FEATURE DOCUMENT

CUSTOMER DIALED ACCOUNT RECORDING FEATURE

2-WIRE NO. 1 AND NO. 1A ELECTRONIC SWITCHING SYSTEMS

INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This feature document describes the *Customer Dialed Account Recording (CDAR)* feature when utilized with the No. 1/1A Electronic Switching System (ESS).

REASON FOR REISSUE

1.02 This document is reissued to provide coverage of additional feature interactions and enhancements. Since this reissue is a general revision, no revision arrows have been used to denote significant changes.

FEATURE AVAILABILITY

1.03 The CDAR feature is available in all active generic programs for No. 1 and No. 1A ESSs. This feature is included in the base.

1.04 The CDAR feature was originally only available in conjunction with the basic Station Message Detail Recording (SMDR) feature. See reference C(8) in Part 18. With the 1E7 (No. 1 ESS) and 1AE7 (No. 1A ESS) generic programs, the CDAR feature may be used in conjunction with the Expanded Message Detail Recording to Customer Premises (XMDR) feature. See reference A(7) in Part 18.

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The CDAR feature permits a Centrex/ESSX-1 customer optionally to add an account number (customer's personal identification [ID] code) to the automatic message accounting (AMA) record. This feature may provide a customer record for allocation of charges on both outward and inward directed calls.

BACKGROUND

2.02 Up to eight digits of the account number appears in the SMDR record for the associated call and may be used by the customer for cost allocation purposes. The record is provided to the customer with the billing and includes all information required for SMDR plus the CDAR account number.

2.03 The SMDR is a Centrex/ESSX-1 feature that provides a record, by station number, of originating traffic completing over foreign exchange (FX), wide area telecommunications service (WATS), common control switching arrangement (CCSA), and the message telecommunications service (MTS) network (toll) facilities. The SMDR feature, as referred to in this document, differs from the SMDR to Customer Premises feature available in the 1E6 (No. 1 ESS) and 1AE6 (No. 1A ESS) generic programs for electronic tandem switching (ETS) customers.

2.04 The CDAR account codes are not available in the ETS SMDR records. With the 1E7 (No. 1 ESS) and 1AE7 (No. 1A ESS) generic programs, CDAR account codes are available as part of the XMDR feature for ETS customers. The XMDR is a feature which allows non-ETS Centrex/ESSX-1 calls to be recorded via ETS SMDR to customer premises hardware.

2.05 The CDAR feature is applicable to individual stations, tie trunks, and attendants within a large business customer's service.

2.06 The CDAR feature options include: preset routing access code, restriction of directly dialed AMA charged calls, and recording of CDAR information for inward directed calls.

DESCRIPTION

3. USER OPERATION

CUSTOMER

3.01 The customer obtains dial tone and dials the CDAR access code which is less than or equal to five digits. Optionally, a second dial tone may be returned following the CDAR access code. The customer then dials the account number associated with the call. The format of the account number is left entirely to the customer's discretion. Although the account number can consist of up to 14 digits, only 8 digits will actually be stored on the magnetic tape. The customer must notify the operating telephone company (OTC) how many digits, up to 14, will be dialed to represent the CDAR account number. Also, it is required that the OTC be informed of which eight digits of the dialed account number are to be saved for account records. These eight digits may or may not be contiguous. After the system has received the last digit expected of the account number, another dial tone (second or third) is returned and the customer is now in the same state as if the call had just originated, ie, the customer can dial any number. From this point on, the call appears like any other call from the customer's viewpoint.

3.02 The customer's billing record has, in addition to all normal entries concerning the call, an 8-digit entry for the account number. The customer can use this CDAR information for allocation of charges. The data recorded concerning the call is first placed on magnetic tape and then sent to the accounting cen-

ter on a daily basis. The accounting center runs the tape into a computer for storage. When the billing period for a particular customer comes due, hard copy records are made and sent along with the SMDR to the CDAR customer for billing purposes.

3.03 The customer desiring to place an outward call and utilize the CDAR feature dials the appropriate CDAR access code, then a customer ID code (14 digits maximum), routing access code, followed by the area code (if required), and the terminating directory number (DN).

3.04 The following feature options are available to the CDAR customer.

(a) *Preset Routing Access Code:* At the time the customer orders the CDAR feature, the customer may associate a routing access code ("dial 9", CCSA, outward wide telecommunications service [OUTWATS], etc) with a particular CDAR access code. The routing access code may contain no more than three digits. When using the CDAR feature and the preset routing access code option, the customer does not dial the routing access code. After the entire account number has been dialed, the system optionally returns dial tone and puts the customer in the position of having dialed the CDAR access code, account number, and routing access code. Therefore, this option eliminates the customer's need for dialing a routing access code after the CDAR information. One distinct CDAR access code is needed for each routing access code that the customer wants treated by this option.

