DLG, FLXDG, FLXRD, AND FLXRS
CENTREX-CO/ESSX-1 RECENT CHANGE FORMATS
(1AE8A.05 AND LATER GENERIC PROGRAMS)
1A *ESS*™ SWITCH

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1. GENERAL

This AT&T practice provides the data link group and flexible route selection RC (recent change) formats for use at the maintenance terminal. This AT&T practice also provides the procedures for adding an FRS (flexible route selection) customer in a 1A ESS CO (central office). This practice applies to the 1AE8A.05 and later generic programs.

Program listings and Input/Output message manuals for the 1A ESS switch are covered in the 6A series documents.

This practice is organized as follows:

(a) Overview of flexible route selection in Part 1.

(b) A list of abbreviations and acronyms for terms not identified in RC formats is provided in Part 2.

(c) Translator descriptions are given in Part 3 for FRS 3-digit translator, RSN (route sequence number) translator, RDN (route description number) expansion, and the DLG (data link group) translator.

(d) General RC message format information with a listing of reference documents and basic RC message formats are given in Part 4.

(e) Overall procedures required to add, change, and delete flexible route selection and data link groups are given in Part 5.

1.1 Reason for Reissue

This document is reissued to add keywords FRSDA and ASPOV to the RC:FLXRS message and to Table A. This reissue incorporates Addendum Issues 1 and 2, and changes keyword PVNOV (as added by Addendum Issue 2) to ASPOV.

1.2 Overview

1.2.1 Flexible Route Selection

FRS is a centrex feature that automatically directs outgoing station calls to the least expensive available route. The FRS feature provides up to four private routes: FX (foreign exchange), CCSA (common control switching arrangement), full time, and measured WATS (wide area telephone service), over which a call may be attempted in a selected order. Beginning with generic program 1AE7, the 1A ESS switch can optionally provide up to 10 private routes. An optional DDD network overflow is provided if no other economical route is found.

The FRS applies only to chargeable (AMA detail bill) 7- or 10-digit interoffice calls. All other calls are routed via the DDD message network. Centrexes that **do not** have FRS handle each private route via a single dial access code on a 1-access code -- 1-route basis. The FRS allows a centrex station, dialing only one access code, to gain access to any of the private routes, the private routes being in a selected order. The CCSA 7-digit on-network calls may not be handled by the FRS feature.

Route selection is performed after the FRS access code and the 7 to 10 digits have been dialed. The first choice in the customer's list of available routes is checked. If the first choice route is available, it is used to route the call. If the route is not available, the next route on the list is tried. If no private route is available, the call may be either routed on the DDD network, routed to an announcement, or given an overflow tone, depending on which option the customer had previously chosen. Refer to AT&T Practice 231-090-142 for FRS feature details.

2. GLOSSARY OF ABBREVIATIONS AND ACRONYMS

The following abbreviations and acronyms are used in this practice.

ABBREVIATION	TERM
BISI	Busy Idle Status Indicator
CCSA	Common Control Switching Arrangement
CO	Central Office
DI	Digit Interpreter
DL	Data Link
DLIO	Data Link Input/Output
DLG	Data Link Group
FAT	Foreign Area Translation
FRS	Flexible Route Selection
FRSI	FRS Index
FX	Foreign Exchange
HUCS	High Unduplicated Call Store
INWATS	Inward Wide Area Telephone Service
ISB	Individual Station Bill
LUCS	Low Unduplicated Call Store
MEMN	Member Number
MHT	Master Head Table
MSN	Master Scanner Number
NPA	Numbering Plan Area
OTQ	Outgoing Trunk Queue
PDA	Parameter Data Assembler
PS	Program Store
RC	Recent Change
RDI	Remote Data Interface
RDN	Route Description Number

ABBREVIATION	TERM
RI	Route Index
RSN	Route Sequence Number
SFG	Simulated Facilities Group
SLEN	Screening Line Equipment Number
UT	Unit Type
WATS	Wide Area Telephone Service.

3. TRANSLATION DESCRIPTIONS

3.1 FRS Translations

The FRS translations consist of the the FRS 3-digit translator, RSN translator, and the RDN translator. The following paragraphs contain a general description of each translator. For a detailed description of the FRS translations including the bit layouts, refer to PA6A002.

3.1.1 FRS 3-Digit Translator

The function of the FRS 3-digit translator (Fig. 1) is to route 3-digit codes (200 through 999) corresponding to the first three digits dialed (exclusive of access code) or the second three digits in the case of FAT (foreign area translation) via RSNs.

The FRS 3-digit translator consists of a head table and the FRS 3-digit subtranslator. The head table contains up to 256 words (words 0 through 255) and is pointed to by the MHT (master head table) + 43. Each FRS head table word may contain either an address pointing to an FRS 3-digit subtranslator, or all zeros, indicating the associated subtranslator does not exist. The head table is entered using the FRS 3-digit translator number obtained from word 0 of the RSN subtranslator.

The FRS 3-digit subtranslator is built to a fixed length of 200 words (words 0 through 199). Each primary translation word contains four RSNs (route sequence numbers). The RSNs can be either 3 bits or 5 bits long to give an RSN range of 0 through 7, or 0 through 31, respectively. The index to the FRS 3-digit subtranslator is obtained by adding the subtranslator address to the INTEGER value of [100*D1 (+) 10 * D2 + D3 (-) 211]/4 where 0 is greater than 9, and D1, D2, and D3 are replaced by D4, D5, and D6 for FAT. The REMAINDER portion of the index is used to determine which of the four RSNs will be used. The output, RSN, from the FRS 3-digit subtranslator is used as input to enter the RSN translator to obtain an RDN.

When building the FRS 3-digit translator, the head table and subtranslators may both be located in the HUCS (high unduplicated call store) or LUCS (low unduplicated call store) area of call store. However, it is recommended that they be located in HUCS. Data is written into the FRS 3-digit translator by RC message RC:FLXDG and the data is generally found on form ESS 1309.

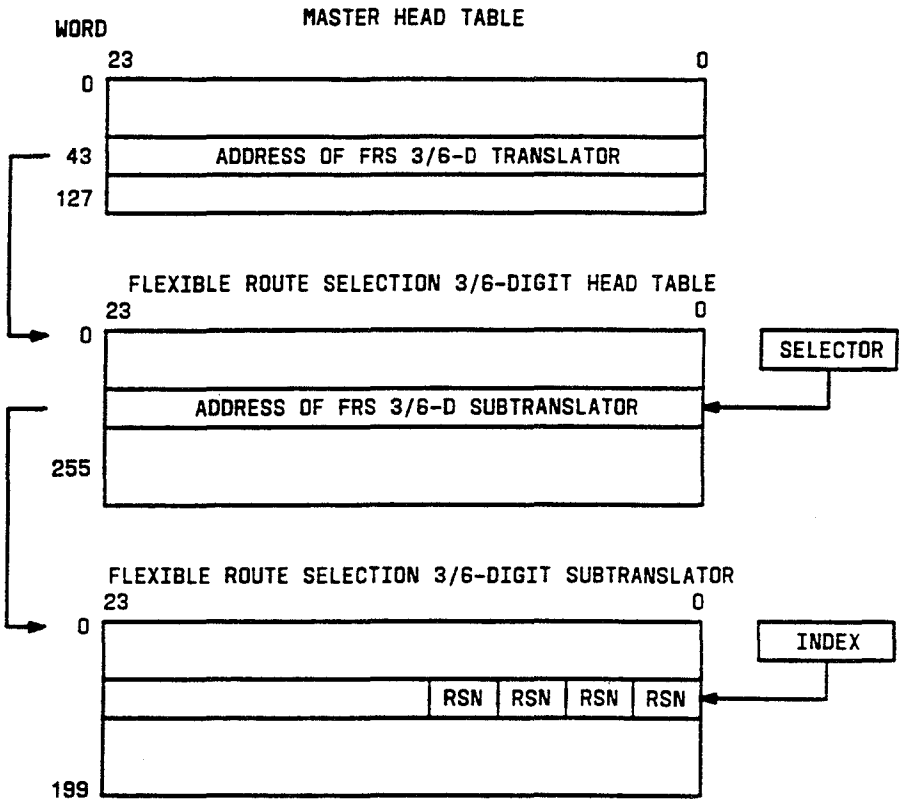


Fig. 1 — FRS 3/6-Digit Translator

3.1.2 RSN Translator

The RSN translator (Fig. 2) consists of an RSN head table and RSN subtranslator. The head table can be up to 256 words (words 0 - 255) long and is pointed to by MHT + 42. The RSN head table is indexed by the FRSI number obtained from the centrex digit interpreter table. Each RSN head table may contain either an address pointing to an RSN subtranslator, or all zeros indicating that the subtranslator is unassigned. The RSN subtranslator may be either 17 (words 0 - 16) or 65 (words 0 - 64) words long depending upon whether the FRS 3/6-digit translator contains 3- or 5-digit RSN entries. A 17-word RSN translator must work with a 3-bit RSN 3/6-digit translator, while a 65-word RSN translator can only work with a 5-bit RSN 3/6-digit translator. The index to the RSN subtranslator is found from the result of 2 * RSN (+) 1.

The function of the RSN translator is to determine the routing sequence possibilities for the particular call. The RSN translator identifies the most economical route available for a call and provides additional special treatment for foreign area calls or for calls having NXX code conflicts.

For each RSN entry, bits 22 through 20 of the first word defines four types of RSN entries:

(a) Type 1 Route Sequence — directs the route selection function with up to 4 RDNs.

(b) Type 2 Conflict — used only in offices having NXX code conflicts that are resolved by timing and/or prefixes.

(c) Type 3 Foreign Area Translation or Piggyback

— Foreign Area Translation — interprets the first 6 digits of 10-digit directory numbers, and

— Piggyback — used as a method for providing more route selection opportunities than are available from a single RSN translator.

(d) Type 4 Extended Route Sequence — directs the actual route selection function when more than 4 private routes are required.

An auxiliary block is required for the FRS route list when extended route sequence RSNs are used. At this time, the auxiliary block is variable in length and may be from 4 to 6 words long.

When the RSN translator is built, the head table and subtranslators may be located in the HUCS or LUCS area of call store. However, it is recommended that they be located in the HUCS area. Data is written into the RSN translator by RC message RC:FLXRS and is generally found on form ESS 1308.

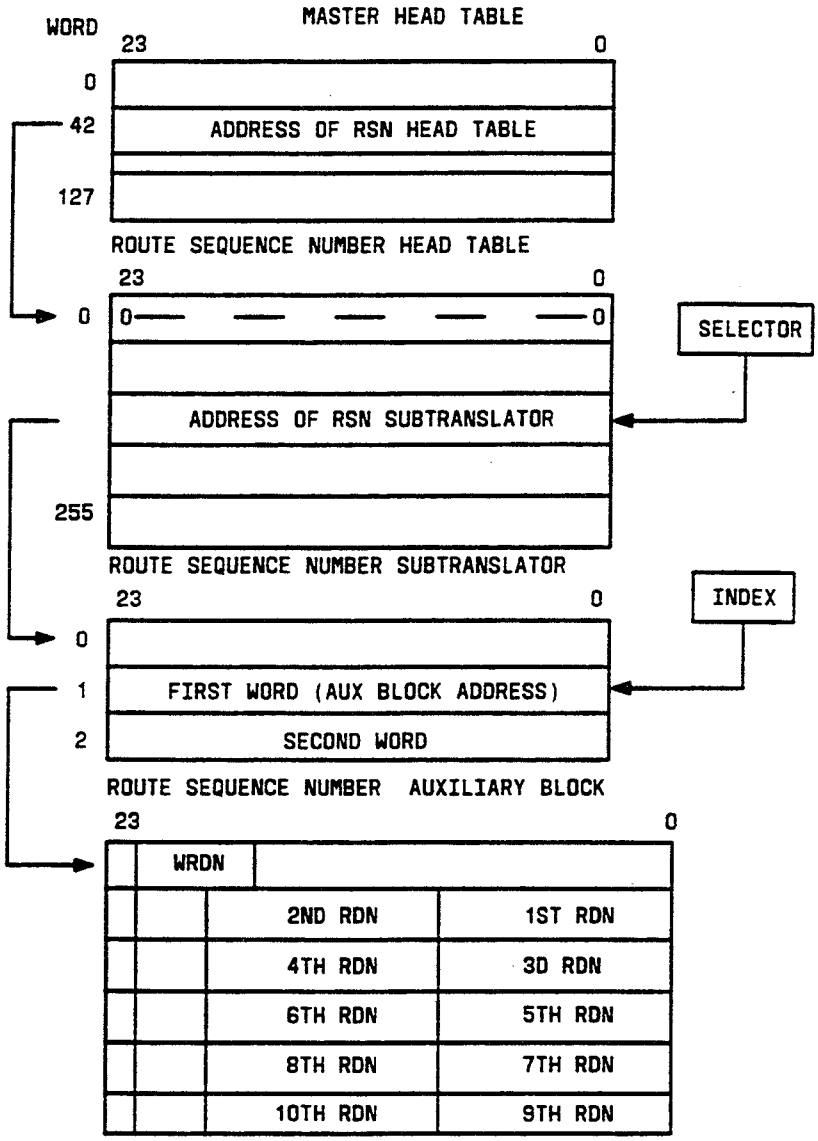


Fig. 2 — RSN Translator

3.1.3 RDN Translator

The RDN translator (Fig. 3) consists of a head table and an expansion table. The head table is 32 words long (words 0 - 31) and is pointed to by MHT + 44. The RDN head table allows for 2 functional word types; a head table word containing an address pointing to an RDN expansion, and an all zero word for unassigned RDN expansion tables. Each RDN expansion table is also 32 words long. The index to the RDN head table is obtained from the INTEGER value of the RDN found in the RSN subtranslator divided by 32. The REMAINDER from the above division provides the index into the RDN expansion.

