FEATURE DOCUMENT

AUTOMATIC CALLING STATION IDENTIFICATION FEATURE

ENHANCED PRIVATE SWITCHED COMMUNICATIONS SERVICE

2-WIRE NO. 1 ELECTRONIC SWITCHING SYSTEM

INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This document describes the Automatic Calling Station Identification (ACSI) feature used with a No. 1 Electronic Switching System (ESS) arranged for Enhanced Private Switched Communications Service, Phase 2 (EPSCS 2). *No attempt is made to define the appropriate intrastate or interstate tariff(s) under which EPSCS is provided. Care must be taken when implementing an EPSCS arrangement to insure that the arrangement is consistent with the tariff(s) currently in effect.*

REASON FOR REISSUE

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

FEATURE AVAILABILITY

1.03 The ACSI feature (optional) is part of the EPSCS 2 feature group that is available with the 1E6 and later generic programs at the EPSCS switch and 1E6/1AE5 generic programs at a No. 1/1A ESS CTX-CO/ESSX-1 location.

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The ACSI feature provides identification of the EPSCS customer location and the station number of each station from a main CTX-CO or PBX/CTX-CU. Calls originating from a satellite or tributary location will default to the external billing number (EBN) of the main CTX-CO or PBX/CTX-CU EBN. The ACSI feature can also be used to provide alternate call screening (if selected) by the EPSCS customer. The alternate call screening option eliminates the need for a customer-dialed authorization code.

BACKGROUND

2.02 When the calling station is homed on a No. 1/1A ESS CTX-CO/ESSX-1 location with 1E6/1AE5 or later generic programs, the station ID is collected automatically and transmitted via an automatic number identification (ANI) arrangement to the EPSCS network switch for storage in the message detail record (MDR) register. The MDR register is a modified automatic message accounting (AMA) register.

2.03 When the calling station is homed on a customer premises location (PBX/CTX-CU), the station ID is collected by an automatic identified outward dialing (AIOD) method and transmitted to the EPSCS network switch for storage in the MDR register.

2.04 The formatting and retransmitting of the station ID from the EPSCS network switch to the customer network control center (CNCC) for recording in the message detail record is accomplished by the Network Message Detail Recording (NMDR) feature. For details concerning the NMDR feature, refer to reference A(6) in Part 18.

2.05 With the initial implementation of EPSCS 1 in the 1E5 generic program, the automatic station identification capability was not provided on calls originated from a No. 1/1A ESS CTX-CO/ESSX-1 location or from a PBX/CTX-CU location.

2.06 Prior to the ACSI feature, the calling number item recorded in the message detail record reflected the customer's EBN associated with the EPSCS network access line (NAL) group. The customer's EBN was obtained from the incoming network access line translations. The EBN is also referred to as the billing directory number (BDN).

2.07 With the ACSI feature, the calling number item recorded in the message detail record reflects the *actual calling station identification* of the EPSCS customer. The calling number item recorded is a composite number that includes the NNX portion of the customer's EBN (3-digits) and a portion of the actual calling station ID (4-digits).

2.08 The station ID number that is recorded in the message detail record is primarily for the EPSCS customer's use (e.g., internal cost allocation) but may also be used (if optionally selected) for alternate call screening purposes on a per station basis.

2.09 In the event of an ACSI/AIOD failure, the EPSCS customer's EBN is provided in the message detail record.

DESCRIPTION

3. USER OPERATION

CUSTOMER

3.01 The customer (user) of the information that is provided by the ACSI feature is the subscribing EPSCS business customer. A brief overview of the ACSI feature is illustrated in Fig. 1 and briefly explained below.

3.02 Each user station served from a main CTX-CO or a PBX/CTX-CU interfacing with an EPSCS network switch (by some type of switching system) is assigned both a Message Telecommunications System (MTS) telephone number (7-digits) and an EPSCS network telephone number (7-digits). The only exception to this is the direct access lines (DALs), which only have an EPSCS network number. (The 7-digit numbers shown in the illustration are examples only.) The first three digits (-777) of the MTS telephone number represent an office code, and the first three digits (-222) of the EPSCS telephone number represent an EPSCS network code. For both numbers, the last four digits (-1111) represent the station extension number and are always identical. Each user station may be either TOUCH-TONE® or dial pulse (DP) and may be homed on the EPSCS network switch via a variety of switching systems (examples: No. 1/1A ESS CTX-CO/ESSX-1, a PBX/CTX-CU, a No. 5 Crossbar (XBR) Switching System, a No. 101 ESS, or a DIMENSION® Switching System). For more detailed information on the types of switching systems that may home on the EPSCS network, refer to A(7) in Part 18. Those locations having one or more MTS office codes or one or more EPSCS network codes must have one NAL group per code to allow proper station ID at the EPSCS network switch. In addition to the NAL group, a PBX/CTX-CU location must also have a data link interface for proper station ID at the EPSCS network switch.

3.03 The station ID that is automatically collected and stored in the MDR register at the EPSCS network switch is a composite number which represents both the EPSCS customer's network NNX and the station extension number.

3.04 Refer to Part 4, FEATURE OPERATION, for the sequences involved when the ACSI feature is used.

TELEPHONE COMPANY

3.05 Not applicable.

4. SYSTEM OPERATION

HARDWARE

4.01 With the ACSI feature, additional hardware may be required at the business service switching system location where the calling station(s) is homed and also at the EPSCS network switch.

4.02 Since EPSCS NALs operate in a cut-through mode and automatic number identification (ANI) is senderized, a 2-way, dial-repeating trunk circuit SD-1A473-01 must replace the SD-1A236-01 or SD-1A237-01 circuits in the NAL group at a No. 1/1A ESS CTX-CO/ESSX-1 location. The SD-1A473-01 circuit repeats dial pulses and passes TOUCH-TONE signals without requiring a tandem tie line cut-through (TTLCT) service circuit. Upon completion of the ANI transmission, the NAL drops back to cut-through configuration. (This capability is available in a 1E6/1AE5 base feature.) See reference A(11) in Part 18 for a description of the SD-1A473-01 circuit.