(b) *Restriction of Directly Dialed AMA Charged Calls:* This option allows a CDAR customer to restrict individuals from directly dialing any type of AMA charged call ("dial 9", CCSA, or OUTWATS) without using the CDAR feature first. If the customer does dial a restricted code, the call will be either routed to reorder tone or diverted to the business customer attendant.

(c) *Inward Directed Calls via Attendant:* An option exists that will allow recording CDAR information from any inward directed calls that are extended by the attendant to an intragroup facility. After the attendant has answered the inward directed call, the attendant obtains dial tone and dials the special CDAR access code and the charged account number. At this

point the attendant receives the second dial tone and can complete the call to any intragroup facility (intragroup station, regular tie trunk, or cut-through tie trunk). The attendant can not extend the call to a private network facility. From this point the call is treated the same as a normal extended call.

TELEPHONE COMPANY

3.05 Not applicable.

4. SYSTEM OPERATION

HARDWARE

4.01 Not applicable.

OFFICE DATA STRUCTURES

A. Translations

4.02 The translations for the CDAR feature are obtained from the centrex digit interpreter table. Figure 1 shows the items required in the digit interpreter auxiliary block.

4.03 The CDAR customer is allowed to specify where the account code is to be recorded (ie, only on the AMA tape, only on the SMDR to customer premises record, or both). Therefore, the centrex digit interpreter auxiliary block for data type 5, subtype 22, sub-subtype 2 includes an item for this purpose. This item, message detail recording destination (MDRD), specifies where the account code digits for the CDAR customer's call should appear and is available in 1E7/1AE7 and later generic programs. The values of this item are defined in Figure 1.

B. Parameters/Call Store

4.04 The CDAR feature uses call store registers for the control and recording of call data. These registers are the AMA register, originating register (OR), and the incoming call register (IR).

4.05 There are two items of information that must be recorded in the AMA register for CDAR usage: the indication that the register has a CDAR account number and the account number. The CDAR indicator (A8CDAR) is used when the data in the AMA register is being transferred to the AMA buffer prior to being placed on the AMA tape. The layout of

	23	22	21	20	19	18	17	12	11	10	9	8	7	6	5	4	3	0
WORD 0		WRDN								AAD1			AAD2			AAD3		
1		DTYP			RESTR			*		SSTYP				STYP				
2	†			DTS						MDRD			NADE					
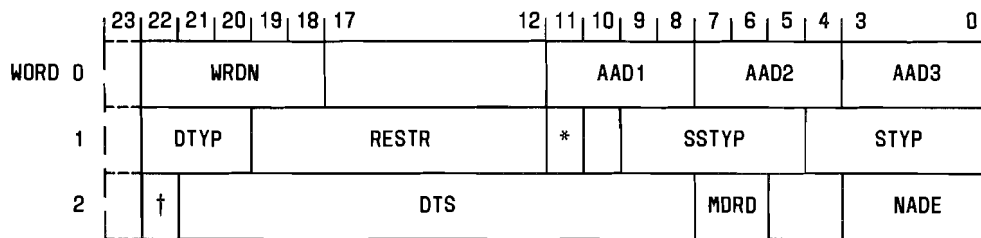
NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

* TSDT

† INDAB

```
LEGEND: WORD 0 - WRDN  - NUMBER OF WORDS IN AUXILIARY BLOCK = 3
                 AAD1⌐
                 AAD2 | - ADDRESS ACCESS DIGIT 1, 2, 3.
                 AAD3⌐
        WORD 1 - DTYP  - DATA TYPE = 5, CENTREX SPECIAL PURPOSES
                 RESTR - RESTRICTION BITS
                 SSTYP - SUB-SUBTYPE = 2
                  STYP - SUBTYPE = 22
                  TSDT - SECOND DIAL TONE
        WORD 2 - INDAB - INWARD DIRECTED ACCOUNT BILLING (= 1, IF USED)
                   DTS - DIGITS TO SAVE. THIS ITEM INDICATES WHICH OF
                         THE DIALED ACCOUNT DIGITS SHOULD BE SAVED.
                         A ONE IN THE BIT POSITION INDICATES THE
                         DIGIT SHOULD BE SAVED. THE CORRESPONDENCE
                         BETWEEN BIT POSITION AND DIGIT IS AS FOLLOWS:
                         (BIT POSITION 21 IS ASSOCIATED WITH DIGIT 1,
                         ETC., TO BIT POSITION 8 WITH DIGIT 14 RESPECTIVELY).
                         A MAXIMUM OF 8 BITS CAN BE SET.
                  MDRD - MESSAGE DETAIL RECORDING DESTINATION. VALUES
                         ARE AS FOLLOWS:
                         0 - INDICATES THE CUSTOMER DIALED ACCOUNT CODE
                             DIGITS SHOULD BE RECORDED AS USUAL ONLY AT
                             THE REVENUE ACCOUNTING OFFICE (RAO).
                         1 - DESIGNATES THE CUSTOMER AS WANTING THE CDAR
                             DIGITS RECORDED ONLY AT THE CUSTOMER PREMISES.
                         2 - INDICATES THE CDAR DIGITS SHOULD BE RECORDED
                             AT BOTH THE CUSTOMER PREMISES AND THE RAO.
                  NADE - NUMBER OF ACCOUNT DIGITS EXPECTED (≤ 14)
```