The function of the RDN expansion is to describe the routes of all private facilities (FX and CCSA) and intrastate and interstate WATS facilities that are made available to a centrex customer.

Each RDN will expand to one word through the RDN expansion. If the route is a simulated facility, the data word selected by the RDN contains an indication of the type of facility, CCSA or WATS, and the simulated facilities group number. If the route is a physical facility, the data word contains an indication of the type of facility, CCSA, FX or announcement, and the RI (route index).

If OTQ (outgoing trunk queuing) is used with FRS, the RDN for a facility with OTQ must be the last RDN listed for the RSN, and it must be the only RDN listed for the RSN that pertains to routing to a facility with OTQ.

When building the RDN translator, the head table and expansion tables may both be located in the HUCS or LUCS area of call store. Again however, it is recommended that they be located in HUCS. Data is written into the RDN expansion table by RC message RC:FLXRD and is found on form ESS 1310A2.

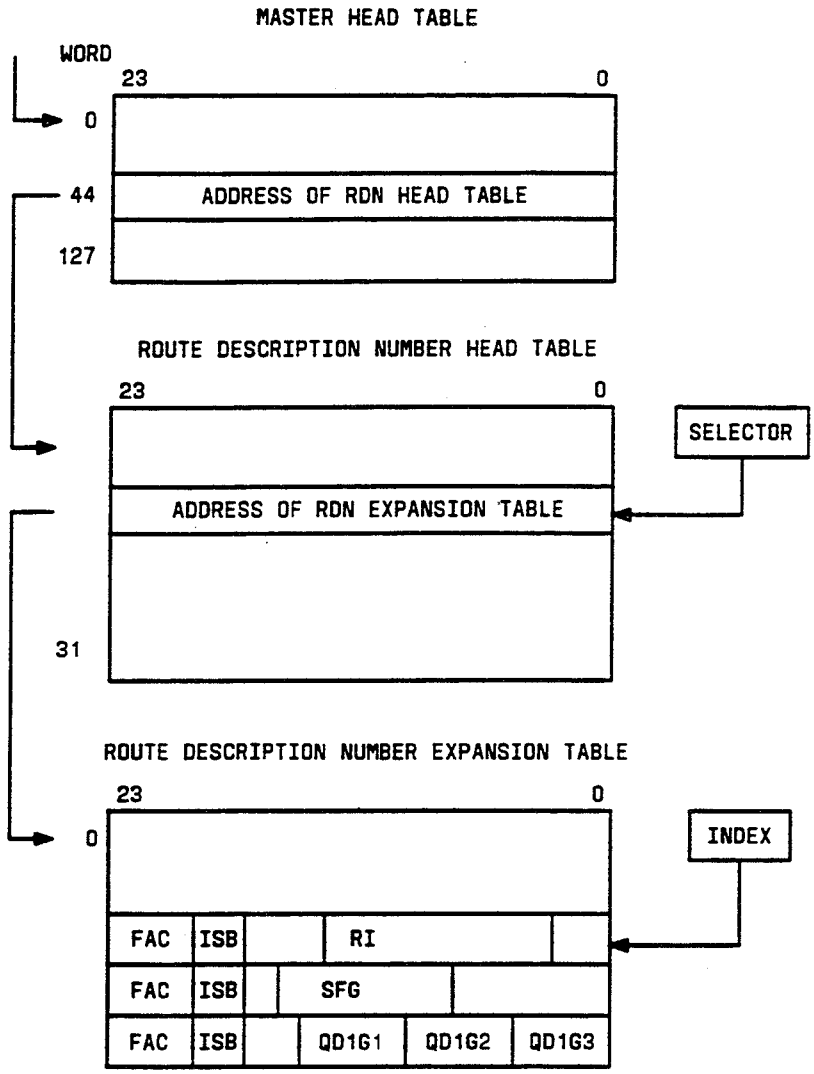


Fig. 3 — RDN Expansion Translator

3.1.4 FRS Translation Sequence

FRS Access Code Interpretation

When a 1-, 2-, or 3-digit access code is dialed by the customer, it is translated through the customer's centrex common block digit interpreter tables. Final data in the digit interpreter table (DTYP 5, subtype 19) gives an FRSI (flexible-route selection index).

After the centrex FRS access code is completed, the remaining 7 or 10 digits are processed as a normal centrex originated DDD network call. All routing and charging information needed to route the call over the DDD network is computed at this time. Only chargeable 7- or 10-digit interoffice calls are checked at the end of the dialing to determine if the FRS access code was dialed.

FRS Routing

The FRSI, derived from the centrex digit interpreter table, is used as the input to the RSN translator (Fig. 2). The FRS3DT item in the first word of the RSN subtranslator selects an FRS 3-digit subtranslator through the master head table (+) 43 pointer. The first three digits dialed are used to index into the FRS 3/6-digit subtranslator from which an RSN is derived.

The RSN, obtained from the 3-digit subtranslator, is then used to reenter the same RSN subtranslator in which the FRS3DT number originated, and select a 2-word entry which may be one of 4 types as mentioned in 3.1.2.

A **route sequence** entry (types 01 and 04) directs the actual route selecting function. Each route sequence 2-word entry (Fig. 4) contains an ordered list of RDNs (route description numbers) that are 10 bits long. The type 0 and 1 entries also contain a DDD option bit. Up to four RDNs are provided by the type 1 entry. If more than four private routes are required, a type 0 entry contains the address of an auxiliary block that can hold up to 10 RDNs. The first RDN assigned contains the RDN associated with the most economical private route. The remaining RDNs contain the routes associated with any other customer's private facilities in the order to be selected. The last RDN assigned (which may be the second, third, fourth, etc.) can be associated with a final route to an announcement if selected by the customer.

The first available route in the list is used for the call. If no private route is available, the call is routed over the DDD network if the DDD bit is set to 1, or routed to overflow if the DDD bit is 0. If only DDD network routing is desired, all four RDNs are 0 and the DDD bit is set to 1.

A **conflict** RSN entry (type 02) is only necessary in offices that have NXX code conflicts that are resolved by timing and/or prefixes. Although only conflicts between chargeable interoffice calls must be resolved by a conflict RSN entry, it is advisable to establish a conflict entry for every conflict between interoffice (even noncharged) calls to avoid errors if billing charges are made. The details of resolving the conflicts are handled by the POTS 3-digit translator, and only a minimal knowledge of conflicts is needed to supply the information needed for the conflict RSN entry. The RSN obtained from the FRS 3-digit translation references a conflict entry containing three RSNs. One of these RSNs is assigned to each of the following conditions:

(a) 7 digits with no prefix dialed

(b) 1 (+) 7 digits dialed

(c) 10 digits with or without prefix dialed.

If any of these conditions are invalid for a particular 3-digit code because of improper prefixing or number of digits, the FRS translation is never entered, so that a dummy RSN requesting only DDD network routing can be assigned to that slot in the entry.

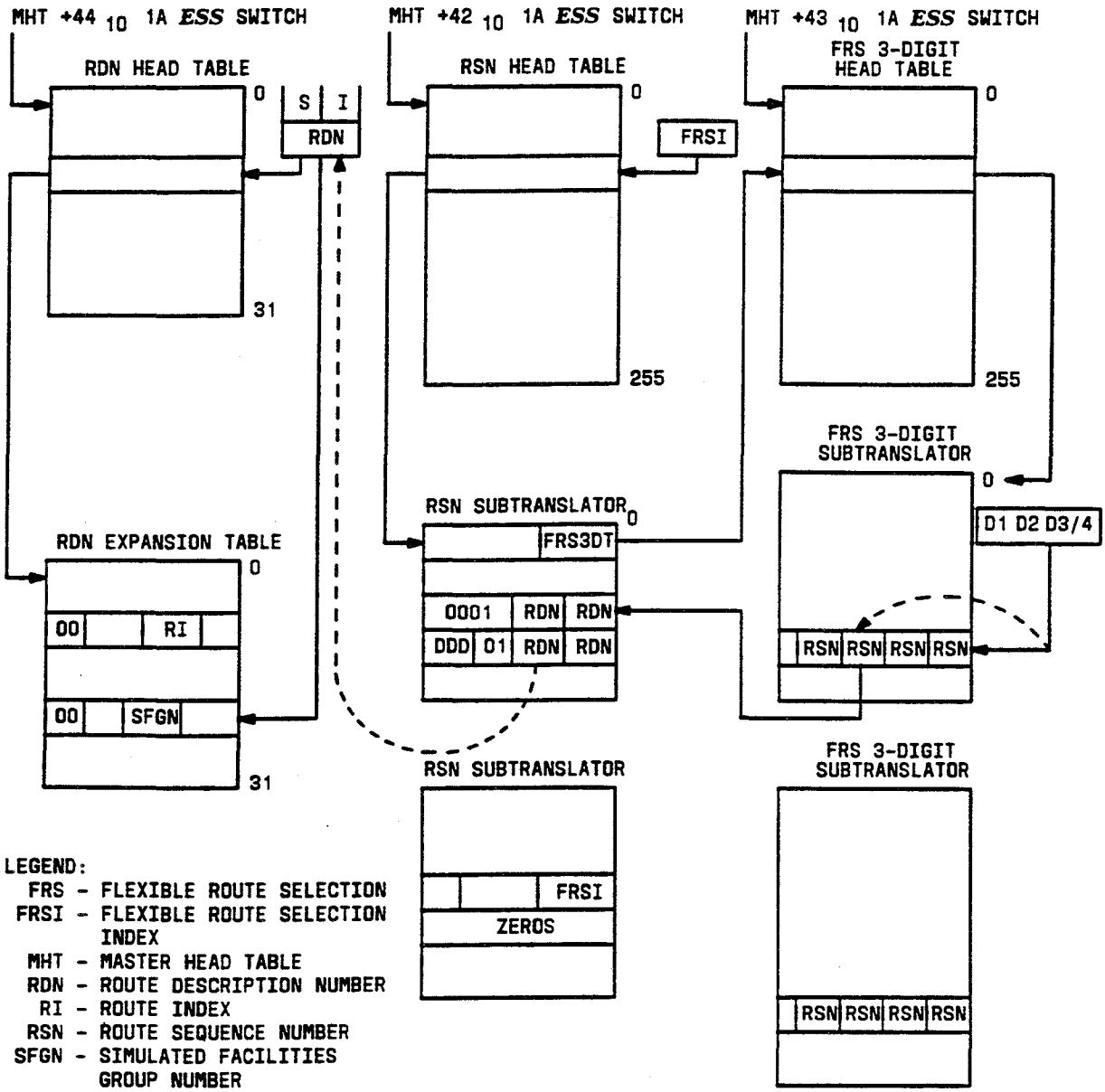


Fig. 4 — Simple FRS Translation (Single Case)

The **FAT** entry (type 03) (Fig. 5) allows the office code of the dialed number to be translated through the 3-digit translator. The area code (NPA) was examined during the first 3-digit translator encounter with this call.