4.03 When the calling station is homed on a PBX/CTX-CU or a No. 101 ESS, an AIOD frame J1A033G-1 must be installed at the EPSCS network switch. In addition, each incoming NAL group that passes station ID requires one AIOD data link circuit SD-1A301. (An alternate data link circuit per NAL may be provided if redundancy is desired.) Data link circuits SD-1A301 are ordered in units of six and mount in the AIOD frame. A maximum of 60 circuits are available for any one EPSCS network switch.

4.04 The ACSI feature is compatible with a No. 5 XBR Switching System. When the EPSCS network switch has an interface with a No. 5 XBR System, the Advanced Private Line Terminating (APLT) feature is applicable to the NALs providing the interface. Also, minor modifications to the marker circuitry are required. For detailed information on the APLT feature, refer to A(11) in Part 18. Refer to No. 5 XBR documentation for detailed information on marker circuitry.
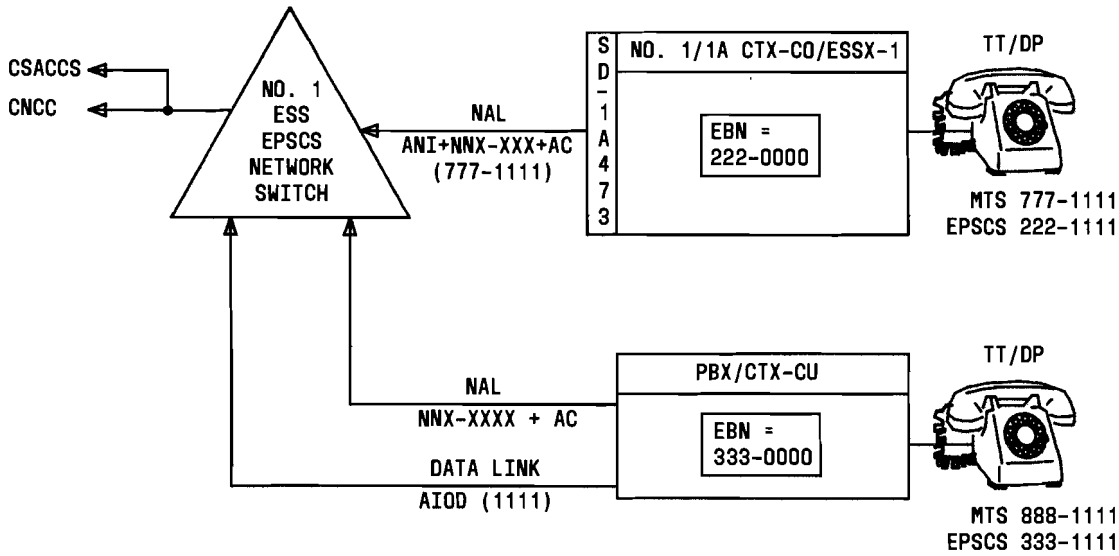
Fig. 1—Overview of the ACSI Feature

LEGEND:
- CSACCS – CUSTOMER SERVICE ADMINISTRATIVE CONTROL CENTER
- CNCC – CUSTOMER NETWORK CONTROL CENTER
- EBN – EXTERNAL BILLING NUMBER
- MTS – MESSAGE TELECOMMUNICATIONS SYSTEM
- ANI – AUTOMATIC NUMBER IDENTIFICATION
- STA. ID – STATION IDENTIFICATION
- EPSCS – ENHANCED PRIVATE SWITCHED COMMUNICATIONS SYSTEM
- AIOD – AUTOMATIC IDENTIFIED OUTWARD DIALING

OFFICE DATA STRUCTURES

A. Translations

No. 1/1A ESS CTX-CO/ESSX-1 Location

4.05 An application of a wink (AW) item is added to the route index expansion table (Fig. 2) to indicate whether a wink or steady off-hook signal is used as a start-dial signal for ANI digits. When AW equals one, a wink signal is applicable. When AW equals zero, a steady off-hook signal is applicable. (AW equals one only when the TYPE item in word zero of the route index expansion table equals two. A No. 1A ESS CTX-CO must have the 1AE5 or later generic program before adding this capability.)

4.06 The first word of the trunk class code expansion table (Fig. 3) of the NAL group

23	22	21	20	19	18	17	16	15	14	13	12	11	10	9				4	3			0	
	TYPE		NXTRID											TGN									WORD 0
	0		XMTYP		DEL NO.		PRIMES					W	AW	0◄———————►0					PREF 1				WORD 1 TYPE 3
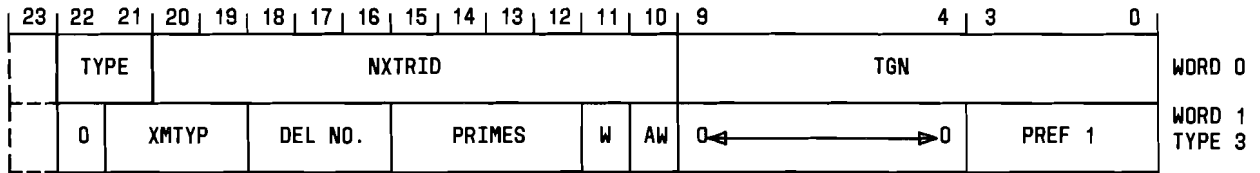
NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:
W - WINK TRAFFIC SERVICE POSITION

AW - APPLICATION OF WINK
AW = 1 WHEN A WINK SIGNAL IS USED AS A
START-DIAL SIGNAL FOR ANI DIGITS.
AW = 1 ONLY WHEN TYPE = 2 IN WORD 0.

Fig. 2—Route Index Expansion Table

interfacing the centrex office with the EPSCS network switch must have the following: TSP equals one, OP equals one to indicate MF outpulsing, and SDS and WDD items equal one, respectively, for start-dial signaling.

EPSCS Network Switch Location

4.07 The TGOG item in word zero of the trunk group supplementary auxiliary block (Fig. 4) must equal one for optional word G to be present. Optional word G contains the ACSI feature indicator item (ACSIF), the ACSI signaling indicator item (ACSIS), and the ACSI authorization code index (ACI) item. When ACSIF equals one, the ACSI feature is active. When ACSIS equals one,

a wink start-dial signal is sent to a No. 1/1A ESS CTX-CO/ESSX-1 location to signify that the EPSCS network switch is ready for ANI transmission. A start (ST) pulse is always returned, even on ANI failures. (When ACSIS equals zero, a steady off-hook signal is sent to a No. 5 XBR Switching System location. An ST pulse is received in all cases except failure).