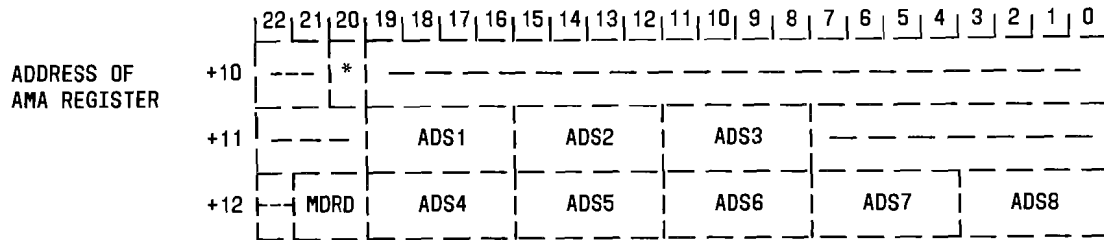**Fig. 1—Digit Interpreter Auxiliary Block for CDAR**

the register words containing the CDAR indicator and eight digits of the account number are shown in Fig. 2.

4.06 In addition, the CDAR AMA register contains the MDRD item to indicate the recording option for XMDR call types.

4.07 An additional value is designated for the network type item in the OR and IR on ETS customer related calls. Also, the MDRD item is defined in the OR and IR for CDAR. Other items of CDAR information used by the OR and IR are shown in Fig. 3 and 4.

FEATURE OPERATION

4.08 Access to the CDAR feature is via a dialed access code. After the final digit of the CDAR access code has been dialed and the digit translation routine returns data from the digit interpreter auxiliary block, a routine is entered which processes the contents of the digit interpreter auxiliary block. Figure 1 shows a layout of the digit interpreter auxiliary block. First, the total number of account digits expected (NADE) and the account number digits to save (DTS) items are stored for later use in the originating register for lines and attendants. The trunk second dial tone (TSDT) item is looked at to deter-
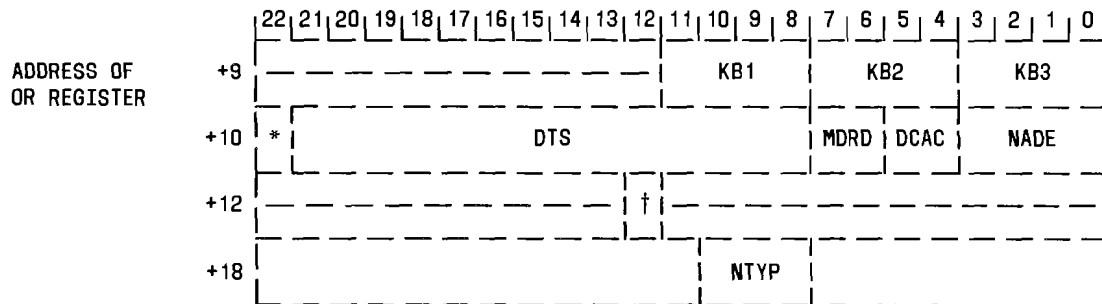
ADDRESS OF
AMA REGISTER

```
      |22|21|20|19|18|17|16|15|14|13|12|11|10| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
+10   |--- | * |  --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- |
+11   |--- |  ADS1  |  ADS2  |  ADS3  | --- --- --- --- --- --- --- |
+12   |--|MDRD|  ADS4  |  ADS5  |  ADS6  |  ADS7  |  ADS8  |
```

* DM5

LEGEND:
  DM5 - CDAR ACCOUNT NUMBER LOADED IN AMA REGISTER
  ADS1 THROUGH ADS8 - CDAR ACCOUNT DIGIT SLOT 1 THROUGH 8
  MDRD - MESSAGE DETAIL RECORDING DESTINATION

Fig. 2—CDAR AMA Register

ADDRESS OF
OR REGISTER

```
      |22|21|20|19|18|17|16|15|14|13|12|11|10| 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
+9    | --- --- --- --- --- --- --- --- --- --- |  KB1  |  KB2  |  KB3  |
+10   |* |         DTS          |MDRD|DCAC|  NADE  |
+12   | --- --- --- --- --- --- |†| --- --- --- --- --- --- --- |
+18   | --- --- --- --- --- --- |  NTYP  | --- --- --- --- |
```

* INDAB

† CDAR

LEGEND:

  KB1, KB2, KB3 - CDAR ROUTING ACCESS CODE DIGITS 1, 2, 3.

  INDAB - INWARD DIRECTED ACCOUNT BILLING INDICATOR (INWATS).

  DTS - DIGITS TO SAVE. THIS ITEM INDICATES WHICH OF THE DIALED
        ACCOUNT DIGITS SHOULD BE SAVED.

  MDRD - MESSAGE DETAIL RECORDING DESTINATION.