The FAT route contains a 7-bit FRSI. This FRSI is used to index the RSN translator head table, thereby selecting another RSN subtranslator block. The FRS3DT bits in word 0 of the new RSN subtranslator select a 3-digit subtranslator through the 3-digit head table. The NXX digits (second 3 digits) are then used to index this subtranslator to identify the additional RSN required for FAT entries. The algorithm given in 3.1.1 is used by the second 3 digits to index the 3-digit subtranslator. The RSN selected by these 3 digits is completely unrelated to the RSN obtained from the preceding 3-digit translation. The RSN that is obtained in the 3-digit translations selects a routing sequence entry when input to the RSN translator. The FAT call is then handled as a regular route sequence call.

The **piggyback** entry (type 03) (Fig. 6) can be used to obtain additional RSN entries when all regular 3-digit translator entries are exhausted. The additional 3-digit translator(s) provides 8 or 32 additional RSN entries, for 3-bit or 5-bit RSNs respectively, for the 3 digits examined.

The piggyback entry contains a 7-bit FRSI. These bits are used to index the RSN translator head table, thereby selecting another RSN subtranslator block. The FRS3DT bits in word 0 of the new RSN subtranslator select a 3-digit subtranslator through the 3-digit head table. The first 3 digits are used to index this subtranslator to identify the additional RSN for this piggyback entry. The RSN selected by the 3 digits is completely unrelated to the RSN from the preceding 3-digit translation.

Each nonzero RDN derived in the RSN translator expands to one data word through the RDN expansion (Fig. 3). When the route is a simulated facility, the data word selected by the RDN contains an indication of the type of facility either WATS or CCSA as indicated by FAC (bits 21 through 19), the SFGN (bits 17 through 9), and the ISB (individual station bill) indicator (bit 18).

For WATS route, the ISB feature (when bit 18 is set) causes the system to make an AMA record on the billing DN for the dialing centrex station, attendant, or tie trunk. (An AMA record is not made on the calling DN.) When ISB equals 0 for the WATS route, the AMA record made is the screening DN for the simulated facilities group. For CCSA route via simulated facilities, the ISB feature has no effect on the AMA record since an AMA record is automatically made as part of the CCSA service.

When the route is a physical facility, the data word contains an indication of the type of facility (CCSA, FX, or announcement indicated by FAC bits 21 through 19), an RI (bits 15 through 5), and an ISB (bit 18) indicator. For CCSA route via physical route, the ISB feature has no effect on the AMA record since an AMA record is automatically made as part of the CCSA service. For FX route via physical facility, the ISB feature (when bit 18 is set) causes the system to make an AMA record on the billing DN for the dialing centrex station, attendant, or tie trunk. When ISB equals 0 for FX physical route, no AMA record is made. The announcement facility is not an actual private facility; therefore, no private route is available. Announcement is typically used where the DDD bit is not set and an announcement is referred to overflow. The ISB option is not provided on calls routed to an announcement.

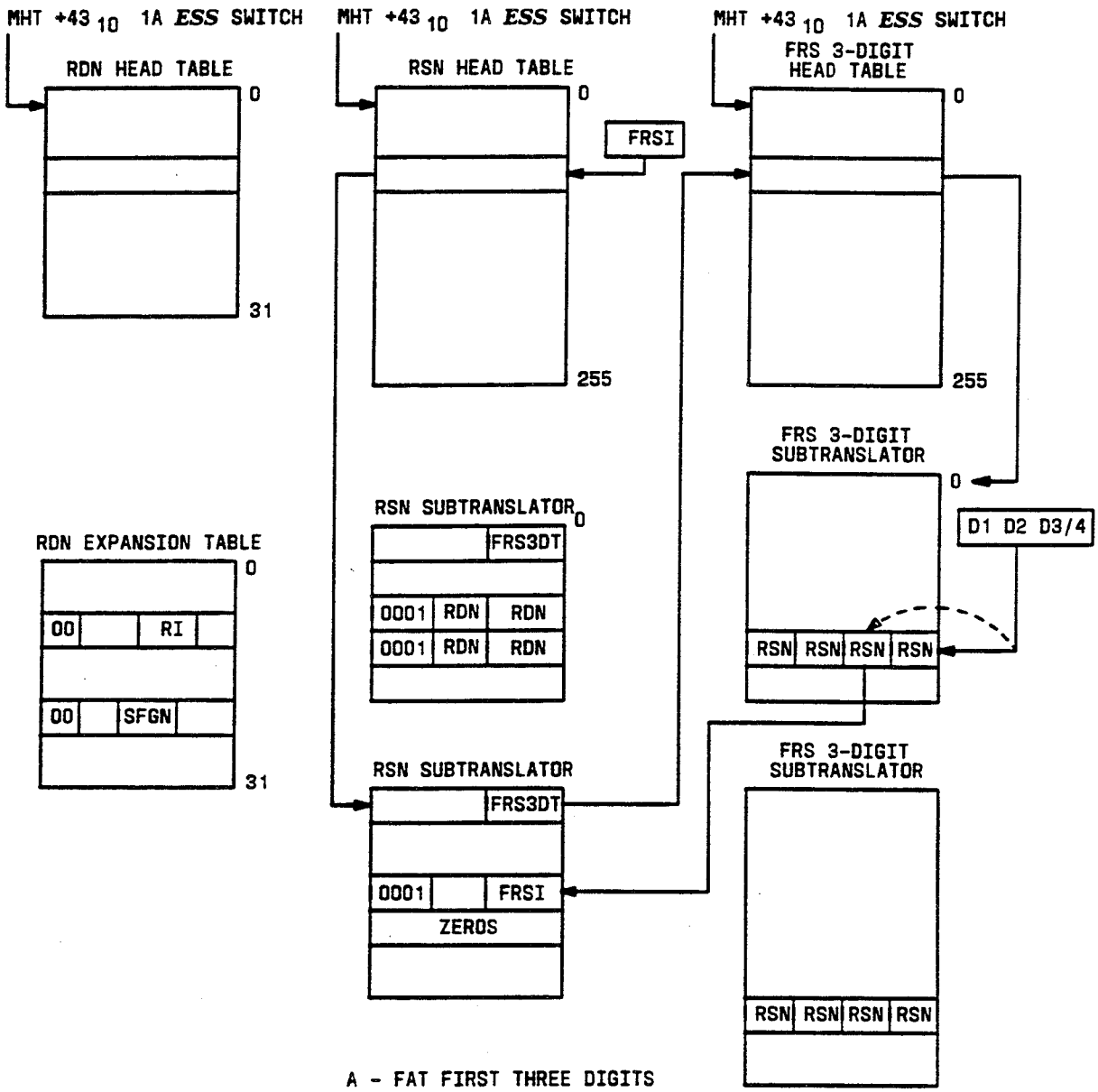


Fig. 5 — Foreign Area Translation for FRS (Sheet 1 of 2)

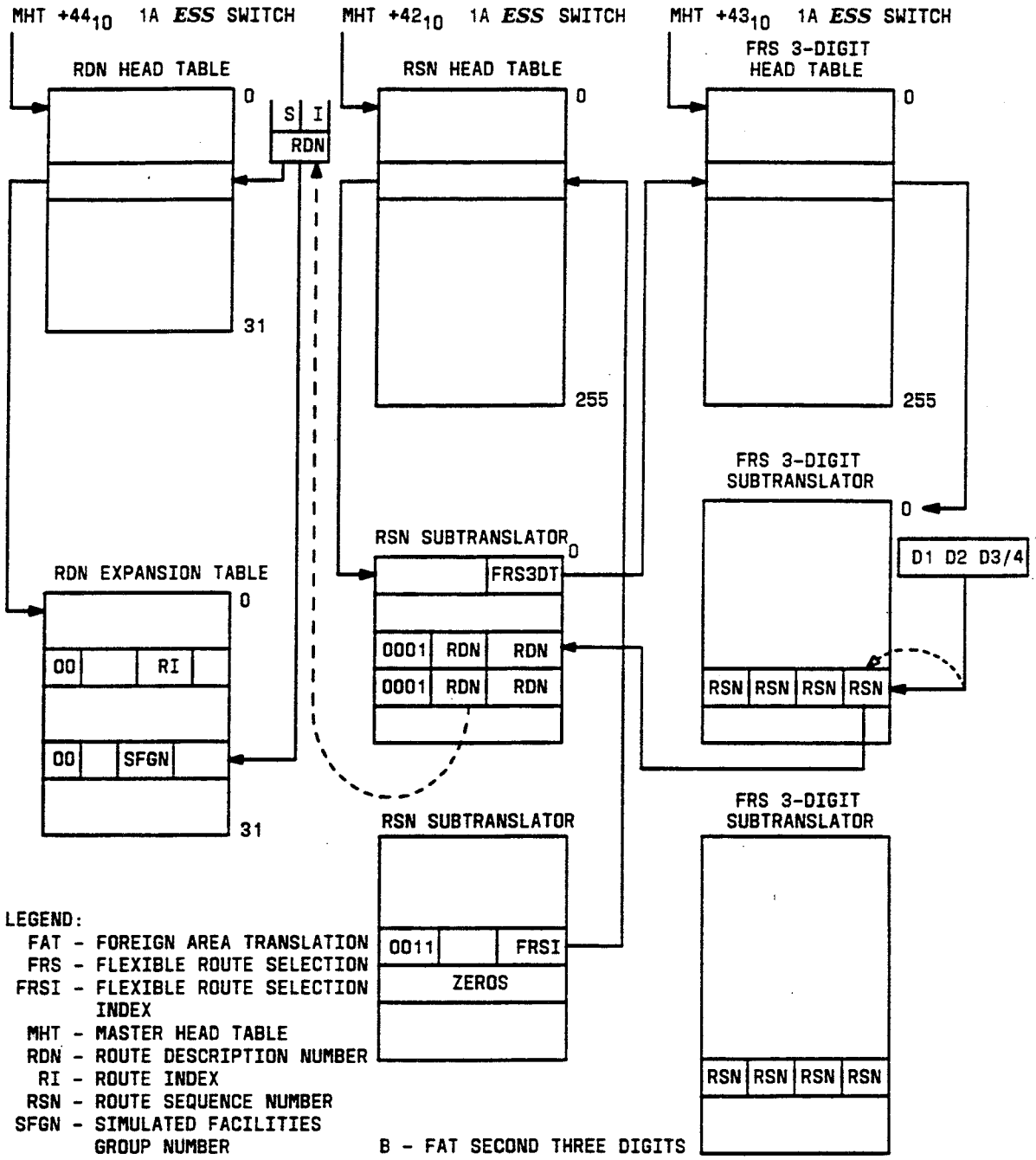


Fig. 5 — Foreign Area Translation for FRS (Sheet 2 of 2)

