

**TOLL DIVERSION TO ATTENDANT  
FEATURE DOCUMENT  
1 AND 1A "ESS\*" SWITCH**

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**INTRODUCTION**

**1. GENERAL INFORMATION**

**SCOPE**

1.01 This practice describes the Toll Diversion to Attendant (TOLD) feature for the 1 or 1A ESS switch.

**REASON FOR REISSUE**

1.02 Revision arrows are used to emphasize significant changes. This practice is reissued for the following reasons:

- (a) To provide coverage for the Carrier Interconnect (CI) feature
- (b) To delete references to inactive generic programs

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(c) To make minor corrections.

## FEATURE AVAILABILITY

**1.03** The TOLD feature is available in all active generic programs.

**1.04** The CI feature is an optional feature group initially available with the 1E8 (1ESS switch) and 1AE8 (1A ESS switch) generic programs.

## 2. DEFINITION/BACKGROUND

### DEFINITION

**2.01** With the *Toll Diversion to Attendant (TOLD)* feature, a toll call placed from a toll or code restricted centrex station is intercepted and routed to the attendant.

### BACKGROUND

**2.02** The TOLD feature applies to calls such as direct distance dialing, message rate service, and code restricted calls originated from a centrex station that has been assigned some or total restriction on its calling ability.

**2.03** Code restriction denies selected station lines completion of outgoing exchange network calls to selected office codes, area codes, and inter-LATA (local access and transport area) codes.

**2.04** Toll restriction, a limited form of code restriction, permits station users to access the local central office and to dial local service area calls but prevents completion of toll calls or calls to the toll operator without the assistance of the attendant.

**2.05** The TOLD feature provides the capability of diverting the calling station to the centrex group 'dial 0' attendant rather than connecting to reorder or to an announcement. Automatic diversion to the attendant allows the desired call to be properly handled without having to receive reorder or an announcement, go on-hook, and then initiate a call to the attendant. The TOLD feature minimizes system time and equipment usage to process a toll diverted (restricted) call to completion.

**2.06** For the CI feature, code restriction was extended to inter-LATA codes. Implementation

of the inter-LATA carrier code restriction is the same as office and area code restriction.

## DESCRIPTION

### 3. USER PERSPECTIVE

#### CUSTOMER

**3.01** The TOLD feature affects only centrex line originated Message Telecommunications System (MTS) toll calls. Calls over a nonrestricted access trunk (eg, tie trunk) are not toll restricted. If a user places an outgoing call to a *directory number (DN)* (intraoffice, interoffice, 3-digit service code) or inter-LATA carrier code (10XXX) that is restricted by direct dialing, the call is intercepted and routed to the centrex group "dial 0" attendant.

#### TELEPHONE COMPANY

**3.02** Not applicable.

### 4. SYSTEM OPERATION

#### HARDWARE

**4.01** Not applicable.

#### OFFICE DATA STRUCTURES

##### A. Translations

**4.02** No unique translations are required for this feature. The TOLD feature relies on a combination of existing translations contained in the line equipment number (LEN) translations, rate and route translations, and the digit interpreter table translations for the centrex group.

**4.03** Each line is associated with a chart column. The chart column is obtained from the line equipment class 2 (LENCL 2) word. Based on the chart column and the first three or six digits dialed, screening and routing information is obtained in the form of the call indicator word (CIW) and supplementary call indicator word (SCIW).

**4.04** Standard call screening (using the line's chart column, rate center, and the dialed digits) is used to identify toll calls that are to be toll diverted. Thus a line equipment number (LEN), which has toll restrictions, must use a chart column other than the

chart column(s) used for lines that are not toll restricted. This may require a LEN auxiliary block; however, if several centrex group lines have similar toll restrictions, it may be possible (and advantageous) to use an abbreviated code.

**4.05** The codes which are toll restricted must yield (via the standard screening process) a SCIW which is contained in the chart class column table. The SCIW (Fig. 1) contains the treatment indicator (TRI). Toll diversion for a centrex line assigned the TOLD feature is indicated when TRI = 1.

**4.06** The digit 0 slot of the first centrex digit interpreter table (contained in the centrex common block) must contain an attendant DN (data type [DTYP] 6) or a timing entry (DTYP 1). The DTYP 1 and DTYP 6 words are shown in Fig. 2.

