

**5ESS®-2000 SWITCH
RECENT CHANGE PROCEDURES
5E11 AND LATER SOFTWARE RELEASES**

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1. INTRODUCTION TO RECENT CHANGE AND VERIFY

1.1 PURPOSE

This document is a guide about how to use the Recent Change and Verify (RC/V) system. The RC/V system is a user interface provided by the 5ESS[®]-2000 switch. It allows you to modify or verify the contents of the office dependent data (ODD) database on the switch. This document is for the switch equipped with the 5E11 and later software releases.

1.2 UPDATE INFORMATION

1.2.1 GENERAL

The 5E11 and later document provides you with the following topics:

- Recent Change Menu Mode
- Recent Change Text Mode
- Recent Change Batch Mode
- Recent Change Database Query
- Global Recent Change
- DBRC Performance
- Assignment Examples

1.2.2 LUCENT TECHNOLOGIES

As a result of the AT&T divestiture, the AT&T Network Systems division became Lucent Technologies, a separate and independent corporation. The 5ESS[®]-2000 switch and many other network and transmission products became products of Lucent Technologies. The marketing, sales, engineering, delivery, installation, support, and future development of these products are now provided by Lucent Technologies.

Therefore, the corporate name and logo on this document's cover, spine and title page are changed from the AT&T brand to the Lucent Technologies brand. The AT&T name is being removed from the content (where appropriate), as well as the 9-digit document order number.

Not all pages of this document are being reissued to make these changes; instead, the pages will be reissued over time, as technical and other changes are required. Customers on standing order for this document, may see references to the AT&T name on previous-issue pages. Customers receiving new orders for this document will see the references changed to the Lucent Technologies name throughout the document as appropriate. Exceptions may exist in software-influenced elements such as input/output messages, master control center screens, and recent change/verify screens. These elements will not be changed in this document until such time as they are changed in the software code.

Document updates will not be made specifically to remove historical references to AT&T, especially in cases where the Network Systems division of AT&T, now Lucent Technologies, provided the product or service in question.

1.2.3 SUPPORTED SOFTWARE RELEASES

In accordance with the 5ESS[®]-2000 Switch Software Support Plan, the 5E10 software release is rated Discontinued

Availability (DA) as of November 13, 1998. The information supporting 5E10 and earlier is being removed over time, instead of concurrently, from all documentation.

If you are supporting offices that use a software release prior to 5E11 and you have a need for the information that is being removed, retain the associated pages as they are removed from the paper documents, or retain the earlier copy of the CD-ROM.

1.2.4 TERMINOLOGY

Effective with the 5E9(1) software release, the name of the 5ESS[®] switch was changed to 5ESS[®]-2000 switch; therefore, the name 5ESS[®] switch is no longer valid. The name revision will be accomplished over time as other technical changes are required. In the interim, assume that any reference to the 5ESS[®] switch is also applicable to the 5ESS[®]-2000 switch. Note that this name change may not have been carried forward into software-influenced elements such as input/output messages, master control center screens, and recent change/verify screens.

National ISDN is an evolving platform in which new features will continue to be introduced for new revenue opportunities, improved operational efficiencies, and for support of specific applications. NI 1, NI 2, and NI 3 represent specific features as documented in Bellcore SRs 1937, 2120, and 2457. The industry is migrating to an additional terminology to more specifically denote the availability of National ISDN features: NI 95, NI 96, etc. A feature is included in a specific version (such as, NI 96) if it is available by the switch vendors by the first quarter of the year.

1.2.5 REASON FOR REISSUE

This document is being reissued to include updated information in Chapter 3 and Chapter 5.

Chapter 3, RC Text Interface, contains information on the new "SELVIFY" command, which is available as a software update for the 5E13 software release (feature 99-55-4093, "Improve RC Verify"). Chapter 5, RC Office Records, contains information on the new "FIL_FRMID" option, which is available as a software update for the 5E12 and 5E13 software releases. Both features are available in the 5E14 software release.

1.3 ORGANIZATION

This document is organized into the following sections:

- Introduction to Recent Change and Verify
- RC Menu Interface
- RC Text Interface
- RC Batch
- RC Office Records
- Database Query
- Global RC - Lines
- DBRC Process and Performance Impact
- Assignment Examples
- Glossary
- Index

These sections have separators labeled with the section titles. Each section contains information related to the use of recent change or recent change views/forms. A table of contents is provided at the front of the document listing a condensed view of the major subjects covered in each of the sections.

The first nine sections have a table of contents that provides a more comprehensive view of the subjects covered in that particular section. The glossary section contains a list of terms, acronyms, and abbreviations used throughout this document. The index contains a list of items in alphabetical order and their respective page numbers.

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1.7 REFERENCES

The following is a list of other Lucent Technologies documents that are referred to in this document.

- 235-118-252, *Recent Change Reference (5E11)*
- 235-118-253, *Recent Change Reference (5E12)*
- 235-118-254, *Recent Change Reference (5E13)*
- 235-900-304, *Recent Change Operations Systems Interface Specification*
- 235-100-125, *System Description*
- 235-600-700, *Input Message Manual*
- 235-600-750, *Output Message Manual*
- 235-105-210, *Routine Operations and Maintenance Procedures*

1.8 SECTION OVERVIEW

1.8.1 General

This section gives an overview of the RC/V system along with suggestions about how to get the most out of this document.

1.8.2 INFORMATION IN THIS SECTION

The following items are covered in this section:

- WHY YOU SHOULD READ THIS DOCUMENT
- HOW TO USE THIS DOCUMENT
- GETTING STARTED
- EXAMPLES
- DEFINITION OF TERMS
- ACCESSING RC/V
- INHIBITING RC
- RECENT CHANGE VIEW TIME-OUT

- RC/V USERS
- VERBOSE OPTION
- ERROR AND WARNING MESSAGE HANDLING

1.8.3 WHY YOU SHOULD READ THIS DOCUMENT

Due to the complexity of the RC/V system, it is important that you read this document before using the system because RC/V can modify the existing customer database. Making unwarranted database changes may lead to problems.

1.8.4 HOW TO USE THIS DOCUMENT

This document is an easy-to-use guide for the RC/V system. You should be familiar with the craft interface on the 5ESS[®]-2000 switch and have access to the appropriate input and output command manuals.

NOTE: Examples of screens and reports provided in this document are for reference purposes only and are not intended to reflect the software release.

In addition to this document, you can also refer to 235-118-254, *Recent Change Reference*.

1.8.5 GETTING STARTED

The introduction contains "DEFINITION OF TERMS", Section 1.9. It provides a list of recent change terms used within the document, and may be referenced as needed. It will be helpful if you are familiar with those terms first.

1.8.6 EXAMPLES

Examples shown in this document were generated by using the RC/V system on actual data. Real examples should help you become more familiar with the RC/V system.

1.9 DEFINITION OF TERMS

Table 1-1 contains the following definition of terms:

Table 1-1 DEFINITION OF TERMS

TERM	DEFINITION
APPTXT	This is the RC/V Text Interface program name. This program is invoked by the "RCV:APPTXT!" input command.
ECD	Equipment Configuration Data Base. This data base describes the physical and logical configurations of the 5ESS [®] -2000 switch and peripheral hardware. It also contains configuration and control information for the audit and craft interface software.
FM	Facility Management. This is an RC/V facility which gives a service provider customer access to a limited set of recent changes. The service provider customer can "manage their facilities" without the service provider performing all the necessary Recent Changes (RCs). This interface uses an attached processor to the 5ESS [®] -2000 switch.
MCC	Master Control Center. This terminal is the master control for the 5ESS [®] -2000 switch. This terminal has an emergency access page that can be used to control and monitor activities such as system initialization.
MML	Man Machine Language. This is the craft interface language understood by the 5ESS [®] -2000 switch.
NULL	No Value. This term is used to represent fields with no value assigned to them. For RC/V purposes, 0 (zero) is not the same as NULL.
OA&M	Office Administration and Maintenance. This term is used by service providers to describe the activity

	required to maintain and administer the 5ESS [®] -2000 switch.
ODBE	Office Data Base Editor. This is an interactive menu-driven tool that allows users tuple-level access of the 5ESS [®] -2000 switch base relations. It is primarily used to correct problems with the office dependent data base that cannot be corrected using recent change.
ODD	Office Dependent Data
OFR	Office Records. This is an RC/V facility which allows users to print hard-copy listings of 5ESS [®] -2000 switch office dependent data.
OSs	Operation Systems. This term is used to refer to remote computer systems (such as MACSTAR [®] system) which perform OA&M processing on a day-to-day basis.
RC or RC/V	Recent Change or Recent Change/Verify. This is the facility that is used to review/modify the ODD using view level access.
RCOS	Recent Change Operations Systems. This interface allows remote users to perform recent change processing from their OS.
ROP	Read-Only Printer. This device logs 5ESS [®] -2000 switch activity. Some recent change activity may be optionally sent to the ROP.
SCC	Switching Control Center. This is a remote terminal which allows functionality similar to the MCC terminal.
STLWS	Supplemental Trunk and Line Work Station. This is a terminal which has the same functionality as the MCC, but does not have an emergency access page.
TLWS	Trunk and Line Work Station. This is a terminal which has the same functionality as the MCC, but does not have an emergency access page.
atomic fields	Fields which are input as single pieces of data [for example, the Telephone Number (TN) field].
compressed list	A field list which moves data entered throughout the list to the front of the list thus compressing the data [for example, the FL (FEATURE LIST) field on the RBRASG TN (1.8) view].
craft interface	This is the user interface which accepts craft input commands from the user.
cursor	The character or symbol on the terminal screen (usually a blinking box or underline) which identifies the position on the screen where the next typed character will be entered. The cursor is displayed as an underline (or underscore) throughout the examples in the RC/V Menu Interface and RC/V Text Interface sections.
data fields	Fields on a form that are not key fields are called data fields.
default value	This is the predefined value for a field in an RC/V view, and will be used if a user does not enter a value for the field.
domain	This is the range of legal values that may be entered for a field. Any values entered outside of this range will return an error message.
field names	This is the name of a field on an RC/V view.
form	A collection of fields which are combined to form a logical data entity. The words <i>form</i> and <i>view</i> are used synonymously. A view may have multiple screens or pages.
form id	This is the unique form identifier used by the RC/V Text Interface. It can be either the view name or the class.view number.
form key	A group of one or more key fields found on a view, used to uniquely identify the office dependent data that will be added, deleted, or modified when the view is used.
key field	This is a field used in the access of a view or form for which the user must enter valid data (do not leave blank). In the RC/V Menu Interface, key fields are denoted by an asterisk "*".
list field	Fields which are composed of two or more rows of data. Each row of a list can contain one or more atomic fields and/or structures.
logical view	This is the users view of how the data in the ODD appears.
name-value	This term is used in the RC/V Text Interface to refer to a field name and the field value.
optional key	A key field whose entry by the user can be skipped and left blank. In the RC/V Menu Interface, optional keys are denoted by the asterisk enclosed in parentheses "(*)".
positional list	Field lists which do not move data entered throughout the list. These lists leave the data positioned where the user entered the data on the view.
physical view	This is the actual data base stored layout for a given view.
required field	A field in which the user must enter a non-null value. In the RC/V Menu Interface, required fields are denoted by a pound sign "#".
simple data field	This is another name for an atomic field.
subfields	These are fields within lists [for example, the BUTTONLIST field on the RC_CFGGRP (12.5) view has BUTTON, FEATURE, ACTION, PARAM, and SLACKBY as subfields].
structure field	These fields are complex groups of atomic fields that in some way belong together (that is, a structure called <i>address</i> could consist of three atomic fields called <i>street</i> , <i>city</i> , and <i>state</i>).
views	This is a term used to refer to forms, form ids, or user logical interpretations on how the ODD is stored.

1.10 RC/V SYSTEM OVERVIEW

1.10.1 RC/V SYSTEM OVERVIEW - GENERAL

The RC/V system consists of many user interfaces which allow you to modify or verify the contents of the ODD on the 5ESS[®]-2000 switch. The RC/V system currently provides the following interfaces:

- RC/V Menu Interface - immediate and batch release
- RC/V Text Interface - immediate and batch release
- Office Records (OFR)
- Recent Change Operations Systems Interface (RCOS)
- Facility Management (FM)

This document will provide information on the use of the "RC MENU INTERFACE", Chapter 2 ; "RC TEXT INTERFACE", Chapter 3 ; "RC BATCH RELEASE", Chapter 4 ; and "RC OFFICE RECORDS", Chapter 5 . Information about RCOS may be found in 235-900-304, *Recent Change Operations Systems Interface Specification* and 235-100-125, *System Description*. Information on FM may be found in 235-100-125, *System Description*.

1.10.2 ACCESSING RC/V

1.10.2.1 Recent Change on the Administrative Services Module (ASM)

1.10.2.1.1 Availability of Recent Change on the ASM

Beginning with the 5E13 software release of the 5ESS[®]-2000 switch, some RC/V applications will be offered on the Administrative Services Module (ASM). RC/V on the ASM is one in a series of steps undertaken to provide the customer with a modern, high-speed data administration interface. This document does not provide general ASM information, only information pertaining to RC/V on the ASM. For detailed information on the ASM, see 235-105-210, *Routine Operations and Maintenance*.

The ASM is an optional feature, as is Recent Change on the ASM. All RC/V functionality will continue to be provided on the Administrative Module (AM). The RC/V applications provided on the ASM include:

- RC Menu Interface (APPRC) (See the "RC Menu Interface" section of this document for more information.)
- RC Text Interface (APPTXT) (See the "RC Text Interface" section of this document for more information.)
- RCOS Interface, see 235-900-304, *Recent Change Operations Systems Interface Specification* for detailed information.

RC/V on the ASM is a secured feature. Normal secured feature procedures must be followed to purchase and activate RC on the ASM.

RC/V on the ASM will provide the same functionality as does RC/V on the AM, but will provide easier, more modern access methods and improved performance and increased RC/V throughput.

1.10.2.1.2 Differences Between RC/V Applications on the AM and the ASM

In most cases, the RC/V applications (excluding the RCOS Interface) provided on the ASM will function in exactly

the same way they do on the AM. There are, however, some differences in accessing these applications on the ASM.

- (1) Each RC/V user must have a login on the ASM to access RC/V applications. Twelve standard RC logins have been predefined on the ASM. These logins: rcv1, rcv2, rcv3, rcv4, rcv5, rcv6, rcv7, rcv8, rcv9, rcv10, rcv11, and rcv12, automatically start craftshell, giving the user the equivalent of an RC/V terminal on the ASM.

A single preliminary password is set for all of these logins during ASM growth. This preliminary password is the same password associated with the primary ASM "rc" administrative login. The user must subsequently change the password for each login after ASM growth.

- (2) RC/V users on the ASM are identified by login, not by tty as they are on the AM. So, for example, in RC VERBOSE messages, the user's login is used to identify the origination of an RC/V, not the user's tty. Affected input and output messages are:

- OP:RCACCESS
- SET:RCACCESS
- OP:RCUSER
- RC VERBOSE

Refer to the appropriate section of 235-600-700, *Input Messages*, and 235-600-750, *Output Messages*, for details on each of these messages.

- (3) There are, by default, no permanent terminals on the ASM. Most users will access the ASM via telnet or some other standard network access interface. [refer to the appropriate ASM manual for more details.] Once a session is established and a craftshell is started, users follow standard procedures for starting the RC Menu Interface and the RC Text Interface. See the "RC Menu Interface" and "RC Text Interface" section of this document for more information.
- (4) For the RC Text Interface, the "DEVICE=TTY" option is not available on the ASM. This is because there are no permanent ttys on the ASM.

1.10.2.2 General

1.10.2.3 General - Accessing RC/V

Once invoked, the RC/V system provides you with a logical view of how the data is stored in the ODD database. With proper access permissions, you can examine (verify) or modify (insert, change, delete) data in the ODD database by entering the logical view or form you desire. By default, you can verify any form instance in the ODD database. In order to modify information within the ODD, your terminal or login must be authorized prior to attempting the modification.

You can use the **SET:RCACCESS** command to perform the authorization. Recent change authorization (access) is granted on a per-class basis. When your terminal or login is granted modification permission for class 1, you can modify any view under class 1 at your terminal or login. The default RC/V access is verify only.

To display or modify the RC security of any terminal or login connected to the 5ESS[®]-2000 switch, you must use the following input commands:

```
SET:RCACCESS - modify access
OP:RCACCESS - display access
```

While this document will explain both of the preceding input commands, you can also consult the 235-600-700 and 235-600-750, *Input Message and Output Message* manuals for detailed coverage.

1.10.2.4 Terminals Supported

You can invoke the RC/V System from any of the following:

- Master Control Center (MCC) terminal
- Switching Control Center Subsystem (SCCS) terminal
- Recent Change and Verify (RC/V) terminal (on the ASM or AM)
- Trunk and Line Work Station (TLWS) terminal
- Supplemental Trunk and Line Work Station (STLWS) terminal
- Recent Change Operations Systems (RCOS) interface
- Any terminal input device compatible with 5ESS[®]-2000 switch craft interface (on the ASM or AM)

1.10.2.5 Setting RC/V Security for a Terminal

1.10.2.5.1 General - Setting RC/V Security for a Terminal

The `SET:RCACCESS` input command allows you to modify the RC/V security of any terminal or login.