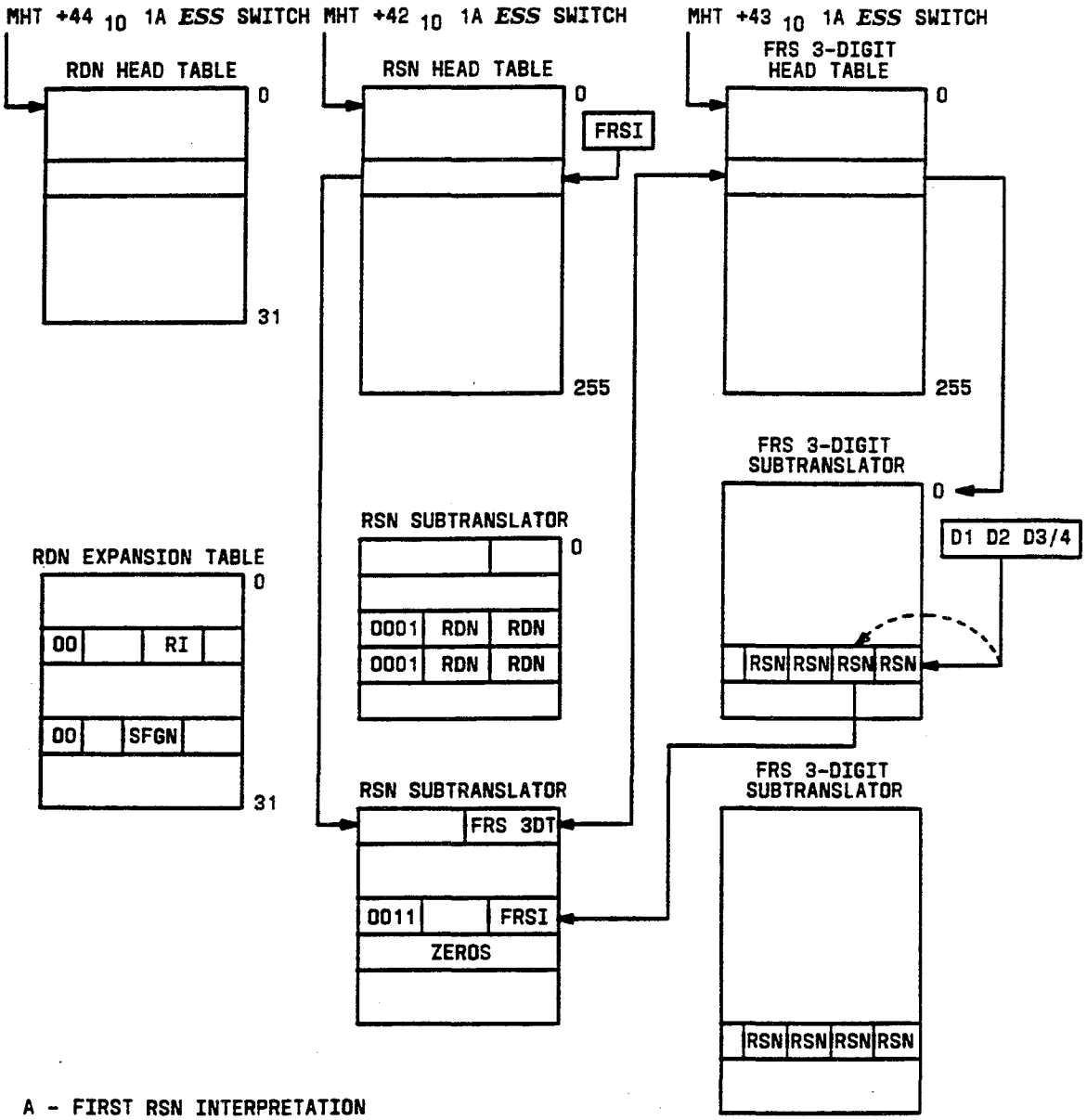


Fig. 6 — Piggyback Translation for FRS (Sheet 1 of 2)

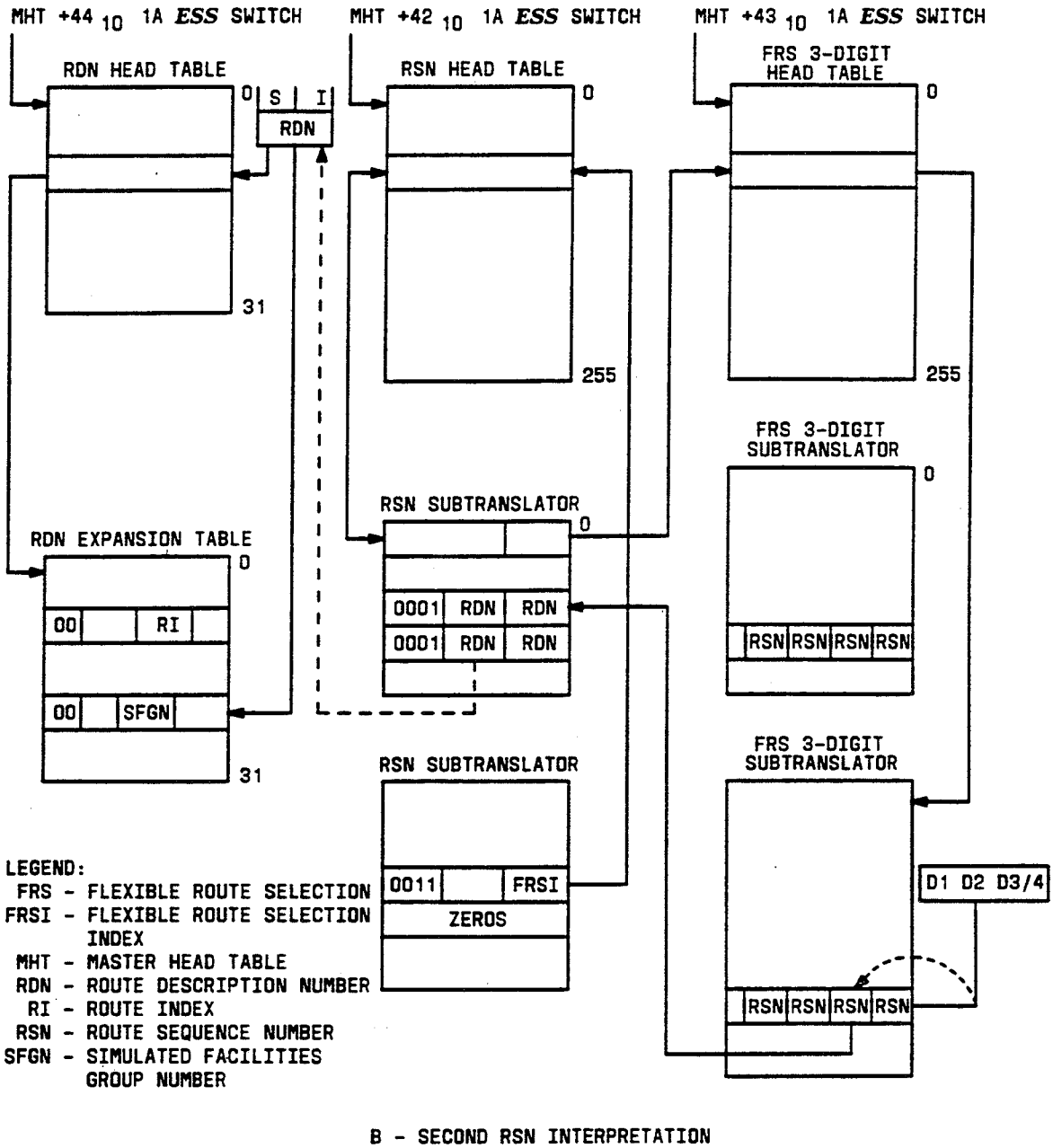


Fig. 6 — Piggyback Translation for FRS (Sheet 2 of 2)

The route may also lead to a queue for outgoing trunks. In this case, the data word contains an indication of the type of facility OTQ (outgoing trunk queue) and a queuing access code of 1 to 3 digits (QDIG1, QDIG2, QDIG3). The ISB equals 0 because the ISB indicators for outgoing trunk queuing are contained in the centrex digit interpreter table auxiliary blocks.

Fig. 7 shows a situation where two FRS translations use two different FRSIs and two diffferent RSN subtranslators, but share the same 3-digit translator.

3.2 Data Link Group Translations

The optional feature package, DLIO (data link input/output), provides a software interface between the DL (data link), call processing, and the maintenance programs. When the DLIO feature is loaded, the DLG (data link group) translator is required for each operational console or nonconsole DL within the 1A ESS switch.

The DLG translator consists of a head table and a DLG auxiliary block. The DLG head table is 66 words (words -1 through 64) long and is pointed to by MHT + 64. The head table consists of a minus one word containing the head table length. The remaining 64 words are indexed by the DLG number, and may contain the address to the DLG auxiliary block, or all zeros if the DLG number is unassigned.

The DLG auxiliary block length is variable from 3 to 67 words (words -1 through 65) depending on the DL application and the number of DLG members. The auxiliary block can be considered on two parts. The first part, containing words 0,1 and the optional -1 word, provides the data for the features associated with the DL application. The second part consists of all remaining words within the auxiliary block and provides a list of the DL members on a one word per DL member basis. The DLGs associated with console type DLs contain only one DL member, but nonconsole type DLs may contain as many as 64 members.

The DLG head table can be built in either the HUCS or LUCS area of a call store; however, the HUCS area would be preferred. The DLG auxiliary block, however, must be built in LUCS. The auxiliary block is built and linked to the head table with the RC message RC:DLG; however, data must be entered into the auxiliary block with the RC message RC:DLG;CHG. The form ESS 1514 provides the input data.

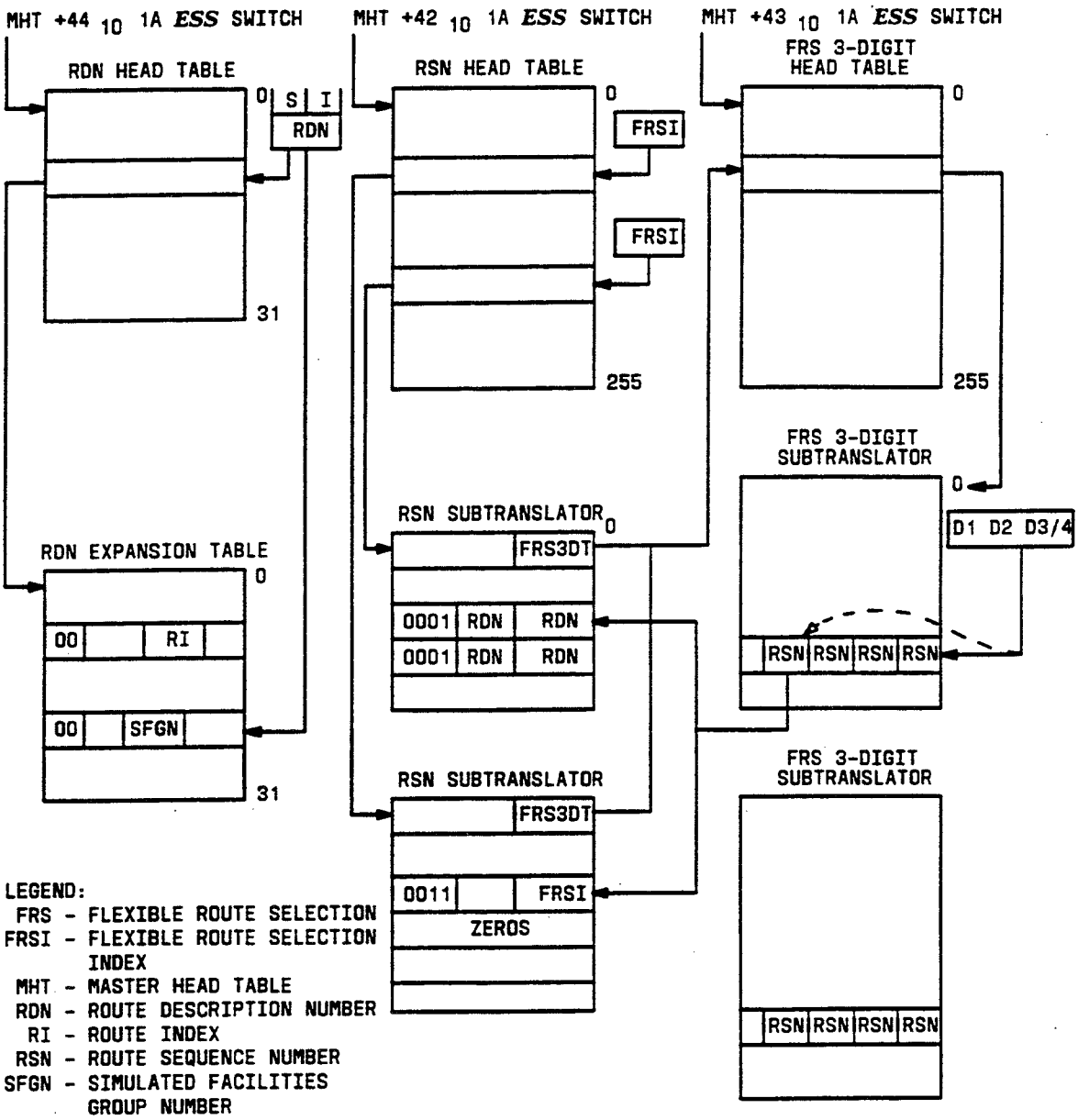


Fig. 7 — Sharing an FRS 3-Digit Translator

4. RECENT CHANGE AND VERIFY FORMATS

4.1 General

The following references provide additional RC/VFY information of a general nature that may prove helpful.