(1) The DTYP 1 word is a timing entry which contains the address of the next digit interpreter table. The DTYP 7 word provides critical timing (4 to 6 seconds) for the next digit after a variable number of digits are received.

(2) If a timing entry (DTYP 1) is used in the digit 0 slot of the first digit interpreter table, the digit 12 slot (end of timing) in the digit interpreter table pointed to by the DTYP 1 entry must contain a DTYP 6 entry.

(3) The DTYP 6 entry is used for routing calls to the attendant and contains the "dial 0" DN. The DTYP 6 entry also contains the override access restriction (OAR) item. The set OAR allows all stations, including fully restricted stations (originating major class = 16), to reach the "dial 0" attendant.

**B. Parameters/Call Store**

**4.07** The TOLD feature does not require any unique parameter words, set cards, registers, or call store areas. An originating register is used. A conference register is used if required.

**FEATURE OPERATION**

**4.08** A feature flow diagram of the operation of the TOLD feature is shown in Fig. 3.

**4.09** In centrex-type originating calls, all registers except the originating register (OR) and, if used, a conference register is released. The call is then treated as a "dial 0" call. Digit 0 is generated and stored in the OR; the digit count is reset to 1. The originating station call is routed to the attendant DN associated with digit 0 in the centrex digit interpreter tables.

**4.10** Calls from stations marked for toll diversion will be allowed to complete if the call is origi-

SCIW TYPE 1											
23	22	21	20	16	15	5	4	2	1	0	
TRI			CHARGE INDEX					PREFIX			

NOTE:  
1. BIT 23 EXISTS IN 1A "ESS" SWITCH ONLY.

LEGEND:

- PREFIX - 0 AND 1 DIRECT DISTANCE DIALING PREFIX
- = 000 1 PERMITTED 0 NOT PERMITTED
- = 001 NEITHER PERMITTED
- = 010 BOTH PERMITTED
- = 011 0 PERMITTED 1 NOT PERMITTED
- = 100 1 MANDATORY 0 NOT PERMITTED
- = 110 1 MANDATORY 0 PERMITTED
- = 111 1 NOT PERMITTED 0 MANDATORY

TRI - TREATMENT INDICATOR = 01 FOR BUSINESS

Fig. 1—SCIW for Toll Diversion

DATA TYPE 1 ENTRY (DTYP - 001)

23	22	20	19													0					
DTYP				ADDRESS OF NEXT INTERPRETER TABLE																	

DATA TYPE 6 ENTRY (DTYP - 110)

23	22	20	19	18	17	16													0				
DTYP				OAR		DIRECTORY NUMBER																	

NOTES:

1. BIT 23 EXISTS IN 1A "ESS" SWITCH ONLY.
2. DATA TYPE 1 IS USED ONLY FOR TIMING WHEN A TIMING CONFLICT CAN OCCUR.

LEGEND:

- DTYP - DATA TYPE
- OAR - OVERRIDE ACCESS RESTRICTIONS. WHEN OAR = 1, ALL ATTENDANT ACCESS RESTRICTED CALL TERMINATE TO ATTENDANT

Fig. 2—Centrex Digit Interpreter Table Entries Used With TOLD

nated through a centrex group attendant position as determined by the attendant originating major class. The centrex group attendant position may be equipped with any type of console used for either the 50A or 51A Customer Premises System (CPS).

**CHARACTERISTICS**

**5. FEATURE ASSIGNMENT**

5.01 The TOLD feature is provided on a per line basis.

**6. LIMITATIONS**

6.01 When a call is toll diverted to an attendant console, no special *call indicator lamp (CIL)* will be lighted on the console to indicate toll diversion. Since the toll diverted call is regenerated as a "dial 0" call, the CIL associated with regular "dial 0" calls will be lighted. However, if intragroup calls to the attendant require a code other than 0 (eg, extension 3091), two different CILs could be lighted, one for regular calls and one for toll diverted calls.

6.02 When arranging the dialing pattern for a centrex group using the TOLD feature, the digit 0 slot in the first level centrex digit interpreter table (contained in the centrex common block) must contain either an attendant DN entry (DTYP = 6) or a timing entry (DTYP = 1). A timing entry is required only if a conflict can exist involving the digit 0.

6.03 Outgoing MTS toll calls originating from a tie trunk (for local network access) cannot be toll diverted. However, existing means of restricting stations from completing calls over a tie trunk can be used (eg, station being restricted from dialing tie trunk access code). These calls will be intercepted and routed to reorder or to a recorded announcement.

