFORMATION	DATA GROUP	NUMBER OF DIGITS
Start of Entry Character (V)		1
Entry Code (10)		2
Information Digits	A2	2
Service Feature	A2	2
Connect Time	A3	8
Calling Number	B2	7
Disconnect Time	C	8
Called Number	D	10
Terminating Company	I8	4
Calling NPA	J	3
Entry Extender*	L	1
Optional Information*	M	2
Trunk Network Number*	Q	6

\* Optional

**SUPPLEMENTARY INFORMATION****17. GLOSSARY**

17.01 Not applicable.

**18. REFERENCES****A. Bell System Practices**

(1) Section 231-048-304—Rate and Route Translation Recent Change Formats for NOCNOG, DNHT, NOGRAC, RATPAT, DIGTRN, CCOL, RI, CHRGX, DITABS, TNDM, IDDD, TDXD, and RLST (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(2) Section 231-048-305—RC Formats for PSWD, PSBLK, SUBTRAN, and GENT (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(3) Section 231-048-307—Traffic Measurements Recent Change Formats for DIGTRN, TRFSLB, TRFLCU, TRFHC, TNCTX, CTRF, and NUTS (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(4) 231-048-309—Centrex-CO/ESSX-1 Recent Change Formats for CTXCB, CTXDI,

CTXEXR, CXDICH, DITABS, DLG, FLXDG, FLXRD, and FLXRS (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(5) Section 231-048-310—RC Formats for ANIDL, CAMA, CFG, CPD, JUNCT, MSN, NMTGC, PLM, ROTL, SIMFAC, TMBCGA, CLAM, PUC, RSP, RSSCB, RCHAN, and LRE (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(6) Section 231-048-312—Line RC Formats for LINE, TWOPTY, MPTY, SCLIST, MLHG, ACT, CFV, and VSS (1E7 and 1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(7) Section 231-060-210—Service Circuits, Network Switching Engineering—2-Wire No. 1 and No. 1A Electronic Switching Systems

(8) Section 231-090-207—Feature Document, Traffic Measurements Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(9) Section 231-090-271—Feature Document, Wide Area Telecommunications Service Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

**Note:** This section is applicable to 1E6/1AE6 and earlier generic programs only.

- (10) Section 231-090-275—Feature Document, 800 Service-Terminating End Office Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (11) Section 231-090-276—Feature Document, Busy-Idle Status Indicator Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (12) Section 231-090-366—Feature Document, HILO 4-Wire Switching Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (13) Section 231-090-416—Feature Document, Common Channel Interoffice Signaling—Local and Toll Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (14) Section 333-200-027—Common Channel Interoffice Signaling—CCIS Network Administration Center—CNAC—Assignment/ Administration.

**B. TTY Input and Output Message Manuals**

- (1) Input Message Manual IM-1A001—No. 1 Electronic Switching System
- (2) Input Message Manual IM-6A001—No. 1A Electronic Switching System

- (3) Output Message Manual OM-1A001—No. 1 Electronic Switching System
- (4) Output Message Manual OM-6A001—No. 1A Electronic Switching System.

**C. Other Documentation**

- (1) Office Parameter Specification PA-591001—No. 1 Electronic Switching System
- (2) Office Parameter Specification PA-6A001—No. 1A Electronic Switching System
- (3) Parameter Guide PG-1—2-Wire No. 1 Electronic Switching System
- (4) Translation Guide TG-1A—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (5) Translation Output Configuration PA-591003— No. 1 Electronic Switching System
- (6) Translation Output Configuration PA-6A002— No. 1A Electronic Switching System
- (7) Parameter Guide PG-1A—2-Wire No. 1A Electronic Switching System.