FEATURE DOCUMENT

DIVISION OF REVENUE PEG COUNTS FEATURE

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

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INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This document provides information concerning the capabilities and methods of operation of the Division of Revenue Peg Counts (DRPC) feature pertaining to the No. 1 and No. 1A Electronic Switching Systems (ESS).

REASON FOR REISSUE

1.02 This document has been reissued to incorporate 1E5 through 1E7 (No. 1 ESS) and 1AE5 through 1AE7 (No. 1A ESS) generic program capabilities. See paragraphs 1.03 through 1.06. Since this reissue is a general revision which involves conversion to the standard 18-part format, no revision arrows have been used to denote significant changes.

FEATURE AVAILABILITY

1.03 The DRPC feature is available in all active generic programs. Through the 1E5/1AE5 generic programs, the DRPC feature is contained in the base. Effective with the 1E(B5)6, 1E6, 1AE(C4,B5)4, and 1AE6 generic programs, DRPC becomes an optionally loadable feature group and is loaded with feature group 9SDRPC and feature package 9FDRPC.

1.04 Beginning with the 1E5/1AE5 generic programs, additional Common Control Switching Arrangement (CCSA) peg count capabilities concerning the HILO feature are provided for the DRPC feature as follows:

(a) The total through-switched intrastate CCSA (HILO) calls peg count may be provided.

(b) The total through-switched interstate CCSA (HILO) calls peg count may be provided.

1.05 Also beginning with the 1E5 generic program, Enhanced Private Switched Communication Service (EPSCS) peg count capabilities are provided for the DRPC feature as follows (EPSCS is provided in No. 1 ESS only):

(a) The total through-switched intrastate EPSCS calls peg count may be provided.

(b) The total through-switched interstate EPSCS calls peg count may be provided.

1.06 Beginning with the 1E6 and 1AE6 generic programs, Electronic Tandem Switching (ETS) peg count capabilities are provided for the DRPC feature as follows:

(a) Total originating ETS calls peg count

(b) Total outgoing ETS calls peg count

(c) Total through-switched ETS calls peg count.

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The DRPC feature enables No. 1 and No. 1A ESS offices to display various traffic measurements that are required to perform the division of revenue function.

BACKGROUND

2.02 Division of revenue traffic data forms the basis by which interstate toll revenues are shared by Long Lines, the associated companies, and the independent telephone companies. The revenues are shared in proportion to each company's interstate plant investment. The fraction of the total plant investment assignable to interstate is based on the percentage of interstate minutes of use of that plant and varies from month to month.

2.03 This feature provides the capability for counting the number of message network calls orig-

inating from eight different incoming separations categories, each directed toward 16 destination separations categories on a sample basis. These measurements can be accumulated and printed out on the traffic teletypewriter (TTY) or transmitted to the Engineering Administration and Data Acquisition System (EADAS).

2.04 The division of revenue traffic schedule (DRTS) contains daily totals of the following peg counts:

(1) Intraoffice calls

(2) Centrex/ESSX-1 intragroup calls

(3) CCSA intrastate calls

(4) CCSA interstate calls

(5) EPSCS intrastate calls (1E5 and later generic programs)

(6) EPSCS interstate calls (1E5 and later generic programs)

(7) ETS calls (1E6/1AE6 and later generic programs)

(8) Toll attempts and completed toll attempts on selected trunk groups

(9) Division of revenue matrix counts (optional).

DESCRIPTION

3. USER OPERATION

CUSTOMER

3.01 Not applicable.

TELEPHONE COMPANY

3.02 Each month the network administrators in all operating telephone companies are required to collect selected traffic measurement data to perform division of revenue separation studies. This data is collected on a 24-hour basis for a minimum of two to five business days in each dial entity. The data is used to develop subscriber line usage (SLU) and local dial equipment minutes (DEM) traffic factors to separate the interstate investment in subscriber plant and local dial switching equipment.

3.03 When parameter set card B6SRCM is not set to provide a separations matrix in the office, the only optional portion of the DRPC feature pertains to the toll division/completed toll peg counts. These eight counts are included on the DRTS under control of the TDR-TOLL TTY input message. The data contained in these counts is under control of the TDR-UTDP TTY input message. See references B(1) and B(2) in Part 18.

3.04 When parameter set card B6SRCM provides a separations matrix in the office, in addition to the toll division/completed toll peg counts, the 130-word separations matrix may be included under control of the TDR-SEP TTY input message. See references B(1) and B(2) in Part 18.

3.05 Data collection in the separations matrix starts immediately when a TDR-SEP-ALW TTY input message is received and stops when a TDR-SEP-INH TTY input message is received. When collection is taking place, the matrix is printed out in the DRTS and then zeroed at 2:30 a.m.

4. SYSTEM OPERATION

HARDWARE

4.01 Not applicable.

OFFICE DATA STRUCTURES

A. Translations

Line Equipment Number (LEN)

4.02 The CCSA and EPSCS calls, both on-network and off-network, are categorized as either "intrastate" or "interstate." This categorization is based on the originating major class obtained from the LEN (real or pseudo) of the initiating entity on all CCSA and EPSCS calls. There are four originating major classes as follows:

(1) 4FNAL (decimal 28)—network access line—interstate customer (non-Centrex/ESSX-1)

(2) 4FNALS (decimal 33)—network access line—intrastate customer (non-Centrex/ESSX-1)

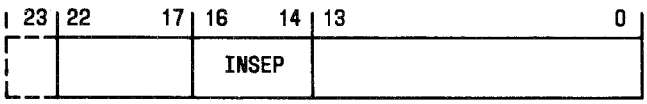
(3) 4FCNAL (decimal 34)—network access line—interstate customer (Centrex/ESSX-1)

(4) 4FCNALS (decimal 35)—network access line—intrastate customer (Centrex/ESSX-1).

4.03 This state/interstate specification by originating major class is reflected in the instructions concerning the ESS 1306 form, Line Class Record, in the Translation Guide TG-1A. This form describes originating major class code assignments. If this translation information is not updated, the CCSA and EPSCS peg counts on the DRTS will be incorrect; otherwise, CCSA and EPSCS traffic division of revenue will function normally.

Incoming Separation of Revenue Assignment (INSEP)

4.04 The INSEP categories are contained in the trunk group number (TGN) supplementary translator which contains a primary translation data word for each TGN in an office. For those trunk groups that carry no direct distance dialing (DDD) network incoming traffic, zero is specified for this item. Figure 1 displays the layout of the TGN supplementary translator primary translation word (PTW).



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

LEGEND:

INSEP - INCOMING SEPARATION OF REVENUE CLASS

Fig. 1—Supplementary Primary Translation Word for Incoming Trunk Group

Destination Separation of Revenue Assignment (DESEP)

4.05 The DESEPs are listed in the auxiliary blocks of appropriate rate and route patterns (RRP). The DESEP item is located in the call identification word 2 (CIW2) of the RRP auxiliary block. Therefore, all RRPs that specify a DESEP require a CIW2. The format of the CIW2, when present, is shown in Fig. 2 and 3.

4.06 The INSEP and DESEP information is required for the proper functioning of the separations matrix counts. This information may be included but is not required if the feature is not being used.

4.07 If the optional screening codes exist, an auxiliary block is built containing the call identification word (CIW) and screening codes (Fig. 3). Otherwise, the CIW is contained in the RRP PTW.

4.08 The RRP translation may contain a CIW2 which is similar to the CIW. This means that 2-word auxiliary blocks (for no screening) and 6-word auxiliary blocks (for screening) are valid. A description follows of the format of the RRP auxiliary blocks.

4.09 The first word of the auxiliary block contains call type 31 (for internal use only) to indicate that the first word of the auxiliary block is the CIW2. In this case, the CIW is in the second word. Figures 2 and 3 display the two types of RRP auxiliary blocks. The second word of the auxiliary block is identical to the format of the CIW when contained in a PTW except that item 22 is 0. The next four words are optional screening codes; if they exist, the SCRI item must be set.

4.10 Translation programs will generate a CIW2 equals 0 if no CIW2 exists in an RRP translation. Therefore, CIW2 need only be built when:

(a) There is nonzero data in bits 5 through 16 of the CIW2.

(b) The CIW contains data in bits 21 through 18 (ie, call type 28), and screening is required.

B. Parameters/Call Store

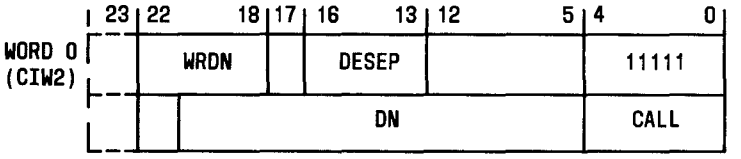
4.11 Parameter word B6SRCM contains the address of a 130-word block of call store used for division of revenue traffic counts. See Fig. 4.

4.12 Parameter set card DRPC allows the DRPC feature to exist in a central office yet not have a separations matrix. As a result, the separation data will not be collected if DRPC equals 0. It is collected if DRPC equals 1.

FEATURE OPERATION

A. General

4.13 The DRPC feature creates a daily traffic schedule upon which are displayed measure-

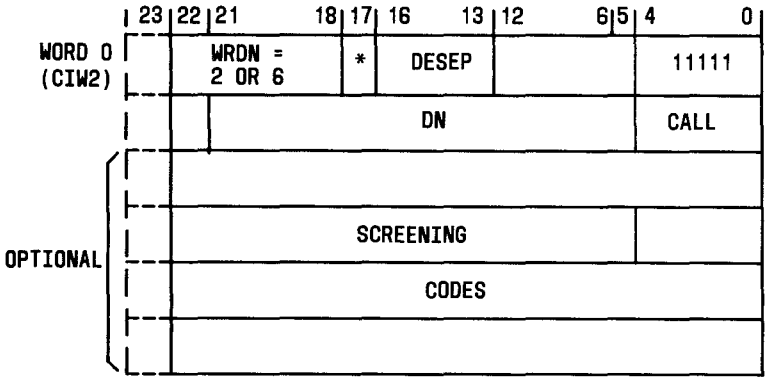


NOTE: BIT 23 EXISTS IN NO. 1A ESS ONLY.

LEGEND:

CALL - CALL TYPE
DESEP - DESTINATION SEPARATION OF REVENUE CLASS
DN - DIRECTORY NUMBER
WRDN - NUMBER OF WORDS IN THE AUXILIARY BLOCK
A TWO-WORD AUXILIARY BLOCK IS BUILT IF
CIW2 WORD IS BUILT BUT NO SCREENING
CODES ARE REQUIRED.

Fig. 2—Two-Word Rate and Route Pattern Auxiliary Block



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

* SCRI

LEGEND:

CALL - CALL TYPE
DESEP - DESTINATION SEPARATION OF REVENUE CLASS
DN - DIRECTORY NUMBER
SCRI - 0 IF NO SCREENING CODES
1 IF SCREENING CODES EXIST
SCREENING CODES - SCR1 THROUGH SCR15
WRDN - NUMBER OF WORDS IN THE AUXILIARY BLOCK.
A 6-WORD AUXILIARY BLOCK IS BUILT IF
SCREENING CODES ARE REQUIRED AND THE
CIW2 WORD WAS BUILT.