4.08 The ACSI feature can also be used to provide alternate call screening. In this mode of operation, the station extension number is used as a 4-digit authorization code, eliminating the need for a customer-dialed authorization code. If the ACI item in optional word G equals zero, the customer does not have the option of alternate call screening

23	22		19	18	17	16		12	11	10		8	7			0	
				SDS	WDD				TSP	OP							WORD 1
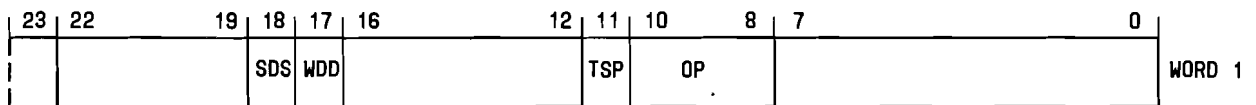
NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:
SDS - START DIAL SIGNAL ON OUTGOING TRUNK
1 = INDICATED
0 = NOT INDICATED
WDD - WINK-START DIAL VERSES DELAY DIAL
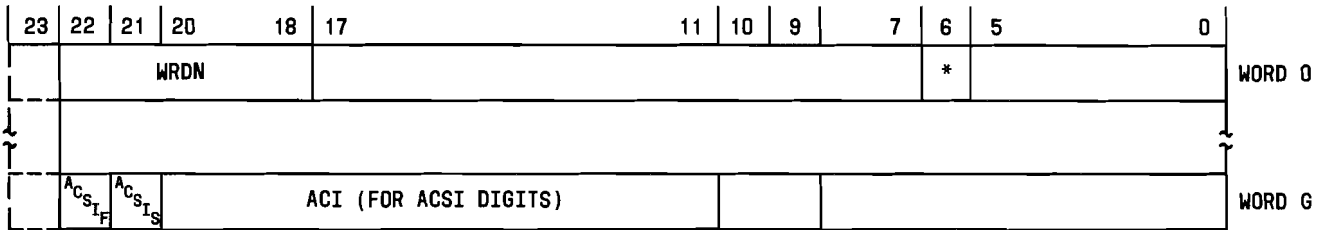1 = WINK-START DIAL
0 = DELAY DIAL
TSP - TRAFFIC SERVICE POSITION
1 = WHEN CENTRAL OFFICE HAS AN ACSI INTERFACE WITH EPSCS
OP - OUTPULSING
1 = MULTI-FREQUENCY (MF)

Fig. 3—Trunk Class Code Expansion Table

23	22	21	20	18	17	11	10	9	7	6	5	0	
	WRDN									*			WORD 0
	$AC_{S_{I_F}}$	$AC_{S_{I_S}}$		ACI (FOR ACSI DIGITS)									WORD G

NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:

* TGOG = 1 INDICATES OPTIONAL WORD G ACTIVE

ACSIF - AUTOMATIC CALLING STATION IDENTIFICATION FEATURE. ACSIF=1 IF TRUNK GROUP HAS ACSI USING PER-TRUNK SIGNALING (i.e., "CAMA-LIKE" ANI, RATHER THAN BY AIOD DATA LINK) (NOTE: THIS ITEM AND THE AID ITEM OF THE TGs SLEN ARE MUTUALLY EXCLUSIVE (SEE FIG. 5).

ACSIS - AUTOMATIC CALLING STATION IDENTIFICATION SIGNALING.
1 = WINK-START SENT TO A NO. 1/1A ESS CTX-CO/ESSX-1 LOCATION FOR ANI TRANSMISSION. ESS ALWAYS RETURNS AN ST SIGNAL, EVEN ON ANI FAILURES.

0 = STEADY OFF-HOOK SENT TO A NO. 5 XBR CTX-CO FOR ANI TRANSMISSION. NO ST SIGNAL IS RETURNED ON ANI FAILURES.

ACI = AUTHORIZATION CODE INDEX. (USED WHEN ACSI DIGITS ARE TO BE TRANSLATED AS AN AUTHORIZATION CODE WITH SCREENING POSSIBLE). RANGE = 1 TO 1023. IF SET TO ZERO, CUSTOMER DOES NOT HAVE OPTION OF SCREENING ON THE ACSI DIGITS FOR THIS TRUNK GROUP. NOTE: IF A CUSTOMER-DIALED AUTHORIZATION CODE IS COLLECTED; (FOR SCREENING OR ONLY FOR RECORD), THIS ITEM IS IGNORED.

Fig. 4—Trunk Group Supplementary Auxiliary Block

on the ACSI digits. If the ACSI digits are to be translated as an authorization code (AC) with call screening possible, the ACI item can be any range from 1 to 1023. The number used is dependent on how the customer's screening tables are set up. (If a customer-dialed AC is collected for screening or only for record, the ACI item is ignored.)

4.09 When a PBX/CTX-CU location interfaces with the EPSCS network switch and AIOD is used for collecting ACSI, the standard AIOD items in the SLEN and TNN-TGN auxiliary blocks associated with the NAL and data link circuits must be as indicated in Fig. 5.

B. Parameters/Call Store

4.10 At the EPSCS, CTX-CU talking paths (set card AIODTP) are provided one per NAL incoming from a PBX/CTX-CU location equipped for ACSI. Additional call store is required for the AIOD data links (set card AIODDL). Refer to A(5) in Part 18 for details.

4.11 The ACSI feature requires both an incoming register (IR) and a message detail record (MDR) register at the EPSCS network switch location. These registers provide temporary storage of the station ID and the called digits. The IR is identified by set card NOR, and the MDR register is identified by set card NAM.