  DCAC - DIGIT COUNT OF ADDRESS ACCESS CODE.

  NADE - NUMBER OF ACCOUNT DIGITS EXPECTED.

  CDAR - CDAR FEATURE APPLIES TO THIS CALL.

  NYTP - NETWORK TYPE=3 TO INDICATE THAT THE CALL IS ASSOCIATED
         WITH AN ETS CUSTOMER, BUT THAT THE CALL IS A NON-ETS
         CALL REQUIRING XMDR DATA.

Fig. 3—Originating Register Layout

| | | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |

ADDRESS OF
OR REGISTER

+6 — — — — — — — — — | *

+9 | KB1 | KB2 | KB3

+10 | † | DTS | MDRD | DCAC | NADE

+18 | NTYP

* TCDR

† INDAB

LEGEND:
```
          TCDR - 1 = TRUNK CDAR (CUSTOMER DIALED ACCOUNT RECORDING)
 KB1,KB2,KB3 - ACCESS CODE DIGITS FOR CDAR
        INDAB - INWARD DIRECTED ACCOUNT BILLING INDICATOR
         DCAC - DIGIT COUNT OF ADDRESS ACCESS CODE FOR CDAR
         MDRD - MESSAGE DETAIL RECORDING DESTINATION
          DTS - DIGITS TO SAVE
         NADE - NUMBER OF ACCOUNT DIGITS EXPECTED
         NTYP - NETWORK TYPE = 3 TO INDICATE THAT THE CALL IS
                ASSOCIATED WITH AN ETS CUSTOMER, BUT THAT THE
                CALL IS A NON-ETS CALL REQUIRING XMDR DATA.
```
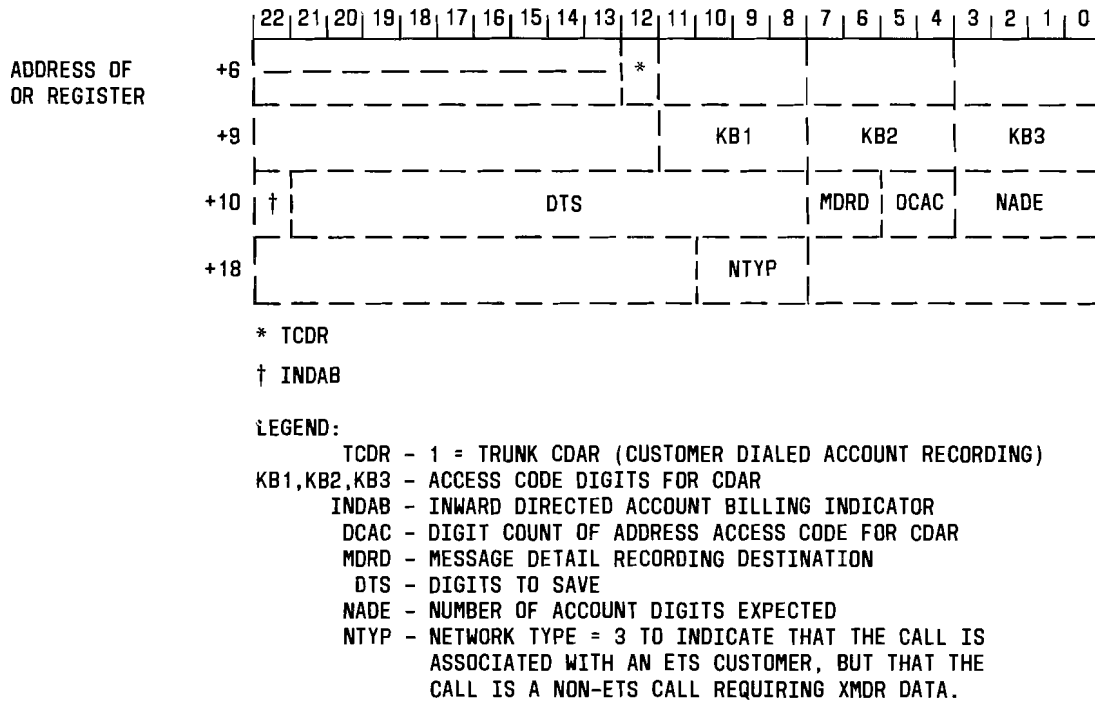
Fig. 4—Incoming Call Register Layout

mine if second dial tone is to be given. The DTS item has a bit corresponding to each of the 14 account number digits that could be expected. The DTS item is set if that particular digit is to be saved for output to the AMA tape. The inward directed account billing (INDAB) indicator item is stored in the OR if the call is attendant controlled and extended to an intragroup station. Also, any routing access code digits (AAD1, AAD2, and AAD3) are stored in the OR.

4.09 After each account number digit has been collected, the NADE item is decremented. A check is made to compare the account number digit with the DTS item to determine if the digit should be saved. When it is saved, the OR is marked to store the next received digit in the next digit slot. When it is not saved, the OR is set to store the next digit in the digit slot just used.