Fig. 3—Six-Word Rate and Route Pattern Auxiliary Block

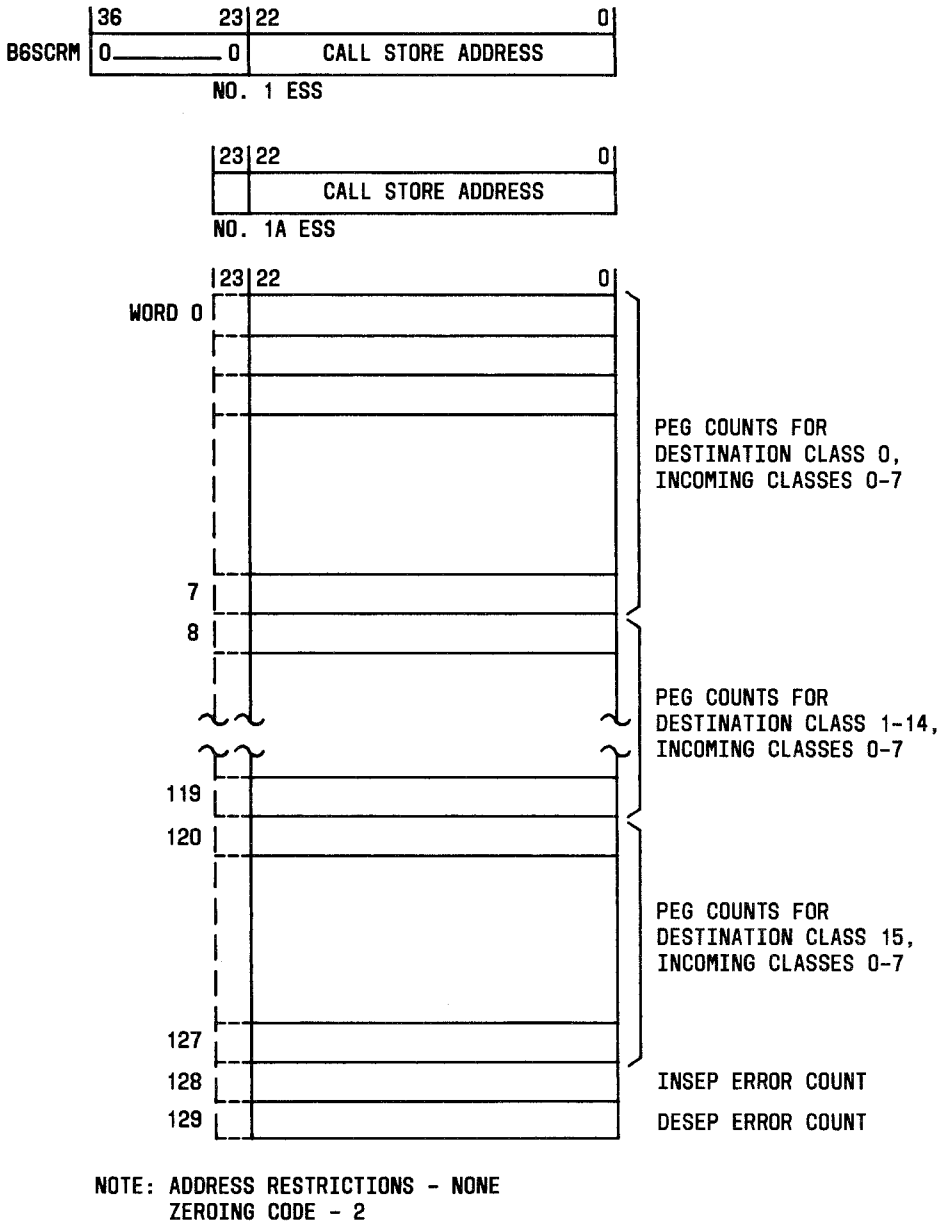


Fig. 4—Layout of Allocated Call Store for the Separations Matrix

ments pertinent to division of revenue. The counts displayed on this schedule describe the following division of revenue classifications:

(a) Originating traffic

(b) Intra-Centrex/ESSX-1 traffic

(c) CCSA traffic

(d) EPSCS traffic (No. 1 ESS only)

(e) ETS traffic

(f) Toll traffic on selected trunk groups

(g) DDD message network traffic.

4.14 The required peg counts are output on a separate daily traffic schedule called the DRTS

and are printed every day at approximately 2:30 a.m. The collection period is unconditionally 2:30 a.m. to 2:30 a.m. Seventeen items appear on this schedule; fifteen of these items appear unconditionally and are to be considered part of the generic program. The remaining two items appear conditionally on the traffic schedule. A description of these items follows.

4.15 The first item on the DRTS is the originating calls peg count. The second item is one count of all intra-Centrex/ESSX-1 call attempts.

4.16 The next eight items on the DRTS classify CCSA traffic. They are:

(a) Interstate CCSA originating

(b) Interstate CCSA outgoing

(c) Interstate CCSA through-switched

(d) Intrastate CCSA originating

(e) Intrastate CCSA outgoing

(f) Intrastate CCSA through-switched

(g) Intrastate CCSA (HILO) through-switched

(h) Interstate CCSA (HILO) through-switched.

4.17 The next two items on the DRTS classify EPSCS traffic. They are (1) intrastate EPSCS through-switched and (2) interstate EPSCS through-switched. (Applies only to No. 1 ESS.)

4.18 The next three items on the DRTS pertain to ETS traffic. These items are:

(a) ETS originating

(b) ETS outgoing

(c) ETS through-switched.

4.19 The toll division/completed toll peg counts constitute the sixteenth item on the DRTS.

4.20 The seventeenth and final item on the DRTS is the separations matrix; it consists of 128 counts plus two error words. The purpose of the separations matrix is to place all public network calls in the system into various classes as required for the division of revenue function. This item is primarily for a toll environment and is optional. Counts appear in the separation only if assigned.

B. Detailed Description

4.21 The ***originating calls peg count*** is a duplicate of the originating calls peg count type measurement code (TMC) 05, equipment group (EGO) 014 which appears on the TC24A daily traffic schedule.

4.22 The ***intra-Centrex/ESSX-1 calls peg count*** is a daily peg count which includes the following types of calls:

(a) Centrex/ESSX-1 station-to-station call attempts

(b) Centrex/ESSX-1 station-to-attendant (dial 0) call attempts

(c) Centrex/ESSX-1 manual station originations.

4.23 For offices that do not serve Centrex/ESSX-1 customers, this item appears on the DRTS as zero.

4.24 The next eight items (items three through ten) concern ***CCSA traffic.*** For division of revenue purposes, the "toll" classification and the "machine-facilities use" classification must be determined on a CCSA call. The "toll" classification indicates whether a particular CCSA call is initiated from a "state" or an "interstate" customer. "State" and "interstate" pertain to the type of tariff under which the CCSA service can be sold. The "machine-facilities-use" classification indicates the type of call being switched; that is, the call is one of the following:

(a) Line to line

(b) Line to trunk

(c) Trunk to trunk.

4.25 A sufficient set of CCSA-related "machine-facilities-use" peg counts is composed of the following three types of counts:

(a) ***Originating CCSA Peg Count:*** This count is made upon receipt of the first digit or upon

recognition of the CCSA access code; thus, it necessarily includes both on-network and off-network call attempts from the following:

(1) All network access line originations

(2) All Centrex/ESSX-1 station dial "8" attempts

(3) All Centrex/ESSX-1 attendant dial "8" attempts.

(b) ***Outgoing CCSA Peg Count:*** This count is made after successful completion of outpulsing and includes both on-network and off-network calls originated by the three sources listed under originating CCSA peg count.

(c) ***Through-Switched CCSA Peg Count:*** This count also is made after successful completion of outpulsing and includes both on-network and off-network calls from the following:

(1) Calls outpulsed over CCSA incoming and 2-way trunks are included in this count.

(2) Calls outpulsed over Centrex/ESSX-1 access tie trunks that dial 8 are also included.

4.26 The three peg counts described in paragraph 4.24 are used to develop counts for the various call types. The line-to-line calls are determined by subtracting the outgoing CCSA peg count from the originating CCSA peg count. The line-to-trunk and trunk-to-trunk calls are obtained directly from the outgoing CCSA peg count and through-switched CCSA peg count registers. The line-to-line and trunk-to-trunk usage must be estimated by multipying the associated calls by the network holding time as measured on the network trunks.

4.27 The eight items concerned with CCSA traffic are:

(a) Interstate CCSA originating

(b) Interstate CCSA outgoing

(c) Interstate CCSA through switched

(d) Intrastate CCSA originating

(e) Intrastate CCSA outgoing

(f) Intrastate CCSA through switched

(g) Interstate CCSA (HILO) through switched (1E5/1AE5 and later generic programs)

(h) Interstate CCSA (HILO) through switched (1E5/1AE5 and later generic programs).

4.28 The tenth and eleventh items on the DRTS concern ***EPSCS traffic.*** As with CCSA calls, the "toll" and "machine-facilities-use" classifications must be determined. This is accomplished in essentially the same manner as described for CCSA calls. The through-switched EPSCS peg count is made after successful completion of outpulsing and includes both on- and off-network calls from the following:

(a) Calls outpulsed over EPSCS incoming and 2-way trunks are included in this count.

(b) Calls outpulsed over Centrex/ESSX-1 access tie trunks that dial 8 are also included.

4.29 The two items concerning EPSCS calls are intrastate EPSCS through-switched calls and interstate EPSCS through-switched calls (1E5 and later generic programs for No. 1 ESS).

4.30 The next three items on the DRTS indicate ***ETS traffic.*** As with CCSA calls, the "machine-facilities use" classification must be determined to indicate the type of call being switched. The call can be one of the following:

(a) Line to line

(b) Line to trunk

(c) Trunk to trunk.

4.31 The following peg counts are recorded on the DRTS for ETS calls.

(a) ***Originating ETS Peg Count:*** This count is made upon receipt of the first digit or upon recognition of the ETS access code; thus, it necessarily includes both on- and off-network call attempts from the following:

(1) All network access line originations

(2) All Centrex/ESSX-1 station dial "8" attempts

(3) All Centrex/ESSX-1 attendant dial "8" attempts.

(b) ***Outgoing ETS Peg Count:*** This count is made after successful completion of outpulsing and includes both on- and off-network calls originated by the three sources listed under originating ETS peg count.

(c) ***Through-Switched ETS Peg Count:*** This count is also made after successful completion of outpulsing and includes both on- and off-network calls from the following:

(1) Calls outpulsed over ETS incoming and 2-way trunks are included in this count.

(2) Calls outpulsed over Centrex/ESSX-1 access tie trunks that dial 8 are also included.

4.32 The ***toll division/completed toll peg counts*** constitute the sixteenth item on the DRTS. This item, which consists of eight counts, is conditional on the DRTS. The conditions are that the appropriate TTY input messages have been received to activate this item. The two messages are TDR-TOLL and TDR-UTDP. [See references B(1) and B(2) in Part 18.]

4.33 The seventeenth and final item on the DRTS is the ***separations matrix,*** which consists of 128 counts plus two error words. For this item to appear on the DRTS, the matrix must exist as determined by the B6SRCM parameter word. The second requirement is that the TTY input message TDR-SEP-ALW has been received or is in effect. See references B(1) and B(2) in Part 18.

4.34 The purpose of the separations matrix is to place all public network calls in the system into various classes as required for the division of revenue function, particularly as applied to toll switching systems. This matrix is 8 columns by 16 rows. Each column represents an INSEP category. Each row represents a DESEP category.

4.35 Every 2-way or incoming trunk group is assigned an INSEP from one to seven. Incoming separation category zero is not allowed for trunk groups and will cause an error message to be printed if encountered by the call processing programs; INSEP zero is used for locally originated calls. Automatic error checking is described in Part 13—TESTING. All lines in the office are automatically defaulted by the call processing programs to be included in INSEP category zero.

4.36 Every nonintraoffice destination code (typically 3- or 6-digit routing codes) is assigned a DESEP from 1 through 15. Destination separation category zero is only allowed for intraoffice destination codes and will cause an error message to be printed if a nonintraoffice destination code is encountered by the call processing programs. Automatic error checking is described in Part 13—TESTING. All intraoffice destination codes are automatically assumed by the call processing programs to be included in DESEP category zero. This is possible because intraoffice destination codes are identified by call type. When the program encounters a destination code with the intraoffice call type (4FITRA=5), DESEP zero is supplied and used by the program. Figure 4 displays the layout of the separations matrix.

4.37 By use of INSEP and DESEP classifications, every incoming and originating DDD call can be categorized for division of revenue purposes. When separations matrix collection is taking place (that is, the TDR-SEP-ALW TTY input message has been received or is in effect and the TDR-SEP-INH TTY input message has not subsequently been received) on every eighth call in the system, the INSEP and DESEP are determined and a peg count is made in the appropriate entry of the matrix; that is, the appropriate entry is incremented by one. This sampling technique is used for better utilization of processor time. To perform the work needed to obtain the INSEP and DESEP and to make the actual peg count, approximately 1 percent additional real time per counted call is required. By sampling one out of eight calls, the average real-time penalty can be lowered to approximately 1/8 of 1 percent per call. When the separations matrix is printed on the DRTS, all the matrix elements are scaled up by eight; so direct comparisons with other peg counts can be made.