FEATURE OPERATION

A. General

4.12 When the calling station is homed on a No. 1/1A ESS CTX-CO/ESSX-1 location, a standard digit analysis method known as ICAL-ANI is used at the EPSCS network switch to implement ACSI. (ICAL is the software designation for the digit analysis program, and ANI is the automatic number identification.) The ICAL-ANI method is similar and functionally equivalent to the centralized automatic message accounting (CAMA) digit collection. However, the ICAL-ANI method results in considerable memory savings since the 5200 word CAMA package does not have to be loaded in each Centrex/ESSX-1
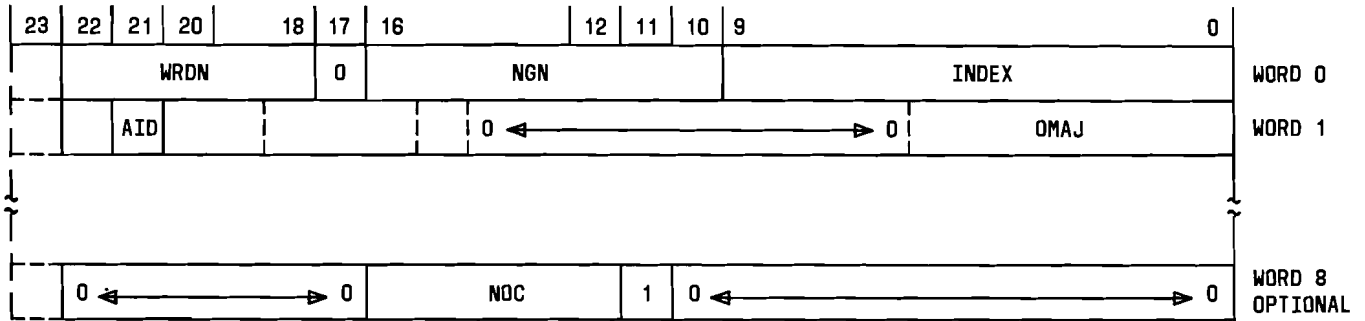
NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY

LEGEND:

AID - AUTOMATIC IDENTIFICATION

NOC = NORMALIZED OFFICE CODE

AID = 1 IF AIOD OPTIONAL WORD 8 EXISTS;
0 IF OTHERWISE.

(A) SLEN AUXILIARY BLOCK
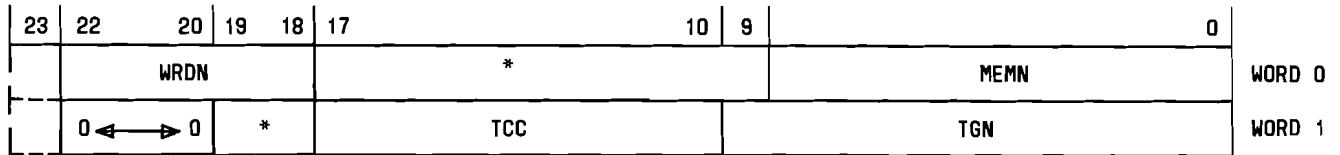
NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY

*WORD 0 (ITEMS 17-9), AND WORD 1(ITEMS 19, 18) EQUALS AIOD INDEX.
NOTE: WHEN AIOD INDEX IS GREATER THAN 511; THE TWO MSBs ARE LOCATED
IN WORD 1, AND THE REMAINING NINE LSBs ARE LOCATED IN WORD 0.

(B) TNN-TGN AUXILIARY BLOCK

Fig. 5—EPSCS Network Switch Translation—AIOD Operation

office having an ACSI interface with the EPSCS network switch.

4.13 When the calling station is homed on a PBX/CTX-CU location, an automatic identified outward dialing (AIOD) method is used to implement ACSI. A separate AIOD data link provides the 4-digit station ID. To construct the network station ID, the network access code is derived from the existing customer external billing number (EBN). The AIOD operation for ACSI digit collection is basically the same as normal AIOD with two minor exceptions:

(1) ANI is fetched at the EPSCS network switch at screening time rather than at answer time.

(2) ANI is stored in the MDR register rather than the AMA register. In the event ANI is not present at screening time, an attempt is made to make the fetch again at answer time. If ANI is available at answer time, it is stored in the MDR register and marked with a special event code. If ANI is unavailable at answer time, a standard AIOD default to the EBN occurs.

4.14 Since normal AIOD operation is covered in another feature document, only the ICAL-ANI digit collection method is covered in this feature operation. For more detailed information on normal AIOD digit collection, refer to reference A(5) in Part 18. Reference A(12) in Part 18 is a descriptive Bell System Practice for AIOD operation with a No. 1 ESS.

B.   ICAL-ANI Digit Collection for ACSI

4.15   A station user (homed on a No. 1/1A ESS CTX-CO/ESSX-1 location) causes seizure of a DRTT circuit (SD-1A473) and a NAL to the EPSCS network switch by going off-hook and dialing a single-digit access code (typically digit 8). This action also causes an IR to be seized and initialized at the EPSCS network switch.

4.16   Before the EPSCS network switch connects a MF receiver for digit collection, a translation check is performed to determine if the ACSI feature exists for the seized NAL.

4.17   When the ACSI feature is active, the IR is reinitialized for ACSI digit collection and a MF receiver is connected to the incoming NAL.

4.18   At the EPSCS network switch, a translation check is also made to identify the type of start-dial signal to be used. (When ACSIS equals one, a wink signal is returned to the No. 1/1A ESS CTX-CO/ESSX-1 location as a start-dial signal.)

4.19   At the EPSCS network switch, a peripheral output buffer (POB) is activated for ACSI digit collection and the call is placed on 2-way, 1-second timing for 8 seconds. (This is necessary to make the ICAL-ANI digit collection functionally equivalent to the CAMA digit collection.)

4.20   Upon receipt of the start-dial signal at the No. 1/1A CTX-CO/ESSX-1 location, a MF transmitter is connected to the seized NAL and the ANI digits are transmitted to the EPSCS network switch.

4.21   When the first ANI digit (information digit) is received, an analysis is performed to determine if additional digits are to be received. If the information digit is a 0 or 3, the remainder of the digits (7 digits) are collected and the call continues. If the information digit is a 2 or 5, no other digits are expected and the call continues. In the case of an invalid information digit, a TN08 message is printed at the EPSCS and the call is routed to overflow. A TN08 message is also printed at the EPSCS when too few or too many digits are received.

4.22   When the information digit is valid and the ANI digits are received, the call is taken

off timing and the IR is reinitialized for collection of the *called* digits.

4.23   A trunk digit receiver is connected to the NAL, and the EPSCS network switch sends a dial tone to the calling station. The station user then dials the *called number.*

>   *Note:* The return of dial tone may be delayed for up to 2 seconds after the call is initiated. This delay results from the switching functions which must occur to collect the calling station ID information.