4.10 Eventually, the NADE item is decremented to a zero value. This means that all the account digits have been collected. At this point, a bit in the OR is set to indicate it is being used for a CDAR call. This is necessary to implement the toll charged "dial 9" restriction. A 13-word AMA register is seized, linked to the OR, loaded with the account number and

billing DN of the CDAR user, and the AMA register is initialized so that control can be reseized at answer time.

4.11 After initializing the AMA register, one of three procedures occurs, depending upon which CDAR feature option is in effect. These options are indicated by the contents of the digit interpreter auxiliary block.

(a) If the user dials a CDAR access code, which indicates the user would dial the routing access code, the OR is initialized as if it were seized after an origination and dial tone is returned to the CDAR user.

(b) If the access code dialed indicated that the routing access code was already stored in the OR, the routing access code is retrieved and stored in the proper digit slots in the OR. The digit count is then set to the number of digits in the access code (≤3). A translation is done on the routing access code which ignores restriction bits. The call proceeds from this point as if the routing access code had been dialed with no access code restric-

tions. Dial tone is returned as a function of the access code translations.

(c) This final procedure is for recording an account number for an inward directed call that is to be extended by the attendant. The digits that are dialed to extend the call are saved and stored in the CDAR AMA register, and the completion of the call proceeds as if the CDAR feature had not been used. If the call was extended to a centrex station, the full 7-digit DN appears as the called party in the AMA record. If it was extended on a centrex tie trunk, only the dialed access code appears as the called party in the AMA record.

4.12 As the CDAR call progresses, the next entry into the CDAR AMA register is the answer report. The CDAR account number is copied from the CDAR AMA register into the 13-word AMA register associated with this call, and the item (CDAR) is set to indicate the presence of the account number. The AMA register must be making a timed record of the call for its duration.

4.13 Access to the CDAR feature for incoming calls using the IR is basically the same as for the OR. Access to CDAR is via the dialed access code. After the final digit of the CDAR access code is received, a digit translation routine is called to obtain the data from the digit interpreter auxiliary block. Then a routine is called to process the contents of the auxiliary block. The routine first determines if TSDT is to be returned before receiving the account digits. Next, the NADE, DTS, and INDAB items are stored in word 10 of the IR. If there are any address access code digits, they are stored in word 9 of the IR in the KB1, KB2, and KB3 slots. The program then waits for the account digits. The collection of the account digits and the AMA register initialization is the same as described above, with references to IR instead of OR.

4.14 The MDRD item specifies where the account code digits for the CDAR customer's call should be recorded. The MDRD item is only valid with data type 05, subtype 22, sub-subtype 02. On CDAR calls the MDRD item is copied from the CDAR auxiliary block into the OR/IR. The CDAR AMA register seize routine can then move the MDRD indicator from the OR/IR into the CDAR AMA register to designate the recording option.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 The CDAR feature is provided to Centrex/ESSX-1 customers on a per group basis.

6. LIMITATIONS

6.01 Not applicable.

7. INTERACTIONS

STATIC

7.01 Not applicable.

DYNAMIC

A. Station Message Detail Recording

7.02 The CDAR feature is only available in conjunction with the SMDR (paragraph 2.03) and XMDR features. These features provide the AMA format for detailed information in which CDAR may be included.

B. Customer Identification (CSAID) on the AMA Tape Feature

7.03 The CSAID feature can be used with the CDAR feature. Refer to A(14) and A(17) in Part 18 for AMA details.

C. 1- or 2-Digit Speed Calling

7.04 Since many digits are required to be dialed to complete a CDAR call, provisions have been made to use the CDAR feature with either 1- or 2-digit speed calling. The speed calling option is not available to incoming centrex tie trunks using the CDAR feature. The information pertaining to the CDAR portion of the call can be entered into the recent change area by using a service order or the Customer Changeable Speed Calling (CCSC) feature. If the service order method is used, the recent change entry contains the CDAR access code plus the actual account number digits chosen for the AMA record. If the CCSC method is used, the CDAR access code and the total number of account number digits (≥ 14) are dialed after the change speed calling list access code and speed calling code.

7.05 The address information (routing access code plus destination digits) can be supplied after

the speed calling CDAR information by one or two methods, either dialed directly or using another speed calling entry to specify the address information.

7.06 If the CDAR access code, placed on the speed calling list, has an associated preset routing access code, then the address information (destination digits) must be dialed directly. The address information for this type of call cannot be put in a speed calling list entry because of a restriction imposed by the recent change program. The restriction is that some access code must be dialed after the speed calling code that leads to a final data type of call, the routing access code is contained in the CDAR speed calling entry. After the speed calling code for · this CDAR access code is dialed, the system is expecting the number of digits required by the associated routing access code. Reference A(10) in Part 18 has further details of speed calling features.

> *Note:* The CDAR access code must consist of no greater than three digits if speed calling is used. This restriction is imposed by the CCSC feature.