4.38 The actual peg count is made as follows for the following types of calls:

(a) On calls to destination codes served by the office, the peg count is made when all digits have been received prior to performing the terminating directory number translation.

(b) On calls to destination codes not served by the office, the peg count is made after successful completion of outpulsing when the call is logically proceeding to the "waiting for answer" state.

(c) On calls to service codes, such as operator codes, the peg count is made at the end-of-digit

analysis. The terminating entity of such calls is a nonoutpulsing trunk. These calls are:

(1) Calls that are served by the office in which the call was made are pegged.

(2) Calls for which digit analysis is completed out of the destination code translator (identified by call type 4FCOMP equals 3, complete without outpulsing) are also pegged.

(d) On calls via a HILO intraprocessor trunk, the peg count for an originating (local-to-toll side of an office) call is made after the toll side to which the digits were successfully transferred completes outpulsing. The peg count for a terminating (toll-to-local side of an office) call is made after the digits are successfully transferred to the local side, but before the completion of the connection.

4.39 Calls counted in the matrix are as follows:

(a) All non-Centrex/ESSX-1 line or trunk-initiated calls

(b) All Centrex/ESSX-1 extension, tie trunk, or attendant dial 9

(c) All Centrex/ESSX-1 extension, tie trunk, or attendant Wide Area Telecommunications System (WATS) access

(d) All Centrex/ESSX-1 extension, tie trunk, or attendant flexible route selection access which either goes WATS or overflows to the DDD network.

4.40 Calls to 10X type codes are generally routed directly out of the destination code translation to a nonoutpulsing trunk group. Thus, they are counted in the matrix just as calls to service codes are counted. A separate DESEP category should be used for the classification of such test codes. However, not all test codes can be as easily classified because calls to test codes can be handled in two ways in No. 1 and No. 1A ESS. First, they may be handled directly out of a destination code translator in the manner of a service code. Calls to such test codes are commonly called test calls to test trunks. Second, the 3-digit codes can be translated out of the 3-digit translator with call type 4FIDN, which means "expand to a directory number." The directory number is supplied out of the translation. A terminating directory number translation is then done on this directory number which supplies a route index leading to a trunk group with no outpulsing. Calls to such test codes are commonly called test calls to test lines. Using the second method, a count is also made in the separations matrix, but the DESEP classification will be zero since a terminating directory number translation has been performed. Therefore, test calls to test trunks can be separated into a distinct DESEP category, but test calls to test lines cannot be separated from calls to locally served directory numbers.

4.41 The types of calls not counted in the matrix include all DDD network calls or call attempts that do not satisfy any of the conditions listed in paragraph 4.38. This includes calls to invalid destination codes which are given intercept treatment, all non-DDD network calls, unsuccessful call attempts, and miscellaneous services. Examples are:

(a) All purely Centrex/ESSX-1 calls

(b) All Centrex/ESSX-1 special features such as dialed dictation, paging, tandem tie-line calling, etc

(c) All CCSA-, EPSCS-, and ETS-originated calls, ***even those which go off-network*** (thus, onto the public network) via this office's translations

(d) Activations of services such as call-forwarding activation.

4.42 On calls to directory numbers which, in turn are call forwarded, the count in the separations matrix is based on the call to the ***original called directory number;*** the count is not influenced by the call forwarding.

4.43 The DRTS information is provided via two TTY output messages. They are the TDR01 DIV OF REV and the TW02 8-word message. See references B(3) and B(4) in Part 18.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 The DRPC feature is provided on a per office basis.

6. LIMITATIONS

OPERATIONAL

6.01 Separations matrix data will not be collected if parameter DRPC is set to zero. See paragraph 4.12.

ASSIGNMENT

6.02 The size of the separations matrix does not allow for greater than 8 INSEPs or 16 DESEPs.

7. INTERACTIONS

STATIC

7.01 Not applicable.

DYNAMIC

7.02 After a zeroing phase (4, 5, or 6), data collection in the separations matrix automatically is on, assuming that the matrix exists.

7.03 When the EADAS interface package is also loaded and functional in the No. 1 or No. 1A ESS office, the DRTS is not printed; instead, this data comprises data block 65 for EADAS. The EADAS feature must interrogate for this block prior to 2:30 a.m. See references A(3) and A(4) in Part 18.

8. RESTRICTION CAPABILITY

8.01 Not applicable.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 Refer to Fig. 5 for the implementation procedure for the DRPC feature. Refer to Part 13 for testing procedures.

9.02 Through the 1E5 and 1AE5 generic programs, the following set cards are used for the DRPC feature:

(a) The DRPC (Division of Revenue Peg Counts) set card indicates whether or not the separations matrix exists.

(b) The 9FDRPC (Division of Revenue Peg Counts) set card is required for the DRPC feature.

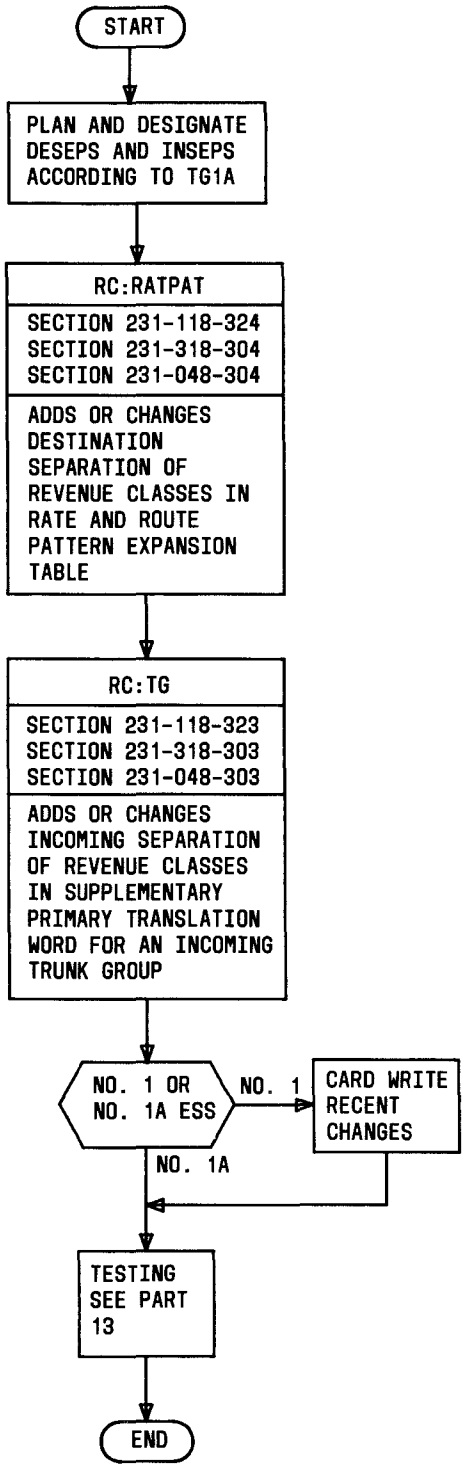


Fig. 5—Procedure for Adding the Division of Revenue Peg Counts Feature

9.03 Effective with the 1E6 and 1AE6 generic programs, the following set cards are used for the DRPC feature:

(a) DRPC—Division of Revenue Peg Counts (indicates whether or not the separations matrix exists)

(b) 9FDRPC—Division of Revenue Peg Counts (required for DRPC feature package)

(c) 9SDRPC—Division of Revenue Peg Count (required for DRPC feature group).

10. HARDWARE REQUIREMENTS

10.01 Not applicable.

11. SOFTWARE REQUIREMENTS

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

MEMORY—NO. 1 ESS

A. Fixed

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

(a) ***Base Generic Program (Program Store):*** Approximately 800 words (1E5 and earlier) or 400 words [1E(B5)6/1E6 and later] are required.

(b) ***Parameters (Program Store):*** One word (B6SCRM) is required.

B. Conditional

11.02 The following memory is required when the DRPC feature is activated.

(a) ***Optionally Loadable Feature Packages (Program Store):*** Effective with 1E(B5)6/1E6 and later generic programs, the DRPC feature package/group requires 428 words loaded (512 total).

(b) ***Call Store:*** These requirements are as follows:

- 130 words for separations matrix
- 1 word for duplicated originating calls peg count
- 2 words for intragroup Centrex/ESSX-1 peg count
- 12 words for CCSA-related peg counts
- 4 words for EPSCS-related peg counts
- 6 words for ETS-related peg counts
- 1 control word.

C. Variable

11.03 The ***translations (program store)*** memory required when the DRPC feature is applied is as follows: one word (shared) in the TGN supplementary auxiliary block for INSEP and two or six words (shared—for nonscreening or screening, respectively) in the RRP auxiliary block.

MEMORY—NO. 1A ESS

A. Fixed

11.04 The following memory is required whether or not the DRPC feature is applied.

(a) ***Base Generic Program (Program Store, File Store):*** Approximately 1000 words (1AE5 and earlier) or 550 [1AE(C4,B5)4/1AE6 and later] are required.

(b) ***Parameters (Unduplicated Call Store, File Store):*** One word (B6SCRM) is required.

B. Conditional

11.05 The following memory is required when the DRPC feature is activated.

(a) ***Optionally Loadable Feature Packages (Program Store, File Store):*** Effective with 1AE(C4,B5)4/1E6 and later generic programs the DRPC feature package/group requires 736 words.

(b) ***Duplicated Call Store:*** These requirements are the same as specified for No. 1 ESS except the EPSCS word costs do not apply. See paragraph 11.02(b).

C. Variable

11.06 Translation memory requirements are the same as No. 1 ESS; see paragraph 11.03. Translations are located in unduplicated call store, file store.

REAL TIME IMPACT

11.07 The DRPC feature requires an average of ten additional cycles per call, including the separations matrix counts when implemented on a No. 1 ESS. On a No. 1A ESS, the time requirement is approximately 20 additional cycles. These figures would be much greater if the sampling procedures were not used.

11.08 Without the separations matrix counts, the additional processor time requirements decrease to four and eight cycles, respectively, for the No. 1 ESS and the No. 1A ESS.

11.09 Cycle time for the No. 1 ESS is 5.5 microseconds (0 percent speedup), or 5.0 microseconds (10 percent speedup). Clock speedup is available with 1E7 and base restarts of the 1E6 generic programs.

11.10 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, detailed in reference C(1) in Part 18, are applicable to the DRPC feature:

- ESS 1216—Trunk Group Supplementary Record
- ESS 1305—Rate and Route Pattern Record
- ESS 1306—Line Class Code Record.

RECENT CHANGES

12.02 Recent change messages required for the DRPC feature which contain unique keywords are as follows.

RC MESSAGES	FUNCTIONS
RC:RATPAT	Adds or changes an existing destination division of revenue class in the RRP expansion table via keyword DESEP.
RC:TG	Adds or changes the incoming division of revenue class in the supplementary PTW for an incoming trunk group via keyword INSEP.

12.03 See references A(9) through A(14) in Part 18 for details.

13. TESTING

13.01 Translation data for the DRPC feature should be verified using the following TTY input messages. See references B(1) through B(4) in Part 18 for detailed information.

(a) Use the VFY-OFFC- input message to verify DESEP in the RRP expansion table. The system response is OK followed by a TR04 output message with translation information.

(b) Use the VFY-TKGN- input message to verify INSEP in the TGN supplementary translator. The system response is OK followed by a TR10 output message with translation information.

13.02 Continual validity checking for INSEP and DESEP is done automatically by the call processing programs. Whenever an error in an INSEP or DESEP is detected by the call processing programs, an 8-word TW02 TTY output message is printed out on the maintenance TTY with the identifying code 35353535 shown as the eighth word. The first seven words contain central control (CC) registers F, J, K, L, X, Y, and Z at the time of the print call. Register J contains the absolute address of the print routine. At that location, in the pertinent program listing which is pident ORDL, ICAL, or TAND, will be found appropriate comments describing the exact translation error found and a listing of the contents of the CC registers F, K, L, X, Y, and Z which will contain information required to correct the problem.

13.03 Whenever an INSEP error is detected, a peg count will be made in word 128 of the matrix; this is the INSEP error count word. Whenever a DESEP error is detected, a peg count will be made in

word 129 of the matrix; this is the DESEP error count word.