NOTE: This command can only be executed from the MCC or the SCCS terminal.

NOTE: LOGIN is used for ASM users; TTY is used for AM users.

The syntax of this command is as follows:

```
SET:RCACCESS, [LOGIN|TTY]="a",ACCESS=H'b;
```

- OR -

```
SET:RCACCESS, [LOGIN|TTY]="a",ACCESS=O'c;
```

- OR -

```
SET:RCACCESS, [LOGIN|TTY]="a",ACCESS=d;
```

Where:

- | | |
|------|--|
| a = | Login ID (for ASM users) or symbolic name of TTY terminal (for AM users), contained in double quotes. |
| H' = | Indicator that the value to follow is a hexadecimal number. |
| b = | 7-character hexadecimal field constructed from binary bits corresponding to RC/V permission. The field range in hexadecimal is from 0000000 to FFFFFFFF. |
| O' = | Indicator that the value to follow is an octal number. |
| c = | 10-character octal field constructed from binary bits corresponding to RC/V permission. The field range in octal is from 000000000 to 1777777777. |
| d = | 9-character decimal field constructed from binary bits corresponding to RC/V ability. The field range in decimal is from 00000000 to 268435455. |

This input command defines security for any terminal or login. Please note that the symbolic name of the terminal specified should match exactly that of the terminal you desire (that is, upper or lower case). The value you input for the "ACCESS" field sets the security for the terminal.

Currently, the RC/V system supports the following view classes for 5E11 and later:

- (1) Class 1 - LINES
- (2) Class 2 - LINES-OE
- (3) Class 3 - LINES-MLHG
- (4) Class 4 - LINES-MISC.
- (5) Class 5 - TRUNKS
- (6) Class 6 - AUTOMATIC CALL DISTRIBUTION
- (7) Class 7 - TRUNKS-MISC.
- (8) Class 8 - OFFICE MISC. & ALARMS
- (9) Class 9 - DIGIT ANALYSIS
- (10) Class 10 - ROUTING & CHARGING
- (11) Class 11 - CUTOVER STATUS
- (12) Class 12 - BRCS FEATURE DEFINITION
- (13) Class 13 - TRAFFIC MEASUREMENTS
- (14) Class 14 - LINE & TRUNK TEST
- (15) Class 15 - COMMON NTWK INTERFACE
- (16) Class 16 - PSU BASED SS7
- (17) Class 17 - CM MODULE
- (18) Class 18 - SM & REMOTE TERMINALS
- (19) Class 19 - SM UNIT
- (20) Class 20 - SM PACK & SUBPACK
- (21) Class 21 - OSPS FEATURE DEFINITION
- (22) Class 22 - ISDN-EQUIPMENT
- (23) Class 23 - ISDN
- (24) Class 24 - APPLICATIONS PROCESSOR
- (25) Class 25 - LARGE DATA MOVEMENT
- (26) Class 26 - OSPS TOLL & ASSIST/ISP

Where:

a = Login ID (for ASM users) or symbolic name of terminal (for AM users), contained in double quotes.

The output of this input command is always displayed in hexadecimal. If the security of a given terminal or login is displayed as H'0, the terminal or login does not have modification access for any RC/V view. Please note that the symbolic name of the terminal or the login specified should match exactly (that is, upper or lower case) the name of the desired terminal or login. This command, unlike the "SET:RCACCESS" command, may be executed from any craft interface terminal.

1.10.3 INHIBITING RC

Occasionally, you are unable to perform modifications to the ODD database even though you have specified the correct access for your terminal or login. You will see a message similar to the following:

```
"RC UPDATES MANUALLY INHIBITED - REVIEW MODE ONLY"
"UPDATES INHIBITED"
"RC has been manually inhibited"
```

The RC/V system can be manually inhibited during software update application, a retrofit, or for other reasons.

You can use the following input command to inhibit recent change:

```
INH:RC
```

To restore (un-inhibit) recent change capability, issue the following input command at any craft terminal:

```
ALW:RC
```

1.10.4 RECENT CHANGE VIEW TIME-OUT

The RC/V system also provides time-outs for view operations so that you do not have to wait forever for an RC request to complete. The time-out value for a view is the maximum length of time required to complete a given operation and is expressed in seconds. There are two types of view time-outs:

- Verify Time-Out (read/review)
- Modify Time-Out (insert/update/delete)

Verify (review) operations have a default time-out of 155 seconds. This implies the maximum wait time for the verify operation to complete is 155 seconds.

Insert, Update, and Delete operation time-out values differ among RC views. You can find these time-out values in 235-118-254, *Recent Change Reference*. These values are defined in the manual as: "MAXIMUM TIME OUT." When an operation exceeds the view's time-out value, the RC/V system returns a time-out message.

1.10.5 RC/V USERS

You can determine who is currently using the RC/V system by issuing the following craft input command:

```
OP:RCUSER
```

The 5ESS[®]-2000 switch responds with a listing of all the active RC/V users including any remote OSs using the RC/V system. Here is an example:

```
M OP RCUSER          5 ACTIVE RC USERS
RC PROCESS          TTY/LOGICAL/CLERK-ID  PART 1 OF 1
RCV:APPTEXT        TERM-ID = ttye
```

```

RCV:APPTTEXT      LOGIN    = rcos1
RCV:MENU,APPRC    TERM-ID = ttyq
RCV:MENU,APPRC    LOGIN    = rcv2
RCV:APPTTEXT      TERM-ID = RCOS3
RCV:POKE 196      TERM-ID = ttya
ODBE               TERM-ID = ttyr

```

1.10.6 VERBOSE OPTION

You can set the verbose option upon invoking the RC/V Menu Interface or the RC/V Text Interface. When the verbose option is turned on, additional information is provided on the read-only printer (ROP). The verbose option provides an indication on the ROP of the following RC activities:

- All users starting an RC/V session
- All users completing an RC/V session
- All users inserting a new RC view
- All users updating an existing RC view
- All users deleting an existing RC view
- All views that failed to insert, update, or delete due to level 3 error

The default setting for the verbose option is controlled by the Office Parameter view (view 8.1 - RC_PARAM), and can be modified at any time. Any RC user can override the default parameter upon invocation of the RC/V Menu Interface or the RC/V Text Interface.

To reset the default, you can

- update view 8.1 and set RCVERBOSE=Y

To override, you can do

- **rcv:apptext,verbose!**
- **rcv:menu:apprc, verbose!**

NOTE: A VERBOSE option of yes can significantly increase ROP output. Care should be exercised when setting the default VERBOSE option to yes on the Office Parameter view.

The following examples illustrate the ROP output for an RC/V Text Interface user on the AM, when the VERBOSE option is turned on:

```

M REPT: RCV APPTTEXT STARTING TERM-ID = ttys
  (where s = tty number).
M RCV SUCCESS RC_HGRPAS INSERTED 230 02
M RCV FAILURE RC_HGRPAS NOT INSERTED 230 02
M REPT: RCV APPTTEXT COMPLETE TERM-ID = ttys
  (where s = tty number).

```

The numbers at the end of the view success and failure lines are the values of the keys entered by the user.

1.11 ERROR AND WARNING MESSAGE HANDLING

1.11.1 ERROR AND WARNING MESSAGE HANDLING - GENERAL

Error messages are displayed on the screen as soon as the system identifies the problem. The RC/V Menu Interface displays the entire error or warning message, while the RC/V Text Interface displays an indication that an error or warning has occurred. You must request the detailed error message by using the **MSG!** command. This command is discussed in "RC TEXT INTERFACE", Chapter 3 .

The timing of displaying an error or warning message depends upon the message error level. Error messages can contain multiple lines. An error message provides more detailed information than a help message, allowing you to evaluate the input error and reenter the correct field value. Error messages may contain a list of correct values and a description of the original help message. Refer to 235-118-254, *Recent Change Reference*, if you need additional information.

Error messages exist in three levels:

- **Level 1:** Field (range checks)
- **Level 2:** Data consistency (form checks)
- **Level 3:** Data integrity (database checks)

Field checks (level 1) take place immediately after you enter a value in the field, or while entering the value. The field value is checked for proper format and appropriate range.

Form or data consistency (level 2) checks take place immediately after entering data for the entire view. Fields are checked against other fields in the view to ensure that the view is consistent. For example, on view 1.6, a Tip-Party line is checked to ensure that it is not a member of a Multiline Hunt Group.

Data integrity checks (level 3) occur when the view is entered in the database. The new request is compared to the data that exists in the database. If the new request does not maintain consistency within the database or the database is already inconsistent, a data integrity error occurs, and one or more error messages will be displayed on the screen.

1.11.2 WARNING MESSAGES

Warning messages/indications alert you to double check the input values. An example of a warning message for the RC/V Menu Interface is as follows:

- **Warning: Free Terminating Service YES is only for unusual purposes.**

The preceding warning appears on the screen twice for the RC/V Menu Interface, and a warning indication also appears twice for the RC/V Text Interface. It first appears when a Y for yes is input in the field for Free Line Service (FLS). It appears the second time after the form is completed (RC/V Menu Interface) or the last operation is entered (RC/V Text Interface) prior to inserting/updating the view in the database.

When the warning message/indication appears the first time, the prompt **Continue?** appears in the acknowledgment area for the RC/V Menu interface, and a "?W" for the RC/V Text Interface.

After receiving the warning message, you can enter a Y (yes) to accept the field, or a N (no) to move the cursor back to the field in question so you can enter a new value. In the RC/V Text Interface, you can continue by ignoring the warning message indication and entering the next field or operation.

When the warning message/indication appears the second time, it is displayed as follows for the RC/V Menu Interface:

- **1 Warning. Hit return for next message, Change, or Ignore:**
- **Warning: Free Terminating Service YES is only for unusual purposes.**

For the RC/V Menu Interface, entering an **I** ignores the warning and entering a **C** allows changes to the field. Consult the service order and proceed according to local practices.

At the second invocation of the warning message for the RC/V Text Interface, a "?W" will be displayed. You can request the detailed warning message using the **MSG!** command, and an **IGN!** ignores the warning message.

1.11.3 LEVEL 1—ERROR MESSAGES

Level 1 error messages report improper field values when the value is out of range or is in an inaccurate format. Help messages and level 1 error messages vary from very basic to very complex. Yes/No fields have very basic help and error messages. A typical example of the messages for a field of this type is as follows:

- **Help message:** Deny Origination. Enter Y or N.
- **Error message:** DENY ORIG: Invalid. Enter Y=yes or N=no.

An example of a field with more extensive help and error messages is Telephone Number (TN). The messages for this field are as follows:

- **Help message:** Telephone number. Enter XXXXXXXX or NXXXXXXXXX where N=2-9 and X=0-9.
- **Error message:** TN: Invalid. Enter XXXXXXXX or NXXXXXXXXX where N=2-9 and X=0-9.

1.11.4 LEVEL 2—DATA CONSISTENCY ERROR MESSAGES

Data Consistency checks are cross checks on multiple fields on the same form or view (intra-form checks). The level 2 form checks are performed after you request the form to be inserted or updated in the database. An error message of this level is to indicate the inconsistencies on the view (form). The content of the message specifies fields on the view that are inconsistent. An example of a level 2 error message is as follows:

- **Coin Lines (COIN) cannot have abbreviated dialing (AD).**
In this case, COIN and AD are both fields on the view that have been entered with inconsistent values.

Following is an example associated with BRCS Call Waiting view (12.15):

- **If ACTYP is AUTO, then DACTYP must be NONE or CODE.**
Again, ACTYP and DACTYP are two fields on the view that have been inconsistently entered.

NOTE: Level 2 error messages can also have warning messages associated with some fields. The warning message may sometimes take the place of the error message when improper input is entered.

1.11.5 LEVEL 3—DATA INTEGRITY ERROR MESSAGES

1.11.5.1 General - Level 3—Data Integrity Error Messages

The purpose of a level 3, or data integrity error message, is to identify conflicts of the new data with the existing data or conflicts within the existing data. Level 3 error messages perform cross checks on multiple RC forms/views and are composed of multiple lines. The first line is divided into two parts:

- the numerical error code in the form of XXX-YYY and
- the error type

The remaining lines of a level 3 error message provide a detailed error description. Level 3 error messages are classified as user-related or system-related.

1.11.5.2 User-Related Errors

The "INPUT DATA ERROR" and "ACTION CONFLICT" error types describe user-related problems. The detailed error description provides the names of the fields in error, and suggestions on problem resolution.

User-related errors can usually be corrected by changing the value of a field on the view, or by completing a sequence of views in the proper order.

Examples of descriptions provided with INPUT DATA ERROR and ACTION CONFLICT error types are as follows:

- BFG Name in use or not allowed
- Incorrect office code (NXX, OXX or 1XX) in the telephone number
- The TN must be given when line is on intercept
- The member being assigned to a multiline hunt group is already assigned
- The LCC and/or RAX entered have not been defined. (See view 4.1.)

The last example in the list displays the error when the LCC or RAX field given on view 12.9 was not previously defined on view 4.1. If an incorrect LCC or RAX value was entered, the value of the field should be changed. If the correct value was entered, the service order or input form may be incorrect, or LCC and/or RAX must be assigned by completing view 4.1.

The service order should always be checked first when resolving errors. If the service order is incorrect or the error cannot be corrected, contact the appropriate personnel in accordance with local practices.

1.11.5.3 System-Related Errors

These messages are displayed due to system errors and are separated into the following categories:

- DATABASE SYSTEM ERROR: Usually displayed when a system resource is busy or is being accessed by multiple users. Try the database operation again (Insert, Delete, Update, or Review) in a few seconds. Report the problem if the error persists after several attempts. The format for most DATABASE SYSTEM ERROR messages is as follows:

```
XXX-2 DATABASE SYSTEM ERROR: ZZZ
$1 $2 failed ($3:$4)$5
```

Where:

XXX =	error ID (numeric view ID)
ZZZ =	phrase explaining database manager (DBM) failure
\$1 =	name of the relation or utility function
\$2 =	database operation (for example, read, insert...)
\$3 =	arbitrary string for location identification
\$4 =	return code from the DBM

\$5 = processor(s) or group type and group id

- **STORED DATA CONFLICT:** The system has detected inconsistencies in the database that usually cannot be resolved by using RC views. Manual intervention is likely to be required to correct the database. The format for most STORED DATA CONFLICT messages is as follows:

```
XXX-3 STORED DATA CONFLICT
Data in $1 $2 found ($3)$4
```

Where:

XXX = error ID (numeric view ID)
 \$1 = name of the relation or utility function
 \$2 = NOT or "null string"
 \$3 = arbitrary string for location identification
 \$4 = processor(s) or group type and group id

- **INTERNAL SYSTEM ERROR:** The system has run out of work space or has reached an unexpected program control point. These control points are designed to prevent or minimize corruption of the data base. Report the problem before continuing any Recent Change activity. The format for most INTERNAL SYSTEM ERROR messages is as follows:

```
XXX-4 INTERNAL SYSTEM ERROR
Found at internal location ($1:$2)
```

Where:

XXX = error ID (numeric view ID)
 \$1 = the code location identifier
 \$2 = miscellaneous data item or a return code.

- **FAILURE TO COMPLETE OPERATION:** The system gives error information when errors are encountered by subviews of the current RC view. A subview is a view called internally by the current view or another subview. Additional error messages follow with detailed information. The format for the FAILURE TO COMPLETE OPERATION message is as follows:

```
XXX-YYY FAILURE TO COMPLETE OPERATION
$1
```

Where:

XXX = error ID (numeric view ID)
 YYY = error number
 \$1 = phrase explaining error

- **RELATION KEY INFORMATION:** This message is only given with other system-related error messages, and is provided to assist the person attempting to correct the database. The format for most RELATION KEY INFORMATION messages is as follows:

```
391-5 RELATION KEY INFORMATION
$1
```

Where:

\$1 = the keys to the relation

Following examples are some level 3 error messages:

- **115-2 DATABASE SYSTEM ERROR: DB transaction timer ran out**
CF_LTM insert failed (fp2:-137) pcr=7
391-5 RELATION KEY INFORMATION
ltm_idx=37 ltm_type=LTM_OTHER lead_mod=77
- **115-3 STORED DATA CONFLICT**
Data in CF_LTM not found (fp2); pcr=7
391-5 RELATION KEY INFORMATION
ltm_idx=37 ltm_type=LTM_ISDN lead_mod=77
- **199-4 INTERNAL SYSTEM ERROR**
Found at internal location (brd4:10)
- **199-30 FAILURE TO COMPLETE OPERATION**
Could not process BRCS feature.
- **115-86 FAILURE TO COMPLETE OPERATION**
Feature /EDNULL's insert or cross checks of parameters failed.
- **403-16 ACTION CONFLICT**
EDS Group Name is not defined (i3).