4.24   After the first dialed digit is received, a MDR register is seized and, if ACSI is active, the ACSI digits are stored in the MDR register for subsequent transmittal to the CNCC.

4.25   When the called digits are collected, a translation check is made to determine if a user-dialed authorization code (AC) is required. When a user-dialed AC is required, a recall dial tone is sent to the calling station and the station user dials the AC. (No screening is performed on the ANI information when a user-dialed AC is required. When a user-dialed AC is not required, a translation check is made to determine if ACSI with alternate call screening is in effect. If the ACI item in optional word G of the TG supplementary auxiliary block is any range from 1 to 1023, alternate call screening is performed on the ANI information. (Refer to paragraph 4.08.)

4.26   If no failures occur during the ICAL-ANI digit collection process, both the calling station number and the called number are stored in the MDR register for subsequent transmittal to the CNCC for incorporation into the MDR. Refer to A(6) in Part 18 for detailed information concerning the formatting and transmitting of the station ID to the CNCC.

CHARACTERISTICS

5.   FEATURE ASSIGNMENT

5.01   The ACSI feature is assigned to EPSCS customers on a per network access line (NAL) group basis. The EPSCS customer has a choice of selecting the alternate call-screening option with the ACSI feature.

6. LIMITATIONS

OPERATIONAL

6.01 Customers having large centrexes (more than 10,000 lines or with multiple NNXs at accessing locations) will require separate NAL groups to properly identify the correct NNX at the EPSCS network switch.

6.02 An EPSCS office may have only one AIOD data frame which can contain a maximum of 60 AIOD data link circuits; thus, only 60 CPE-type locations with ACSI may home on an EPSCS network switch.

ASSIGNMENT

6.03 The ACSI feature is not available for use with direct access line (DAL), incoming foreign exchange (FX), 800 service, release link trunks used for network attendant (NEAT) access, or off-network access lines.

7. INTERACTIONS

STATIC

7.01 Incoming NALs at the EPSCS network switch cannot be equipped for both direct connect and ANI/AIOD.

7.02 Incoming NALs from centrex central offices cannot have both the ACSI feature and the Speed Calling feature. (With the ACSI feature, the seized NAL is not immediately connected to a MF receiver at the EPSCS network switch. With the Speed Calling feature, a receiver must be connected to the seized trunk immediately.)

DYNAMIC

7.03 When an incoming call to a CTX-CO is extended onto an EPSCS network, a 3-port conference circuit SD-1A284 becomes an intermediary circuit between the calling station and the outgoing NAL. Since dial pulses cannot be repeated through the 3-port conference circuit, a tandem tie line cut-through (TTLCT-LO) service circuit must be used for dial pulse stations in this configuration during the dialing period. Figure 6 shows the various network connections that occur in the case of a DP station extending an incoming call. The connections shown in Fig. 6C remain (the DP station

is connected to the tandem tie trunk through the TTLCT-LO circuit) until time-out, following the last digit dialed (12 seconds) or until the station flashes. TOUCH-TONE stations may dial through the 3-port conference circuit onto the EPSCS network via the DRTT circuit SD-1A473-01 as shown in Fig. 6C.

8. RESTRICTION CAPABILITY

8.01 Not applicable.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 The procedure to add, change, or delete the ACSI feature is illustrated in Fig. 7. Refer to Part 13 for testing.

9.02 The set cards applicable to the ACSI feature is dependent upon the method used for ACSI digit collection. The following applies:

(a) When the calling station is homed on a PBX/CTX-CU location and that location interfaces with an EPSCS network switch, an AIOD digit collection method is used for ACSI. The following set cards apply: The AIOD feature (set card 9FAIOD) is part of the AIOD feature group (set card 9SAIOD) and is applicable at the EPSCS network switch location. The PBX/CTX-CU talking paths are identified by set card AIODTP. The AIOD data links supplying the 4-digit station ID are identified by set card AIODDL. Set cards NOR and NAM identify the incoming and MDR registers, respectively.

(b) When the calling station is homed on a No. 1/1A ESS CTX-CO/ESSX-1 location and that location interfaces with an EPSCS network switch, an ICAL-ANI digit collection method is used for ACSI. The following set cards apply: The ACSI feature (set card 9FACSI) is part of the ACSI feature group (set card 9SEPS2) and is applicable at the EPSCS network switch. Set cards NOR and NAM identify the incoming and MDR registers, respectively, at the EPSCS network switch.

10. HARDWARE REQUIREMENTS

Note: This part contains cost factors and determination of quantities. Central Office
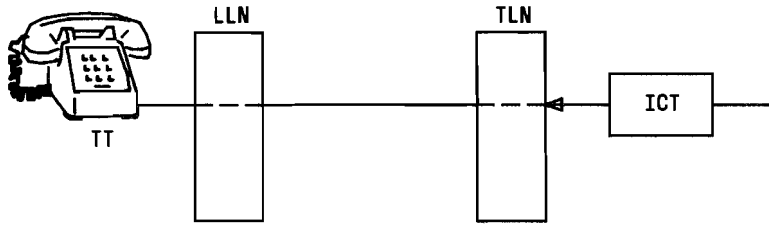
A. INCOMING TRUNK CONNECTED TO STATION