13.04 The translation errors which can be detected by the call processing programs are:

(a) There is no TGN supplementary translator in the office. (Thus, there are no INSEPs available.)

(b) An unexpected return (2,J) from the supplementary TGN translation occurs.

(c) A 1-way incoming or 2-way trunk group has been encountered during the processing of a DDD network call which has no INSEP assigned to it.

(d) A destination code has been found for which more than one DESEP category is associated; for example, a 6-digit code (NPA-office code) which has a DESEP associated with both the NPA and the office code.

(e) A nonintraoffice destination code has been found which has no DESEP assigned to it.

13.05 Whenever any separations matrix-related translation error is found, an internal error counter is incremented. Whenever this error counter exceeds 32, no further TW02 messages with identifying code 35353535 are printed; this prevents flooding the maintenance TTY with TW02 output messages when there are significant errors in INSEP/DESEP translations (a likely possiblity when the feature is first implemented in an office). The error counts described above continue to accumulate whether or not printing of these TW02 messages is suppressed. The one exception is the item described in paragraph 13.04(a); if that error should be encountered, the separations matrix peg count collection and printing are immediately turned off.

13.06 As previously mentioned, the system of INSEP and DESEP may contain errors when the feature is first implemented in an office. This is probably due to the need for coordination of data from pertinent translators. When the package and attendant translations are first loaded in an office, a "shakedown" period of the system of INSEP and DESEP translations is required and time must be allocated to debug those translations.

13.07 Specifically, the INSEP and DESEP error counts and associated TW02 error messages should be examined, and corrective measures should be taken accordingly. After 32 INSEP and DESEP error counts are collected, further error message printing is automatically suppressed by the ESS program; however, there are two ways to reinitialize this error print collection.

(a) Every day at 2:30 a.m. the error print counter is automatically recycled by the program (assuming matrix collection is taking place).

(b) Whenever the TDR-SEP-ALW TTY input message is received and matrix collection has been suppressed by a previous TDR-SEP-INH TTY input message, the error print counter is recycled.

13.08 This debugging procedure should be implemented as soon as possible after the translations are loaded into an office after office cutover and should continue until the error count words of the matrix are consistently zero. This procedure assumes that a running office receives a call mix which uses all its translations fairly regularly. When the translations are debugged, the debugging effort will naturally cease but the two error words should always be looked at whenever the matrix is examined.

13.09 The automatic error checking by the call processing programs does not include the capability to insure that DESEPs are unique across multiple nontoll and toll destination code digit translators. This aspect of the integrity of DESEP can be realized by strict adherence to the rules for filling out the record keeping forms. No nonintraoffice destination code may be assigned a zero DESEP, and no destination code may be assigned more than one DESEP. These DESEPs must be explicitly made for every destination code in every DDD-network destination code translator.

14. OTHER PLANNING TOPICS

INSEP

14.01 All 2-way or 1-way incoming trunk groups which carry DDD traffic (except CCSA-, EPSCS-, and ETS-only 2-way or 1-way incoming trunk groups) are to be assigned to one of seven incoming division of revenue classes. Trunk groups which are to be assigned INSEPs include local, tandem, centralized automatic message accounting (CAMA), and toll trunk groups. Also included are

trunk groups of centrex tie trunks from which DDD network calls can be originated (for example, dial "9", WATS, or flexible route selection with the possibility of WATS and/or DDD network access). No CCSA-, EPSCS-, or ETS-only trunk groups, even ones from which calls go off network in the given ESS office, are to be assigned INSEPs. The CCSA-, EPSCS-, or ETS-only trunk groups are identified as those with the centrex type trunk group auxiliary block with the originating major class of the pseudo-LEN 4FNAL (28), 4FNALS (33), 4FCNAL (34), or 4FCNALS (35).

14.02 The rules for assigning INSEPs are as follows:

(a) All lines in the office are automatically considered to be in INSEP category zero by the call processing programs. No explicit assignment can be made.

(b) All 1-way incoming or 2-way trunk groups which may carry DDD traffic are to be assigned among INSEP categories one through seven.

(c) The INSEP category zero is illegal for trunk groups. This implies that the following procedure is required with respect to the assignment of INSEPs to trunk groups.

(1) All 1-way incoming or 2-way trunk groups from which there is any possibility of receiving DDD network traffic (except CCSA, EPSCS, and ETS incoming trunk groups) have to be identified.

(2) Once identified, these trunk groups must be assigned to a nonzero INSEP category.

DESEPs

14.03 Certain dialable DDD network destination codes and toll operator and test codes are to be assigned to one of 15 DESEP classes. These DESEPs will be specified in the auxiliary blocks of appropriate RRPs. A DESEP is optional for the following call types: 3, 4, 6, 7, 10, 15, 23, 24, 25, 26, and 27. A DESEP may not be assigned to any other call type. The following guidelines for DESEPs apply to both 2-wire and HILO networks.

14.04 One unique DESEP must be associated with every dialable destination code (that is, one unique DESEP obtained from the ESS destination code translators). The requirement of a unique DESEP for any given destination code does not adapt to the structures of the No. 1 and No. 1A ESS destination code translators. This uniqueness requirement implies that if a given destination code is received from any line or trunk in the entire office, then the same unique DESEP must be obtained from translations. The problem is that different translation tables are referenced for the same digits dialed, depending on the source from which the digits are dialed. Therefore, a method must be devised to ensure that for each dialable destination code the DESEP obtained for that code is the same for every DDD network destination code translator in a No. 1 ESS or a No. 1A ESS office.

14.05 In order to understand this multiple assignment problem, it is necessary to understand, to some extent, the structure of destination code translations.

Structure of Destination Code Translations and Effect of Structure on Assignments of DESEPs

14.06 The structure of No. 1 ESS and No. 1A ESS destination code translations will be discussed first. The destination code translations have been built around the concept of routing originating traffic (that is, calls initiated by lines). Each line in an office belongs to an entity called a rate center (RAC). Specifically, each LEN is assigned a billing directory number and the number group of the billing directory number is assigned to an RAC. Frequently, all DDD network lines in an office are assigned to one RAC. (Private line network lines will definitely be assigned to different RACs, indicating that private networks have non-DDD network dialing patterns. In this feature, only DDD network lines will be considered.) However, it is possible that the set of DDD network lines will be apportioned among more than one RAC. For example, consider a No. 1 or No. 1A ESS machine that serves customers in two adjacent calling plan areas. The operating company, in this situation, would probably assign lines in each calling plan area to a different RAC. All DDD network 1-way incoming or 2-way trunk groups, except those which are marked trunk group type "toll" and those which have an associated pseudo-LEN, are arbitrarily assigned to RAC number zero; RAC number zero is normally used by at least some DDD network lines in the office. Trunk groups which have an associated pseudo-LEN are assigned to the RAC of the billing directory number of the pseudo-LEN. (In fact, some of these trunk groups may belong to private line networks.)

14.07 Toll-type trunk groups are not a part of this RAC structure. Toll-type trunk groups belong to an entity called a toll digit index (TLDI). Here, the association is direct; that is, a toll trunk group is directly assigned to a TLDI. Again, it is common that all toll trunk groups in an office are assigned to one TLDI. However, it is quite possible that the set of toll trunk groups will be apportioned among more than one TLDI. For example, consider a No. 1 or No. 1A ESS machine which is equipped with incoming DDD access, intertoll, and secondary intertoll trunks. Secondary intertoll and intertoll trunks have essentially similar dialing patterns, and thus all would likely belong to the same TLDI. The DDD access trunks can have much simpler dialing patterns and may well be assigned to a different TLDI.

14.08 The facilities in a No. 1 or No. 1A ESS local/toll switching machine from which destination code digits can be received are lines, nontoll trunk groups with no associated pseudo-LEN, nontoll trunk groups which possess an associated pseudo-LEN, tandem trunk groups, and toll trunk groups. All call-initiating entities in a local/toll No. 1 or No. 1A ESS machine uniquely belong to an RAC or TLDI. A local/toll machine will possess at least one RAC and at least one TLDI. Whenever a call into a machine is initiated from an entity possessing an RAC, the item RAC is used as an index into a translation head table in order to select a subtranslator. The destination code digits received from the originating entity are used as an index into the selected subtranslator to obtain the data needed to complete the call. If the call-initiating entity (necessarily a trunk in a toll trunk group) possesses a TLDI, the item TLDI is used as an index into a different translation head table in order to select a similar type of subtranslator. Figure 6 illustrates this process for an office with two RACs and two TLDIs for the specific destination code 312 (Chicago numbering plan area [NPA]). In order for one DESEP to be uniquely assigned to the dialable destination code 312, this same DESEP value must be uniquely obtainable from all four data blocks that can be referenced from the 312 code.

14.09 Figure 6 also shows that data is obtained from various destination code subtranslators for any given destination code depending on the origin of the call. In general, this data consists of information describing the type of call, the routing of the call, and the type of screening (which is used to determine charging) required. Considerable program store space is saved by obtaining this information via a secondary means known as an RRP. The RRP can be thought of as a data-compressing device. In general, many destination codes share the same call type, routing, and screening information. This data usually occupies more than one program store word. Such destination codes all point to the same RRP, which in turn points to the complete set of call type, routing, and screening information. Figure 7 illustrates this process for an office with two RACs and two TLDIs where the specific codes 223, 556, 791, 283, 579, 624, and 890 all share the same call type, routing, and screening. Within each RAC and TLDI, these codes lead to the same RRP (RRPa, RRPb, RRPc, and RRPd). There is no reason for the four RRPs to be different. For example, these seven codes may all represent office codes physically far removed from this office to which the call type, routing, and screening are the same for both RACs and both TLDIs. In this case, RRPa equals RRPb, and RRPc equals RRPd. It is also possible that RRPa equals RRPb equals RRPc equals RRPd.

14.10 A DESEP is attached to an RRP and not directly to digits received. An RRP, instead of defining three parameters, must now define four parameters: call type, routing, screening, and DESEP. This system of allowing for multiple destination code translators, the elements of which are abbreviations for sets of call disposition parameters, allows for flexibility in setting up efficient sets of destination code translations for different offices with different dialing patterns; it also can result in a very complex set of translators. There are two reasons for this. First, the structures of multiple RAC subtranslators in an office do not have to be identical; likewise, multiple TLDI subtranslators do not have to be identical structures. For example, in one RAC subtranslator, an NPA code may require 6-digit translation to determine final call disposition; whereas, in another RAC subtranslator, the NPA code may be enough to determine final call disposition. Second, the structure of an RAC subtranslator is never identical to that of a TLDI subtranslator. An RAC subtranslator basically has the ability to resolve NXX codes (N stands for digits 2 through 9, and X stands for digits 0 through 9); whereas, a TLDI subtranslator can resolve XXX codes. Furthermore, the variety of digit combinations that can be interpreted via TLDI tables is more comprehensive than that using RAC tables.