2. RC MENU INTERFACE

2.1 RC/V MENU INTERFACE

2.1.1 WHAT IS RC/V MENU INTERFACE?

Recent Change Menu Interface is a form of Recent Change that provides the ability to review, insert, update, and delete the static office dependent data (ODD) on the 5ESS[®]-2000 switch using an on-line data entry system. The data is entered on a Recent Change view that is used to query or change the database.

Many of the terms used in this section have been defined in "INTRODUCTION TO RC/V," Chapter 1 .

2.1.2 INVOKING RECENT CHANGE MENU

The two methods used to invoke the Recent Change Menu Interface follows:

- **Craft Shell Mode:** Terminals such as the RC/V terminal and Control and Display terminals (except the MCC, STLWS, or TLWS terminal) can access the RC/V menu interface through a craft shell input message. Enter **RCV:MENU:APPRC** at the craft shell prompt to bring-up the RC/V main menu.
- **Control and Display Command Mode:** Terminals such as the MCC, STLWS, and TLWS can access the RC/V menu interface by entering **196 <CR>** at the "CMD<" prompt. The control and display terminals can also control the access of other RC/V terminals.

NOTE: Throughout this document are examples using a <CR> designation. This indicates a carriage return.

Refer to "Recent Change on the Administrative Services Module (ASM)" in "INTRODUCTION TO RC/V"; Chapter 1 for details on using the RC/V Menu Interface via the ASM.

2.1.3 ACTIVATING RC/V MENU INTERFACE FROM CRAFT SHELL MODE

2.1.3.1 General - Activating RC/V Menu Interface From Craft Shell Mode

To enter an input command that allows access to the RC/V menu interface, the terminal must be in the craft shell input state (terminals like the RC/V terminal are always in the input state). In the craft shell input mode, the character "<" represents the user prompt. On a control and display terminal, change to the input mode by pressing the "CMD/MSG" key on the keyboard.

NOTE: The PRINT and DETAIL options do not work as expected if a printer is not attached to the terminal. Instead, the completed view is displayed on the RC/V terminal immediately after completion of the operation.

To access the RC/V menu, type **RCV:MENU:APPRC [a] [b] [c]**, at the craft shell prompt (not valid on MCC terminal). The *a*, *b*, and *c* options associated with this command can be any of the three following options:

- **PRINT or NPRINT:** This option controls the printing of RC/V screens on the attached printer. If PRINT is specified, the RC/V screen can be printed on the attached printer. The default value is NPRINT (for no print). If PRINT is not specified, and there is a later attempt to print a form, the message **No Print File** will flash in the upper right corner of the RC/V screen.

NOTE: The upper right corner of the screen is referred to as the *acknowledgment area* throughout the rest of this document.

The print option is activated by specifying:

```
RCV:MENU:APPRC,PRINT<CR>
```

NOTE: Using the print option on a terminal other than a control and display terminal causes the output to be printed on an attached printer if one is available. If there is not an attached printer, and the terminal is not set for a printer, the output is displayed on the screen.

The print option can be deactivated by specifying either of the following commands:

```
RCV:MENU:APPRC,NPRINT<CR>
or
RCV:MENU:APPRC<CR>
```

- **DETAIL or NDETAIL:** Prints a detailed journal on the attached printer of completed changes. The default value is NDETAIL (for no detail messages printed). An example of non-detailed output to the printer is shown in Exhibit 2-1 . If the detail option is specified, the updated forms are printed on the printer, indicating the old and new values for each changed field.

The detail option is activated by specifying:

```
RCV:MENU:APPRC,DETAIL<CR>
```

The detail option can also be deactivated by specifying one of the commands:

```
RCV:MENU:APPRC,NDETAIL<CR>
or
RCV:MENU:APPRC<CR>
```

An example of detailed output to the printer is shown in Exhibit 2-2 . The form was updated, changing the field *RMK* from *TUTORIAL* to *TUTORIAL LCC*.

```

UPDATED RECORD
-----
                                5ESS SWITCH
                                RECENT CHANGE  4.1
(5306)                          LINE CLASS CODE

*1. LCC      ABC
*2. RAX      1
#3. SERVCL   INDIV
#4. TERM     INDIV
#5. SCR      1
  6. LINESCRN N
  7. DAS      1
#8. INSEP    1
#9. DESEP    1
    COUNT    0
11. RMK      TUTORIAL LCC
-----
RCV SUCCESS RC LCC UPDATED ABC 1 TERM-ID = ttya

```

Exhibit 2-1 NDETAIL Option Output NDETAIL Option Output

```
UPDATED RECORD
```

```

                    5ESS SWITCH
                RECENT CHANGE  4.1
(5306)             LINE CLASS CODE

*1. LCC          ABC
*2. RAX          1
#3. SERVCL      INDIV
#4. TERM        INDIV
#5. SCR         1
 6. LINESCRN    N
 7. DAS         1
#8. INSEP       1
#9. DESEP       1
   COUNT       0
11. RMK         TUTORIAL LCC
               [TUTORIAL]

RCV SUCCESS RC LCC UPDATED ABC 1 TERM-ID = ttya

```

Exhibit 2-2 DETAIL Option Output DETAIL Option Output

- **VERBOSE:** Prints a one-line message on the receive-only printer (ROP) following the completion of each RC/V transaction. The default for VERBOSE is specified on the Office Parameters View (8.1). When the 5ESS®-2000 switch office has defaulted the VERBOSE option to "N" on view 8.1, the VERBOSE option can be activated by updating the field "RCVERBOSE" to "Y" on view 8.1 or by specifying VERBOSE on the command line:

```
RCV:MENU:APPRC,VERBOSE<CR>
```

This command overrides the "RCVERBOSE" value on view 8.1 for the current RC/V session only. The 5ESS®-2000 switch defaults RCVERBOSE to "N."

2.1.3.2 Example of Activating RC/V from Craft Shell Mode

Enter the following RC/V command at the craft shell prompt, followed by a carriage return, to display the RC/V main menu with default options:

```
< RCV:MENU:APPRC
```

The craft shell prompt is the "<" character, and a carriage return is entered after the command is typed.

Enter the following RC/V command at the craft shell prompt, with options specified, to display the main menu with the options activated:

```
< RCV:MENU:APPRC,PRINT,VERBOSE,DETAIL<CR>
```

The order of the options is not important, but they must be separated by a comma.

2.1.4 ACTIVATING RC/V MENU INTERFACE FROM CONTROL AND DISPLAY COMMAND MODE

2.1.4.1 General - Activating RC/V Menu Interface From Control and Display Command Mode

To enter an input command that allows access to the RC/V menu interface, the terminal must be in the command

mode. When in command mode, the **CMD :** prompt is displayed and the cursor is positioned in the command input area in the upper left corner of the screen (mode changes are accomplished by pressing the CMD/MSG key on the keyboard).

Select Page 196 for the Office Dependent Data Recent Change and Verify (also known as Poke 196). When accessing RC/V at the MCC using Poke 196, wait for the prompt before typing in commands. Once the prompt appears, select the desired options (see "Example of Activating RC/V from Control and Display Mode", Section 2.1.4.2 Exhibit 2-3). The three options follow:

- **PRINT or NPRINT:** To select the default value (N for NPRINT), simply hit the carriage return (CR). To select the print option, type **Y<CR>**.
When the PRINT option is selected at the MCC, the output generated from the RC/V activity is directed to the receive-only printer (ROP) at the *end* of the Recent Change session.
- **DETAIL or NDETAIL:** To select the default value (N for NDETAIL), press the carriage return. To activate the detail option, type **Y**.
When the DETAIL option is selected at the MCC, the output generated from the RC/V activity is directed to the ROP at the *end* of the Recent Change session.
- **VERBOSE or NVERBOSE:** Print a one-line message on the ROP following the completion of each RC/V transaction. The default for VERBOSE is specified on the Office Parameters view (8.1). When the 5ESS®-2000 switch office has defaulted the "RCVERBOSE" field to "N" on view 8.1, the options screen displays VERBOSE as follows:

```
VERBOSE OPTION CR=N
```

When view 8.1 defaults the "RCVERBOSE" field to "Y," the options screen displays:

```
VERBOSE OPTION CR=Y
```

The 5ESS®-2000 switch originally defaults "RCVERBOSE" to "N."

For MCC (Poke 196) RC/V menu invocation, the start and end messages "RC/V 196 STARTING" and "RC/V 196 COMPLETED" will be printed at the ROP only if the VERBOSE option was specified as Y. After all of the options are entered, the RC/V main menu appears.

2.1.4.2 Example of Activating RC/V from Control and Display Command Mode

After entering 196 and a carriage return at a terminal that is in the CMD mode, the first screen displayed is the RC/V option screen. If a carriage return is entered at the input line of the option, then the default value for that option is selected. If the default value for an option is not desired, enter the alternate value for that option (Y for PRINT and DETAIL, and Y or N for VERBOSE). Once all values for the options are entered or defaulted, the RC/V main menu is displayed on the screen Exhibit 2-3 .

```
5ESS SWITCH
RECENT CHANGE AND VERIFY
```

```
PRINT OPTION      CR=N  _
```

```
DETAIL OPTION     CR=N  _
```

```
VERBOSE OPTION    CR=N  _
```

Exhibit 2-3 Print Options on Control and Display Terminals Print Options on Control and Display Terminals
2.1.5 RC/V MENU DISPLAY AND ACCESS

Exhibit 2-4 is displayed upon invoking the RC/V Menu Interface.

```

                                5ESS SWITCH
                                RECENT CHANGE AND VERIFY CLASSES

H RCV HELP                      9 DIGIT ANALYSIS                20 SM PACK & SUBPACK
A ADMINISTRATION                10 ROUTING & CHARGING           21 OSPS FEATURE DEFINITION
B BATCH INPUT PARMS            11 CUTOVER STATUS              22 ISDN -- EQUIPMENT
1 LINES                         12 BRCS FEATURE DEFINITION     23 ISDN
2 LINES -- OE                  13 TRAFFIC MEASUREMENTS       24 APPLICATIONS PROCESSOR
3 LINES -- MLHG                14 LINE & TRUNK TEST           25 LARGE DATA MOVEMENT
4 LINES -- MISC.               15 COMMON NTKW INTERFACE       26 OSPS TOLL & ASSIST/ISP
5 TRUNKS                       16 PSU BASED SS7              27 OSPS TOLL & ASSIST
6 AUTOMATIC CALL DIST.        17 CM MODULE                   28 GLOBAL RC - LINES
7 TRUNKS - MISC.              18 SM & REMOTE TERMINALS
8 OFFICE MISC. & ALARMS       19 SM UNIT

```

Exhibit 2-4 Main Menu Main Menu

The cursor is positioned at the bottom of the screen. This prompt is referred to as the *main menu prompt* throughout this document.

```
Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM, or N -> _
```

Any of the following items may be selected at the main menu prompt. Both upper and lower case letters are accepted at the main menu prompt.

CLASS Enter one of the classes of views displayed on this menu, (for example, 2 for LINES -- OE or 9 for DIGIT ANALYSIS). After entering a class and a carriage return, a screen appears with the specific view titles and numbers associated with the specified class. This screen is called the *view menu*, and the cursor is positioned at the bottom of the screen at the *view menu prompt*:

```
Input VIEW, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM, < or N -> _
```

CLASS.VIEW Enter a class and a view number (for example, 1.11). After entering the "class.view" and a carriage return, the database operation prompt is displayed for that view.

If the "class.view" followed by the database operation is entered (for example, 1.11u for view 1.11 update mode), then the requested RC/V view appears in the operation mode requested, with the cursor positioned on the input line of the first key field. This type of entry is known as *chaining input* and can be entered at the main menu prompt or at the view menu prompt.

NOTE: The database operation prompt is NOT displayed if the "class.view" followed by the database operation is entered.

- Q Quit the main menu, which exits Recent Change.
- R Change to Recent Change mode. This option allows data to be reviewed, created, and modified. The words "RECENT CHANGE" are displayed in the acknowledgment area of the screen when in Recent Change mode.
- V Change to Verify-Only mode. This allows data to be reviewed/verified only. The word "VERIFY" is displayed in the acknowledgment area when in Verify-Only mode.
- BMI Batch Mode Input. See "RC BATCH", Chapter 4
- BMD Batch Mode Demand. See "RC BATCH", Chapter 4
- BMR Batch Mode Release. See "RC BATCH", Chapter 4
- IM Immediate Mode. See "RC BATCH", Chapter 4
- < Display the Main Menu screen.
- N Display the Next screen of the main menu and the view menu. If there are not multiple screens, the cursor remains at the current position. If the cursor is on screen 2 of 2, N displays screen 1 of 2.

NOTE: On the control and display terminal, "type ahead" is not allowed and the PF Function keys are supported to allow suspension of the RC/V session, to perform some other work, and to resume the RC/V session.

2.1.6 VALID DATABASE OPERATIONS

The valid database operations on Recent Change views are as follows:

- I (insert) — Insert new data
- R (review) — Review existing data
- U (update) — Update or change existing data
- D (delete) — Delete (remove) unwanted data from the database
- V (verify) — Verify the data in the database.

Many Recent Change views only allow a *subset* of the operations shown previously. The first example displays all the database operations, and the second example displays a subset of the database operations.

After entering a class and a view number, the user is prompted at the bottom of the screen for a valid database operations. The following prompt is referred to as the *database operation prompt* throughout the rest of this document.

Enter Database Operation I=Insert R=Review U=Update D=Delete : _

Enter Database Operation R=Review U=Update : _

2.1.7 SCREEN LAYOUTS AND KEYBOARD/KEYPAD

The local RC/V video display terminal provides maintenance personnel with a means to interface with the 5ESS[®]-2000 switch database for RC/V operations. For functional purposes, the video display terminal is divided into the following units:

- Display CRT (Cathode-Ray Tube)
- Alphanumeric keyboard
- Numeric/function keypad.

The general layout of the video display RC/V view by lines is shown in Tables 2-1 and 2-2 for both the RC/V terminals and the MCC terminals.

Table 2-1 CRAFT SHELL TERMINAL (RC/V) SCREEN LAYOUT

LINE	DATA DISPLAYED ON THAT LINE
LINE 1	5ESS SWITCH and OFFICE ID are located at the center of the view. The acknowledgment area is at far right corner where response messages flash (for example, FORM UPDATED). The number of screens is displayed if there are multiple screens on the view. The screen number (for example, SCREEN 1 of 2) is located in the far left column on line 2, and the mode of RECENT CHANGE or VERIFY along with the VIEW NUMBER is located near the center of the screen.
LINE 2	
LINE 3	
LINE 4	The OFFICE RECORD NUMBER (if the view has an office record) is located in the far left column, and the VIEW NAME is centered on the screen.
LINE 5	Blank line
.	View data fields begin
.	View data fields (limited to 12 lines)
.	
LINE 16	Last line for view data fields
LINE 17	Blank line
.	
.	
LINE 20	Blank line
LINE 21	ERROR MESSAGE prompt or Form Operation prompt
LINE 22	ERROR MESSAGE or WARNING MESSAGE or Database Operation prompt
LINE 23	HELP MESSAGE or ERROR MESSAGE or Main/View Menu prompt

Table 2-2 CONTROL AND DISPLAY TERMINAL (MCC) SCREEN LAYOUT

LINE	DATA DISPLAYED ON THAT LINE
LINE 1	5ESS SWITCH and OFFICE ID are located at the center of the view. The acknowledgment area is at far right corner where response messages flash (for example, FORM UPDATED). The number of screens is displayed if there are multiple screens on the view. The screen number (for example, SCREEN 1 of 2) is located in the far left column on line 2, and the mode of RECENT CHANGE or VERIFY along with the VIEW NUMBER is towards the right side of the screen.
LINE 2	
LINE 3	
LINE 4	The OFFICE RECORD NUMBER (if the view has an office record) is located in the far left column, and the VIEW NAME is centered on the screen.
LINE 5	Blank line
.	View data fields begin
.	View data fields (limited to 12 lines)
.	

LINE 16	Last line for view data fields
LINE 17	ERROR MESSAGE prompt or Form Operation prompt
LINE 18	ERROR MESSAGE or WARNING MESSAGE or Database Operation prompt or Main/View Menu prompt
LINE 19	HELP MESSAGE or ERROR MESSAGE or blank line

The local RC/V keyboard (Figure 2-1) consists of an alphanumeric keyboard and a numeric/function keypad. Both can be used to enter messages and field values. The numeric/function keypad enables numbers to be entered in calculator fashion. Each key in the keypad generates the same character as the corresponding numeric key on the main keyboard. However, the keypad ENTER key corresponds to the keyboard RETURN key in function.