D. Call Forwarding

7.07 When CDAR charging is being applied to an inward directed call that is being extended by the attendant to some intragroup facility, that facility can be an intragroup station having the Call Forwarding feature activated. In this case, the CDAR AMA record contains the called party regardless of where the call terminates. See references A(3) and A(4) in Part 18 for further details.

E. Toll Diversion (TOLD)

7.08 The TOLD feature interacts with the CDAR feature when the customer wants to restrict personnel (intragroup lines) from completing any "dial 9" type calls, which result in a timed AMA entry without using the CDAR feature. The TOLD feature is assigned to intragroup lines on an individual basis. If a "dial 9" call is dialed from an intragroup station with TOLD and the call is initially destined to be toll diverted, a check is made before the call is diverted to the attendant for usage of the CDAR feature on the call. When it is, the call is allowed to continue; otherwise, it is intercepted by the attendant who may complete it.

7.09 When a CDAR user is on an incoming tie trunk and CDAR was not used on a toll

charged "dial 9" call, reorder tone is returned. The CDAR feature is required to complete the above call. Refer to A(9) in Part 18 for details on the TOLD feature.

F. Outward Wide Area Telecommunications Service

7.10 When the customer is going to use the CDAR feature to charge an OUTWATS call, the OUTWATS access code must be marked for individual station billing. If the simulated facilties group is not marked this way, the screening DN is used as the billing directory number (BDN). Since the BDN is not that of the user, an AMA entry type is made (ie, a type 01 entry marked traffic sampled—no charge). See reference A(8) in Part 18 for further details.

G. Flexible Route Selection (FRS)

7.11 When the customer is going to use the CDAR feature to charge a call that will use FRS, the OUTWATS route selector must specify individual station billing in case the call is routed using OUTWATS. If the FRS call is routed by any other means, the call automatically receives individual station billing treatment. See reference A(5) in Part 18 for the FRS feature.

H. Initial AMA Entry on All AMA Call Attempts (IAAC)

7.12 If AMA records are made for uncompleted calls due to the IAAC feature (or any other reason), the CDAR AMA register is ignored and no CDAR information will appear in the AMA record for the uncompleted call.

I. Message Detail Recording on Tie Trunks (TAMA)

7.13 The TAMA feature may use the CDAR feature to record detail information concerning tie trunk usage. This nonstandard use of CDAR is described in reference A(11) in Part 18 in order to illustrate the compatibility with the TAMA and CDAR features.

J. Expanded Message Detail Recording to Customer Premises

7.14 When an XMDR customer is going to use the CDAR feature to record the account code digits, the MDRD item in the digit interpreter auxiliary block for CDAR must specify where the account code digits should be recorded. Valid entries for this item

are 0, 1, or 2. (See Fig. 1.) The MDRD item is only valid with a value of "1" or "2" if the centrex is collocated with an ETS that has both the SMDR to customer premises and XMDR options.

7.15 The TAMA register seize routine has been modified to inhibit copying CDAR digits into the TAMA register if the CDAR option specifies "XMDR only." Translations for ETS message detail records via the revenue accounting office (RAO) and answer report to a CDAR AMA have been modified to release the CDAR AMA register if the CDAR option specifies "XMDR only." (In the case of ETS-RAO, the call must be an ETS call and XMDR does not apply to ETS calls. In the case of an answer report to a CDAR AMA, if a CDAR AMA for XMDR only is on the call, the call cannot be one of the call types recorded by XMDR because XMDR translations would have caused the release of the register.)

7.16 The CDAR digits are not copied from the CDAR AMA into an ETS SMDR or XMDR AMA register.

8. RESTRICTION CAPABILITY

8.01 Since access to the CDAR feature is offered on a per group basis via the digit interpreter table, restrictive treatment codes can be used on individual members of the group. This can prevent these members from dialing the CDAR access code and gaining entry to the CDAR feature. If the attendant has the Attendant Control of Trunk Group Access (ACOF) feature or the Selective Customer Control of Facilities (SCCOF) feature, restrictive action to the CDAR feature could occur.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 Figure 5 illustrates the procedure for incorporating the CDAR feature into the system for a Centrex/ESSX-1 customer. For more detailed information on addition, deletion, and/or changing of this feature's capability, refer to references in Part 18A. Refer to Part 13 for testing information.