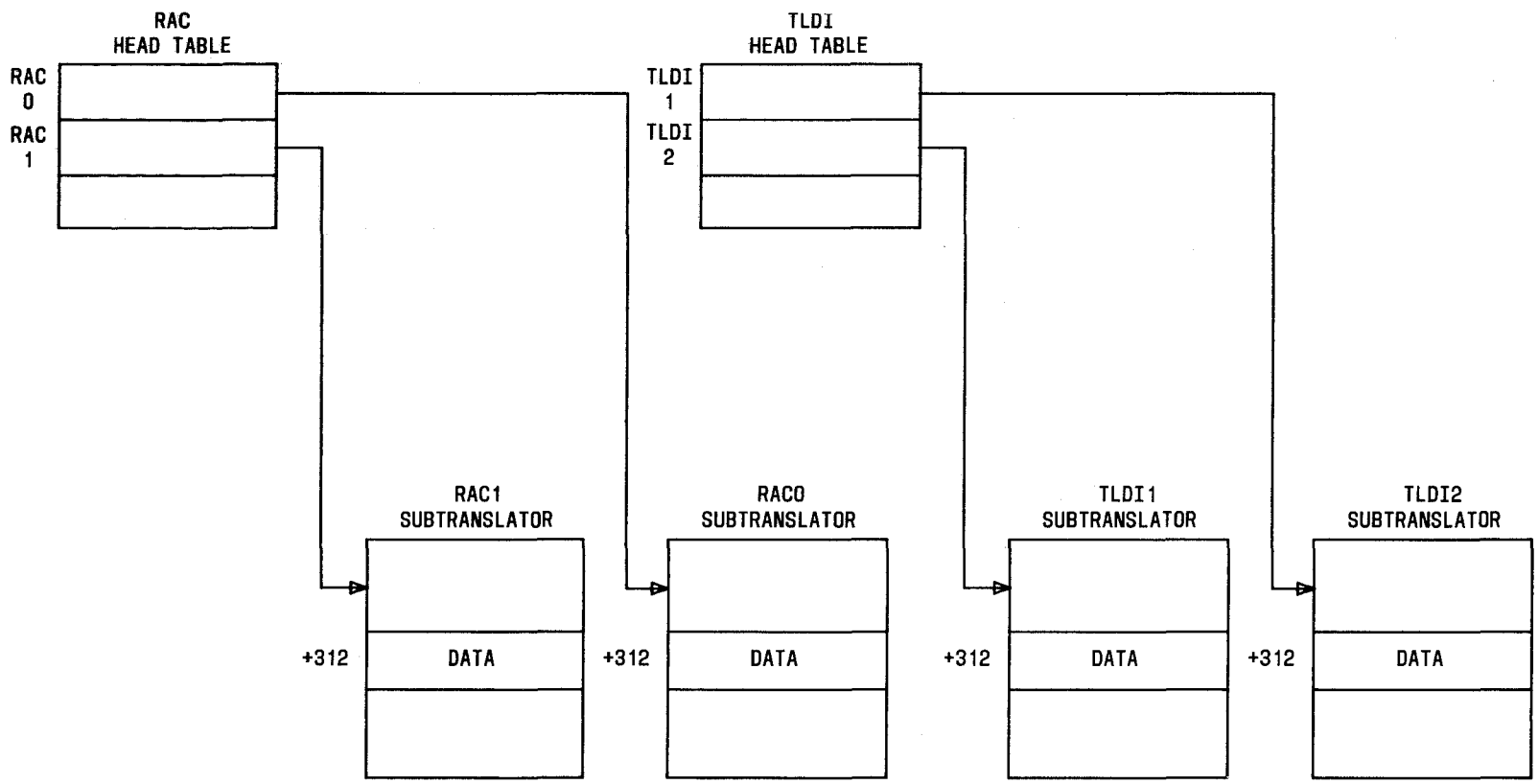
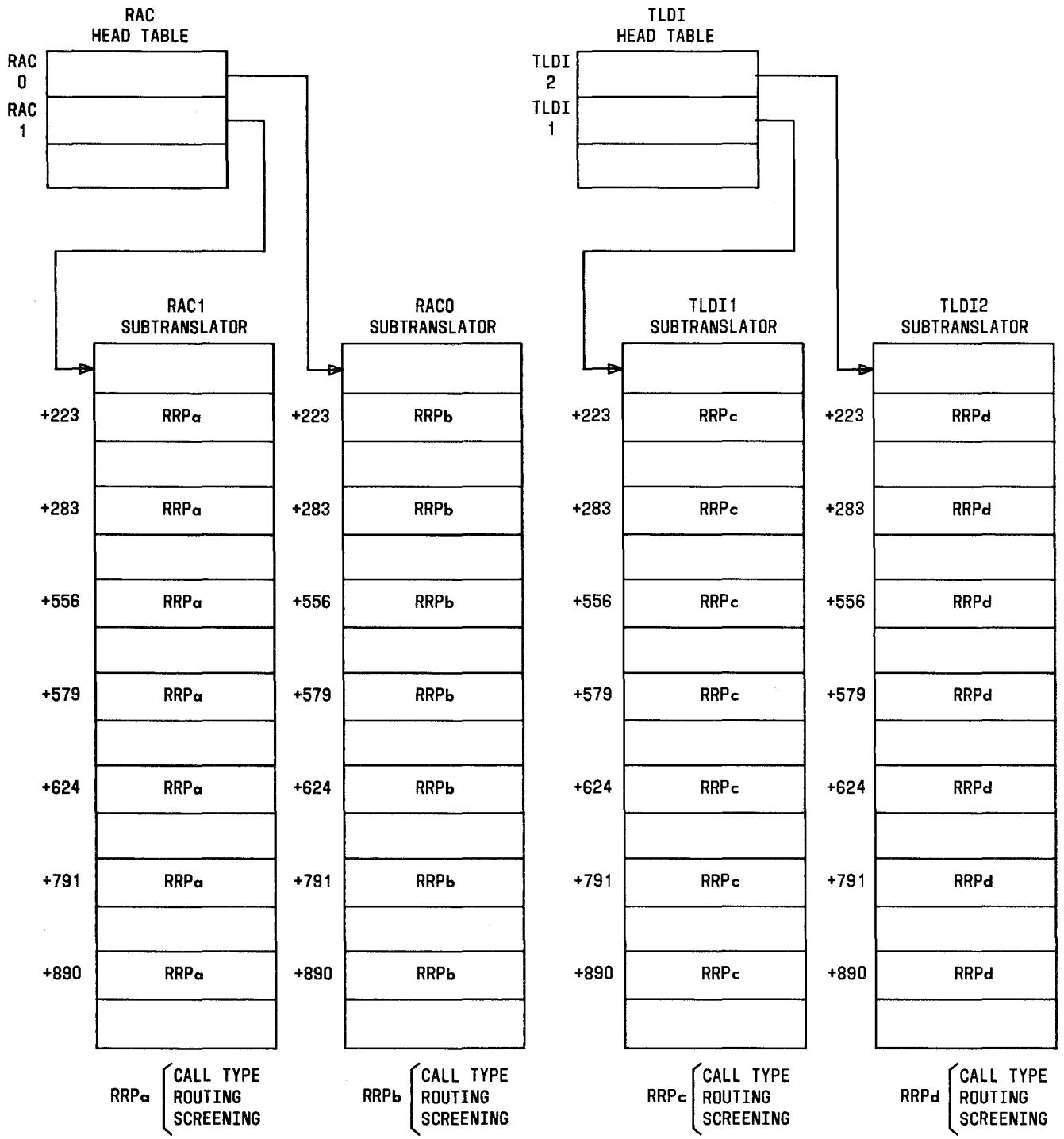


Fig. 6—Interpretation of the Destination Code "312" Via Different Translations Tables Depending on the Origin of the Call



NOTE: DESTINATION CODES 223, 556, 791, 283, 579, 624, AND 890 ALL SHARE THE SAME CALL TYPE, ROUTING, AND SCREENING.

Fig. 7—Codes Leading to One RRP

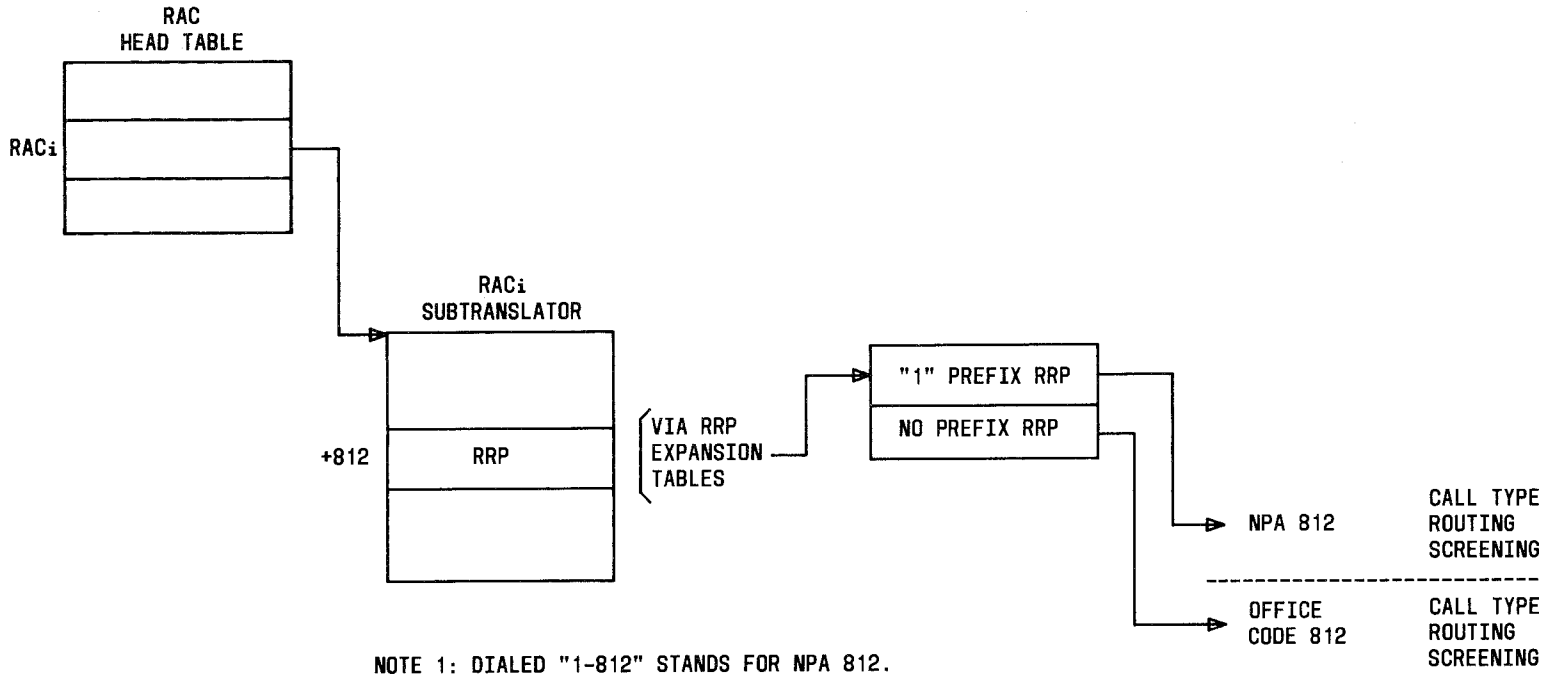
14.11 The following procedure is used to determine call disposition via an RAC table. The first three digits are used to obtain an RRP; hence, obtain final call type, routing, and screening information. (There are a few special cases where less than three digits are used, for example 0, for operator.) This information may indicate that sufficient data is present to dispose of the call or may indicate more information is needed before the call may be disposed. If the information is sufficient, then any remaining digits (such as the last four digits of a directory number numeric) are collected and the call is disposed. If it is not, then more digit information must be collected and examined. More information may be needed either to resolve a conflict code or to perform a 6-digit call disposition analysis. Conflict codes are resolved either by examining the total number of digits received (either 7 or 10), or by receipt or nonreceipt of a "1" or "0" prefix digit, depending on local practices. In such cases, the RRP originally obtained for the NXX code will lead to data specifying that more information is needed. The prefix and/or timing information will be used to select an RRP leading to proper call disposition. Figure 8 illustrates this process for a case where 812 is defined as both an NPA code (Indiana) and an office code, where local practices specify that "1-812" stands for NPA 812 and "812" stands for office code 812.

14.12 If 6-digit analysis is required to determine call disposition, then the data obtained from the RRP of the first three digits will specify this via the call type. The "routing" will consist of an index called a normalized area code (NAC), which points to another subtranslator. This subtranslator is indexed by the next three digits similar to the way in which an RAC selects a subtranslator which is indexed by the first three digits. The data obtained from this second translator is also an RRP, which leads to final call disposition. Figure 9 illustrates this process for 502-336 (Kentucky). The RACs and NACs are used to index the same head table to obtain a digit subtranslator.