C = CONNECTION

R = RESERVED PATH
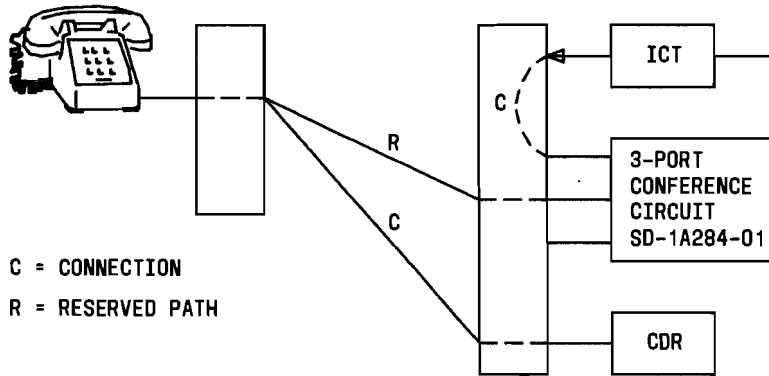
B. STATION FLASHES AND DIALS THE ACCESS CODE ('8')
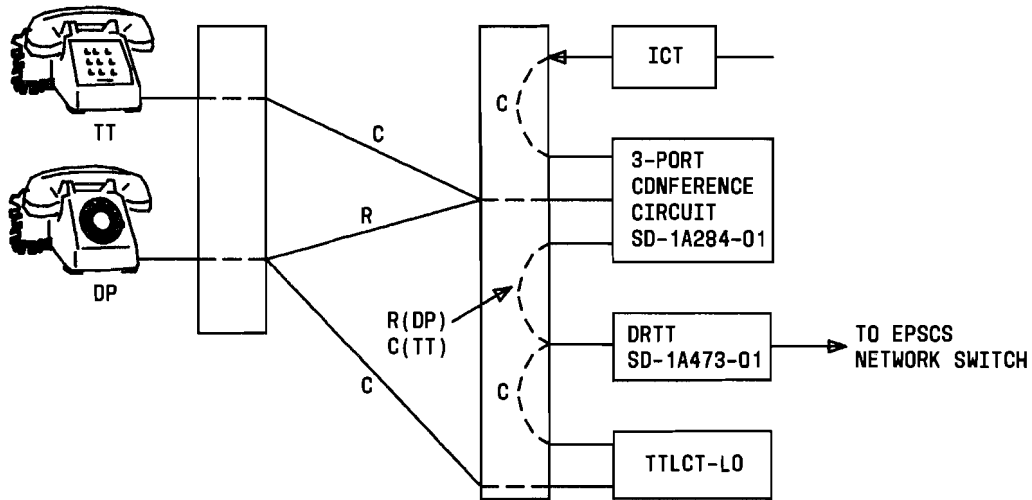
C. FURTHER DIALING INTO THE EPSCS NETWORK (CONNECTION OF THE
LINE TO THE CONFERENCE CIRCUIT DOES NOT OCCUR UNTIL TIME-OUT
OR FLASH. A TT STATION DOES NOT NEED TTLCT SINCE THE
CONFERENCE BRIDGE PASSES TT DIGITS.)

Fig. 6—Incoming Call Extended Onto EPSCS Network

Flowchart

```
                    ┌─────────┐
                    │  START  │
                    └─────────┘
                         │
                         ▼
              ╱─────────────────╲
             ╱  IS ICAL-ANI OR   ╲    AIOD    ┌──────────────────────────┐
            ╱   AIOD DIGIT        ╲──────────▶│ RC:LINE              †    │
            ╲   COLLECTION USED   ╱           ├──────────────────────────┤
             ╲  FOR ACSI         ╱            │ SECTION 231-048-312       │
              ╲─────────────────╱             ├──────────────────────────┤
                     │                        │ BUILDS SLEN AUX BLOCK     │
                  ICAL-ANI                    │ ENTRY (AID) FOR AIOD      │
                     │                        │ OPTIONAL WORD 8           │
                     ▼                        └──────────────────────────┘
          ┌───────────────────────┐                      │
          │ RC:RI            *    │                      ▼
          ├───────────────────────┤          ┌──────────────────────────┐
          │ SECTION 231-048-304   │          │ RC:TG MEM            †    │
          ├───────────────────────┤          ├──────────────────────────┤
          │ BUILDS ROUTE INDEX    │          │ SECTION 231-048-303       │
          │ EXPANSION TABLE       │          ├──────────────────────────┤
          │ ENTRY FOR START-DIAL  │          │ BUILDS TNN-TGN            │
          │ SIGNALING             │          │ AUXILIARY BLOCK           │
          └───────────────────────┘          └──────────────────────────┘
                     │                                    │
                     ▼                                    │
          ┌───────────────────────┐                      │
          │ RC:PSWD          *    │                      │
          ├───────────────────────┤                      │
          │ SECTION 231-048-305   │                      │
          ├───────────────────────┤                      │
          │ BUILDS TRUNK CLASS    │                      │
          │ CODE EXPANSION TABLE  │                      │
          │ ENTRIES               │                      │
          └───────────────────────┘                      │
                     │                                    │
                     ▼                                    │
          ┌───────────────────────┐                      │
          │ RC:TG            †    │                      │
          ├───────────────────────┤                      │
          │ SECTION 231-048-303   │                      │
          ├───────────────────────┤                      │
          │ ASSIGNS ACSI FEATURE, │                      │
          │ SIGNALING METHOD, AND │                      │
          │ AUTHORIZATION CODE    │                      │
          │ INDEX TO INCOMING NALs│                      │
          │ AT EPSCS NETWORK      │                      │
          │ SWITCH                │                      │
          └───────────────────────┘                      │
                     │◀───────────────────────────────────
                     ▼
          ┌───────────────────────┐
          │ FOR NO. 1 ESS ONLY:   │
          │ UPDATE PS MEMORY CARDS│
          └───────────────────────┘
                     │
                     ▼
          ┌───────────────────────┐
          │ TEST THE FEATURE AS   │
          │ PER PART 13           │
          └───────────────────────┘
                     │
                     ▼
               ┌─────────┐
               │   END   │
               └─────────┘
```

* APPLIES TO NO. 1/1A
  CTX-CO/ESSX-1 LOCATION

† APPLIES TO NO. 1 ESS
  EPSCS NETWORK SWITCH

Fig. 7—Installation/Addition/Deletion Procedures for ACSI Feature

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 When the ACSI feature is provided and the calling station(s) is homed on a No. 1/1A ESS CTX-CO/ESSX-1 location, a dial-repeating trunk circuit SD-1A473-01 (J1A033CR) replaces the SD-1A236-01 or SD-1A237-01 circuit in the NAL group that interfaces that location with the EPSCS network switch. The SD-1A473 circuit repeats dial pulses and passes TOUCH-TONE signals without requiring a TTLCT service circuit. Each SD-1A473 circuit requires three master scan points, six signal distributor points, and two trunk link network terminations. Trunk order code is 17301.