**7. INTERACTIONS**

**STATIC**

7.01 Not applicable.

**DYNAMIC**

7.02 With the TOLD feature, if a customer station user dials a call using a customer dialed ac-

BUSINESS CUSTOMER - CO LINE ORIGINATED "DIAL 9"  
TOLL CALL TO AN INTRA-OFFICE, INTER-OFFICE DN,  
OR 3-DIGIT SERVICE CODE

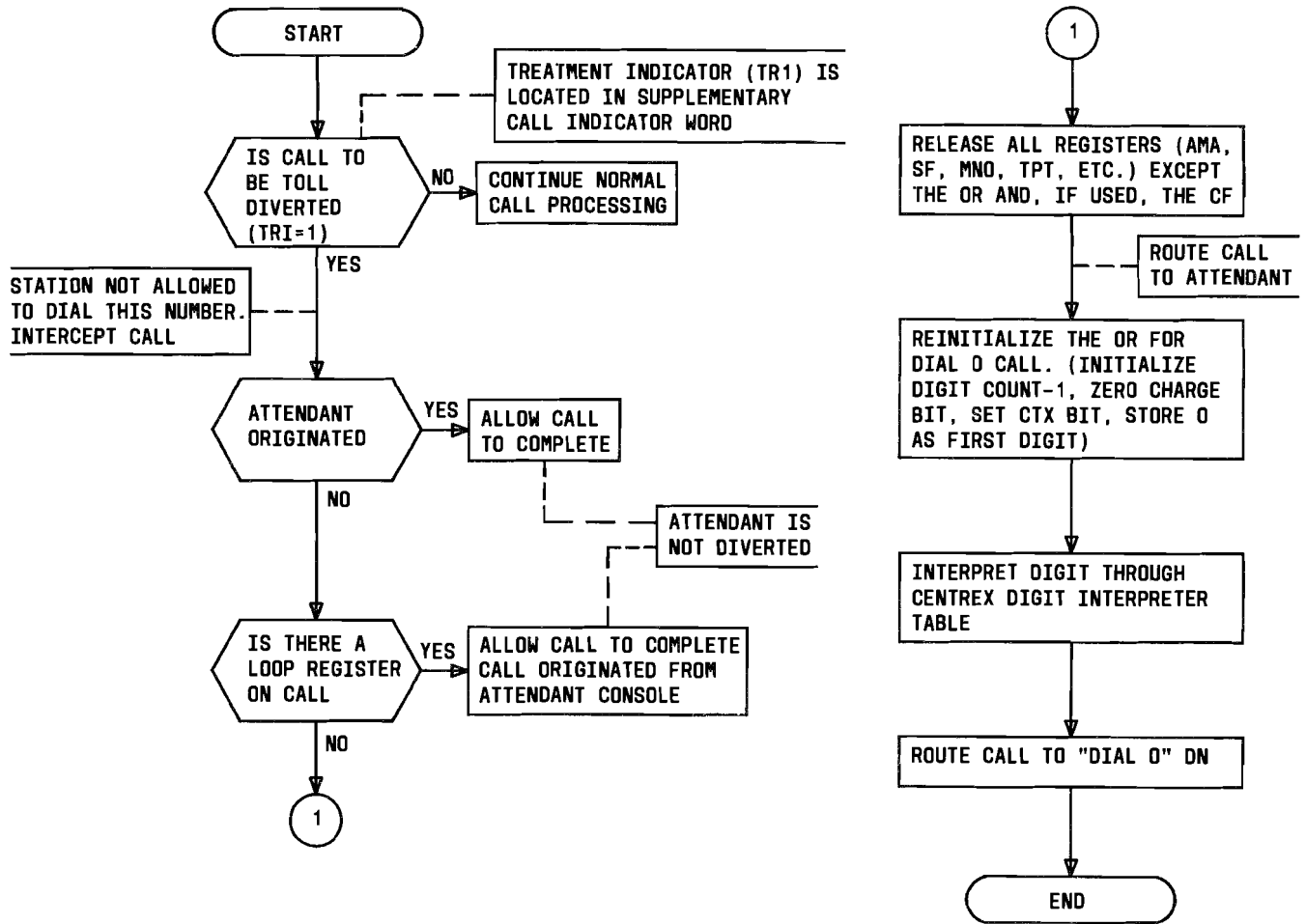


Fig. 3—TOLD Feature Flow Diagram

count recording (CDAR) access code, the call is allowed to continue without being diverted to the attendant.