14.13 Two of the problems involved in attempting to correlate DESEPs across multiple RACs can now be explained. An RRP defines call type, routing, and screening and must be modified to define call type, routing, screening, and DESEP classification. For an NPA code requiring 6-digit resolution, two RRPs are referenced, one for the first three digits and one for the second three digits. If both RRPs include DESEPs, the possibility of contradictory DESEPs is introduced. In fact, depending on each particular instance, the DESEP belongs to one or the other RRP. Therefore, the DESEP should be optional information attached to an RRP as is screening. (That is, there now can exist RRPs that lead only to call type and routing; no screening is applicable and therefore does not apply.) Figure 10 illustrates various possibilities. Even if the routing, call type, and screening are the same for some NPA code, if the DESEP is not the same for all NXXs in the NPA, then 6-digit translation is required to specify the DESEP. This means that a separate RRP or RRPs and a separate 800 (program store) word foreign area (NAC) subtranslator must be included for the NPA. The extra real time for a 6-digit translation must be taken if it is required to split DESEPs by NXX within an NPA, even if the call type, routing, and screening can be completely determined from the NPA code. This problem with DESEPs may be summed up as the DESEP must be attached to only the appropriate one of the two RRPs associated with an NPA-NXX 6-digit translation setup. This problem occurs within a given RAC.

14.14 Another DESEP problem concerning foreign area translation concerns offices with multiple DDD network RACs. Figure 11 illustrates a contradictory DESEP for the 602 (Arizona) NPA code. Calls to 602-887-XXXX will be counted in DESEP 2 for RAC0-initiated calls but in DESEP 3 for RAC1-initiated calls. This fails the requirement that any DESEP for a given destination code must be unique. This is a good example of cross-RAC/TLDI DESEP misassignments which can be introduced in error.

14.15 In order to describe another RAC-related DESEP misassignment possibility, the process of screening must be examined. To dispose of a call, the call type must be determined, as well as the routing it requires and the way it is to be charged. The RRPs define call type, routing, and screening (for charging purposes). In essence, screening allows for different charging on calls to a given NXX code depending on the origin of the call (specifically, depending on the class of service of the originating line as identified by its chart column, hence, the more formal name, "chart column screening"). Figure 12 illustrates this process. Screening; however, can also be used to alter routing and call type. For example, suppose that a certain group of lines requires 6-digit translation to determine call disposition to an NPA; whereas the rest of the lines require only 3-digit translation. This situation can be handled by placing



NOTE 1: DIALED "1-812" STANDS FOR NPA 812.

NOTE 2: DIALED "812" STANDS FOR OFFICE CODE 812.

Fig. 8—Local Conflict Code Resolution

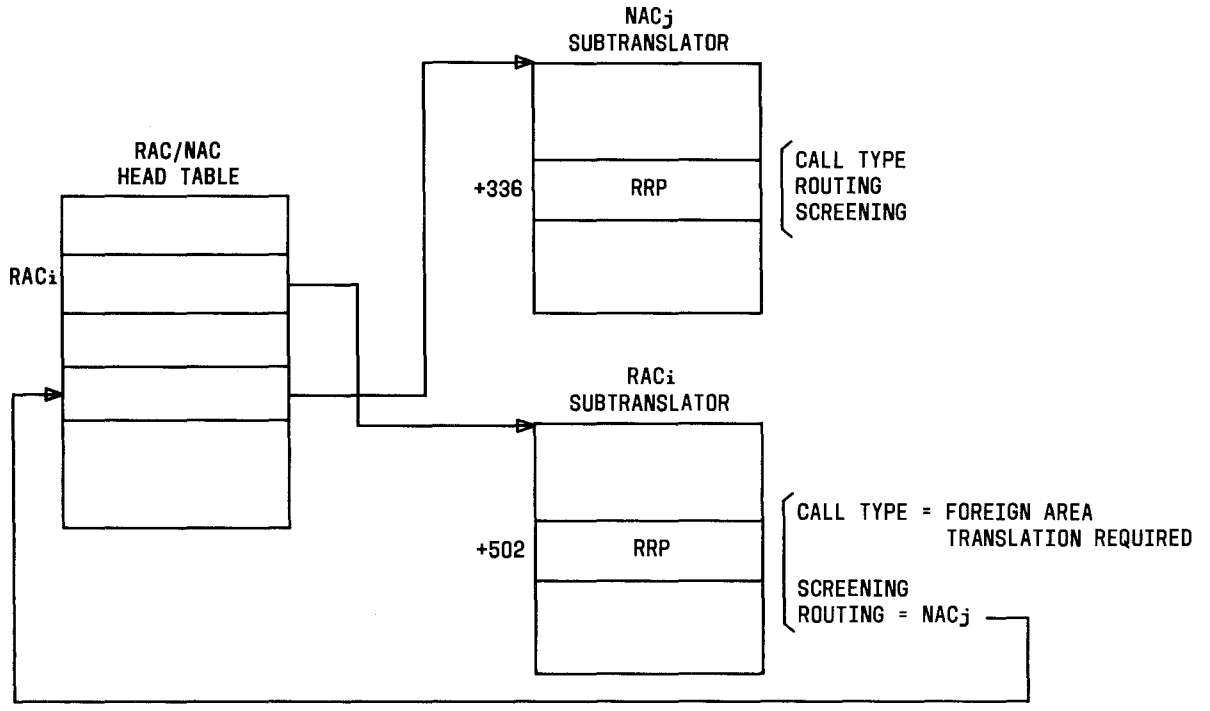


Fig. 9—Six-Digit Translation to Determine Final Call Disposition for "502-336"

NPA CODE SPECIFIES ALL:

NPA ⟶ RRP ⟶ { CALL TYPE, ROUTING, SCREENING, DESEP }

NPA CODE REQUIRES 6-DIGIT TRANSLATION FOR CALL TYPE, ROUTING, AND SCREENING, BUT NOT FOR DESEP ASSIGNMENT:

NPA ⟶ RRP { CALL TYPE = FOREIGN AREA; ROUTING = NAC ⟶ NXX ⟶ RRP; DESEP } { CALL TYPE, ROUTING, SCREENING }

NPA CODE REQUIRES 6-DIGIT TRANSLATION FOR ALL:

NPA ⟹ RRP { CALL TYPE = FOREIGN AREA; ROUTING = NAC ⟶ NXX ⟶ RRP } { CALL TYPE, ROUTING, SCREENING, DESEP REQUIRED FOR EVERY RRP DERIVED FROM EVERY NXX IN THE FOREIGN AREA TRANSLATOR OF THE NPA CODE }

Fig. 10—Possibilities for Specifying DESEP for an NPA Code

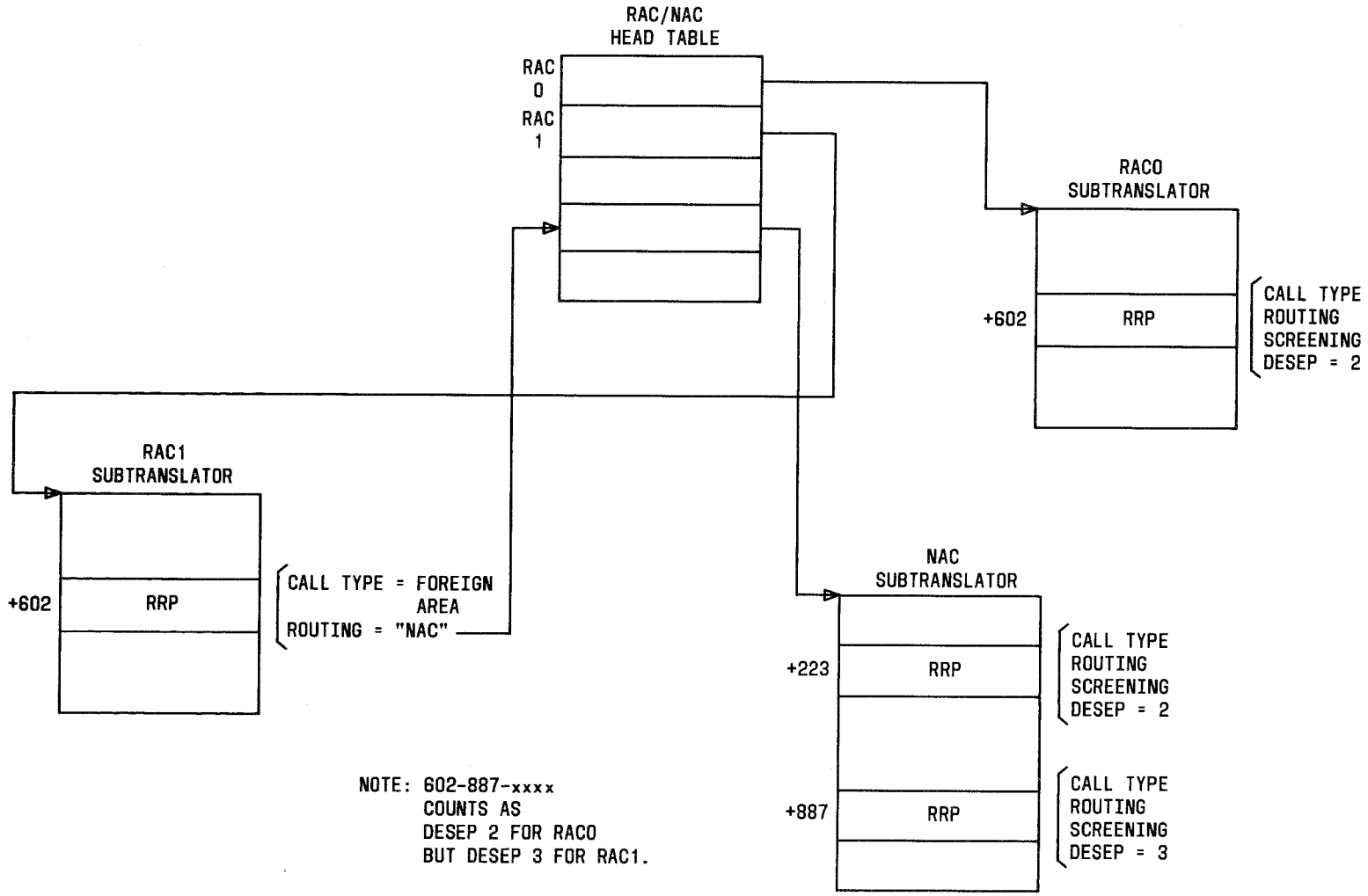


Fig. 11—Example of Contradictory DESEPs Across Two RACs for an NPA Code

the different groups of lines in different RACs, but it can also be handled by specifying call type and routing information in the chart column screening information, which overrides the standard call type and routing. Figure 13 illustrates this situation, which again can result in contradictory DESEPs. The example in Fig. 13 demonstrates the rule that no RRP obtained from an NAC (which in turn is obtained from overridding chart column screening) should include DESEPs.

14.16 Primary consideration has been given to RAC subtranslators in this feature. Local/toll No. 1 and No. 1A ESS offices will be equipped with TLDI-selected toll translation tables. The reason that a different set of destination code translators exists for toll trunks is that a greater variety and combination of digits can be received from such trunks. Simply stated, digit interpretation for toll trunks differs from class 5 type digit interpretation in the following ways:

(a) The XXX codes rather than NXX codes must be interpretable.

(b) A valid string of digits can consist of any number of digits from 3 through 11.

14.17 The mechanism for enabling a No. 1 or No. 1A ESS machine to recognize the various digit combinations consists of the following:

(a) Toll 3-digit translators selected by TLDIs rather than RACs which have an XXX (1000-word) index range rather than an NXX (800-word) index range.

(b) Toll 3-digit foreign area translators selected by toll foreign area indicators (TFAIs) rather than NACs which, likewise, have an XXX (1000-word) rather than an NXX (800-word) index range.

(c) Toll digit-by-digit interpreter tables with a range of up to five digits (digits 4 through 8); these are combined with (d).

(d) A pseudo digit interpreter table called a "timing table," which is indexed by the number of digits received on a call rather than the actual digits.

14.18 The final data obtained from any of these four types of toll destination code digits translation tables is again an RAC, just as is obtained from the nontoll destination code digit translation tables. Just as an RAC digit table derived RRP can lead to further digit translation by leading to an NAC and hence an NXX type foreign area translator, so can a TLDI digit table derived RRP lead to further digit translation by leading to an NAC NXX-type foreign area translator or to a TFAI and hence an XXX-type toll foreign area translator. Specifically, the call type is "toll foreign area," and the route is the listed TFAI. An RRP obtained from a TLDI digit table can also lead to a digit-by-digit or timing table by specifying call type "more toll digits required" and route "toll digit-by-digit index"; a toll digit-by-digit index can also be obtained from a TFAI RRP. This toll digit-by-digit index is used to select a digit interpreter or timing table which is then indexed by digits or by the number of digits to obtain an RRP; this RRP can, in turn, lead to a foreign area translator. Thus, the toll digit translation scheme is a potentially complex scheme, which does not necessarily mimic the nontoll digit translation scheme even for matching NXX codes.