- Refer to AT&T Practice 231-318-316 for information on RC message formats and the interpretation of message flowcharts.
- Refer to the information accompanying the message flowcharts for definitions of keywords used in each message.
- Refer to Translation Guide TG-1A for documentation of translation data and associated ESS forms.
- Refer to Translations Output Configuration PA-6A002 for information on the ESS forms and the 1A ESS switch translation memory (translators).

4.2 Service Order Number

The service order number can be used as an option in any message. The formats for the associated ORD keyword (a/m/m/m/m/m/n) are shown below:

ORD a/m/m/m/m/m/n

a/ = This variable is an alphabetical character and is shown slashed because it is optional.

m/m/m/m/m/m/n = Decimal number: Leading zeros can be omitted.

For example, each of the following is a valid order number:

ORD B1234

ORD B1234567

ORD F6

ORD F6

ORD 23

ORD 23

4.3 Flowchart Symbols

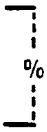
The following flowchart symbols are used in RC message flowcharts.

OPTION Symbol: The OPTION symbol is used to indicate that all flowlines leaving the symbol are optional. None, one, some, or all such flowlines may be selected.

EXCLUSIVE OR Symbol: The EXCLUSIVE OR symbol is used to indicate that exactly one of two or more flowlines leaving the symbol must be selected.

NONEXCLUSIVE OR Symbol: The NONEXCLUSIVE OR symbol is used to indicate that one or more of the flowlines leaving the symbol must be selected (no less than one, but more than one may be selected).

AND Symbol: The AND symbol is used to indicate that all flowlines leaving the symbol must be used.



Repeatable Segment: The repeatable segment symbol is used to indicate that the keyword unit or the specific group of keyword units within the segment bracket can be repeated within an RC message without reentering previous keyword units. Each segment is terminated by the percent sign (%).

In change message flowcharts, keywords without a variable shown are YES/NO keywords. When a YES/NO feature is added, enter the keyword; when a YES/NO feature is removed, enter the keyword followed by NO or N.

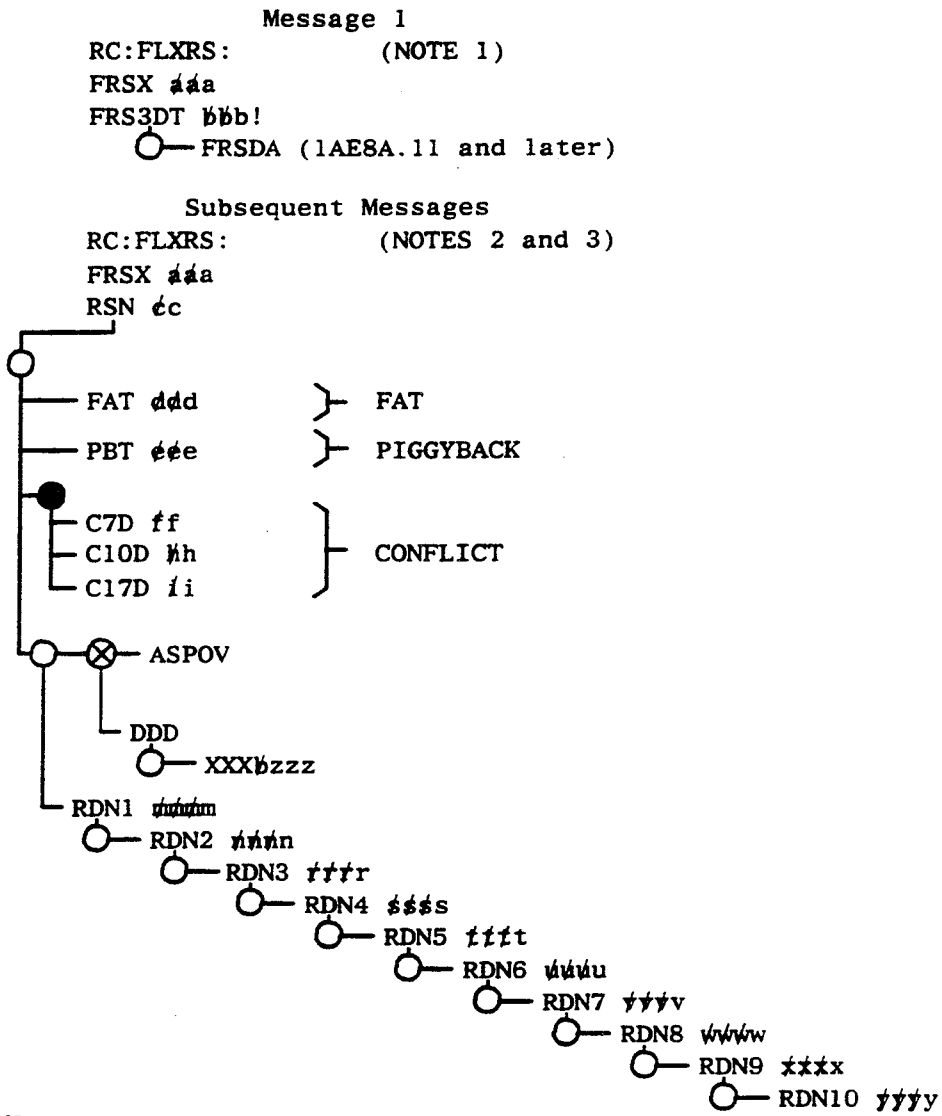
When using a change message flowchart, refer to the associated new message flowchart for valid combinations of keywords.

4.4 Adding, or Replacing, Route Sequence, Conflict, Foreign Area Translation, and Piggyback Route Selecting Functions in a Route Sequence Number Translator RC:FLXRS (RCRS, PR-6A349)

Refer to Fig. 8 and Table A for the RC message flowchart and keyword definitions associated with adding or replacing data in the RSN translator.

Initial Conditions: The RSN subtranslator exists and is linked to the RSN head table.

Results of Message: The existing data in the first word or one of the 2-word entries making up the remainder of the subtranslator is overwritten. (All data must be specified since no existing data is preserved.)



Notes:

1. This message is used to specify the index into the FRS 3-digit translator which is in the first word of the RSN translator.
2. Message 1 must have been entered before any of these messages are entered.
3. This message is used to specify each of the 2-word entries making up the remainder of the RSN subtranslator.

Fig. 8 — Adding or Replacing Data in the RSN translator

4.5 Deleting Route Sequence, Conflict, Foreign Area Translation, and Piggyback Route Selecting Functions in a Route Sequence Number Translator RC:FLXRS (RCRS, PR-6A349)

Refer to Fig. 9 and Table A for the RC message flowchart and keyword definitions associated with deleting data from the RSN translator.

Initial Conditions: The RSN specified exists.

Results of Message: The specified data is replaced with zeros.

Message 1

```
RC:FLXRS;OUT:     (NOTE 1)
FRSX ¢¢a
RSN ¢c!
```

Message 2

```
RC:FLXRS;OUT:     (NOTES 2 and 3)
FRSX ¢¢a
FRS3DT ƀƀb!
```

Notes:

1. This message deletes the 2-word entries in the RSN.
2. Message 1 must have been entered before message 2 is entered.
3. This message deletes the FRS index in the first word of the RSN subtranslator.

Fig. 9 — Deleting Data in the RSN Translator

TABLE A

RC:FLXRS KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
ASPOV	Advanced Services Platform Overflow. Indicates that if an FRS route is unavailable, the call can overflow to an ASP route.		
C7D ffff	Conflict for 7 Digits Dialed (no prefix): ffff = 0 through 31.	ESS 1308 Cols. 50-51	7D RSN Conflict Entry (9-5)
C10D hhhh	Conflict for 10 Digits Dialed (with or without a prefix): hhhh = 0 through 81.	ESS 1308 Cols. 52-53	10D RSN Conflict Entry (4-0)
C17D iiii	Conflict for 1 + 7 Digits Dialed: iiii = 0 through 31.	ESS 1308 Cols. 48-49	1 + 7D RSN Conflict Entry (14-10)
DDD	Direct Distance Dialing Network Overflow. Used to indicate that the DDD network should be used to complete call if no private route is available.	ESS 1308 Col. 41	DDD Route Sequence Entry (22)
FAT dddd	Flexible Route Selection Index for Foreign Area Translation. Used to select a route sequence entry based on the first 6 digits instead of the first 3 digits of the called DN: dddd = 1 through 127.	ESS 1308 Cols. 18-21	SELECTOR
FRSDA	FRS routing of 10-digit 555 calls: YES specifies that FRS routing should be attempted for 10-digit 555 calls. NO (default) specifies that 10-digit 555 calls should default to standard FRS treatment.		
FRSX aaaa	Flexible Route Selection Index aaaa = 0 through 255.	ESS 1308 Cols. 18-21	SELECTOR
FRS3DT bbb	Flexible Route Selection 3-Digit Translator Selector. Used by the system to select a subtranslator address in the FRS 3-digit translator head table bbb = 0 through 255.	ESS 1308 Cols. 54-56	FRS3DT Word 1 (6-0)

TABLE A (Contd)

RC:FLXRS KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
PBT ¢¢¢e	Flexible Route Selection Index for Piggyback Translation. Used to select an additional 3-digit translator for overflow use (additional RSN entries are examined): ¢¢¢e = 1 through 127.	ESS 1308 Col. 43	FRSI Piggy-back Entry (6-0)
RDN1 ¤¤¤m	First Route Description Number. The first choice private route for the call: ¤¤¤m = 1 through 1023.	ESS 1308 Cols. 25-28	1st RSN Route Sequence Entry (9-0)
RDN2 ¤¤¤m	Second Route Description Number. The second choice private route for the call: ¤¤¤m = 1 through 1023.	ESS 1308 Cols 29-32	2nd RSN Route Sequence Entry (19-10)
RDN3 ƒƒƒr	Third Route Description Number. The second choice private route for the call: ƒƒƒr = 1 through 1023.	ESS 1308 Cols 33-36	3rd RSN Route Sequence Entry (9-0)
RDN4 ¢¢¢s	Second Route Description Number. The second choice private route for the call: ¢¢¢s = 1 through 1023.	ESS 1308 Cols 37-40	4th RSN Route Sequence Entry (19-10)
RDN5 ƒƒƒt	Second Route Description Number. The second choice private route for the call: ƒƒƒt = 1 through 1023.	ESS 1308 Cols 33-36	5th RSN Route Sequence Entry (9-0)

TABLE A (Contd)

RC:FLXRS KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
RDN6 µµµu	Second Route Description Number. The second choice private route for the call: µµµu = 1 through 1023.	ESS 1308 Cols 37-40	6th RSN Route Sequence Entry (19-10)
RDN7 ¥¥¥v	Second Route Description Number. The second choice private route for the call: ¥¥¥v = 1 through 1023.	ESS 1308 Cols. 33-36	7th RSN Route Sequence Entry (9-0)
RDN8 ψψψw	Second Route Description Number. The second choice private route for the call: ψψψw = 1 through 1023.	ESS 1308 Cols 37-40	8th RSN Route Sequence Entry (19-10)
RDN9 χχχx	Second Route Description Number. The second choice private route for the call: χχχx = 1 through 1023.	ESS 1308 Cols 33-36	9th RSN Route Sequence Entry (9-0)
RDN10 ¥¥¥y	Second Route Description Number. The second choice private route for the call: ¥¥¥y = 1 through 1023.	ESS 1308 Cols 37-40	10th RSN Route Sequence Entry (19-10)
RSN ¢c	Route Sequence Number. Used as index into the route sequence number subtranslator.	ESS 1308 Cols. 22-23	INDEX
XXX zzz/NO	Overflow carrier for this RSN. Used as the XXX portion of the 10XXX carrier access code when the other routes specified in the RSN translator are unavailable. Variable zzz = 000 through 999.		