10.02 When the ACSI feature is provided to an EPSCS business customer and the calling station(s) is homed on a PBX/CTX-CU location, an AIOD frame J1A033G-1 is installed at the EPSCS network switch. In addition, each access trunk group that passes station ID requires one AIOD data link circuit SD-1A301-01. (An alternate data link circuit per access trunk group may be provided if redundancy is desired.) Data link circuits SD-1A301 are ordered in units of six and mount in the AIOD frame. A maximum of 60 data link circuits can be installed in an EPSCS office.

10.03 MF receiver usage of the EPSCS network switch and MF transmitter usage at a centrex switch is increased with the ACSI feature. The receivers are engineered on ten high-day, busy-hour calls, with a 2-second holding time and a P.01 grade of service. The transmitters should be provided with the default of 1.3-seconds holding time and a P.01 grade of service.

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.

A. Memory—EPSCS Network Switch Location (No. 1 ESS Only)

Fixed

11.01 The following memory is required whether or not the ACSI feature is used.

- **Base generic program (program store):** The ACSI feature increases the base generic program size by (476) words (approximately).
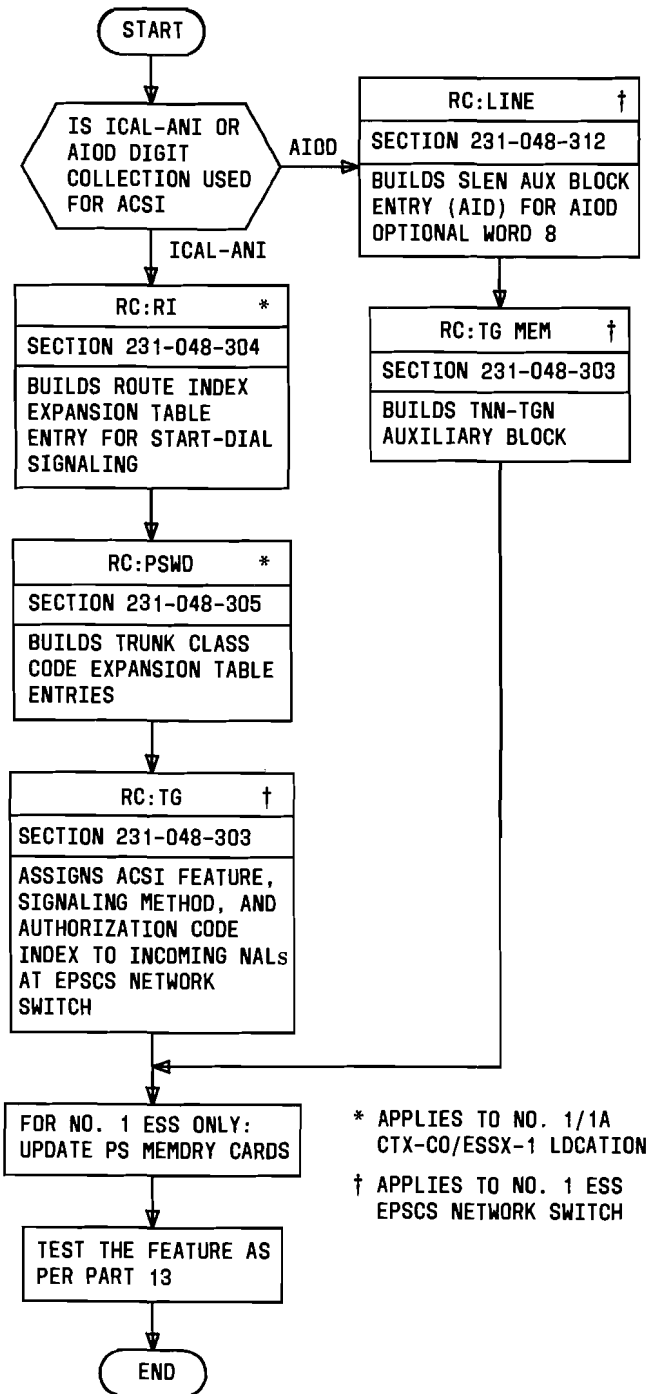
Conditional

11.02 The memory required when the ACSI feature is loaded is dependent upon the method used for ACSI digit collection.

- **Optionally loadable feature package (program store):**

    (a) When ACSI is collected by the AIOD method, the AIOD feature package is loaded at the EPSCS network switch. The AIOD feature package requires 3328 words (3175 loaded, plus 153 patch) and is part of the AIOD feature group.

    (b) When ACSI is collected by the ICAL-ANI method, the ACSI feature package is loaded at the EPSCS network switch. The ACSI feature package requires 512 words (402 loaded, plus 110 patch) and is part of the ACSI feature group.

- **Call store:**

    (a) A 19-word incoming register (IR) is required at the EPSCS network switch for storage of the ACSI digits and the called digits. The IR is identified by set card NOR.

    (b) A 13-word MDR register is required at the EPSCS network switch for storage of the ACSI digits and the called digits. The MDR register is identified by set card NAM.

Variable

11.03 The following memory is required when the ACSI feature is activated.

- **Translations (program store):**

    (a) 1 word in the trunk group supplementary auxiliary block for optional word G. (Optional word G is shared with other EPSCS 2 features.)

    (b) 1 word in SLEN auxiliary block for optional word 8 (used only when the AIOD method is used for ACSI digit collection).

    (c) 2 words in the TNN-TGN auxiliary block (used only when the AIOD method is used for ACSI digit collection).

B. Memory—No. 1/1A ESS CTX-CO/ESSX-1 Location

11.04 To equip a No. 1/1A ESS CTX-CO/ESSX-1 location for an ACSI interface with an EPSCS 2 network switch, the translation words shown in Fig. 2 and 3 are added, along with a new dial-repeating trunk circuit SD-1A473. To incorporate these changes the following applies:

- A No. 1 ESS CTX-CO/ESSX-1 location must have 1E6 or later generic programs.

- A No. 1A ESS CTX-CO/ESSX-1 location must have 1AE5 or later generic programs. An overwrite to 1AE5 of approximately ten words is needed to permit the CTX-CO switch to recognize a wink rather than an off-hook as the start-dial signal for ANI. In addition, those No. 1A ESS CTX-COs utilizing the dial-repeating trunk circuit SD-1A473 for EPSCS network access lines equipped for ACSI require an overwrite to 1AE5 of approximately 150 words for the change in circuit (CIC) table.