9.02 No special parameter set cards are required.
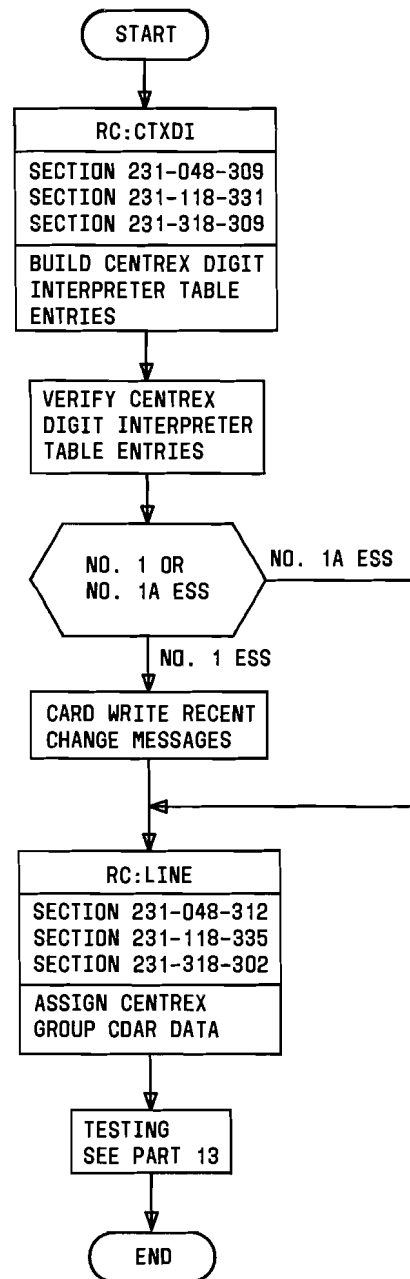
10. HARDWARE REQUIREMENTS

10.01 Not applicable.

Fig. 5—CDAR Installation and Growth Procedures

11. SOFTWARE REQUIREMENTS

MEMORY

A. No. 1 ESS

Fixed

11.01 The *generic program base (program store)* memory required whether or not the CDAR feature is used is approximately 545 words.

Conditional

11.02 The *call store* memory required when CDAR is activated is 13-word AMA registers, 19-word ORs, and 19-word IRs. The register quantities require engineering consideration prior to activating the CDAR feature. Set card values of NAM and NOR are used to indicate the quantity of the above call registers. See references C(2) and C(4) in Part 18.

Variable

11.03 The *translations (program store)* memory required when the CDAR feature is applied is a 3-word digit interpreter auxiliary block for each assigned access code.

B. No. 1A ESS

Fixed

11.04 The *generic program (program store, file store)* memory required whether or not the CDAR feature is used is approximately 763 words.

Conditional

11.05 The *call store (duplicated call store)* memory required when the CDAR feature is activated is 13-word AMA registers, 19-word ORs, and 19-word IRs. Engineering consideration to quantity of the above registers is required. Set cards NAM and NOR indicate quantities of AMA registers, ORs, and IRs. See references C(3) and C(7) in Part 18.

Variable

11.06 The *translations (unduplicated call store, file store)* memory required when the CDAR feature is applied is a 3-word digit interpreter auxiliary block for each assigned access code.

REAL TIME IMPACT

A. NO. 1 ESS

11.07 Approximately 9000 cycles are required per use of CDAR. The cycle time for the No. 1 ESS is 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 program.

B. No. 1A ESS

11.08 Approximately 18,000 cycles are required per use of CDAR. The cycle time for the No. 1A ESS is 0.7 microsecond.

12. DATA ASSIGNMENTS AND RECORDS

TRANSLATION FORMS

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

(a) *ESS 1107—Supplementary Information Record:* This form inputs the following information in the digit interpreter auxiliary block:

(1) A record of which digits in the train of account number digits that are used in the AMA record output. A check is placed in the box corresponding to the dialed account number digit if it is to be saved.

(2) The routing access code digits (≤ 3)—These digits are translated after the account number has been collected and normal actions follow.

(b) *ESS 1109—Centrex Group Record:* This form provides records of the centrex access codes which are used to initiate a CDAR request (DTYP=5, STYP=22, SSTYP=2). Also, two items in the digit interpreter auxiliary block are recorded in this form:

(1) NADE—This is the total number of account number digits dialed by the user.

(2) INDAB—This allows the attendant to make an AMA record of an account number for a call that is to be extended to a centrex facility.

RECENT CHANGES

12.02 The following recent change message format is affected by the CDAR feature:

Message	Function
RC:CTXDI	Builds centrex digit interpreter table entries for CDAR using keywords NADE, SAVE, INDAB, AAC, and OPT. For further details refer to A(1), A(12), or A(16) in Part 18.

13. TESTING

13.01 Testing of the CDAR feature can be done by the following method:

(a) Type the VFY-XDGNT input message to verify the centrex digit interpreter table entry for the CDAR access code. The system response for this input is a TR18 output message.

(b) From a centrex line or attendant with access to the CDAR access code used in the VFY-XDGNT input message, make a CDAR call by dialing the CDAR access code, the account code digits, any routing access code required, and finally, the destination address digits (must result in a timed AMA record). The resulting AMA entry for the call should be identical to that of a normal call made to the destination with the specified account digits in the extended data field.