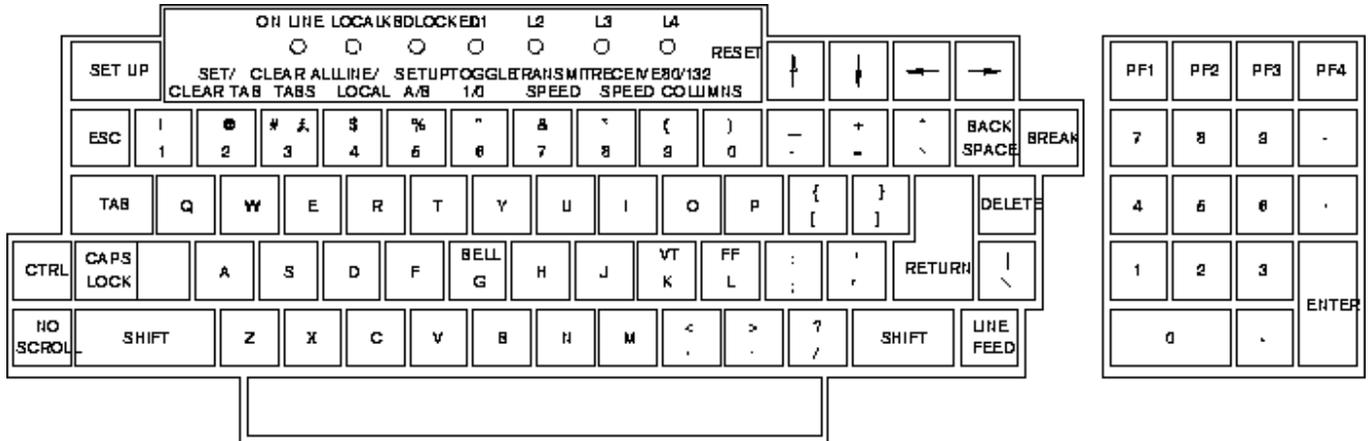


Figure 2-1 Typical Keyboard and Keypad

2.1.8 USER INPUT

2.1.8.1 General - User Input

User input consists of input commands, navigational commands, and informational commands that can be entered during RC/V menu interface sessions.

2.1.8.2 Input Commands

The following is a list of valid input commands and the control character (in parentheses) used to execute the command:

- nnn<CR> — Enter a value in a field (for example, 123). Type the value followed by a carriage return.
- Alphabetic characters may be typed in either upper case or lower case.
- <CR> — No value or response; skip this field. Pressing the carriage return key only (no characters entered) retains the current value of an input field. If a default exists, it is assigned to the current field. If no default exists, processing continues as if a null item had been entered.
- null item (') — Set this field to null (empty or missing) value. For an optional field, the current field is set to null and displayed as a string of underscore (_) characters. For a required field, the message **Required Field!** flashes in the acknowledgment area and the cursor returns to the beginning of the field.

2.1.8.3 Navigational Commands

The following is a list of navigational commands and the control character (in parentheses) used to execute the

command:

- Back up (^ or ↑) — Backs up to the previous field. The current field remains unchanged and the cursor moves to the previous field.
 - If the previous field is a structure or a list, the cursor moves to the beginning of the structure or list.
 - If the previous field is on another screen (for multiscreen views), then that screen is automatically displayed.
 - If the current field is within a list, the cursor backs up one field at a time until positioned at the beginning of the current row and then backs up within the first column to the beginning of the list.
 - If the cursor is positioned at the first field on the form, the database operation prompt is displayed.

- Forward tab (> or →) — Skips forward to the next "tab stop." Tab stops are identified with a ">" character preceding the field (for example >23. RAX __). Upon entering the forward tab character ">", the current field remains unchanged and the cursor moves to the next tab stop. Some views may have tab stops at certain fields on that view to inform the user that the field with the tab stop may be the next field that must have a value entered.
 - If no tab stop exists between the current field and the end of the view, then the cursor moves to the form operation prompt on the command line at the bottom of the screen.
 - If the next tab stop is on another screen, then that screen is automatically displayed.
 - If an empty required field is encountered before the next tab stop, then the message **Required Field!** flashes in the acknowledgment area and the cursor then moves to that required field.
 - If the cursor is positioned at the beginning of a list row, the cursor moves to the next tab stop.
 - If the cursor is within a row, but not at the beginning, it is then positioned at the beginning of the next row.
 - If the cursor is positioned in the optional key fields, the forward tab will move the cursor beyond the optional keys to the first non-key field in the view.

- Back tab (< or ←) — Backs up to the previous tab stop. The current field remains unchanged and the cursor moves to the previous tab stop.
 - If the previous tab stop is on another screen, then that screen is automatically displayed.
 - If no previous tab stop exists, the cursor is positioned at the first data field.
 - If the cursor is positioned at the beginning of a list row, the cursor moves to the previous tab stop.
 - If the cursor is within a row, but not at the beginning, it is then positioned at the beginning of the current row.
 - If the cursor is positioned at the first field on the form, the view menu is displayed.

- End of form (;) — Skips to the end of the form. The current field remains unchanged and the cursor moves to the form operation prompt on the command line at the bottom of the screen. If a required field was empty, the message **Required Field!** flashes in the acknowledgment area and the cursor then moves to that required field.

- Execute (*) — When entered as a field value, it skips forward to the end of the view and performs the database operation.

NOTE: Note that this character cannot be used for optional keys, you must use the forward tab (>). Also, it only works on simple fields in the change mode operation.

- Abort/quit form (Q) — Aborts this form or exits RC/V menu mode interface.
 - If entered in response to a form operation prompt at the bottom of the screen, the active form is discarded, and the message **FORM ABORTED!** flashes in the acknowledgment area and the cursor then moves to the first key field.
 - If entered at the database operation prompt, the class menu is displayed.
 - If entered at the main menu prompt, exits RC/V.
 - If entered at the field prompt, the system will respond with a message indicating that only field values can be entered at the field prompt.

2.1.8.4 List Input Commands

The following is a list of valid input commands for lists and the character (in parentheses) used to execute the command:

These commands are only recognized when entered in the first field in the row of a list.

- null row (") — Set the current row to null values. Each field in the current row is set to the null or empty value. The cursor then returns to the beginning of the change field prompt row.
- default row (:) — Set the current row to default values. Each field in the current row is set to its default value. The cursor then returns to the beginning of the current row.
- insert row (}) — Insert a new row at the current position (for compressed-type lists only). Each row, from the current row to the end of the list is "pushed down" and a null row is inserted at the current row location. The cursor returns to the current (null) row. If the list is "full" (no null rows), then the message **List is Full!** flashes in the acknowledgment area and the cursor returns to the current row.
- delete row ({) — Delete the current row (for compressed-type lists only). The current row is discarded and each row, from the next to the last, is "pushed up" one row position. The last row is set to null values, and the cursor returns to the change field prompt row.
- copy row (=) — Copy previous row. The previous row is copied to the current row. The cursor returns to the current row location.

2.1.8.5 List Navigational Commands

The following is a list of navigational commands for lists and the character (in parentheses) used to execute the command:

- previous row ([or ↑) — Back up one row. The cursor moves "up" to the beginning of the previous row in the list. If the current row is the first row, processing continues as if back up "^" had been entered.
- next row (] or ↓) — Skip to the next row. The cursor moves "down" to the beginning of the next row in the list. If

the current row is the last row, the cursor moves to the next field.

- end of list (#) — Skip to the end of the list. The cursor moves to the next field following the current list.

2.1.8.6 Information Commands

The following is a list of information commands and the character (in parentheses) used to execute the command:

- help (H) — Display help information. Enter "H" or "h" at the main menu or class menu prompt. The form on the screen is cleared and a full screen help page is displayed with the prompt. Enter "H" or "h" to sequentially move forward through the help screens. Entering "H#" or "h#" (where # is the page number), allows direct access to that specific help screen.
- help messages (?) — Turn on/off help message display. The cursor returns to the current field.
 - If help messages for fields are currently being displayed, they are turned off starting with the next field.
 - If help messages for fields are not currently being displayed, the help message is displayed on the help line.
- current mode (.) — Display the current database operation mode. The current database operation mode flashes as a message in the acknowledgment area (for example, "Insert Mode") and the cursor returns to the current field.

2.1.9 FORM OPERATIONS

When the cursor is on the input line of a field and the help message feature is on, a help message for that field is displayed at the bottom of the screen. This message lists the possible values to be entered for that field.

If an incorrect value is entered for that field, an error message prints at the bottom of the screen, and the cursor remains on the input line for that field.

The form operation prompt appears at the bottom of the screen once all appropriate fields have been entered on the view. This prompt will be referred to as the *form operation prompt* throughout this document. Depending on the current database operation mode, the form operation prompt is different, displaying only the database operations allowed. Examples of prompts are as follows:

- Enter Insert, Change, Validate, screen#, or Print: _
- Enter Update, Change, Validate, screen#, or Print: _
- Enter Review, Change, Validate, screen#, or Print: _
- Enter Delete, Change, Validate, screen#, or Print: _

The response to the form operation prompt may be one of the following:

- | | |
|---|-----------------------------|
| I | to insert a form |
| C | to change a field on a form |
| V | to validate the form |

a number to display the desired screen number

P to print the current screen

U to update the form

D to delete the form.

2.1.10 INSERTING A NEW VIEW

After entering Recent Change and choosing **i** for the database operation, the RC/V view (Exhibit 2-5) is displayed on the terminal with the cursor located on the input line of the first key field.

Type in the key fields. In the example shown in Exhibit 2-5 , "ABC" was entered for the LCC field, followed by a <CR>, and "1" was entered for the RAX field, followed by a <CR>. Once the keys are entered, there is a short pause while the database is read to verify that the form to be inserted (with the specific key values) is not already in the database. During this pause, the message **reading...** is displayed in the acknowledgment area. If the form already exists in the database, the message **DUPLICATE FORM** flashes in the acknowledgment area. If the form does not already exist in the database, the cursor is positioned at the next data field on the view. At this point, enter any of the following:

- Input values in data fields (in the example, "INDIV" was entered for the SERVCL field...etc.).
- A <CR> to skip the field or retain the current value (the default value for the field may already be displayed).
- Enter a "^" to position the cursor at the beginning of the previous key field, if the key field value(s) entered previously were incorrect.
- Enter a ">" to go to the next tab stop if one is available. If a tab stop is not available, the form operation prompt is displayed.
- Enter a "*" to default all the other data fields on the view.

After entering one of the preceding commands, or typing in an "I" for insert, the messages **inserting...** followed by **FORM INSERTED** are displayed in the acknowledgment area. The database now includes the new form.

```

                                5ESS SWITCH                                FORM INSERTED

                                5ESS SWITCH
                                RECENT CHANGE  4.1
                                LINE CLASS CODE

(5306)

*1. LCC      ABC
*2. RAX      01
#3. SERVCL   INDIV
#4. TERM     INDIV
#5. SCR      0001
 6. LINESCRN N
 7. DAS      01
#8. INSEP    001
#9. DESEP    001

```

COUNT	_____
11. RMK	TUTORIAL

Enter Insert, Change, Validate, screen#, or Print: I

Exhibit 2-5 Example of Inserting a New View

FORM OPERATION PROMPT (at bottom of the screen)
 ACKNOWLEDGMENT AREA (upper right corner of the screen)

2.1.11 REVIEWING/VERIFYING A VIEW

2.1.11.1 General - Reviewing/Verifying a View

Review mode is used for read-only retrieval of previously-stored forms. Enter the key field(s) on a specified view and the database is searched for a form with the key(s). The message **reading...** appears in the acknowledgment area while the database is being read. If the form does not exist in the database, the words **FORM NOT FOUND** flash in the acknowledgment area, the data fields are cleared, and the cursor returns to the first key field. If the form does exist, the data fields are displayed with values from the retrieved form, and the review mode form operation prompt is displayed.

2.1.11.2 Change-Insert Operation

Review mode can also be used for a change-insert operation. When inserting data that is similar, except for the key fields, the change-insert operation allows easy data entry. Choose operation (R)eview to read the data that is similar (See "General", Section 2.1.11.1, on how to review an existing form), select the (C)hange-insert operation at the form operation prompt to change the key fields, then select the (I)nsert operation to insert the new data in the database.

2.1.12 UPDATING A VIEW

Update mode is used for modifying previously stored forms. Enter the key field values and the data field values as described in "General", Section 2.1.11.1. Once the form has been retrieved, the form operation prompt is displayed. At this time, enter a **C** to change a field value. (See "CHANGING CAPABILITY", Section 2.1.14, for more details.) After entering a field number or field name and a carriage return, the cursor is placed at the input line of the field in order to change the data. Both upper- and lower-case characters are accepted in the input fields. Changes may be made to as many fields as necessary. At the form operation prompt, enter **U** for update. The message **updating...** followed by **FORM UPDATED** appear in the acknowledgment area. The database now reflects the changes made to that form.

Chaining input can be used in the update operation using update insert (UI) (for example, 4.1UI). By entering **UI** after the class.view number, the view is displayed with the cursor at the first key field. After entering the key fields, the database is read and data is displayed on the form. The cursor is positioned at the next data field. If the data is to be changed, enter the new value for that field followed by a <CR>. If a change is not needed for that field, just enter <CR>. In both cases, the cursor is positioned at the next data field on the form, until the last field is reached, or a special character is entered (for example, forward tab or end of form).

2.1.13 DELETING AN EXISTING VIEW

Delete mode is used for removing previously stored forms. There are two ways to access a form to be deleted.

From the main menu or class menu, enter the view number, followed by a carriage return (for example, 4.1 <CR>). The user is prompted for the database operation. Enter **D** to indicate the delete operation. The view (Exhibit 2-6) appears with only the key fields displayed (as follows). In this example, entering 4.1D produces the same results

with fewer keystrokes.

```

                    5ESS SWITCH
          RECENT CHANGE  4.1
(5306)          LINE CLASS CODE

*1. LCC          _____
*2. RAX          _

```

Exhibit 2-6 Delete Operations (Displaying Only Key Fields) Delete Operation (Displaying Only Key Fields)

Enter the key fields and the database is checked to ensure that the data exists in the database. The message **reading...** appears in the acknowledgment area. If the read is successful, the form operation prompt is displayed. Now enter **D** to delete the form, the message **deleting...** followed by **FORM DELETED** appear in the acknowledgment area to indicate that the form has been deleted. If the read is not successful, an error message is displayed on the error line at the bottom of the screen.

There is also a way to initiate a delete operation and have all the fields displayed on the view, and not just the key fields. At the main menu or class menu, enter the view number followed by the operation (D) and also the verify operation (V) (for example, 4.1DV). All the fields on View 4.1 (Exhibit 2-7) will be displayed for you to determine if the data should really be deleted from the database. If it is to be deleted, enter **D** at the form operation followed by a carriage return, and the message **deleting...** followed by **FORM DELETED** appear in the acknowledgment area to indicate that the form was deleted. If the form is not to be deleted, type **Q** at the form operation to quit the delete operation of this form and the message **DELETE ABORTED** appears in the acknowledgment area.

```

                    5ESS SWITCH
          RECENT CHANGE  4.1
(5306)          LINE CLASS CODE

*1. LCC          _____
*2. RAX          _
#3. SERVCL      _____
#4. TERM        _____
#5. SCR         _____
  6. LINESCRN   _
  7. DAS        _____
#8. INSEP       _____
#9. DESEP       _____
    COUNT      _____
11. RMK         _____

```

Exhibit 2-7 Delete/Verify Operation (Displaying All Data Fields) Delete/Verify Operation (Displaying All Data Fields)

2.1.14 CHANGING CAPABILITY

Change mode is a facility for changing data values on a form. This mode is entered by responding with a **c** at the form operation prompt. Multiple fields may be changed, and the same field may be changed more than once. The field to be changed is identified by entering the *field number* (Exhibit 2-8) or the *field name* (Exhibit 2-9) in response to the Change field prompt.

NOTE: When entering a field name, the name must be the RC/V Text mode name, rather than the screen name that appears on the view (the names may sometimes differ). Text mode names may be obtained from 235-118-254, *Recent Change Reference*.

```

                                5ESS SWITCH
                                RECENT CHANGE  4.1
(5306)                          LINE CLASS CODE

*1. LCC          ABC
*2. RAX          1
#3. SERVCL      INDIV
#4. TERM        INDIV
#5. SCR         1
  6. LINESCRN  N
  7. DAS        1
#8. INSEP       1
#9. DESEP       1
    COUNT      0
11. RMK        TUTORIAL

```

Change Field: 11

Exhibit 2-8 Changing Field Prompt (Entering a Field Number) Changing Field Prompt (Entering a Field Number)

```

                                5ESS SWITCH
                                RECENT CHANGE  4.1
(5306)                          LINE CLASS CODE

*1. LCC          ABC
*2. RAX          1
#3. SERVCL      INDIV
#4. TERM        INDIV
#5. SCR         1
  6. LINESCRN  N
  7. DAS        1
#8. INSEP       1
#9. DESEP       1
    COUNT      0
11. RMK        TUTORIAL

```

Change Field: RMK

Exhibit 2-9 Changing Field Prompt (Entering a Field Name) Changing Field Prompt (Entering a Field Name)

In both cases, the cursor is positioned on the input line of the field specified so that the value may be changed. After the new value is entered followed by a carriage return, the cursor returns to the form operation prompt and another field number or name may be entered. Entering a carriage return <CR> will exit change mode and the cursor will move to the form operation prompt. If an invalid field name or number is entered, the input is ignored. If the field name or number entered is not on the current screen (multiscreen views), then the appropriate screen will be displayed and the cursor will be placed at the input line of the specified field.