REAL TIME IMPACT

11.05 Refer to A(7) in Part 18 for real time costs applicable to the ACSI feature.

11.06 The cycle time for No. 1 ESS is 5.5 microseconds.

12. DATA ASSIGNMENTS AND RECORDS

TRANSLATION FORMS

12.01 The following ESS translation forms, detailed in reference C(1) in Part 18, are applicable to the ACSI feature.

- ESS 1101—Directory Number Record—Used for recording screening LEN assignment with AID designated; also used to record ANI/AIOD failure billing number assignment.

- ESS 1107—Supplementary Information Record—Used for recording the AIOD index number (4-digits) for each PBX/CTX-CU outdial trunk equipped for AIOD.

- ESS 1109—Centrex Group Record—Used to record the access code for the EPSCS trunk group; should be data type 3, subtype 00, and no option indicator.

- ESS 1115—Multiline Group Record—Used for recording the AIOD index number (4-digits) for each CTX-CU outdial trunk equipped for AIOD (ESS Forms 1200, 1201, 1219, 1220, and 1221 must also have the AIOD index entered).

- ESS 1202—Trunk Group Record—Used to record TNN-to-TGN and trunk member number translations for all trunks.

- ESS 1204—Trunk Class Code Record—Used to record the format of the first and third words of the trunk class code for outgoing trunk groups equipped for ACSI.

- ESS 1216—Trunk Group Supplementary Record—Used for recording the availability of the ACSI feature, type of signaling, and authorization code index (ACI).

- ESS 1303—Trunk and Service Circuit Route Index Record—Used to record the type of start-dial signal used between the EPSCS network switch and the No. 1/1A ESS CTX-CO/ESSX-1 location.

RECENT CHANGES

12.02 The following recent change (RC) messages are affected by the ACSI feature.

RC MESSAGE	FUNCTION
RC:RI	Builds route index expansion entries using keyword ANIWNK. For entire message format see reference A(2) in Part 18.
RC:TG	Builds trunk group entries using keywords CSI, CSIACI, and CSIW. For entire message format see reference A(1) in Part 18.
RC:LINE	Builds SLEN auxiliary block entry using keyword AID. For entire message format see reference A(4) in Part 18.

13. TESTING

13.01 Teletypewriter (TTY) input and output messages given in references in Part 18B can be used to verify translation data for the ACSI feature. The messages are:

(a) Use VFY-EXP to verify route index expansion tables. System response should be a TR05 output message.

(b) For No. 1 ESS, use TAG-TNN-TCL and T-READ to verify trunk class code expansion tables. System response should be a TW02 output message.

(c) For No. 1A use DUMP:CCS, ADR to verify trunk class code expansion tables. System response should be a DUMP:CSS output message.

(d) Use VFY-TKGN-14 to verify trunk group number translations. System response should be a TR10 output message.

(e) Use VFY-TNN to verify trunk and network number assignments. System response should be a TR14 output message.

(f) Use VFY-TKGN to verify the translation and ACI items in the trunk group supplementary auxiliary block. System response should be a TR10 output message.

13.02 Test calls should be made from various locations homed on different types of switching systems to assure that the station ID is

being recorded correctly in the message detail record at the CNCC.

14. OTHER PLANNING TOPICS

14.01   Not applicable.

ADMINISTRATION

15. MEASUREMENTS

15.01   Not applicable.

16. CHARGING

AUTOMATIC MESSAGE ACCOUNTING

16.01   Not applicable.

UNIFORM SERVICE ORDER CODES

16.02   For uniform service order codes (USOCs) applicable to the ACSI feature, refer to the telephone company USOC coordinator and to the AT&T USOC Manual, when assigned.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01   Not applicable.

18. REFERENCES

18.01   The following documentation contains information related to or affected by the ACSI feature.

A. Bell System Practices

(1) Section 231-048-303—Trunk Translation Recent Change Formats for TG, TGBVT, TRK, CFTRK, TGMEM, CCIS, and TKCONV (1E6 and 1AE6 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(2) Section 231-048-304—Rate and Route Translation Recent Change Formats for NOCNOG, CNHT, NOGRAC, RATPAT, DIGTRN, CCOL, RI, CHRGX, DITABS, TNDM, IDDD, TDXD, and RLST (1E6 and 1AE6 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(3) Section 231-048-305—RC Formats for PSWD, PSBLK, SUBTRAN, and GENT (1E6 and 1AE6 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(4) Section 231-048-312—Line RC Formats for LINE, TWOPTY, MPTY, SCLIST, MLHG, ACT, CFV, and VSS (1E6 and 1AE6 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(5) Section 231-090-147—Feature Document— Identified Outward Dialing Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(6) Section 231-190-130—Feature Document— Network Message Detail Recording Feature—Enhanced Private Switched Communications Service (EPSCS)—2-Wire No. 1 Electronic Switching System

(7) Section 231-190-127—Feature Document— Enhanced Private Switched Communications Service Feature—2-Wire No. 1 Electronic Switching System

(8) Section 231-060-220—Trunk and Miscellaneous Circuits—Network Switching Engineering—No. 1 and No. 1A Electronic Switching Systems

(9) Section 231-061-450—Program Stores—Network Switching Engineering—No. 1 Electronic Switching System

(10) Section 231-061-460—Call Stores—Network Switching Engineering—No. 1 Electronic Switching System

(11) Section 231-090-254—Tandem Tie Trunk Service (Nonsenderized) Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(12) Section 231-132-101—Automatic Identified Outward Dialing(AIOD)—Description—2-Wire No. 1 Electronic Switching System.

B. Teletypewriter Input and Output Manuals

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

(2) Output Message Manual OM-1A001—2-Wire No. 1 Electronic Switching System

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

(4) Output Message Manual OM-6A001—2-Wire No. 1A Electronic Switching System.

C. Other Documentation

(1) Translation Guide TG-1A—No. 1 and No. 1A Electronic Switching Systems—2-Wire

(2) Office Parameter Specification PA-591001—No. 1 Electronic Switching System—2-Wire

(3) Parameter Guide PG-1—No. 1 Electronic Switching System—2-Wire

(4) Translation Output Configuration PA-59100—No. 1 Electronic Switching System—2-Wire

(5) Central Office Equipment Engineering System (COEES) Planning and Mechanized Ordering Modules.