14.19 Figure 14 illustrates the two methods used for resolving a simple NPA code/office code conflict. In the RAC table, the RRP obtained from the dialed-in code is a conflict RRP, which specifies to the call processing programs that the presence or absence of an eighth digit will be used to select among two RRPs. One RRP describes the NPA code meaning of the code; the other RRP describes the office code meaning of the code. It is possible that the NPA-code RRP leads to a foreign area translator. On the other hand, the TLDI table obtained RRP leads to a toll timing table. The timing table is indexed by the number corresponding to the total quantity of digits received in order to finally obtain either the NPA-code RRP or the office-code RRP. Again, the NPA-code RRP may lead to either a TFAI or a nontoll foreign area translator. The DESEP specifications are to be tied to RRPs, and the DESEP must be unique for any destination code. By examining the number of RRPs involved in this example (six, of which four would need DESEPs) and the differing mechanisms from which these RRPs are obtained, it is seen that the necessity of correlating DESEPs across RAC/TLDI digit tables for conflict codes requires care in setting up the affected RRPs.

14.20 A more complex example involving conflict codes would include one RAC, one TLDI for intertoll and secondary intertoll trunks, and one

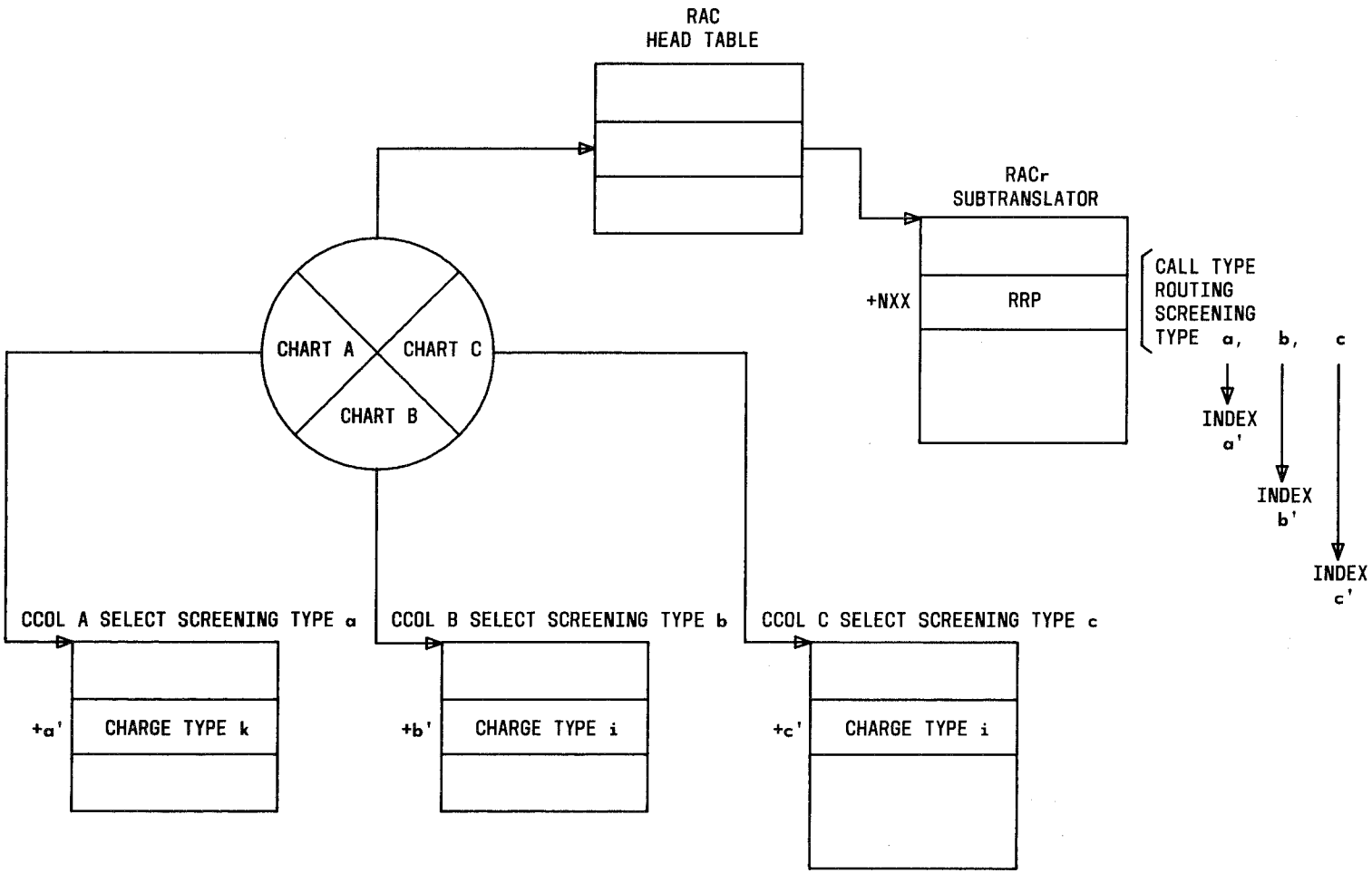


Fig. 12—Effect of Chart Column Screening on Charging

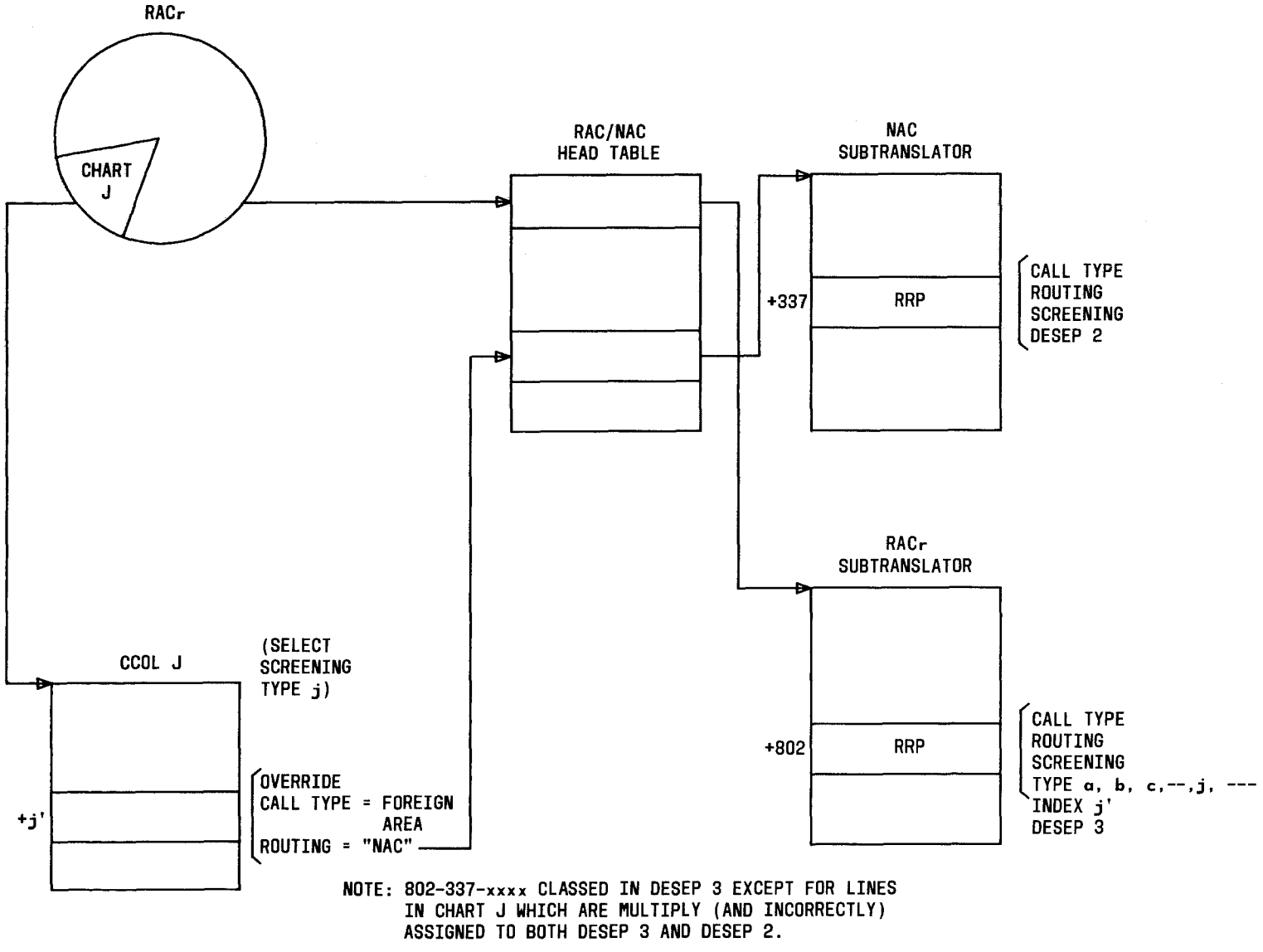
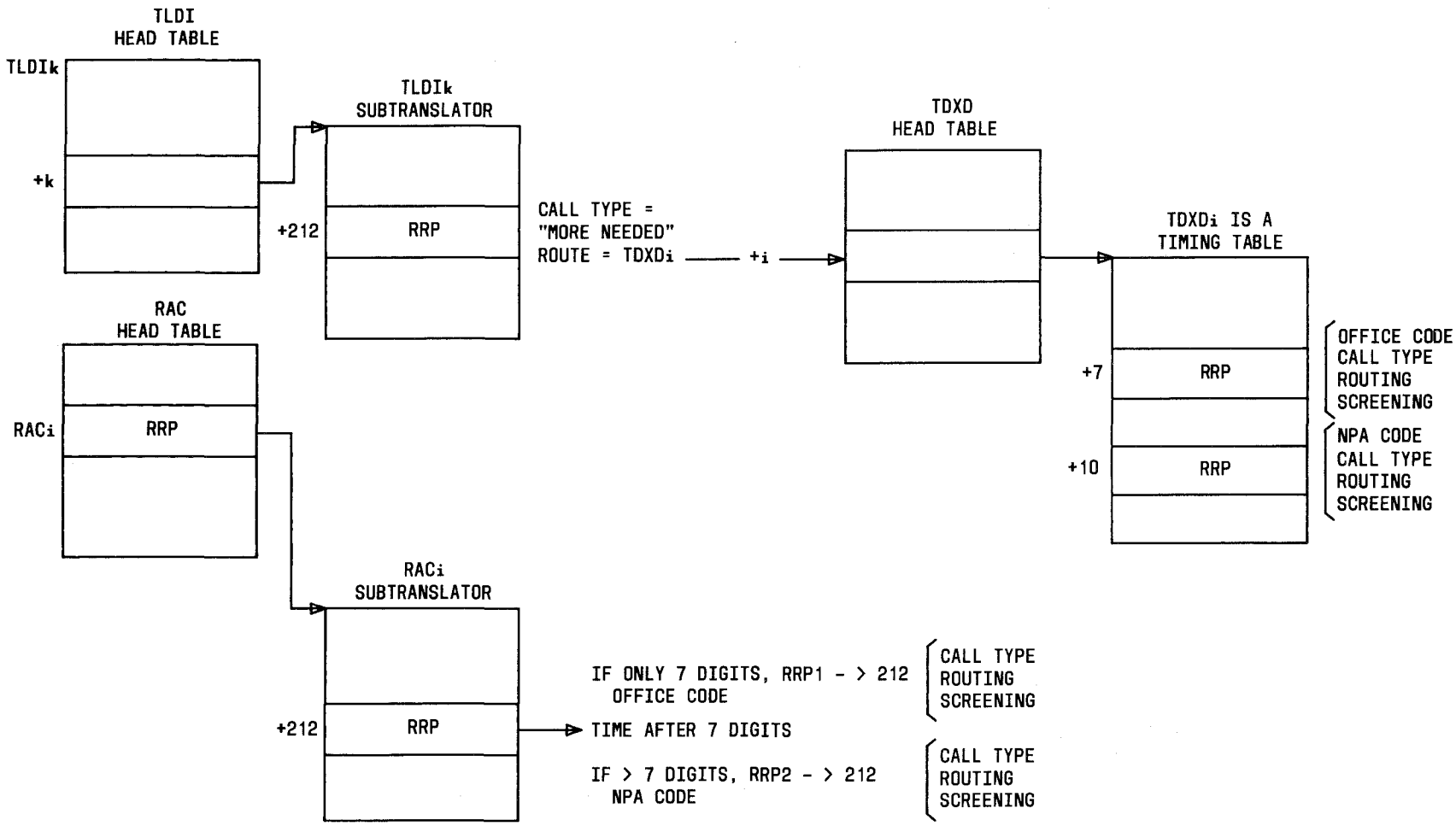


Fig. 13—Example of Doubly-Assigned DESEPs for a Fixed Destination Code (Due to Chart Column Screening With Override Information)



NOTE: "212" IS DOUBLY DEFINED AS AN NPA CODE AND AS AN OFFICE CODE WITHIN THE HOME NPA. LOCALLY (IN THE EXAMPLE), THE CONFLICT IS RESOLVED BY TIMING THE NUMBER OF DIGITS RECEIVED.