When a list is changed, you must identify the row to be changed by responding to a Change Row prompt. You will then be stepped through each field in the row. When the row is complete, the cursor returns to the Change Row prompt, and another row number may be entered. Entering <CR> or back tab "<" to this prompt returns the cursor to the Change Field prompt. Exhibit 2-10 shows the Change Row prompt for lists.

```

                                5ESS SWITCH
                                RECENT CHANGE  1.11
SCREEN 1 OF 2                    BRCS FEATURE ASSIGNMENT (LINE)
(5112,5113)

(*)1. TN 2222222  (*)2. OE  _____  (*)6. MLHG  _____  8. BFGN  _____
                (*)5. PTY  _____  (*)7. MEMB  _____

                                11. FEATURE LIST (FEATLIST)
ROW  FEATURE      A P AC R      ROW  FEATURE      A P AC R      ROW  FEATURE      A P AC R
 1  _____  - - - - -      8  _____  - - - - -      15  _____  - - - - -
 2  _____  - - - - -      9  _____  - - - - -      16  _____  - - - - -
 3  _____  - - - - -     10  _____  - - - - -      17  _____  - - - - -
 4  _____  - - - - -     11  _____  - - - - -      18  _____  - - - - -
 5  _____  - - - - -     12  _____  - - - - -      19  _____  - - - - -
 6  _____  - - - - -     13  _____  - - - - -      20  _____  - - - - -
 7  _____  - - - - -     14  _____  - - - - -      21  _____  - - - - -

Change Field: 11  row: 1
    
```

Exhibit 2-10 Changing a Row Within a List Changing a Row Within a List

2.1.15 VALIDATE A FORM

The validate capability displays a summary of all Level 1 and Level 2 errors and warnings that may exist on the form instance currently on the screen. For a description of error levels, see "ERROR MESSAGES", Section 2.1.18 .

The form is validated by entering **V** at the form operation prompt after all the field values are entered on a form, in an update or insert operation. If there are no warnings or errors related to the values that were entered on the view, then the message **No errors/warnings** flashes in the acknowledgment area. If there are errors or warnings, they are displayed on the error line and may be viewed by pressing carriage return. The errors and warnings may be resolved by using the change capability explained in "CHANGING CAPABILITY", Section 2.1.14 . An example of a form without errors or warnings is shown in Exhibit 2-11 , followed by examples with error messages in Exhibits 2-12 and 2-13 .

5ESS SWITCH

No errors/warnings

5ESS SWITCH

RECENT CHANGE 4.1

(5306)

LINE CLASS CODE

*1. LCC ABC
 *2. RAX 1
 #3. SERVCL INDIV
 #4. TERM PARTY
 #5. SCR 1
 6. LINESCRN N
 7. DAS 1
 #8. INSEP 1
 #9. DESEP 1
 COUNT 0
 11. RMK TUTORIAL

Enter Insert, Change, Validate, screen#, or Print: v

Exhibit 2-11 Validating Capability (No Errors/Warnings - Acknowledgment Area) Validating Capability (No Errors/Warnings - Acknowledgment Area)

5ESS SWITCH

RECENT CHANGE 4.1

(5306)

LINE CLASS CODE

*1. LCC ABC
 *2. RAX 1
 #3. SERVCL INDIV
 #4. TERM PARTY
 #5. SCR 1
 6. LINESCRN N
 7. DAS 1
 #8. INSEP 1
 #9. DESEP 1
 COUNT 0
 11. RMK TUTORIAL

Hit return to review messages, Change, or screen#: _

Field:	0 errors	Set:	0 errors	Form:	1 errors
	0 warnings		0 warnings		0 warnings

Exhibit 2-12 Error and Warning Summary Error and Warning Summary

5ESS SWITCH

RECENT CHANGE 4.1

(5306)

LINE CLASS CODE

```

*1. LCC      ABC
*2. RAX      1
#3. SERVCL  INDIV
#4. TERM     PARTY
#5. SCR      1
  6. LINESCRN N
  7. DAS     1
#8. INSEP    1
#9. DESEP    1
    COUNT    0
11. RMK     TUTORIAL

```

Message #1: Hit return, or Change:
When SERVCL is 'INDIV', TERM must be 'AGING',

Exhibit 2-13 Form Error Message Display Form Error Message Display

2.1.16 PRINT CAPABILITY

The print capability allows the image of the RC/V form currently on the screen to be printed. For multiscreen views, all the screens are printed.

The print capability must first be activated when entering the RC/V Menu Interface and specifying the PRINT option at the RC/V terminal (for example, RCV:MENU:APPRC,PRINT<CR>), or by specifying "Y" at the PRINT option on the Poke 196 menu of the MCC terminal. (For more information, see "ACTIVATING RC/V MENU INTERFACE FROM CRAFT SHELL MODE", Section 2.1.3, and "ACTIVATING RC/V MENU INTERFACE FROM CONTROL AND DISPLAY COMMAND MODE", Section 2.1.4.) To print the form, type **P** at the form operation prompt, and the current form is printed.

When the MCC terminal is used the forms print on the ROP at the end of the RC/V session. However when an RC/V terminal with an attached printer is used, the form prints immediately. On both the RC/V and MCC terminals, the message **FORM PRINTED** flashes in the acknowledgment area to indicate that the form has been printed.

If the default was requested (no print), or the print option was not activated (specifying *N* at the MCC terminal or specifying *NPRINT* at the RC/V terminal), then the message **No print file!** flashes in the acknowledgment area when requesting a form to be printed.

2.1.17 RC/V RESPONSES IN THE ACKNOWLEDGMENT AREA

Table 2-3 lists all the RC/V responses that are displayed in the acknowledgment area (the upper right corner of the RC/V screen).

Table 2-3 RC/V MENU INTERFACE RESPONSE MESSAGES

MESSAGE (NOTE)	CAUSE AND SUGGESTED ACTION
RCV IN PROGRESS (number) number = counter starting at 1 and is incremented by 1 every 2 minutes.	Appears every 2 minutes after an operation on an RC/V view is sent for execution and while the process remains "alive".
DUPLICATE FORM!! (Insert operation)	Caused by entering a key field that already exists in the database. Enter a different key field.
FORM INSERTED (Insert operation)	The view information has been successfully inserted into the database.
FORM *NOT* INSERTED (Insert operation)	The view has not been inserted because of bad information. Correct errors and retry.
FORM ABORTED!! (Insert operation)	Caused by typing "Q".

FORM NOT FOUND!! (Update, Delete, or Verify operation)	Key field does not exist in the database. Try another key field.
FORM DELETED (Delete operation)	The view information has successfully been deleted from the database.
FORM *NOT* DELETED (Delete operation)	The view information has not been deleted because of an error. An error message is displayed, explaining the reason for the error.
DELETE ABORTED!! (Delete operation)	Caused by typing "Q".
FORM UPDATED (Update operation)	Changes made to the form are accepted and the database is updated accordingly.
FORM *NOT* UPDATED (Update operation)	The view has not been updated because of an error or bad information. Correct errors and retry.
UPDATE ABORTED!! (Update operation)	Caused by typing "Q".
No errors/warnings!	The form displayed on the screen has been validated and does not contain any level 1 or level 2 errors or warnings.
No print file!!	The PRINT OPTION was not requested at the beginning of the session, so entering P at the form operation prompt to print this form causes this message to be displayed.
Continue?	Level 1 warnings have been encountered, either enter "y" to ignore the warning and continue, or enter "n" to reenter data.
List is Full!	Cannot enter another element in the list; the list is full.
Key Field!	Must enter data in the key fields on a form. In an Update operation, cannot change the key fields.
Required Field!	Must enter data in the required fields on a form.
updating...	Form is in the process of being updated.
inserting...	Form is in the process of being inserted.
deleting...	Form is in the process of being deleted.
reading...	Form is being read.
Note: Messages appear in upper-right corner of video terminal screen.	

2.1.18 ERROR MESSAGES

The Recent Change Menu Interface provides on-line help messages and error messages. Help messages appear on the screen before data is entered. A one-line help message is provided for each field on a form. If the help message feature is on, it is displayed at the bottom of the screen immediately prior to entering input data. Help messages assist in determining proper field value(s) before data entry. The message contains the common name (basic definition of the field) of the data, the format of the data, and the value or range of values that may be entered.

Error messages are displayed on the screen as soon as the system is able to identify a problem. Timing depends upon the error level; this is discussed at the end of this section. Error messages can be multiple lines and are displayed at the bottom of the screen on the error lines. An error message gives more detailed information than a help message to aid in correcting the data. If there are too many field values to choose from in a particular error message, refer to 235-118-254, *Recent Change Reference*.

The RC/V Menu Interface uses the multilevel error scheme. There are three levels of error messages:

- **Level 1:** Field (range checks). These error messages are given when illegal (out of range) field values have been entered.
- **Level 2:** Data consistency (form checks). These error messages are given when illegal combinations of fields and values are present on the current form. They can be determined without consulting the database.
- **Level 3:** Data integrity (database checks). These error messages are provided when database checks occur while attempting to update the database. These will occur after the user has specified the form operation.

For a further explanation of the multilevel error scheme, refer to "ERROR AND WARNING MESSAGE HANDLING", Section 1.11 .

2.1.19 ON-LINE HELP

Help pages are available on-line for RC/V Menu Interface users. The help pages are accessed by typing **h** or **H** at the main menu prompt or by typing **H#** where **#** is a number from 1 to 7. Help pages contain a list of all the special characters used to maneuver through RC/V menus and views. Select a specific help page by entering the particular page number, or step through the pages in order by typing ">" or successive iterations of **h#** where **#** is the help page number.

Exhibits 2-14 through 2-20 are the help pages as they appear on the video terminal. Exhibit 2-14 explains the commands for menu pages only. Exhibit 2-15 explains the commands for menu pages using "chaining input." Exhibit 2-16 defines the commands for batch input Recent Changes. Exhibits 2-17 and 2-18 explain the RC/V commands for views. Exhibit 2-19 defines the commands for views that contain lists. Exhibit 2-20 defines the commands for Automatic Forms Presentation.

```

SCREEN_1 OF 7                                5ESS SWITCH
                                             RECENT CHANGE VIEW H.1
                                             COMMANDS FOR MENU PAGES

H - Explains commands for MENU or views. If you enter H again, then it
    will display next HELP page.
H# - Select HELP page. (# - help page number)
Q - Quit Recent Change and Verify.
R - Change mode to RECENT CHANGE
V - Change mode to VERIFY
< - Go to CLASS MENU page.
# - If on CLASS MENU page Go to a VIEW MENU page #.
# - If on VIEW MENU page Go to a RECENT CHANGE or VERIFY VIEW #.
#.# - Go to a RECENT CHANGE or VERIFY VIEW. (CLASS#.VIEW#)

```

Exhibit 2-14 Help Message Commands for Menu Pages Help Message Commands for Menu Pages

```

SCREEN_2 OF 7                                5ESS SWITCH
                                             RECENT CHANGE VIEW H.1
                                             COMMANDS FOR MENU PAGES

#R - Go to Recent Change view for read.
#I - Go to Recent Change view for insert.
#D - Go to Recent Change view for delete (only print Key fields).
#DV - Go to Recent Change view for delete with verify (print all fields).
#U - Go to Recent Change view for update.
#UI - Go to Recent Change view for update in insert mode (user can change
      each field sequentially without typing field number).
#V - Go to Verify view.
#N - Go to next menu page. Back to the 1st page if there's no next page.

```

Exhibit 2-15 Help Message Commands for Menu Pages (Chaining Input) Help Message Commands for Menu Pages (Chaining Input)

```

SCREEN_3 OF 7                                5ESS SWITCH
                                             RECENT CHANGE VIEW H.1

```

COMMANDS FOR BATCH

BMI - Delayed Activation Mode. Choose time or demand release (for time release add service information). Select view number for Recent Change.

BMD - Display Status of Delayed Activation Recent Changes.

BMR - Release a file of Recent Changes stored for Delayed Activation.

IM - Immediate Release Mode.

Exhibit 2-16 Help Message Commands for Batch Input Help Message Commands for Batch Input

SCREEN_4 OF 7

5ESS SWITCH
 RECENT CHANGE VIEW H.1
 COMMANDS FOR VIEWS

< - In first field: Leave this view and return to select view number.
 < - Not in first field: Return to first field.
 ^ - In first field: Select new operation for this view.
 ^ - Not in first field: Return to previous field.
 > or ; - Go to end of view or stop at next required field.
 * - Execute the operation or go to next required field.
 ? - Toggle help messages on and off.
 ' - Blank the field.
 Q - Abort this view and start over.
 V - Validate input for errors or warnings.

Exhibit 2-17 Help Message Commands for Views (Characters) Help Message Commands for Views (Characters)

SCREEN_5 OF 7

5ESS SWITCH
 RECENT CHANGE VIEW H.1
 COMMANDS FOR VIEWS

R - Review view from Database.
 I - Insert this view into Database.
 U - Update this view into Database.
 D - Delete this view from Database (only print Key fields).
 C - CHANGE: Change a field - All fields may be changed except key fields when in the update mode only.
 C - CHANGE-INSERT: Allowed in the review mode only - Allows you to review a view and then insert a new view with similar field. You must change the key fields to use this facility. You may change other fields as required by the new view.
 P - Print hard copy of screen image (must have RC/V printer attached).

Exhibit 2-18 Help Message Commands for Views (Letters) Help Message Commands for Views (Letters)

 SCREEN_6 OF 7

 5ESS SWITCH
 RECENT CHANGE VIEW H.1
 COMMANDS FOR VIEWS

The following are used only on views containing LISTS.

- " - Blank entire row.
- ~ - Sets this field to its default value.
- : - Sets this row to its default value.
- [- Go backward to previous row.
-] - Go forward to next row.
- ; - Go to end of view or stop at next required field.
- # - Go to end of list and stop at next non-list field.
- { - Delete current row and move next row to current row.
- } - Move current row to next row and allow insert of row.
- = - Copy previous row to current row.
- * - Execute the operation or stop at next required field.

Exhibit 2-19 Help Message Commands for Views (Containing Lists) Help Message Commands for Views (Containing Lists)

SCREEN_7 OF 7

 5ESS SWITCH
 RECENT CHANGE VIEW H.1
 COMMANDS FOR AUTOMATIC FORMS PRESENTATION

If RC/V is in automatic forms presentation and "Q" or "q" is entered for the operation, the following commands are available.

- A - Abort form fields. RC/V stays in the current form.
- B - Bypass form. Go to next form using automatic forms presentation.
- C - Cancel automatic forms presentation. The previous menu will be displayed.
- H - Display automatic forms presentation help messages.
- < - Bypass form. Go to next form using automatic forms presentation.

Exhibit 2-20 Help Message Commands for Automatic Forms Presentation Help Message Commands for Automatic Forms Presentation

2.1.20 AUTOMATIC FORMS PRESENTATION

Automatic forms presentation displays the sequence of RC/V views which are commonly used to input data associated with lines or trunks. Automatic forms presentation, also known as Auto Forms, is used on many feature assignment views when BRCS features are being assigned.

For example, to assign a line with 16 BRCS features, it may be necessary to display 18 views: the line assignment view, the feature assignment view, and 16 line feature parameter views. Since each view can be used independently to access the specific data, key fields are present on every view. Consequently, this forces the reentering of key data. With automatic forms presentation, the key data needs to be entered only once reducing the amount of data which can be effectively entered in a given time.

The automatic forms presentation mechanism makes it much easier to utilize the feature cluster concept provided in BRCS. The feature cluster concept makes it possible to represent a set of features by a cluster name. Feature clusters are in Class 12 of the RC/V views. To successfully use this cluster concept, a list of the feature names within the cluster is needed. The RC/V system provides this information in a usable format by stacking the terminal parameter views for each feature assigned in the cluster. To assign BRCS features, the user must navigate from view to view, repetitively, request the same database operation, and reenter the same key field values. Stacking the views and using automatic forms presentation makes this process much easier.

NOTE: Automatic forms presentation, however, is not compatible with a remote operating system such as Remote Memory Administration System (RMAS) and does not help nonscreen-oriented users (for example, RC/V Text Interface). These users must rely on the basic mechanisms that those interfaces provide and manually sequence their RC/V operations accordingly.

After completing one view and setting the AUTO field to R, U, or I, the next view in the stack is automatically displayed with the correct database operation (the database operation prompt for the view does not appear). All appropriate key field values are already filled in. Next, fill in the minimum amount of data to complete the form, select the database operation (for example, "U" for update), and proceed to the next view. The initial view (for example, line assignment) is also stacked as the last view in the sequence, thereby causing a return to the initial view to continue with the RC/V transaction. When signaling an exit from the initial view, the menu is redisplayed at the page where it was previously set. Note that each of the views in a stacked sequence are considered to be independent of each other and each constitutes a separate database operation (transaction). In fact, the result is identical to the same sequence of views handled manually. Therefore, errors encountered during a stacked sequence are handled on a view-by-view basis.