7.03 The TOLD feature operates with other features applicable to the "dial 0" attendant. For example, attendant calls can be queued. If the toll diverted call is to be completed to a busy attendant position with the queue option, the call is placed on queue. If the queue is full, the originating station receives busy treatment. If "dial 0" attendant position is on night service, the call is routed to the night DN. If the "dial 0" attendant position has calls forwarded (variable), the call is terminated to the remote station.

7.04 If simulated facilities are used on MTS calls from the centrex group, the chart class column of the screening LEN associated with the *simulated facilities group (SFG)* can be used for screening purposes. The LEN expansion will yield the chart class column. This will cause restrictions to be placed on all stations using the SFG for screening.

8. RESTRICTION CAPABILITY

8.01 Not applicable.

## INCORPORATION INTO SYSTEM

### 9. INSTALLATION/ADDITION/DELETION

**9.01** The TOLD feature can be added, changed, or deleted for a line by using the recent change messages described in Part 12. Refer to Part 13 for testing.

### 10. HARDWARE REQUIREMENTS

**10.01** Not applicable.

### 11. SOFTWARE ENGINEERING

#### MEMORY—1A "ESS" SWITCH

**11.01** Software engineering data is provided herein for program stores (PS), unduplicated call stores (UCS), duplicated call stores (DCS), and file stores (FS), or where applicable (with 1AE7 and later), the Attached Processor System (APS).

#### A. Base Generic Program (PS and FS or APS)

**11.02** The TOLD feature requires approximately 80 words of memory whether or not the feature is used.

#### B. Optionally Loaded Feature Packages (PS and FS or APS)

**11.03** Not applicable.

#### C. Parameters (UCS and FS or APS)

**11.04** Not applicable.

#### D. Call Store Requirements (DCS)

**11.05** Not applicable.

#### E. Translations (UCS and FS)

**11.06** A line may require additional translation words if some of its toll calls are to be diverted. For example, if a station's LEN translation could normally be abbreviated, the line may now require a LEN auxiliary block (three words minimum) to contain its individual chart column. If more chart column numbers are used, additional chart column subtranslators are required.

#### MEMORY—1"ESS" SWITCH

#### A. Base Generic Program (PS)

**11.07** The TOLD feature requires approximately 60 words of memory whether or not the feature is used.

#### B. Optionally Loaded Feature Packages (PS)

**11.08** Not applicable.

#### C. Parameters (PS)

**11.09** Not applicable.

#### D. Call Store Requirements

**11.10** Not applicable.

#### E. Translations (PS)

**11.11** A line may require additional translation words if some of its toll calls are to be diverted. For example, if a station's LEN translation could normally be abbreviated, the line may now require a LEN auxiliary block (three words minimum) to contain its individual chart column. If more chart column numbers are used, additional chart column subtranslators are required.

#### REAL TIME IMPACT

**11.12** The TOLD feature requires approximately 450 cycles (1ESS switch) or 900 cycles (1A ESS switch) more than a "dial 0" call and the digit analyzed. If digit 0 is associated with a DTYP = 1 (timing entry), approximately 300 cycles (1ESS switch) or 600 cycles (1A ESS switch) are also added to the call. Additional cycles may be consumed because of features applicable to the attendant DN (call forwarding is active, queuing is required, etc).

**11.13** Cycle time for the 1A ESS is 0.7 microsecond. Cycle times for the 1ESS switch are 5.5 microseconds (no clock speedup) or 5.0 microseconds (10 percent clock speedup).

**12. DATA ASSIGNMENTS AND RECORDS****TRANSLATION FORMS**

**12.01** The following translation forms provide information for the TOLD feature:

(a) **ESS 1109—Centrex Group Record:** This form record provides centrex class information and screening and routing data for a centrex group. This data is used to build the centrex common block of translations which contains the first digit interpreter table. Of the data types (DTYP) contained in the first digit interpreter table, DTYP 1 and DTYP 6 are applicable for TOLD. For "dial 0" attendant calls, the attendant DN and data type entries must be shown.

(b) **ESS 1304—Rate and Route Chart:** This form is used to provide screening instructions for the routing of calls. Every line class code assigned on ESS 1306 is assigned to chart and column on ESS 1304 to provide screening instructions, charging conditions, and routing of calls.