Fig. 14—Resolution of a Conflict Code Using TLDI Subtranslator and/or an RAC Subtranslator

TLDI for DDD access trunks. Suppose that 703 (Virginia NPA) is doubly defined as an office code; that within NPA 703, code 052 is a TTC (terminating toll center) code; that 703-052-111 identifies some toll operator at TTC 052 within NPA 703; that 703-052-1114 identifies a "leave word" operator at TTC 052 within NPA 703; and, finally, that 703-0521 is a valid directory number. The two operator codes can only be received over the intertoll or secondary intertoll trunks. The following is an example of conflicting call codes.

(a) Calls to office code 703 fall in DESEP 2.

(b) Calls to NPA code 703 are to be foreign area translated to determine DESEPs.

(c) Calls to 703-052-111 (toll operator) fall in DESEP 7.

(d) Calls to 703-052-1114 ("leave word" operator) fall in DESEP 11.

14.21 Figure 15 illustrates a possible translation setup for this situation. This example is a bit unrealistic; but it does illustrate the degree of complexity that can occur with toll translations. It is also possible for the different translators to become interleaved. For example, the 703 NPA-code RRPs in Fig. 15 obtained from the RAC table and the intertoll and DDD access TLDI might be the same; hence, the NAC would be the same, which would therefore lead to the same RRPs for all NXX codes in the given foreign area translator. Furthermore, for the intertoll and secondary intertoll TLDI 703 NPA code RRP, which leads to a toll foreign area translator, the NXX-type codes could lead to the same RRPs as the NXX codes in this nontoll foreign area translator. Thus, it may well be that all NXX codes following NPA code 703 lead to the same RRPs; hence, the same DESEP for 703-NXX type destination code if six digits are used to determine DESEP for the 703 NPA code.

14.22 These examples demonstrate the almost endless number of ways in which the destination code translators can be set up to recognize many different dialing patterns. For most dialable destination codes, such complex translations are not required. Usually, the translations required for any given code are relatively straightforward. Also, DESEPs for most dialable destination codes will simply be attached to initial 3-digit codes and will not require 6-digit foreign area translation. Furthermore, most codes are not conflict codes. Finally, it is unusual for separate DESEP classifications for the more peculiar types of toll dialing patterns to be required distinct from customer dialable codes. For any given office, the DESEP problem would consist of correlating DESEPs for almost all initial 3-digit codes across multiple DDD-network RAC and TLDI 3-digit subtranslators with perhaps a few special, more complex codes for which DESEPs are to be made with extra caution.

14.23 The DESEPs pertain to the DDD network only, not to any CCSA private network. Thus, all RRPs pertaining to any CCSA private network are not to be assigned any DESEPs.

14.24 The most complex portion of the DRPC feature is the assignment and maintenance of the DESEP categories. Furthermore, an automatic procedure has not been designed to verify the integrity of the DESEPs. Included in the Translation Guide—TG-1A (Division 5, Section 9) is a worksheet that can be used as a tool for planning and maintaining DESEPs. Any procedure that is initiated should simply and accurately correlate all pertinent information. In summary, an assignment and maintenance procedure should:

(a) Identify all destination codes that can be used by the central office.

(b) Specify unique DESEPs per destination code.

(c) List all places in the destination code translation tables in program store where a DESEP is actually stored for each destination code.

(d) Be used as a reference when setting up or changing any sort of destination code translator or any RRP expansion table.

ADMINISTRATION

15. MEASUREMENTS

15.01 Not applicable.

16. CHARGING

AUTOMATIC MESSAGE ACCOUNTING

16.01 Not applicable.

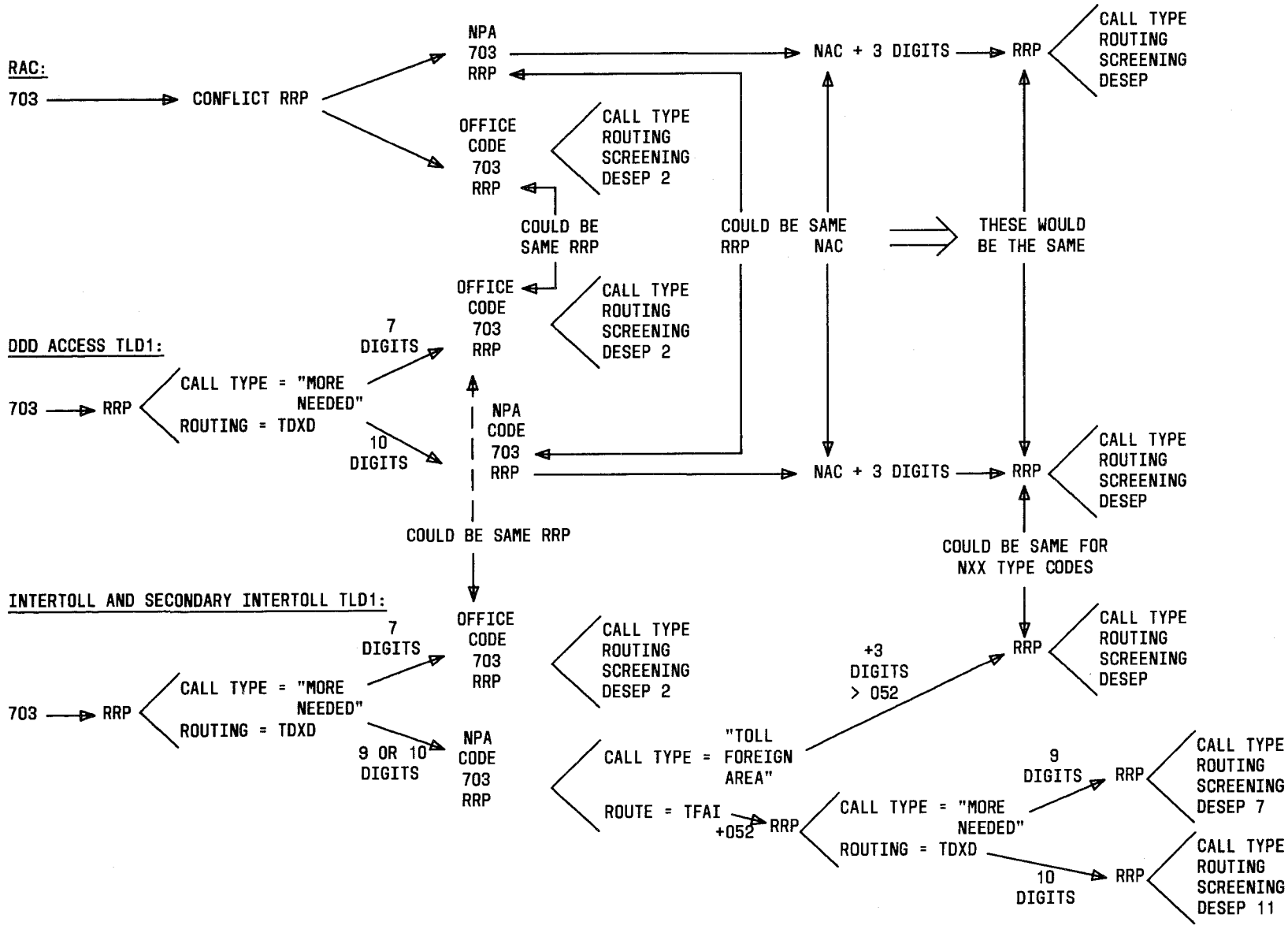


Fig. 15—Example of an Involved Conflict

UNIFORM SERVICE ORDER CODES

16.02 Not applicable.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 The following terms are defined with respect to this document.

Direct Distance Dialing (DDD) Network: This term refers to the entire public telephone switching network.

Centrex/ESSX-1: This term refers to any customer whose telephone service is provided using centrex translations.

Non-Centrex/ESSX-1: This term refers to any customer whose telephone service is ***not*** provided using centrex translations.

18. REFERENCES

18.01 The following documentation contains information pertaining to or affected by the DRPC feature.

A. Bell System Practices

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

(2) Section 231-090-305—Feature Document—Network Management Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(3) Section 231-190-314—Feature Document—Operation with Engineering and Administration Data Acquisition System Feature—2-Wire No. 1 Electronic Switching System

(4) Section 231-390-314—Feature Document—Operation with Engineering and Administration Data Acquisition System Feature—2-Wire No. 1A Electronic Switching System

(5) Section 231-061-050—Service Feature—Network Design—2-Wire No. 1 Electronic Switching System

(6) Section 231-061-605—Traffic Measurements—Network Design—2-Wire No. 1 Electronic Switching System

(7) Section 231-062-050—Service Features—Network Design—2-Wire No. 1A Electronic Switching System

(8) Section 231-070-520—Traffic Measurements—Daily Schedules—Network Administration—2-Wire No. 1 and No. 1A Electronic Switching Systems

(9) Section 231-118-323—Trunk Translation Recent Change Procedures for TG, TGBVT, TRK, CFTRK, and TGMEM (CTX-6 through 1E5 Generic Programs)—2-Wire No. 1 Electronic Switching System

(10) Section 231-118-324—Rate and Route Translation Recent Change Procedures for NOCNOG, DNHT, NOGRAC, RATPAT, DIGTRN, TOLDIG, CCOL, RI, CHRGX, DITABS, TNDM, IDDD, and TDXD (CTX-6 through 1E5 Generic Programs)—2-Wire No. 1 Electronic Switching System

(11) Section 231-318-303—Trunk Translation RC Procedures for TG, TGBVT, TRK, CFTRK, TGMEM, CCIS, and TKCONV (Through 1AE5 Generic Program)—2-Wire No. 1A Electronic Switching System

(12) Section 231-318-304—Rate and Route Translation Recent Change Procedures for NOCNOG, DNHT, NOGRAC, RATPAT, DIGTRN, TOLDIG, CCOL, RI, CHRGX, DITABS, TNDM, IDDD, and TDXD (Through 1AE5 Generic Program) No. 1A Electronic Switching System

(13) Section 231-048-303—CCIS, CFTRK, TG, TGBVT, TGMEM, TKCONV, and TRK Trunk Translation Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems

(14) Section 231-048-304—ARS, CCOL, CHRGX, DITABS, DIGTRN, DNHT, IDDD, IWSA, NOCNOG, NOGRAC, RATPAT, RI, RLST, TDXD, and TNDM Rate and Route Translation Recent Change Formats (1E6/1AE6 and 1E7/1AE7 Generic Programs)—2-Wire No. 1 and No. 1A Electronic Switching Systems.

B. TTY Input and Output Manuals

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

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

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

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

C. Other Documentation

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

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

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

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

(5) Parameter Guide PG-1A—No. 1A Electronic Switching System

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

(7) Office Parameter Specification PA-6A001—2-Wire No. 1A Electronic Switching System

(8) BISP 759-100-000—Subject Index—Central Office Equipment Engineering System (COEES)

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