There is an AUTOFORMS field on view 12.1 that can be used to default the P field in the feature assignment views (for example, view 1.11). If "AUTOFORMS" is set to Y (yes), then the feature(s) that are included in the Feature Assignment views have their appropriate line parameter views (for example, views 1.20 to 1.61) automatically displayed in the update mode. This is useful when the line parameter features are not known, and displaying the features for updating or for general information purposes is desired. Control of the automatic forms processing is through the P field in the Feature Assignment views. If the AUTOFORMS field is set to N (no) in view 12.1, the normal automatic forms presentation process remains in effect.

Auto forms related fields are found on all basic line and trunk views, as well as feature assignment views.

Auto forms are selected by setting the field AUTO to R for read, or U for update. Refer to the appropriate class for this field. The AUTO field is found on all basic line and trunk views, as well as, feature assignment views.

An explanation of the three commands used in auto forms presentation to aid in data entry control are given as follows. To receive these commands, enter **Q** or **q** at the form operation prompt.

- **A (Abort):** Abort the current view and start over. Auto forms are still in effect.
- **B (Bypass):** Bypass the current view and go to the next pending view.
- **C (Cancel):** Cancel all pending views and return to appropriate view menu.
- **H (HELP):** Provides a brief explanation of the previous commands.

The availability of the preceding command options depends on which database operation is being used. In the Update, or Insert modes, all three (A, B, or C) are permitted. Review mode, however, only C (cancel) is an allowable option. Enter H for help to call the help message in any database operation mode.

Table 2-4 lists all the RC/V views that have an auto forms processing field.

Table 2-4 RC/V MENU INTERFACE AUTO FORMS PROCESSING

RC/V VIEW(S)	FIELD NAME	VALID VALUES	MEANING
12.1	AUTOFORMS	Y N	Auto forms presentation default indicator Auto forms presentation activated Auto forms presentation deactivated
1.8, 1.11, 5.11, 23.2, 23.8	P	N R U	Auto forms presentation used in feature assignment No auto forms presentation Review next form [used to review Feature Assignment view and Parameter view(s) data] Update next form [used to update Feature Assignment view and Parameters view(s) data]
1.6, 1.8, 23.2, 23.8	SAUTO	N R U I	Shared auto forms presentation No auto forms presentation Review next form (used to review Primary or Secondary Only Key System view data) Update next form (used to update Primary or Secondary Only Key System view data) Insert next form [used to insert features in Primary or Secondary Only Key System view (23.20) and gives user CURSOR control]
23.2, 23.8	TAUTO	N R U I	Terminal key system auto forms presentation No auto forms Review next form (used to review ISDN Terminal Type C/D Key System view data) Update next form (used to update ISDN Terminal Type C/D Key System view data) Insert next form [used to insert features in ISDN Terminal Type C/D Key System view (23.21) and gives user CURSOR control]
1.6, 5.5, 23.2, 23.20	BAUTO	N R U I	BRCS auto forms presentation used for feature assignment No auto forms presentation Review next form [used to review Feature Assignment view and Parameter view(s) data] Update next form [used to update Feature Assignment view and Parameters view(s) data] Insert next form [used to insert features in Feature Assignment view (X.11) and gives user CURSOR control]

3. RC TEXT INTERFACE

3.1 RC/V TEXT INTERFACE

3.1.1 WHAT IS THE TEXT RC/V INTERFACE?

The RC/V Text Interface is a user interface which is part of the RC/V facility provided by the 5ESS[®]-2000 switch.

As its name suggests, the RC/V Text Interface is text driven, not menu driven. Unlike Menu RC/V, the Text RC/V Interface operates in an input/acknowledgment mode. You send input to the RC/V Text Interface and the interface responds with a reply. The input to this interface can be a single line or multiline input. Since this interface is text driven, it is ideal for OSs which perform OA&M functions remotely. Interfaces such as the Recent Change Operations Systems (RCOS) interface rely heavily upon the usage of the RC/V Text Interface.

Refer to "Recent Change on the Administrative Services Module (ASM)" in "INTRODUCTION TO RC/V"; Chapter 1 for details on using the RC/V Text Interface via the ASM.

This section will explain the usage of the RC/V Text Interface in immediate mode (default). The RC/V Text Interface supports performing recent change operations immediately or by delayed activation. For usage of the RC/V Text Interface by delayed activation (batch mode), refer to "RC BATCH", Chapter 4 .

3.1.2 RC/V TEXT SESSION FLOW

Once the RC/V Text Interface is invoked, you can enter session parameters, form ids, operations, or action commands. The general sequence of input is as follows:

Step	Explanation	Notes
1.	Invoke RC/V Text	
2.	Enter Session Parameters	- [OPTIONAL]
3.	Enter Form Id and the Operation	
4.	Enter Form Key(s) and Values	
5.	Enter Data Field(s) and Value(s) (and Commands)	
6.	Reenter Operation	
7.	End Session	

Multiple forms and operations can be entered within a given session by continuing Steps 3 through 6.

A simple example of an RC/V Text session is as follows:

```
RCV:APPTXT!
FORM="9V10"&"NEW"!
IDPNAME="WASHDC1"!
NEW!
END;
```

In the previous example, the following events occurred:

- The RC/V Text Interface is invoked with the RCV:APPTXT! input command (**STEP 1**).
- There are no session parameters specified (**STEP 2**).
- The **form id** is set to 9V10 (view 9.10) and the **operation** type is: NEW (insert) when the following line is entered: FORM="9V10"&"NEW!" (**STEP 3**).
- The **form key** and value is: IDPNAME="WASHDC1!" (**STEP 4**).
- There are no other **field names** specified (**STEP 5**).
- The operation type is again specified (**STEP 6** - denotes the end of a particular operation for a given form).

- The session is ended with: END; (**STEP 7**).

The following commands are reserved words in an RC/V Text session. See "OPERATIONS AND COMMANDS", Section 3.1.3 , "UNDERSTANDING RC/V TEXT SESSION PARAMETERS", Section 3.1.6 , "TEXT MODE", Section 4.2.2 , "BATCH MODE RELEASE", Section 4.3 , and "BATCH RECENT CHANGE EXAMPLES", Section 4.6 , for detailed information about these commands.

- ABORTFORM
- ATTR
- BMI
- BMR
- CHG
- CLERK
- DEMAND
- DEVICE
- END
- FILE
- FORM
- IM
- IGN
- LCHG
- LASTSO
- LNEW
- LOUT
- MODE
- MSG
- MVFY
- NEW
- NEXTSO
- NVERBOSE
- OUT
- ROP

- SELVfy
- SET
- SHVfy
- STOUT
- TIMEREL
- VERBOSE
- VERSION
- Vfy
- VFYEND
- VFYIMMED
- VFYMODE
- VFYNMVAL
- VFYSCIMG

WARNING: Under certain circumstances, the use of double quotes (") around these commands may change the meaning of the command. To maintain the reserved status of these commands, do not use double quotes.

3.1.3 OPERATIONS AND COMMANDS

The RC/V Text Interface performs designated operations you desire on a per-form basis. You must enter the form along with the type of operation on the same input line. The RC/V Text Interface will complete the operation (barring no errors) once the operation is reentered (the beginning and ending operation must match).

Table 3-1 is a list of the supported operations for the RC/V Text Interface.

Table 3-1 RC/V TEXT INTERFACE OPERATIONS

OPERATION	DEFINITION & USAGE
ATTR	An operation used to list all the fields (attributes) on a specified form. ^a
CHG	An operation used to update (change) an existing form.
MVfy	An operation used to verify an existing form without returning fields which are null or defaulted. ^a
NEW	An operation used to insert (create) a new form.
OUT	An operation used to delete (remove) an existing form.
SELVfy	An operation used to verify an existing form returning user-selected fields.
SHVfy	An operation used to verify an existing form without returning fields which are null, defaulted, or unchangeable (marked as Vfy). ^a
Vfy	An operation used to verify an existing form returning all fields.
Notes:	
a. This operation requires that the "VFYNMVAL" and the "DEVICE=FILE" options be set. (Users of the RCOS interface should NOT specify "DEVICE=FILE".)	

Table 3-2 is a list of the supported commands for the RC/V Text Interface.

Table 3-2 RC/V TEXT INTERFACE COMMANDS

COMMAND	DEFINITION & USAGE
ABORTFORM	A command that allows you to abandon the current form being processed by RC/V Text Interface session. This is used primarily to abandon all entries previously entered for a given form.
END;	A command used to terminate (end) an RC/V Text Interface session. ^b
IGN	A command used to ignore warning messages from an RC/V Text Interface session.
LASTSO	A command that returns the value of the service order variables for the last recent change. ^a
LCHG	A command used to change specific data contained in a list field(s) for a given value.
LNEW	A command used to insert (create) data into a list field for a given value.
LOUT	A command used to delete (remove) a specified row in a list field for a given value or location.
MODE	A command that allows you to change from/to Immediate (default) RC/V Text to/from Batch RC/V Text. ^a
MSG	A command used to allow the RC/V Text Interface to display an error or warning message.
NEXTSO	A command that returns the value of the service order variables for the next recent change. ^a
SEL	A command used in conjunction with the SELVfy operation to allow selection of structure or list data fields. Structure examples: SEL="OE" (Select the entire structure.) SEL="OE.LEN" (Select a subfield of a structure.) List examples: SEL="PIDB" (Select the entire list.) SEL="PIDB[1]!" (Select row number 1 of the list.) SEL="PIDB[1]",SEL="PIDB[2]",SEL="PIDB[3]!" (Select the first three rows of the list.)
SET	A command used to change the specific data contained in a structure or list field for a given location.
VFYMODE	A command that returns information about the current mode along with the clerkid if applicable. ^a
Notes:	
a. These commands are primarily for using RC/V Text to perform batch recent change.	
b. The semicolon shown is not entered by the user. The system replaces the carriage return with the semicolon provided the user did not use the continuation character ("!").	

3.1.4 COMPARING RC/V MENU VS RC/V TEXT

The RC/V Text Interface can perform operations similar to the RC/V Menu Interface. The only exceptions are that the RC/V Text Interface does not support the review change-insert operation, the update-insert operation, the delete-verify operation, autoforms, or batch mode display of clerk files.

Table 3-3 shows the operational term differences between the RC/V Menu Interface and the RC/V Text Interface.

Table 3-3 RC/V MENU INTERFACE vs RC/V TEXT INTERFACE OPERATION TERM DIFFERENCES

MENU MODE	TEXT MODE
i - (insert)	NEW
u - (update)	CHG
d - (delete)	OUT
r - (review)	VFY
	MVfy
	SHVfy
	SELVfy
ri - (review/change-insert)	NOT SUPPORTED
ui - (update/change-insert)	NOT SUPPORTED
dv - (delete/verify)	NOT SUPPORTED

3.1.5 RC/V TEXT CONTROL CHARACTERS

3.1.5.1 General - RC/V Text Control Characters

You can enter man machine language (MML) messages from any supported terminal on the 5ESS[®]-2000 switch.

3.1.5.2 Summary of MML Rules Affecting RC/V Text Input

A summary of the MML Rules which affect the RC/V Text Interface is listed as follows:

- A message may consist of up to 255 characters extending over several lines of input (that is, you enter data beyond the last column on the screen without entering a carriage return). A carriage return delimits the end of the message.
- If a message exceeds 255 characters, you can break the message at a logical point (that is, at the comma) and continue the message by using the exclamation point (that is, replace the comma with the "!" character).
- The MML syntax reserves several special characters governing your input. The RC/V Text Interface adheres to the MML input standards.

Table 3-4 highlights how the MML input rules affect the RC/V Text Interface user.

Table 3-4 RC/V TEXT INTERFACE CONTROL CHARACTERS

MML FORMAT	DEFINITION & USAGE
= (equal sign)	RC/V Text input field name-value separator. This character is used to separate the field name from its value for atomic fields. "=" is used to separate any "SET"/"LNEW"/"LCHG"/"LOUT" and its associated name-value pair.
, (comma)	RC/V Text input field name-value pair separator. This character is used to separate one name-value pair from another field name-value pair.
! (exclamation mark)	RC/V Text input continuation character. This character is used to continue input messages across multiple lines. (It should not be followed by a carriage return <CR>)
" " (double quotes)	RC/V Text escape character. This pair of characters allows RC/V Text users to input special characters (which are non-numeric or non-alphabetic) or lowercase characters (by default, all characters not double quoted are automatically converted to upper case).
* (ampersand)	RC/V Text form id and operation separator and the "SET"/"LNEW"/"LCHG"/"LOUT" command field name and value separator.
- (minus sign)	RC/V Text list handling separator for "LCHG" command. "-" is used when "LCHG" is entered to match a user-supplied value in a list. See the example in "Using the LNEW and LCHG Commands on List Data", Section 3.1.14.4 .
;(semicolon)	RC/V Text input termination character. This character is automatically generated by the 5ESS [®] -2000 switch when an input message is entered without appending the continuation character prior to entering the carriage return.
: (colon)	RC/V Text output prompt character. This signifies that the RC/V Text Interface is waiting for user input.

3.1.6 UNDERSTANDING RC/V TEXT SESSION PARAMETERS

3.1.6.1 General - Understanding RC/V Text Session Parameters

The RC/V Text Interface allows you to control the RC/V Text output by using a set of session parameters. These parameters are keywords which you specify prior to the first "form" keyword. Once the RC/V Text Interface detects the first form id, session parameters are set for the entire RC/V Text Interface session. To change these session parameters, you must exit the RC/V Text Interface session and invoke the RC/V Text Interface entering new session parameters.

3.1.6.2 Valid Session Parameters

Table 3-5 highlights the valid session parameters used by the RC/V Text Interface.

Table 3-5 RC/V TEXT INTERFACE SESSION PARAMETERS

ITEM	COMMAND LINE VALUE	DEFAULT VALUE	RESULT
Verify Format	VFYNMVAL		Name value pair format
	VFYSCIMG	X	Screen image format
Where Verifies Come Out	DEVICE=STDOUT	X	Goes to the terminal or process that started the RC/V Activity
	DEVICE=ROP		Goes to ROP
	DEVICE=FILE		Goes to /rclog/RCTX<tmpname> ^a
	DEVICE=ttyN		Goes to /dev/ttyN ^b
When Verifies Come Out	VFYIMMED		Comes out immediately
	VFYEND	X	Comes out at end of session
ROP Notice	VERBOSE	c	Send messages to the ROP
	NVERBOSE	c	No message to the ROP
Translation Mechanism	VERSION=g ^d	the current software release ^e	Text commands are converted from the version specified to the current version

Notes:

- <tmpname> is a unique name generated by the RC/V Text Interface.
- N specifies the tty such as "q" for /dev/ttyq. This option is NOT available for ASM.
- The default value is the value of RCVERBOSE field on the RC_PARAM view (8.1).
- g = a previous software release of the 5ESS[®]-2000 switch.
- For more information on this feature see 235-900-304, *Recent Change Operations System Interface Specification*.

3.1.6.3 Using Valid Session Parameters

Entering the RC/V Text Interface session parameters is not required if the default session parameters satisfy your needs. The RC/V Text Interface uses "VFYSCIMG", "DEVICE=STDOUT", and "VFYEND" session parameters for defaults, as if you had entered the following during an RC/V Text Interface session prior to entering the first "FORM=" keyword:

```
VFYSCIMG,DEVICE=STDOUT,VFYEND!
```

Session parameters can be changed multiple times prior to entering the keyword "FORM". If a session parameter is entered more than once, then the last value assigned to the session parameter is the value used for the session parameter. For example, if you specify the following:

```
VFYSCIMG,DEVICE=STDOUT,VFYNMVAL,DEVICE=FILE!
```

then, "VFYNMVAL" and the "DEVICE=FILE" session parameters are used for the RC/V Text Interface session.

Table 3-6 is a guide that can be used to select valid session parameter options.

Table 3-6 RC/V TEXT INTERFACE SESSION PARAMETERS SELECTION GUIDE

FORMAT	WHEN?	IS OUTPUT ALLOWED TO:			
		ROP	STDOUT	TTYN	FILE
VFYNMVAL	VFYIMMED	NO	YES ^a	NO	NO
VFYNMVAL	VFYEND	NO	NO	NO	YES ^b
VFYSCIMG	VFYIMMED	NO	NO	YES ^c	NO
VFYSCIMG	VFYEND	YES ^b	YES ^b	YES ^d	YES ^b

Notes:

- Available only through RCOS interface.
- This is dependent on the available space in the /rclog partition.

- c. This cannot be your terminal or the SCC terminal.
- d. Enter your terminal tty, where n specifies the tty such as "q" for /dev/ttyq.

3.1.6.4 VFYEND Session Parameter Restriction

There is one restriction imposed upon using the default "VFYEND" session parameter. This parameter returns verify output at the end of the RC/V Text Interface session. If "VFYEND" session parameter is selected (or the default is taken), the maximum number of verifies permitted during an RC/V Text Interface session depends upon the amount of available space left in the /rclog partition. This is because the verify output is stored in /rclog, and there is a finite amount of disk space available. The following error message appears when the disk space has been exhausted:

```
"?E WARNING-verify limit reached, no more file space in /rclog"
"Enter next FORM with operation other than VFY/MVFY/SHVFY or enter END"
```

Once this message appears, you need to clean up the /rclog partition. Because office records and other recent change activities use this partition, it is important to note that as these recent change activities increase, so does the possibility of exhausting the disk space.