4.6 Adding, or Replacing, Route Sequence Numbers in an FRS 3-Digit Translator RC:FLXDG (RCFD, PR-6A331)

Refer to Fig. 10 and Table B for the RC message flowchart and keyword definitions associated with adding or replacing RSNs in the FRS 3-digit translator.

Initial Conditions: The specified FRS 3-digit translator exists.

Results of Message: The specified data replaces existing data.

Note: This message overwrites any existing data in the FRS 3-digit translator.

```
RC:FLXDG:
FRS3DT aaaa
CODE bbb
RSN cc                %
```

Fig. 10 — Adding or Replacing Route Sequence Numbers in the FRS 3-Digit Translator

4.7 Deleting Route Sequence Numbers in an FRS 3-Digit Translator RC:FLXDG (RCFD, PR-6A331)

Refer to Fig. 11 and Table B for the RC message flowchart and keyword definitions associated with deleting data from the FRS 3-digit subtranslator.

Initial Conditions: The specified RSN is assigned.

Results of Message: The specified RSN is replaced with zeros.

Note: This message removes RSN entries from the FRS 3-digit subtranslator.

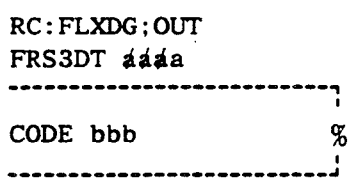


Fig. 11 — Deleting Route Sequence Numbers from the FRS 3-Digit Translator

TABLE B

RC:FLXDG KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
CODE bbb	Dial Digits D1, D2, D3 or Dial Digits D4, D5, D6; D4, D5, D6 are used for FAT entries only.	ESS 1309 Cols. 21,22-23	INDEX
FRS3DT ddda	Flexible Route Selection 3-digit Translator Selector. Used to select a subtranslator address in the FRS 3-digit translator head table.	ESS 1309 Cols.17-19	SELECTOR
RSN eeec	Route Sequence Number: eeec = 0 through 31.	ESS 1309 Cols. 25-26	RSN (4-0) (9-5) (14-10) (19-15)

4.8 Adding, or Replacing, Route Description of Flexible Route Selection Translator in a Route Description Number Expansion Table RC:FLXRD (RCRD, PR-6A346)

Refer to Fig. 12 and Table C for RC message flowchart and keyword definitions associated with entering data into the RDN expansion table.

Initial Conditions: The RDN expansion table exists and is linked to the RDN head table.

Results of Message: The content of the specified word is replaced.

Note: This message overwrites any existing data in the route description number expansion table.

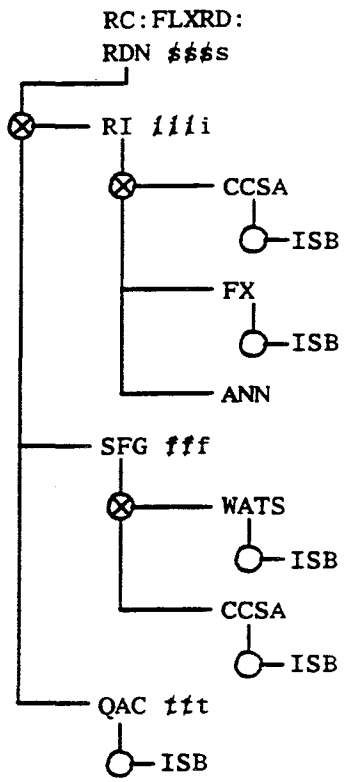


Fig. 12 — Adding or Replacing Route Description in the RDN Translator

4.9 Deleting Route Description of Flexible Route Selection Translator in a Route Description Number Expansion Table RC:FLXRD (RCRD, PR-6A346)

Refer to Table C for RC message keyword definitions associated with deleting data from the RDN expansion table.

Initial Conditions: The specified RDN expansion is assigned.

Results of Message: The specified RDN expansion is replaced with zeros.

RC:FLXRD;OUT:
RDN ⸗⸗⸗s!

Note: This message affects entries in the route description number expansion.

TABLE C

RC:FLXRD KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
ANN	Announcement.	ESS 1310 Col. 35	FAC Physical Facility Entry (21-19)
CCSA	Common Control Switching Arrangement.	ESS 1310 Col. 34	FAC Physical or Simulated Facility Entry (21-19)
FX	Foreign Exchange.	ESS1310 Col. 33	FAC Physical or Simulated Facility Entry (21-19)
ISB	Individual Station Bill. Provides a record for the calling party on simulated WATS and physical FX routes. Refer to Table D.	ESS 1310 Col. 32	ISB Physical or Simulated Facility Entry (18)
QAC ƒƒt	Customer Dialed Access Code for facilities (OTQ): ƒƒt = 1 through 000.		
RDN ƒƒƒs	Route Description Number. Used as an index and selector into the RDN expansion: ƒƒƒs = 1 through 1023.	ESS 1310 Col. 20-23	SELECTOR and INDEX
RI ƒƒƒi	Route Index. Used for access to CCSA, FX trunks, and announcements (1—Parameter Limit).	ESS 1310 Col. 25-28	RI Physical Facility Entry (15-5)
SFG ƒƒf	Simulated Facilities Group Number. Used to provide WATS or CCSA access: ƒƒf = 1 through 511.	ESS 1310 Cols. 32-34	SFGN Simulated Facility Entry (17-9)
WATS	Wide Area Telephone Service.	ESS 1310 Col. 31	FAC Simulated Facility Entry (21-19)

TABLE D

INDIVIDUAL STATION BILL FEATURE

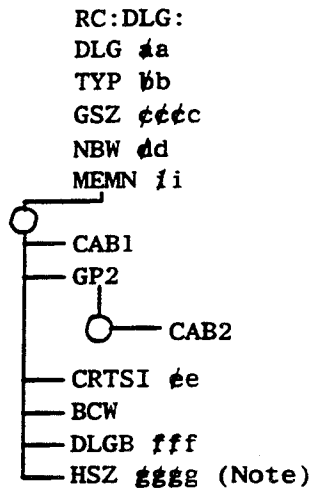
FAC	ISB VALUE	FUNCTION
FX ROUTE (FAC=4)	1	An AMA sample is made on all calls completed over this route. The AMA record is a data type 1 detail bill format with a traffic sample (no charge indication). The calling DN on the record is the billing DN for the dialing centrex station, attendant, or trunk.
	0	**No AMA record is made.**
SIMULATED WATS ROUTE (FAC=2)	1	The calling DN on any AMA record made on calls completed over this route is the billing DN for the dialing centrex station, attendant, or tie trunk. This option is intended for use in conjunction with WATS Chart Class Columns specifying AMA call type 25.
	0	The calling DN on any AMA record made on calls completed over this route is the screening DN for the simulated facilities group.
CCSA ROUTE (FAC=3)		Since the system provides 100 percent party record as part of CCSA service, the ISB item has no effect on a simulated or physical CCSA route. This means an AMA record is made as part of the CCSA service rather than as part of the flexible route selection service and, therefore, is not a flexible route selection option.
ANNOUNCE-MENT (FAC=5)		No private route available. The individual station bill record option is not provided on calls routed to an announcement.

4.10 Adding a Data Link Group RC:DLG (RCDA, PR-6A381)

Refer to Fig. 13 and Table E for RC message flowchart and keyword definitions associated with entering data into the DLG translator.

Initial Conditions: The data link head table exists. The DLG (data link group) word in the head table to be assigned is zero.

Results of Message: A data link group auxiliary block is seized, linked to the DLG head table, common data is built as specified, and the first MEMN word is built. (Remaining MEMN words are built with RC:DLG;CHG messages.) A call store audit is called to reserve buffer space for the DLG.



Note: Use HSZ ¢¢¢q only with TYP3 and GSZ>1.

Fig. 13 — Adding a Data Link Group

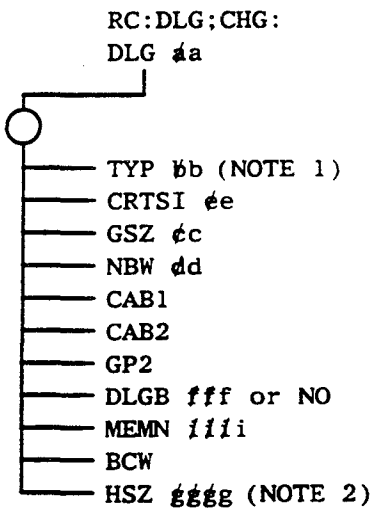
4.11 Changing a Data Link Group RC:DLG (RCDA, PR-6A381)

Refer to Fig. 14 and Table E for RC message flowchart and keyword definitions associated with changing data in the DLG translator.

Initial Conditions: The DLG is assigned.

Results of Message: The data specified replaces the existing data in the auxiliary block. If a different size auxiliary block is required, it is seized and built, and the existing auxiliary block is returned to the idle link list.

Note: Reference 4.3.



Notes:

1. TYP not valid with MEMN and NBW. Also, DLG must be out of service.
2. Use HSZ ¢¢¢¢ only with TYP 3 and GSZ>1.

Fig. 14 — Changing a Data Link Group

TABLE E

RC:DLG KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
BCW	Beehive Calls Waiting lamps.	ESS 1514 Col. 29	BCW Word 1 (22)
CAB1	Common Audio Bus for first group of 50 ACD2 agents.	ESS 1514 Col. 30	CAB1 Word 1 (21)
CAB2	Common Audio Bus for second group of 50 ACD2 agents.	ESS 1514 Col. 31	CAB2 Word 1 (20)
CRTSI ¢e	CRT Storage Index—unique number of each DLG in the office to which a CRT can be connected: ¢e = 1 through 64.	ESS 1514 Cols. 33, 34	CRTSI Word 1 (15-8)
DLG ¢¢a	Data Link Group number: ¢¢a = 1 through 64.	ESS 1514 Cols. 19-21	
DLGB ¢¢¢	Data Link Group Backup CRT number: ¢¢¢ = 1 through 64	ESS 1514 Cols. 35-37	DLG2 Word 1 (7-0)
GP2	RDI equipped with second group of 50 ACD2 agents.	ESS 1514 Col. 32	GRD2 Word 1 (19)
GSZ ¢¢¢c	Group Size. Quantity of data links (MEMNs) in the DLG: ¢¢¢c = 1 through 64.	ESS 1514 Cols. 25, 26	NDL Word 0 (9-4)
HSZ gggg	Hunt Size. Number of hunt terminals converted to number of hunt lists: gggg = 1 through 2047.		
MEMN ¢i	Data Member Number: ¢i = 0 through 63.		

TABLE E (Contd)

RC:DLG KEYWORD DEFINITIONS

KEYWORD UNIT	DEFINITION	FORMS	WORD/ BIT NO.
NBW ϕd	Number of Buffer Words — constant quantity for each DLG: ϕd = for TYP0. = 32 for TYP1 and TYP2. = 70 for TYP3. = 42 for TYP4.		
TYP ϕϕϕb	Centrex Data Link Type—(0 through 15): ϕb = 0 = Centrex Console Cabinet. = 1 = RDI (Remote Data Interface) = 2 = RDI with CRT. = 3 = ACD MIS (Management Information System). = 4 = ACMOS (Automatic Customer Message Outputting System).	ESS 1514 Cols. 27, 28	DLTYP Word 1 (3-0)

4.12 Deleting a Member from a Data Link Group RC:DLG (RCDA, PR-6A381)

Initial Conditions: The DLG is assigned.

Results of Message: The specified data link MEMN (member number) is removed from the DLG.

RC:DLG;OUT:
DLG ϕϕa
MEMN ii!

Note: Deletion of the last MEMN of a DLG deletes the DLG by zeroing the word in the DLG head table for the specified DLG and returning the auxiliary block to the idle link list.

4.13 Verification Information

Verify FRS translations by requesting the list of private routes that apply to the FRS call specified as follows:

VFY-FRS-a b ccc ddd eee.