(1) For the TOLD feature, the mnemonic for reverse battery (REVB) must be entered under the special route index for the appropriate screening code of the established chart and column. A treatment indicator equal to 1 indicates REVB. This treatment indicator (TRI = 01) causes the originating line to be diverted to the attendant for the TOLD feature.

(2) The appropriate 3-digit charge index is entered. Charge index 017 is standard in all offices for detail billing. Charge index 000 is standard in all offices for free calls. Charge indexes 001-016 are used for message rate service.

(3) Access codes of 1 and 0 (for direct distance dialing screening) are given as M (mandatory) and P (permissive).

(c) **ESS 1306—Line Class Code Record:** This form is used to assign a class of service for each subscriber line. A unique class code is established for each set of variations in charging, routing, and screening being provided in an office. Associated with a given class code entry are chart class assignments and major class codes. The appropriate chart and column class assignments (es-

established on ESS 1304) and assigned originating and terminating major class are entered.

**RECENT CHANGES**

**12.02** Recent change messages affected by the TOLD feature are as follows:

MESSAGE	FUNCTION
RC:LINE	Recent change messages for lines are used for adding or changing nonmultiline hunt and multiline hunt lines. The centrex major class and chart column data used for TOLD are entered by this RC line message. See reference A(3) in Part 18 for details.
RC:CTXDI	Builds centrex digit interpreter table entries for DTYP = 6 and DTYP = 1. See reference A(2) in Part 18 for details.
RC:CCOL	Used to set TRI bits. See reference A(1) in Part 18 for details.

**13. TESTING**

**13.01** The following TTY input and output messages, referenced in Part 18B, can be used to verify the TOLD feature.

(a) VFY-XDGNT—This input message is used to verify the centrex digit interpreter table entry for TOLD. The system response should be a TR18 output message.

(b) VFY-LEN—This input message is used to verify the TOLD feature for the line. The system response should be a TR03 output message.

**13.02** Test calls are made to verify that TOLD is operating properly. For test calls, no special CIL is lighted on a centrex group attendant console to indicate the call is being diverted.

**14. ADVANCE PLANNING**

**14.01** Not applicable.

## ADMINISTRATION

### 15. MEASUREMENTS

15.01 There are no specific traffic measurements for TOLD. However, existing traffic counts for centrex calls (eg, count for "dial 0" calls to the attendant) are scored.

### 16. CHARGING

#### AUTOMATIC MESSAGE ACCOUNTING

16.01 No charges will be made on a MTS toll call intercepted and routed to the attendant. All registers except the originating register and conference register (if used) are released. If, however, calls to the "dial 0" DN require charging (eg, the "dial 0" DN has call forwarded to a chargeable DN), a new AMA register will be seized and the appropriate charges made.

## SUPPLEMENTARY INFORMATION

### 17. GLOSSARY

17.01 Not applicable.

### 18. REFERENCES

18.01 The following documentation pertains to or is affected by the TOLD feature.

#### A. AT&T Practices

- (1) 231-048-304—ARS, CCOL, CHRGX, DIGTRN, DITABS, DNHT, IDDD, IWSA, NOCNOG, NOGRAC, RATPAT, RI, RLST, TDXD, and

TNDM—Rate and Route Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)

- (2) 231-048-309—CTXCB, CTXD1, CTXEXR, CXDICH, DITABS, DLG, FLXDG, FLXRD, and FLXRS Centrex-CO/ESSX-1 Recent Change Formats—(1E6/1AE6 and 1E7/1AE7 Generic Programs)

- (3) 231-048-312—ESS Service Order RC Formats—1E6 and 1E7 or 1AE6 and 1AE7 Generic Programs

- (4) 231-090-120—Carrier Interconnect Feature

- (5) 231-090-400—Feature Document Single Digit Dialing Feature.

#### B. TTY Input and Output Manuals

- (1) Input Message Manual IM-1A001—1ESS

- (2) Output Message Manual OM-1A001—1 ESS

- (3) Input Message Manual IM-6A001—1A ESS

- (4) Output Message Manual OM-6A001—1A ESS.

#### C. Other Documentation

- (1) Translation Guide—TG-1A

- (2) Translation Output Configuration PA-591003, 1ESS

- (3) Translation Output Configuration PA-6A002, 1A ESS.