3.1.6.5 DEVICE=FILE Option

The "DEVICE=FILE" option allows you to divert your verify output to a file. When this option is set, a file is created in the "/rclog" partition titled: "RCTX<unique identifier>", where "<unique identifier>" is something like "aaaa_123456" or "vfy_123456". Each time the "DEVICE=FILE" option is selected, you are given the name of the file which the RC/V Text Interface creates:

```
NOTICE - Verify output will go to file RCTXaaaa 123456
```

If you do not perform any verifies during an RC/V Text Interface session, the file created to hold the verify output is automatically removed. In this case, you receive a message similar to the following (the filename may differ):

```
NOTICE - Zero length verify output file RCTXvfy 987654 has been deleted
```

3.1.6.6 Verify Images

The RC/V Text Interface supports two types of verify images as follows:

- Screen Image (default)
- Field Name-Value Image.

Screen Image, as its name suggests, is the RC/V Menu Interface print image. This output looks similar to the output generated by the "p" (print) option in the RC/V Menu Interface. Forms are separated by two unprintable ASCII "EM" characters (that is, EM which is hexadecimal 19).

Field Name-Value Image can only be obtained if you have specified the "VFYNMVAL" option. This option permits you to use the "VFY", "MVFY", "SHVFY", and "SELVFY" operations.

VFYNMVAL output is very terse output, giving just the field name and the field value. For this reason, it is much more suitable than VFYSCIMG output for use with machine interfaces to the RC Text Interface. For example, an OS such as RMAS may choose to use VFYNMVAL style output. Field Name-Value Images consist of a single line of output for every verify and are in the following format:

```
FORM="form-id"&"operation"<em>field-name=field-value<ack>field-name=field-value<ack>...
...<bel>...<bel><em><em>
```

Where:

form-id =	Name of the form selected.
operation =	Operation selected (VFY, MVFY, SHVFY or SELVFY).
field-name =	Name of the field.
field-value =	Value of the field.
 =	EM character (hexadecimal 19).
<ack> =	ACK character (hexadecimal 6).
<bel> =	BEL character (hexadecimal 7).

The "<bel>" character will appear after each RC/V Menu Interface defined screen for the form-id being verified. You also find two EM characters (hexadecimal 19) delimiting the end of each verify. Because the output is written as a single line, editors such as the *UNIX*[®] "ed" editor may not be able to edit files produced with the "VFYNMVAL" option.

NOTE: RCOS users do not receive the double EM character at the end of their verify output.

NOTE: SELVFY operation does not produce <bel> character in output.

3.1.6.7 Invalid Session Parameters

Reviewing Table 3-6 illustrates that there are several restrictions placed on the selection of RC/V Text Input session parameters. Incorrect use of RC/V Text Interface session parameters can result in an error message and the termination of the RC/V Text Interface session. The following list identifies the illegal combinations of RC/V Text Interface session parameters which will result in an error message and session termination:

- (1) "VFYNMVAL" and DEVICE={ROP or ttyN} cannot be selected at the same time (where N is the character identifying the terminal, that is, DEVICE="ttyq").
- (2) "VFYNMVAL", "VFYIMMED" and DEVICE=ttyN cannot be selected at the same time (where N is the character identifying your terminal, that is, DEVICE="ttyq").
- (3) "VFYIMMED" and "DEVICE=FILE" cannot be selected at the same time.
- (4) "VFYSCIMG" and "VFYIMMED" and "DEVICE=ROP" cannot be selected at the same time.
- (5) "VFYNMVAL" and DEVICE=STDOUT cannot be selected at the same time unless you are an RCOS user.
- (6) "DEVICE" keyword specified must be set to some valid device, as shown in Table 3-5.

3.1.7 GETTING HELP

To become proficient with the RC/V Text Interface, you must not only know all the rules regarding its usage, but also all keywords allowed for a particular form id. Unless you are accustomed to using a particular form id on a day-to-day basis, it is difficult to guess keywords that are valid for a given form id. It is recommended that you review 235-118-254, *Recent Change Reference*, for the given form id prior to attempting to use a particular form id.

3.1.8 STARTING THE RC/V TEXT INTERFACE

3.1.8.1 MCC Usage

An RC/V Text Interface session can be invoked from the MCC terminal using the craft input message to invoke the RC/V Text Interface. Interactive users of the MCC terminal will have the additional capability of logging input requests and output replies while using the RC/V Text Interface. This can be accomplished by specifying the

VERBOSE parameter prior to specifying a form id. This guarantees that all the input sent to the RC/V Text Interface and all of its replies are logged and sent to the ROP upon completion of an RC/V Text Interface session. This capability is provided along with the logging of RC session starts, RC session completions, RC session modifications (updates, inserts, deletes), and some RC session failures.

3.1.8.2 Non-MCC Usage

An RC/V Text Interface session can be invoked from any supported terminal on the 5ESS[®]-2000 switch. Logging of input requests and output replies while using the RC/V Text Interface at a terminal other than the MCC is not supported.

3.1.8.3 Invoking RC/V Text

You can invoke the RC/V Text Interface by issuing a craft shell input message to start an RC/V Text Interface session. You can use the RC/V Text Interface in single-line input mode or an multiline input mode.

In single-line input mode, you enter all of the RC/V Text Interface commands in one input line terminated by a carriage return. A single line contains up to 255 continuous characters delimited by the carriage return.

In multiline input, you can split input lines at a logical point and continue by placing an exclamation mark ("!") at the end of each line. The exclamation mark causes the RC/V Text Interface to process the input line, return a reply for the given input, and finally send the colon prompt to you stating that the RC/V Text Interface is ready for more input. There is no limitation on the number of continuations you are allowed.

The syntax of the invocation for single-line and multiline inputs is as follows:

```
Single Line Input:
RCV:APPTXT:DATA[,NVERBOSE[,VERBOSE][,VFYIMMED|VFYEND]
[,VFYNMVAL|VFYSCIMG][,DEVICE={STDOUT|ROP|ROP0|FILE|TTYn}],
FORM=...,FORM=...,END;
```

NOTE: The keyword ":DATA" is required for single-line input mode.

```
Multiline Input:
RCV:APPTXT,VERBOSE!
```

In the multiline input mode, you have the option of entering additional session parameters, forms etc., similar to the single-line input mode, except the keyword ":DATA" should not be entered for multiline input.

3.1.8.4 Single-Line Input

Single-line input for the RC/V Text Interface must be entered as follows:

```
RCV:APPTXT:DATA,[ RC/V Text data ],END
```

In the previous invocation, you would place your desired RC/V Text data (session parameters, commands, forms, keys, fields, values, etc.) to either verify or modify a form or forms in the area enclosed by square brackets. Please note that the square brackets are not needed or allowed in actual RC/V Text Interface input; they are used here to show the layout of single line input.

3.1.8.5 Multiline Input

Multiline input for the RC/V Text Interface can be entered as follows:

```
RCV:APPTXT!
```

It should be noted that a carriage return is not needed after the continuation character, and should not be used when invoked from the MCC. If the carriage return is entered without the continuation character, the RC/V Text Interface

session is terminated. In some cases, a premature end of message error is displayed as follows:

```
REPT: RCV APPTXT TERMINATED WITH ERRORS FOR TERM-ID = ttyN
?E premature end of message
```

In the previous message, N refers to character identifying your terminal (that is, for ttyq, N=q).

3.1.9 ENTERING DATA

3.1.9.1 General - Entering Data

The RC/V Text Interface allows you to manipulate data stored in the ODD by entering the form id, the form id operation, the form id keys, and the assignment of the form id fields. The assignment of fields within a given form id will modify that field for that particular form id. The RC/V Text Interface only accepts field names defined in 235-118-254, *Recent Change Reference*, labeled as "Text Name." Field names displayed on the RC/V Menu Interface screens may not match these names (although an effort is made to do so). The RC/V Text Interface allows you to enter abbreviations for the field name defined as discussed in "Abbreviated Field Names", Section 3.1.9.6. In the RC/V Text Interface, fields can be of two types:

- Simple Data Fields
- Structure or List Data Fields.

NOTE: Input can be uppercase, lowercase or mixed case. All input to the RC/V Text Interface is automatically converted to uppercase. Double quotes must be used to protect lowercase data.

3.1.9.2 Form Names

3.1.9.2.1 Entering Form Names

Entering form names (form ids) through the RC/V Text Interface can be done in one of two methods:

- Class and View
- Form Name.

For example, to make a change to the 1.8 view (RBRASG_TN), enter the following:

```
FORM="1V8"&"CHG!"
```

The syntax of the previous command, "1V8" was entered. The "V" character is used to separate the class and the view.

In the previous example, the following could also be entered:

```
FORM=1V8&CHG!
```

Both cases accomplish the same result. The double quotes are only necessary when special characters need to be entered.

Another method of entering the form id is shown as follows:

```
FORM="RBRASG TN"&"CHG!"
```

In the previous example, double quotes are required around the form id because the underscore is a special character.

3.1.9.2.2 Special Considerations for Verify Operations

In some cases, there can be two form names for the same class and view number. For forms where this is true, one form can be used for all valid operations; the other only for verify operations.

For example, 1V8 has two form names, RBRASG_TN and VBRASG_TN. The verify-only form, in this case VBRASG_TN, is the same form that the user sees when 'V' mode is entered when using the RC/V Menu Interface. The form name that allows all operations for a given form is often referred to as the "RUDI" (read, update, delete, insert) form and the verify-only form name is referred to as just that, the "Verify-Only form".

When entering form names for verify (VFY, MVFY, SHVFY or SELVFY) operations and the form in question has two form names for the same class and view number, the following rules apply:

- (1) When the user specifies the form request using a class and view number, such as FORM=1V8&VFY, the form will be processed using the "Verify-Only" form.
- (2) When the user specifies the form request using the form name, such as FORM="RBRASG_TN"&VFY, the form will be processed using the form requested by the user. This is true whether it is the "RUDI" form or the "Verify-Only" form.

Generally, if a form has both a "RUDI" form and a "Verify-Only" form, they both have most of the same fields. The main difference is usually that the non-key data fields on the "RUDI" form are numbered while the non-key data fields on the "Verify-Only" form are not numbered. However, since things can differ from form to form, please consult 235-118-254, *Recent Change Reference*, for details about specific forms.

3.1.9.2.3 Verify Explicit Selection of Fields

The MVFY and SHVFY operations implicitly provide a selection operation on records retrieved for a given Recent Change view.

The SELVFY operation allows a user to provide key field data in order to explicitly list which fields are selected from records retrieved.

Simple (atomic) data fields will be selected by text name followed by an APPTXT terminator character. Structures and lists must have special treatment due to the fact that when specifying a subfield or row the user must use "special" characters.

An example of this is the OE structure which is comprised of two atomic fields, OE.ENTYPE and OE.LEN. The "." is considered a special character by MML. The MML syntax rules require all special characters be placed in double quotes and because field names cannot contain special characters using OE.LEN to specify a field name would be invalid. Due to these restrictions, you cannot double quote the field name to select the subfields.

In order to resolve this problem, the SEL command is provided in the RC/V Text Interface. The SEL command must be used for structure data fields. The following is examples of structure selections:

```
SEL="OE"!           Select whole structure
SEL="OE.LEN"       Select subfield of structure
```

The SELVFY operation will allow the user to select a whole list or a specific row in a list. The SELVFY operation will NOT allow the selection of a subfield within a list. As stated above MML syntax does not allow entry of special characters, in this case open bracket "[" and close bracket "]". The SEL command will also be used for list data fields. The following is examples of list selections on a list named "PIDB" which has 23 rows of information:

```
SEL="PIDB"!         Select whole list
SEL="PIDB[1]!"      Select row number 1 of list
SEL="PIDB[1]","SEL="PIDB[2]","SEL="PIDB[3]!"  Select first 3 rows of list
```

The keys to the RC view must be specified prior to selecting non-key fields. If a non-key field is specified prior to the key field(s) or if all key fields are not specified the user will receive an error.

Because only a subset of the fields will be returned, the format of the output from the SELVfy operation will only be permitted in name-value pair format. This format is set via the VFYNMVAL session parameter.

3.1.9.3 Simple Data Fields

3.1.9.3.1 General - Simple Data Fields

Simple data fields are atomic while structure or list data fields are composed of several subfields.

3.1.9.3.2 Assigning Values to Simple Data Fields

The TN field used on many 5ESS[®]-2000 switch views is an example of a simple data field. Following is an example field definition for a TN field, typical of those found in 235-118-254, *Recent Change Reference*:

Example TN Field Definition - Simple Data Example	
TN	- (domain TN) - Telephone number.
	Domain: Enter XXXXXXXX or NXXXXXXXXX, where N=2-9 and X=0-9.
	Default: no default

This contains a 7- or 10-digit telephone number. To assign a value to a simple data field, you specify the field name followed by an equal sign, and then the value to be assigned to the field. Two examples of assigning a value to the TN field follow:

TN=5551212!
TN=6305551212!

These examples assign the values 5551212 and 6305551212 to TN.

3.1.9.3.3 Setting Simple Data Fields to NULL (No Value)

One example of setting a simple data field to NULL is shown for the CHNGTN field on the 1.6 (RC_LINE0) view. To set this simple data field to the NULL value, you must simply reference the field name.

For example:

CHNGTN!

Because the CHNGTN field is referenced but not assigned a value, it is set to NULL (no value), which is the default value for most fields.

If a simple data field is set to NULL and the domain for the field does not allow a NULL value (that is, unknown), you receive an error. Refer to 235-118-254, *Recent Change Reference*, for guidelines related to specific fields on a form.

3.1.9.4 Structure and List Data

3.1.9.4.1 General - Structure and List Data

Structure and list data fields are composed of several subfields.

3.1.9.4.2 Assigning Values to Structure Data Fields

The OE field is an example of a structure data field. Following is an example field definition for a CHNGOE field, typical of those found in 235-118-254, *Recent Change Reference*:

Example OE Field Definition - Structure Data Example	
CHNGOE	<p>-(structure domain CLENSTR) - Change/Insert originating equipment line number (composite equipment number consisting of ENTTYPE and LEN). The CHNG OE field allows the user to update or insert a value for the key field, OE. The CHNG fields are displayed when the view is accessed using any valid set of view keys. The CHNG OE field is necessary because the update and insert operations are not allowed for key fields.</p> <p>(CHNGOE.ENTTYPE) - (domain ENTTYPE) - Originating Equipment Type.</p> <p>Domain: Enter A, C, D, E, G, I, K, L, S, or T.</p> <p>Default: no default</p> <p>(CHNGOE.LEN) - (domain LEN) - Originating Line Equipment Number.</p> <p>Domain: For INEN [Integrated Digital Loop Carrier (IDLC) Network Equipment Number], enter (1-192) (0-7) (01-99) (0001-2048).</p> <p>Default: no default</p>

The previous definition tells you that the CHNGOE field is composed of the CHNGOE.ENTTYPE and CHNGOE.LEN subfields. To modify the CHNGOE field, each subfield must be specified separately. Because subfields contain a special character (the period), they cannot be assigned like simple data fields.

You **cannot** enter:

```
CHNGOE.ENTTYPE=L! (** WRONG **)
```

The MML syntax rules require all special characters be placed in double quotes and because field names cannot contain special characters, this example would be invalid. Due to these restrictions, you cannot double quote the field name to assign the subfields.

In order to resolve this problem, the SET command was developed in the RC/V Text Interface. The SET command must be used for structure data fields. The SET command can also be used for list data fields.

In order to assign values to the CHNGOE field, refer to the field definitions for its subfields. Values can be assigned to the CHNGOE.ENTTYPE and CHNGOE.LEN subfields as follows:

```
SET="CHNGOE.ENTTYPE"&"L!"
SET="CHNGOE.LEN"&"0020002060!"
```

In the previous example, double quotes were used to enclose the subfield names. This permitted use of the special character (the period). The ampersand (&) separates the subfield name from its value. It should also be noted that the value is placed in double quotes. While this is not necessary, it is a good practice in case you want to input some special characters such as lowercase letters.

3.1.9.4.3 Setting Structure Data Fields to NULL (No Value)

Setting a structure data field to NULL is similar to setting a simple data field to NULL. To set a structure data field to NULL, you must simply reference each of the structure's subfield names using the SET command. As an example, when lines are placed on intercept, it is a common practice to NULL out the CHNGOE field.

An example of setting the CHNGOE field to NULL is as follows:

```
SET="CHNGOE.ENTTYPE"!
SET="CHNGOE.LEN"!
```

Because each subfield of the CHNGOE field is referenced but not assigned a value, it is set to NULL, which is the

default value for most fields. If a structure data subfield is set to NULL and the domain for the field does not allow a NULL value (that is, unknown), you receive an error. Refer to 235-118-254, *Recent Change Reference*, for guidelines related to specific fields on a form.