Where:
- a = 0—If this call involves a conflict code, indicates no prefix 1 dialed.
  1—If this call involves a conflict code, indicates prefix 1 dialed.
- b = 0—If this call involves a conflict code, indicates 10 digits dialed.
  1—If this call involves a conflict code, indicates 7 digits dialed.
- ccc = First 3 digits dialed.
- ddd = Second 3 digits dialed or 000 if the second 3 digits are irrelevant.
- eee = Flexible route selection index.

System response is a PF TACK followed by a TR37 message containing indications of the FRS private routes for the call specified.

Verify the simulated facilities group entries as follows:

V-SFGN-aaaa.

Where: aaaa = Simulated facilities group number.

System response is a PF TACK followed by a TR35 message containing the contents of the simulated facilities auxiliary block.

Verify the simulated facilities group, centrex group, and range of centrex group numbers as shown in Fig. 15.

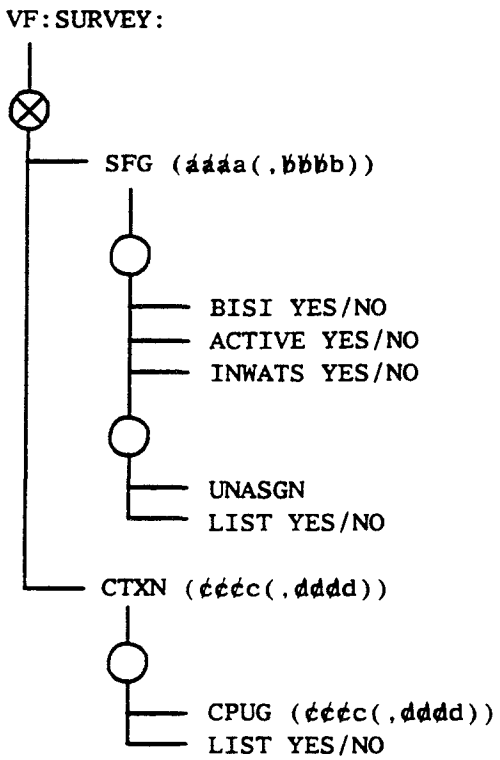


Fig. 15 — Verify Simulated Facilities Groups and Centrex Groups

Note: The VF:SURVEY message requires that YES/NO (or Y/N) must be input with the applicable keywords for a valid response.

SFG [aaaa (, bbbb)] = SFGs (simulated facilities groups) search. SFG range [aaaa (, bbbb)] = $0 \leq a \leq b \leq 4095$.

BISI YES = (Default) Restricts the search to only those SFGs which have a BISI (busy/idle status indicator).

BISI NO = Restricts the search to only those SFGs that are not BISI.

Note: If option BISI is not input, the SFG currently being verified may or may not be a BISI SFG.

ACTIVE YES = (Default) Restricts the search to active SFGs.

ACTIVE NO = Restricts the search to SFGs which are not active.

Note: If ACTIVE is not input, the SFG being verified may be either active or not active.

INWATS YES = (Default) Restricts the search to only INWATS (inward wide area telephone service) SFGs.

INWATS NO = Restricts the search to only those SFGs that are not INWATS SFGs.

Note: If INWATS is not input, the SFG being verified may or may not be

an INWATS SFG.

UNASGN = Initiates a search for a range of SFGs which are unassigned. If BISI, ACTIVE, or INWATS is entered with UNASSGN, no matches will be found. Therefore, these keywords should not be input with UNASGN.

LIST YES = (Default) Each successful match and a final count total will output.

LIST NO = Each successful match will not output, but a total count of all successful matches will output.

CTXN [cccc (, dddd)] = Centrex group or range of centrex groups which will be searched when [cccc (, dddd)] = 1- to 4-digit centrex group number. If [cccc (, dddd)] is omitted, all centrex groups will be searched.

CPUG [cccc (, dddd)] = Which call pickup group or range of call pickup groups will be searched. If cccc is omitted, all call pickup groups or range of call pickup groups will be searched.

System response is a PF TACK followed by requested printout.

5. PROCEDURES FOR ADDING FLEXIBLE ROUTE SELECTION OR DATA LINK FACILITIES

5.1 Add Flexible Route Selection

Simulated Facilities Groups

1. Determine the SFG head table status (established/not established) by typing:

   DUMP:CSS,ADR 7720034!

   System Response: **PF, CODE 091** followed by a **DUMP:CSS** indicating the SFG head table address. If all zeros are printed, the head table is not established.

2. Type the following message to determine the SFG subtranslator status (established/not established).

   DUMP:CSS,INDIR 1,ADR 7720034,INC D' iiii!

   Where: iiii = the result of dividing the SFG number by 128 and taking the whole number portion.

   System Response: **PF, CODE 091** followed by a **DUMP:CSS** indicating the SFG subtranslator address. If all zeros are printed, the subtranslator is not established.

FRS (Flexible Route Selection)

3. Determine the RDN (route description number) head table status (established/not established) by typing:

   DUMP:CSS,ADR 7720054!

   System Response: **PF, CODE 091** followed by a **DUMP:CSS** indicating the RDN head table address. If all zeros are printed, the head table is not established.

4. Type the following message to determine the RDN expansion table status (established/not established).

   DUMP:CSS,INDIR 1,ADR 7720054,INC D' iiii!

   Where: iiii = the result of dividing the RDN on form 1310, columns 20-23 by 32, and taking the whole number portion.

   System Response: **PF,CODE 091** followed by a **DUMP:CSS** indicating the RDN expansion table address. If all zeros are printed, the subtranslator is not established.

5. Determine the RSN (route sequence number) head table status (established/not established) by typing:

DUMP:CSS,ADR 7720052!

System Response: **PF, CODE 091** followed by a **DUMP:CSS** indicating the RSN head table address. If all zeros are printed, the head table is not established.

6. Type the following message to determine the RSN subtranslator status (established/not established).

DUMP:CSS,INDIR 1,ADR 7720052,INC D' iiii!

Where: iiii = FRSI (FRS Index) from form ESS 1308, columns 18-21.

System Response: **PF,CODE 091** followed by a **DUMP:CSS** indicating the RSN subtranslator address. If all zeros are printed, the subtranslator is not established.

7. Determine the FRS 3-digit head table status (established/not established) by typing:

DUMP:CSS,ADR 7720053!

System Response: **PF, CODE 091** followed by a **DUMP:CSS** indicating the FRS 3-digit head table address. If all zeros are printed, the head table is not established.

8. Determine the FRS 3-digit subtranslator status (established/not established) by typing the following message:

DUMP:CSS,INDIR 1,ADR 7720053,INC D' iiii!

Where: iiii = the FRS 3-digit number on form ESS 1309, columns 17-19.

System Response: **PF,CODE 091** followed by a **DUMP:CSS** indicating the FRS 3-digit subtranslator address. If all zeros are printed, the subtranslator is not established.

Translations Update

9. Build the head tables, subtranslators, or expansion tables that are not established per AT&T Practice 231-318-319.

FRS Translations Data

10. Enter the RDN data into the RDN expansion table using the **RC:FLXRD:** message per 4.8.

11. Enter the FRS 3-digit translator selector into the RSN subtranslator by using the RC:FLXRS: message per 4.4.

12. Enter the remaining data into the RSN subtranslator also using the RC:FLXRS: message per 4.4.

13. Enter the RSNs into the FRS 3-digit subtranslator using the RC:FLXDG: message per 4.6.

SFG Translations Data

14. Obtain the SFG SLENs (screening Line equipment number) that are to be assigned from forms ESS 1210A and 1208A/B. Determine the form ESS 1101 that contains the assignment data for each SLEN, and assign the SLENs using the **RC:LINE:** message (See AT&T Practice 231-318-325).

15. Enter the SFG data from form ESS 1210A into translations, using the **RC:SIMFAC:** message (See AT&T Practice 231-318-331).

DI (Digit Interpreter) Tables

16. Determine FRS access code (data type 05, subtype 19) from form ESS 1109, columns 45-49.

17. If new DI tables are required for the FRS access code, seize and link the required DI tables to the centrex common block (form ESS 1109) by using the **RC:DITABS:** message (See AT&T Practice 231-318-355).

18. Add the required data for DTYPE (data type) 05 Subtype 19, using the **RC:CTXDI:** message (See AT&T Practice 231-318-355).

Traffic Registers

19. Determine the status of the traffic registers being assigned from form ESS 1400, columns 20-23, by typing:

TRF-VFY-LIST b cccc 000001.

Where: b = alpha character from form ESS 1400, column 19 and

cccc = value from form ESS 14090, columns 20-23

System Response: **TC17** with a TMC of 10, indicating the traffic register is unassigned.

20. If the traffic registers are assigned, unassign the traffic registers, using the **RC:TRFHC:** message (see AT&T Practice 231-318-338).

21. Assign the new traffic registers, using the **RC:TRFHC:** input message.

Translations Verification

22. Verify translations data for the following translators. The appropriate verify message is indicated in parentheses. The format of the verify output message can be obtained from the output message manual (OM-6A001-01). For translators that do not have specific verify messages, the **DUMP:CSS** input message is used. The contents of the **DUMP:CSS** output message can be compared with the word layouts in the translation output configuration (PA-6A002).

    (a) Verify the FRS data in memory for each possible 3/6-digit dialed code from form ESS 1309 by typing the following message:

    VFY-FRS-a b ccc ddd eee

    Where: a = 0 when no conflict code or when the conflict has no prefix 1—form ESS 1308A, columns 48-49, or form ESS 1308B, columns 36-37, with no RSN entry.
    = 1 when conflict has prefix 1—form ESS 1308A, columns 48-49, or form ESS 1308B, columns 36-37, with an RSN entry.

    b = 0 when conflict code indicates 10 digits dialed—form 1308A, columns 50-51, or form ESS 1308B, columns 38-39, with RSN entry.
    = 1 if a conflict code is involved, indicates 7 digits dialed—form ESS 1308A, columns 52-53, or form ESS 1308B, columns 40-41, with RSN entry.

    ccc = first 3 digits dialed from form ESS 1309, columns 21-23.

    ddd = second 3 digits dialed.

    eee = FRSI from form ESS 1308, columns 18-20.

    System Response: **TR37** message with data associated with dialed code. Compare the data in the **TR37** message with data on forms ESS 1109, 1308, 1309, and/or 1310.

    (b) Verify SFG data in memory by typing:

    V-SFGN- aaaa.

    Where: aaaa = the SFGN from form 1210A, columns 20-33

    (c) Verify centrex digit interpreter data for DTYP 05 subtype 19 by typing:

    VFY-XDGNT-430 c ddddd eeee.

    Where: c = the number of digits to be interpreted

    ddddd = the digits to be interpreted as entered

    eeee = the centrex number.

System Response: **TR02** with translations data for the requested digits. This data can be checked with form ESS 1109 to verify the data in memory.

If the **TR02** response indicates an auxiliary block exists, a **DUMP:CSS,ADR** aaaaaaa,L bb:BIN! should be entered to obtain a copy of the auxiliary block.

Where: aaaaaaa = the auxiliary block address from the TR35 output message

bb = length of auxiliary block from the TR35 output message

The **DUMP:CSS** response will contain binary data that must be converted to decimal parts per PA6A002. The data can then be compared with forms ESS 1109 and 1107B.

(d) Verify the traffic registers by typing:

TRF-VFY-LIST b cccc 000001.

Where: b = the alpha character from form ESS 1400, column 19 and

cccc = the value from form ESS 1400, column 20-23.

System Response: **TC17** with translations data for the requested traffic register. This data can be checked with form ESS 1400 to verify the data in memory.

Testing

23. Establish CO telephone as a centrex test extension.

24. Place test calls using new access codes.

25. Return the CTX test extension to original service state.

End of Procedure

5.2 Add Centrex Data Link Facilities

DL (Data Link) Facilities

1. Obtain form ESS 1514 for DLGs being added.

2. Convert DL member numbers from form ESS 1514, items 01-64, columns 25, 26, from octal to decimal.

3. Verify the DL member(s) are assigned by typing the following message for each member number:

VFY-UNTY-15 029 aaaa.