13.02 For details of input and output messages, see references listed in Part 18B.

14. OTHER PLANNING TOPICS

14.01 Not applicable.

ADMINISTRATION

15. MEASUREMENTS

15.01 Not applicable.

16. CHARGING

AUTOMATIC MESSAGE ACCOUNTING

16.01 The actual charging of the call by the OTC is not affected by the CDAR feature. On calls that have a timed AMA record being made against the CDAR user, the account number is added to the AMA record in the extended data field. On calls using the CDAR feature that do not fit into the above category, a type 01 AMA entry marked sample—no charge is made against the CDAR user with the account number in the extended data field. For these calls, the called party field can contain one of two types of items: (1) a station DN or a tie trunk access code if the attendant extended an inward directed call to one of those entities by using the CDAR feature or (2) seven zeros which implies the CDAR feature was used when it should not have been used.

16.02 As the data is placed on the AMA magnetic tape, it establishes a format dependent on call type. Table A shows the AMA format for a CDAR call type 01 as an example. Formats of other entry types may be found in reference A(14) or A(17) in Part 18.

UNIFORM SERVICE ORDER CODES (USOCs)

16.03 For the proper USOCs, see the AT&T USOC Manual.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 Not applicable.

18. REFERENCES

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

A. Bell System Practices

(1) Section 231-048-309—CTXCB, CTXDI, CTXEXR, CXDICH, DITABS, DLG, FLXDG, FLXRD, FLXRS Centrex CO/ESSX-1 Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(2) Section 231-048-312—ACT, CFV, LINE, MLHG, MOVE, MPTY, OBS, SCLIST, SIMFAC, TNESN, TWOPTY, and VSS Line Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(3) Section 231-090-074—Feature Document— Call Forwarding Variable Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(4) Section 231-090-075—Feature Document—Call Forwarding Busy Line/Call Forwarding Don't Answer Features—2-Wire No. 1 and No. 1A Electronic Switching Systems

(5) Section 231-090-142—Feature Document—Flexible Route Selection (FRS) Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(6) Section 231-090-154—Feature Document—Electronic Tandem Switching (ETS) Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(7) Section 231-090-166—Feature Document—Station Message Detail Recording To Customer Premises—Electronic Tandem Switching (ETS)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(8) Section 231-090-273—Feature Document—Outward Wide Area Telecommunications Service Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(9) Section 231-090-321—Feature Document—Toll Diversion to Attendant (TOLD)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(10) Section 231-090-401—Feature Document—Speed Calling Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(11) Section 231-090-417—Feature Document—Message Detail Recording on Tie Trunks Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(12) Section 231-118-331—Centrex/CO/ ESSX-1 Recent Change Procedures for CTXCB, CTXDI, CTXEXR, CXDICH, DITABS, DLG, FLXDG, FLXRD, and FLXRS (CTX-6 through 1E5 Generic Programs)—2-Wire No. 1 Electronic Switching System

(13) Section 231-118-335—Line Recent Change Procedures—For LINE, TWOPTY, MPTY, SCLIST, MLHG, ACT, CFV, OBS, and SIMFAC—1E4 and 1E5 Generic Programs—2-Wire No. 1 Electronic Switching System

(14) Section 231-190-063—Feature Document—Automatic Message Accounting—2-Wire No. 1 Electronic Switching System

(15) Section 231-318-302—Line Recent Change Procedures—For LINE, TWOPTY, MPTY, SCLIST, MLHG, ACT, CFV, OBS, and SIMFAC—1AE4 and 1AE5 Generic Programs—2-Wire No. 1A Electronic Switching System

(16) Section 231-318-309—Centrex CO/ESSX-1 Recent Change Procedures for CTXCB, CTXDI, CTXEXR, CXDICH, DITABS, DLG, FLXDG, FLXRD, and FLXRS (Through 1AE5 Generic Programs)—2-Wire No. 1A Electronic Switching System

(17) Section 231-390-063—Feature Document—Automatic Message Accounting—2-Wire No. 1A 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 Manaul 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) Office Parameter Specification PA-6A001—No. 1A Electronic Switching System—2-Wire

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

(5) Translation Output Configuration PA-591003—No. 1 Electronic Switching System 2-Wire

(6) Translation Output Configuration PA-6A002—No. 1A Electronic Switching System—2-Wire

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

(8) GL 76-01-130—No. 1 ESS Centrex-CO Optional Features for Automating Attendant Features

(9) BISP 759-100-100—Subject Index—Central Office Equipment Engineering System

(COEES)

(10) BISP 759-100-100—General Description—Central Office Equipment Engineering System (COEES).

TABLE A

CDAR AMA FORMAT
TYPE 01 CALL

DATA	NO. OF DIGITS	
Start of Entry	1	
Type of Entry (01)	2	
Information Digits	2	Data Group A
Service Features	2	
Connect Time	8	
1 Noncheck Dummy Character (NCD)		
7-Digit Connect Time		
Calling Number	7	Data Group B
Disconnect Time	8	Data Group C
1-Digit Midnights Passed		
7-Digit Disconnect Time		
Called Number	10	Data Group D
Entry Extender (Y)	1	
Optional Data Groups Indicator (20)	2	Data Group M
U-Group Indicator (00042)	5	Data Group P
Customer Accounting Code	8	Data Group U2
Customer Identification (CID)	4	Data Group U40
	60	