Where: aa = decimal DL member number

System Response: **TR13 29 aa** with the contents of the UT (unit type) 29 auxiliary block associated with the DL member number entered in the **VFY-UNTY** message. If the auxiliary block is longer than 15 words, a second **TR13** will be printed with the remaining lines of data.

Note: The first data line in the **TR13** output message corresponds to word 0 of the UT 29 auxiliary block.

If the first 5 data lines (words 0 through 4) of the **TR13** message contain all zeros, the DL member number is not assigned. Refer to AT&T Practice 231-048-332 for DL growth procedures.

DLIO (Data Link Input/Output)

Note: DLIO translations are required when setcard 9F054 is listed in the PDA (parameter data assembler).

4. Determine the DLG head table status (exists/does not exist) by typing the following message:

DUMP:CSS,ADR 7720100!

System Response: **DUMP:CSS** output message. If the contents of address 7720100 is all zeros, the DLG head table does not exist.

5. If the DLG head table does not exist, build the head table per AT&T Practice 231-318-319.

6. Build the new DLGs using the RC:DLG: message per 4.10.

7. Ensure that a DLG is assigned for the existing centrex console DLs as follows:

   (a) Obtain the form ESS 1506 associated with an existing centrex console DL

(b) Convert the DL member number (form ESS 1506, columns 33 and 34) of an existing centrex console DL from octal to decimal.

(c) Type the following message:

VFY-UNTY-15 029 aaa.

Where: aaa = decimal DL member number from (b) above

System Response: two **TR13** output messages containing 18 data words.

Note: A DLG is not assigned to the centrex console DL if the the last data word in the **TR13** contains all zeros.

8. If a DLG is not assigned to existing centrex DLs, do the following:

(a) Obtain the form ESS 1506 associated with all existing centrex DLs.

(b) Determine the starting address of each existing UT auxiliary block as follows:

(1) Type the following message to determine the UT 29 subtranslator address for a particular DL member number:

TAG-UNTY-29 aaa.

Where: aaaa = decimal DL member number.

System Response: **TR27** containing a 7-digit octal number. The octal number (bbbbbbb) is the UT 29 subtranslator address associated with the DL member number entered in Step (1).

(2) Obtain the UT 29 auxiliary block address by typing:

DUMP:CSS,ADR bbbbbbb!

System Response: **PF, CODE 091 followed by a DUMP:CSS** containing an 8-digit octal number. Delete the leading zero. The result (ccccccc) is the octal memory address of the UT 29 auxiliary block.

(c) Assign the DLG number in word 17 of the UT 29 auxiliary block associated for each existing centrex console DLs by typing the following RC:PSWD message:

RC:PSWD:
ADD ddddddddd
OLDDAT eeeeeeee, DAT xxx!

Where: ddddddd = ccccccc +21 (octal)
eeeeeeee = present octal value of word 17 from **TR13** output message for DL member.
xxx = octal equivalent of the DLG number.

System Response should be **RC18 1 0 ACPT.**

UT 29 Auxiliary Block

9. Obtain the ESS 1506 form(s) containing the DL member numbers in columns 33 and 34 that where listed on form ESS 1514.

10. For those DL member numbers that contain a CON SOL entry in columns 27 through 32 of form ESS 1514, do the following:

(a) Assign attendant loop circuits per AT&T Practices 231-318-334 and 231-318-336.

Note: A loop circuit is not required when the console position is equipped with trunk busy memory or a lamp multiple unit.

(b) Determine the starting address of the unit type auxiliary block as follows:

(1) Type the following message to determine the UT 29 subtranslator address:

TAG-UNTY-29 aaa.

Where: aaaa = decimal DL member number from Step 2.

System Response: **TR27** containing a 7-digit octal number. The octal number (bbbbbbb) is the UT 29 subtranslator address associated with the DL member number entered in Step (1).

(2) Obtain the UT 29 auxiliary block address by typing:

DUMP:CSS,ADR bbbbbbb!

System Response: **PF, CODE 091** followed by a **DUMP:CSS** containing an 8-digit octal number. Delete the leading zero. The result (ccccccc) is the octal memory address of the UT 29 auxiliary block.

(c) Assign console position 0 by entering the following RC:PSWD message to build the UT 29 auxiliary block words:

RC:PSWD:
ADD ddddddd
OLDDAT eeeeeeee, DAT ffffffff%
OLDDAT gggggggg, DAT 1xxxxxx%
OLDDAT hhhhhhhh, TDN (4,kiiiii)!

Where: ddddddd = ccccccc + n (octally)
n = 5 for console position 0
eeeeeeee = present octal value of word 5 from **TR13** output message for DL member.
ffffffff = octal equivalent of centrex number, primary route index, and the number of data loop lamps.
gggggggg = present octal value of word 6 from **TR13** output message for DL member.
xxxxxx = octal equivalent of master scanner point HDST, conference option, and primary console option.
hhhhhhhh = present octal value of word 7 from **TR13** output message for DL member.
k = **S** if point is in a supplementary SD.
U if point is in a universal trunk SD.
J if point is in a junctor SD.
iiiii = SD number.

System Response should be **RC18 1 0 ACPT**.

Note 1: The starting address of the auxiliary block, ccccccc, and n are both octal numbers and must be added as octal numbers. For example, if ccccccc = 3570774 and n = 5, then ddddddd = 3571001.

Note 2: Formation of the octal equivalent of decimal numbers to form ffffffff is performed as follows:

(1) Convert the decimal numbers to their binary equivalents.

(2) Form a 23-bit binary word making sure the values for the individual items contain the correct number of bits. Prefix the values with zeros to make the correct number of bits if needed. For example, to build a 23-bit binary word for the first word of a console position with the following values:

Centrex number = 12 (binary 1100)
Primary RI = 305 (binary 100110001)
No. of loop lamps = 3 (binary 11).

The 23-bit word would be:

11 000 100 110 001 000 001 100

(3) Starting at the right, convert each group of three bits to its octal equivalent. For the example given, the octal equivalent is 30461014.

System Response should be an **RC18 1 0 ACPT** message.

(d) Assign console positions 1, 2, and/or 3 as follows:

(1) If console position 1 is to be used for trunk busy memory (position 0 assigned to a 2B console), use the following message to assign console position 1:

RC:PSWD:
ADD iiiiiii
OLDDAT jjjjjjj, DAT kkk%
OLDDAT mmmmmmmm, DAT 0%
OLDDAT nnnnnnnn, DAT 0!

Where: iiiiiii = ccccccc + n (octally).
n = 10 for console position 0.
jjjjjjj = present octal value of word 8 from **TR13** output message for DL member.
kkk = octal equivalent of the centrex number. Be sure to use the same centrex number used for console position 0.
mmmmmmmm = present octal value of word 9 from **TR13** output message for DL member.
nnnnnnnn = present octal value of word 10 from **TR13** output message for DL member.

System Response should be **RC18 1 0 ACPT.**

(2) If console position 1 is not to be assigned for trunk busy memory, assign console position 1 using the **RC:PSWD** message as follows:

RC:PSWD:
ADD ooooooo
OLDDAT pppppppp, DAT rrrrrrr%
OLDDAT sssssss, DAT 1xxxxx%
OLDDAT ttttttt, TDN (4,kiiiii)!

Where: ooooooo = ccccccc + n (octally).
n = 10 for console position 1.
pppppppp = present octal value of word 8 from **TR13** output message for DL member.
rrrrrrr = octal equivalent of centrex number, primary route index, and the number of data loop lamps.
sssssss = present octal value of word 9 from **TR13** output message for DL member.
xxxxx = octal equivalent of master scanner point HDST, conference option, and primary console option.
ttttttt = present octal value of word 10 from **TR13** output message for DL member.

k = **S** if point is in a supplementary SD.

U if point is in a universal trunk SD.

J if point is in a junctor SD.

iiiii = SD number.

System Response should be **RC18 1 0 ACPT**.

(3) If console positions 2 and/or 3 are to be assigned, assign each console position by typing a separate RC:PSWD message as follows:

RC:PSWD:
ADD uuuuuuuu
OLDDAT vvvvvvvv, DAT wwwwwww%
OLDDAT yyyyyyyy, DAT 1xxxxx%
OLDDAT zzzzzzzz, TDN (4,Kiiiii)!

Where: uuuuuuu = ccccccc + n (octally).

n = 13 for console position 2.
16 for console position 3.

vvvvvvvv = present octal value from **TR13** output message for:

word 14—console position 2 or

word 17—console position 3.

wwwwwwww = octal equivalent of centrex number, primary route index, and the number of data loop lamps.

yyyyyyyy = present octal value from **TR13** output message for:

word 14—console position 2 or

word 17—console position 3.

xxxxx = octal equivalent of master scanner point HDST,conference option, and primary console option.

zzzzzzzz = present octal value from **TR13** output message for:

word 15—console position 2 or

word 20—console position 3.

k = S if point is in a supplementary SD.

U if point is in a universal trunk SD.

J if point is in a junctor SD.

iiiii = SD number.

System Response should be **RC18 1 0 ACPT**.

(e) When the DLIO feature package is loaded, assign the DLG number in word 17 of the UT 29 auxiliary block by typing:

RC:PSWD:
ADD AAAAAAAA
OLDDAT BBBBBBBB, DAT xxx!

Where: AAAAAAA = ccccccc +21 (octal)..

BBBBBBB = present octal value of word 17 from **TR13** output message for DL member.

xxx = octal equivalent of the DLG number.

System Response should be **RC18 1 0 ACPT**.

(f) Assign the DL MSNs (master scanner numbers) for the console positions just assigned (See AT&T Practice 231-318-331).

Translations Verification

11. Verify translations data for the following translators. The appropriate verify message is indicated in parentheses. The format of the verify output messages can be obtained from the output message manual (OM-6A001-01). For translators that do not have specific verify messages, the **DUMP:CSS** input message is used. The contents of the **DUMP:CSS** output message can be compared with the word layouts in the translation output configuration (PA-6A002).

(a) Verify the DL console words for each customer console by typing the following message:

VFY-UNTY-15 029 aaa.

Where: aaa = decimal DL member number from (b) above

System Response: One or two **TR13** output messages containing UT 29 auxiliary block words. The **TR13** response will contain octal data that must be converted to binary and then to decimal parts per PA6A002. The data can then be compared with forms ESS 1506, 1514, and 1600.

(b) Verify each UT 29 MSN entered by typing the following message:

VFY-MSN-13 aa bb cc.

Where: aa = MSN from form ESS 1600, columns 18-23, associated with appropriate unit type and member number.

System Response: **TR12** output message containing octal MSN data.

The octal data must be converted to decimal and verified from form ESS 1600. The following items should be set as shown:

Nontrunk Program Index	=	7
UT number	=	29
Nontrunk Indicator	=	0

(c) Verify each DLG auxiliary block as follows:

(1) Determine the address of each DLG auxiliary block by typing the following message for each DLG:

DUMP:CSS, ADR, 7720100, INC D' iii!

Where: iii = DLG number from form ESS 1514, columns 19-21

System Response: **PF, CODE 091** followed by a **DUMP:CSS** with the address (aaaaaaa) of the DLG auxiliary block.

(2) Obtain a copy of each DLG auxiliary block by typing the following message:

DUMP:CSS, ADR aaaaaaa,L 3;BIN!

Where: aaaaaaa = address of DLG auxiliary block from (1) above.

System Response: **DUMP:CSS** output message. The **DUMP:CSS** response will contain binary data that must be converted to decimal parts per PA6A002. The data can then be compared with form ESS 1514.

DL Facilities Tests

12. Provide wiring options W, X, and Y at the DL frames.

13. Install DL cross and/or tie-point connections at the MDF, IDF, and/or TDF.

14. Inform the local test desk of equivalent personnel to perform loop resistance and short to ground tests on all DL cable pairs.

15. Diagnose new DL units by typing:

DL-SZRE-N ab.

Where: a = DL frame from form ESS 1506, column 33.
b = DL unit from form ESS 1506, column 34.

System Response: **ATP** if all diagnostic tests are passed.

16. Test customer console operation.

End of Procedure

6. ISSUING ORGANIZATION

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