3.1.9.4.4 Assigning Values to List Data Fields

The FL (feature list) field for the 1.8 view (RBRASG_TN) will be used as a list data field example. Following is an example field definition for an FL field, typical of those found in 235-118-254, *Recent Change Reference*:

Example FL Field Definition - List Data Example	
FL	<p>- (FL) - (domain FEATURE) - Compressed list with 36 rows (FL.FEATURE) - (domain FEATURE) - BRCS feature name. Domain: Enter up to 8 alphanumeric characters. Feature entries must be unique. Preconstructed features always begin with a slash (/).</p> <p>Default: no default (FL.A) - (domain FACACT) - Indicates whether a BRCS feature is initially active or inactive. Domain: Enter Y for yes to indicate feature is active or N for no, otherwise.</p> <p>Default: no default (FL.P) - (domain FACPARAM) - Automatic forms presentation used in feature assignment. Domain: Enter N, R, or U where: N = No auto forms R = Review next form, used to review Feature Assignment view and Parameter view(s) data U = Update next form, used to update Feature Assignment view and Parameters view(s) data.</p> <p>Default: no default (FL.AC) - (domain ATHREQ) - Feature authorization code indicator. Domain: Enter Y for yes if the feature requires an authorization code or N for no, otherwise.</p> <p>Default: no default (FL.R) - (domain BOOL) - Indicates whether Remote Access Service is requested on the feature. Domain: Enter Y for yes if remote access service is requested or N for no, otherwise.</p> <p>Default: no default</p>

This definition tells you that the FL field is a list of 36 elements composed of 5 subfields, namely FEATURE, A, P, AC, and R. To clarify further, this is saying that there are 36 rows of information, and in each row, there are 5 fields.

To modify the FL field, each subfield is modified separately. This requires you to modify the FL.FEATURE[n], FL.A[n], FL.P[n], FL.AC[n], and FL.R[n] subfields where n is the actual row number in the list. Because the syntax rules for MML do not allow entry of a special character such as the period and the bracket, you cannot assign the subfield like simple data fields.

You **cannot** enter:

FL.A[1]=Y! (** WRONG **)

Because the MML syntax rules require all special characters be placed in double quotes and that field names cannot contain special characters, you cannot enter the previous assignment. Due to these restrictions, you cannot double quote the field name to assign the subfields.

In order to resolve this problem, you specify one of the following RC/V Text Interface operators to modify the subfields:

```
SET      - modifies values for a list entry
LNEW     - adds a new list entry
LCHG     - changes a list entry
LOUT     - deletes a list entry
```

First, look at the SET operator and assign a value to a list data field. To assign values to the FL field, look at the field definitions for its subfields. With the definitions in hand, assign values to the FL.FEATURE, FL.A, FL.P, FL.AC, and FL.R subfields using the SET command as follows:

```
SET="FL.FEATURE[36]"&"/CFV"!
SET="FL.A[36]"&"N"!
SET="FL.P[36]"&"N"!
SET="FL.AC[36]"&"N"!
SET="FL.R[36]"&"N"!
```

In this example, the feature Call Forwarding Variable is added to the 36th row. The feature is inactive, automatic form presentation is set to no, authorization request is set to no, and remote access to the feature is set to no.

Note that the row number must be specified in order for the SET command to work. This is one limitation of using the SET command with lists. In many cases, you may not know what row to enter without performing a verify operation. Because of this limitation, OSs would enter the last row to insert a new feature in this case. The feature information is then moved to be contiguous within the list by the application software (**compressed** lists), so if the list had three rows filled, and an attempt was made to fill in row 36, the application software would move the information to row 4 automatically. A drawback to this technique is obvious. If row 36 is already filled, you will overwrite it and lose any feature data already there. So, without verifying the list, the SET command can be cumbersome to use, but it does have a very important feature when working with **positional** lists as discussed later.

Due to the limitations of using the SET command, the list operation commands were developed. These commands do not require you to enter a row number when adding, modifying, or deleting items from a row. To add the Call Forwarding feature as in the previous SET example, you should enter the following:

```
LNEW="FL.FEATURE"&"/CFV"!
LCHG="FL.F"&"/CFV"- "FL.A"&"N"!
LCHG="FL.F"&"/CFV"- "FL.P"&"N"!
LCHG="FL.F"&"/CFV"- "FL.AC"&"N"!
LCHG="FL.F"&"/CFV"- "FL.R"&"N"!
```

In the previous example, the LNEW command is used to add the new feature Call Forwarding Variable. The LNEW command looks for the first available opening in the "FL.FEATURE" column.

If the list is full, the following error message is given:

```
"?D There is no empty position available for FL.FEATURE in the list specified"
```

Otherwise, an "OK" response is returned signifying that the LNEW command was successful. After entering the LNEW command, the LCHG command is used to set the "FL.P", "FL.A", "FL.AC" and "FL.R" fields to "N". Looking closely at the syntax of the LCHG command, you should notice that it is divided into two parts with the minus sign as the separator. On the left hand side of the minus sign, this entry is saying, move to the position (row) where "FL.FEATURE" = "/CFV". On the right hand side of the minus sign, this entry is saying, for the position specified by the left hand side, change "FL.A" to "N", "FL.P" to "N", "FL.AC" to "N", and "FL.R" to "N".

NOTE 1: When using the LNEW command, you must pick a field which has a unique value to insert within a list. This is because the LNEW command inserts the field and its value in the first available position. Using the LNEW command to insert a field with a nonunique value always produces incorrect results.

NOTE 2: When using the LCHG command, you must pick a field with a unique value to position within a list. This is because the LCHG command changes every occurrence of the "field=value" specification. Establishing positioning for a nonunique "field=value" may produce incorrect results.

For example, in the FL field definition, the field "FL.FEATURE" only allows unique entries, where fields "FL.A", "FL.P", "FL.AC", and "FL.R" have nonunique entries (you can enter Y or N for each field). For this reason, the "FL.FEATURE" field is used to position within the list "FL" in the examples in this section.

3.1.9.4.5 Setting List Data Fields to NULL (No Value)

Setting a list data field to NULL is similar to setting a simple data field to NULL. To set a list data field to NULL, you must simply reference the field name. This can be accomplished using any of the SET, LCHG or LOUT commands. As an example, in order to remove the fourth BRCS feature from a line on the 1.8 view (RBRASG_TN) using the SET command, enter the following:

```
SET="FL.FEATURE[4]"!
SET="FL.A[4]"!
SET="FL.P[4]"!
SET="FL.AC[4]"!
SET="FL.R[4]"!
```

Because each field is referenced but not assigned a value, it is set to NULL, which is the default value for most fields.

A better method of performing the same function could be accomplished using the following LCHG command:

```
LCHG="FL.FEATURE"&"/CFV"- "FL.A"!
LCHG="FL.FEATURE"&"/CFV"- "FL.P"!
LCHG="FL.FEATURE"&"/CFV"- "FL.AC"!
LCHG="FL.FEATURE"&"/CFV"- "FL.R"!
LCHG="FL.FEATURE"&"/CFV"- "FL.FEATURE"!
```

As in the example using the SET command, the fields are being referenced and not assigned any values. This will cause them to be set to NULL. The LCHG method is better because you are not required to know which row the feature is in, you just need to know the name of the feature.

NOTE: "FL.FEATURE" must be referenced last, because this field and its value is being used to position within the list.

Another alternative for setting list data fields to NULL is to use the LOUT command. This is also referred to as "removing" the row in the list. You can remove a row using two different methods. The first method is to enter the row number you want to remove as follows:

```
LOUT="FL[4]"!
```

In the previous example, the fourth row of the "FL" list is removed. The second method for using the LOUT command is as follows:

```
LOUT="FL.FEATURE"&"/CFV"!
```

In both examples, the LOUT command performed the equivalent of five SET commands or five LCHG commands.

NOTE: When you do not enter a row number to remove a field and value, the LOUT command works exactly like the LCHG command. It matches every occurrence specified by "field=value", searches through the entire list and sets every row where "field=value" to NULL, thereby "removing" the row.

3.1.9.5 Using the List-Attributes Operation

The list-attributes operation (ATTR) allows you to obtain a list of field names for a form id. This option was developed to dynamically determine the valid attributes pertaining to a given form id. This operation must be used with the VFYNMVAL option, because the output from this operation is in name-value format. The output from a list attribute operator appears as follows:

```
name=*      indicates field name is a key field
name=(*)    indicates field name is an optional key field
name=#      indicates field name is a required field
name=       indicates field name is a normal field
```

In the previous list, name refers to the actual field name, as defined in 235-118-254, *Recent Change Reference*, for the given form. This name may in some cases be different than the name displayed to the user while using the RC/V Menu Interface. The symbols used are identical to the symbols used on screens for the RC/V Menu Interface.

3.1.9.6 Abbreviated Field Names

The RC/V Text Interface permits you to enter abbreviated names for simple data fields, structure data fields, and list data fields. You may abbreviate field names up to a point where they are still unique on the form.

NOTE: The use of abbreviated field names may slow down processing of RC/V requests.

An example of simple data field abbreviation can be found by looking at the example of the 4.1 view (RC_LCC), in "RC/V TEXT INTERFACE USAGE EXAMPLES", Section 3.1.14 . In this view, you can enter the full field name or the abbreviated name as highlighted in Table 3-7 .

Table 3-7 SIMPLE DATA ATTRIBUTE ABBREVIATED NAMES EXAMPLE

ATTRIBUTE FULL NAME	ATTRIBUTE ABBREVIATION
LCC	LC
RAX	RA
SERVCL	SE
TERM	T or TE or TER
SCR	SC
LINESCRN	LI or LIN or LINE or LINES...
DAS	DA
INSEP	I or IN or INS or INSE
DESEP	D or DE or DES or DESE
LATA	L or LA or LAT
RMK	RM

You can enter any of the abbreviations shown in Table 3-7 . An example of changing a structure data field is shown by using the OE field. You can enter the full name or the abbreviated name in Table 3-8 .

Table 3-8 STRUCTURE DATA ATTRIBUTE ABBREVIATED NAMES EXAMPLE

ATTRIBUTE FULL NAME	ATTRIBUTE ABBREVIATION
"CHNGOE.ENTYPE"	"CHNGOE.E"
"CHNGOE.LEN"	"CHNGOE.L"

Finally, an example of changing a list data field is shown by using the 1.12 view (RACT_TN). Following is the field definition from 235-118-254, *Recent Change Reference*, for the FEATLIST field:

FEATLIST FIELD DEFINITION - STRUCTURE DATA EXAMPLE	
FEATLIST:	FEATURE LIST (FEATLIST) - (Compressed list with 48 rows.) (FEATLIST.FEATURE) - (domain FEATURE) - BRCS feature name. Domain: Enter up to 8 alphanumeric characters.. Default: no default (FEATLIST.M) - (domain BFGBOOL) - Master override status? Domain: Enter Y for yes and N for no. Default: no default (FEATLIST.A) - (domain FACACT) - Indicates whether a BRCS feature is initially active or inactive. Domain: Enter Y for yes and N for no. Default: no default (FEATLIST.AC) - (domain ATHREQ) - Feature authorization code indicator. Domain: Enter Y for yes and N for no. Default: no default (FEATLIST.R) - (domain BOOL) - Indicates whether Remote Access Service is requested on the feature. Domain: Enter Y for yes and N for no. Default: no default

You can enter the full name or the abbreviated name as shown in Table 3-9 .

Table 3-9 LIST DATA ATTRIBUTE ABBREVIATED NAMES EXAMPLE

ATTRIBUTE FULL NAME	ATTRIBUTE ABBREVIATION
"FEATLIST.FEATURE"	"FEATLIST.F"
"FEATLIST.FEATURE"	"F.F"
"FEATLIST.M"	"F.M"
"FEATLIST.A"	"F.A"
"FEATLIST.AC"	"F.AC"

In all cases, where both the first and second part of the list data field name (that is, first.second - dot separates the parts) must be unique within the form id or the following error message is displayed:

"?D [Field-entered] matches more than one field on this form"

3.1.10 FORM EXECUTION

After all FORM-related name-value pairs have been entered, the operation (NEW, CHG, OUT, VFY, MVFY, SHVfy, or ATTR) needs to be entered to complete the operation. This is done by reentering the operation (that is, NEW, CHG, etc.) that was used to initiate the form. If errors are detected, an error response is returned. In some instances, the error response is the actual detailed error message, but most of the time, it is not. In order to receive the actual detailed error messages, you must request the error message from the RC/V Text Interface using the MSG command (see "Error Responses", Section 3.1.11.2).

3.1.11 RC/V TEXT INTERFACE RESPONSES

3.1.11.1 Successful Responses

The RC/V Text Interface sends a response for every input line. If the input line was successful, then you receive the following response:

OK - Good. The requested action was performed.
PF - Printout follows. Messages, verify output, and/or attr output will follow.

In the previous responses, the response is preceded by a blank space.

3.1.11.2 Error Responses

If errors are detected during an RC/V Text Interface session, one of the following responses might appear:

?A - Action field or command code contains an error. It may mean that the verb was incorrectly typed or that a field delimiter was omitted.
?D - Data field contains an error. It may mean that an item was incorrectly typed, or that improper data was entered.
?T - Time-out has occurred on the channel. Input has not been received within the allowed time, and the RC/V Text Interface session has terminated.

NOTE: The allowed time is defined in the ECD for each terminal defined in the 5ESS[®]-2000 switch.

?E - An error exists in an input line.

In the previous responses, the response is preceded by a blank space.

The RC/V Text Interface provides you detailed error messages for errors detected during an RC/V Text Interface session. In some cases, the error message is returned directly to you; and in other cases, you must request the actual error message from the RC/V Text Interface by entering "MSG!" for each message.

The RC/V Text Interface "?A", "?D", and "?T" responses usually return the actual detailed error message directly to you without you requesting them. An RC/V Text Interface response such as "?E" usually will not return the detailed error message to you unless you request it. In cases where the message is not directly returned to the user, you must enter the MSG input command. You must send one MSG command for **each** detailed error message. As an example, the following RC/V Text Interface response requires you to send two MSG input commands to retrieve the detailed error messages:

```
"?E 2 MESSAGE LINES <<< 1 ERROR 0 WARNINGS >>>"
```

You send two MSG commands to retrieve the actual detailed message:

```
MSG!
MSG!
```

Error messages can be corrected by retyping the input line and correcting the problem indicated by the error. The operation can also be abandoned by performing an "ABORTFORM" operation. You may be required to perform the "ABORTFORM" operation to correct the error when you receive a "?E" error response. Field values already entered can be changed or deleted at any time without aborting the current form id (except fields which are the key to the form id). Fields can be changed as many times as you desire. The last value entered for a given field is the value assigned to that field.

If you want to abandon the current form id, an "ABORTFORM" can be entered as follows:

```
ABORTFORM!
```

The "ABORTFORM" operation abandons the current form id and makes no changes. The RC/V Text Interface expects you to enter a new form id and operation on the next input line, or enter the END command to terminate the RC/V Text Interface session.

In all cases, error messages can NEVER be ignored by using the IGN! command. Furthermore, the error must always be corrected before continuing with the current form or you must abandon the current form using "ABORTFORM!".

3.1.11.3 Warning Responses

If an unusual request is made during the processing of an RC (such as giving a line FREE service), a warning message may be returned as follows:

```
"?W" - A warning exists in an input line.
```

Like the "?E" response, the detailed warning message(s) must be requested by issuing the MSG command before the detailed warning message is returned.

When both error and warning messages are detected by the RC/V Text Interface, the detailed error message(s) is(are) always returned first followed by detailed warning message(s) (if any) when requested by using the MSG command. The RC/V Text Interface always responds with a "?E" response when there are both errors and warning messages which you need to request with the MSG command.

The system returns the "?W" response only when there are warning messages to be requested. In this special circumstance, you can choose to ignore the warning message by sending the IGN command as follows:

```
IGN!
```

In all cases, if there is only a warning response, you can either send the IGN command or change the data accordingly.

NOTE: The RCOS interface automatically ignores all warning messages and performs the intended RC operation.

RCOS users receive a response message indicating that the operation was performed and a warning message existed.

The RC/V Text Interface uses the multilevel error scheme currently available through the RC/V Menu Interface. They both have three levels of error messages:

- **Level 1:** Field (range checks). These error messages represent illegal field values entered.
- **Level 2:** Data consistency (form checks). These error messages represent possible illegal combinations of fields and values on the form and can be determined without consulting the database.
- **Level 3:** Data integrity (database checks). These error messages are based on database checks while attempting to perform the specified operation.

For a further explanation of the multilevel error scheme, refer to "INTRODUCTION TO RECENT CHANGE AND VERIFY", Chapter 1 .

3.1.12 AUTOFORMS PRESENTATION

The RC/V Text Interface does not support autoforms presentation as the RC/V Menu Interface does. You are required to enter each individual form id as necessary for RC/V input.

3.1.13 EXITING RC/V TEXT

To successfully exit an RC/V Text Interface session, you simply enter an END command without using the RC/V Text Interface continuation character ("!"). This can be performed at any time after you complete a successful operation or do an "ABORTFORM" operation. The system will respond with a "PF" and the RC/V Text Interface session terminates. If an END command is issued while in the middle of a form id, the RC/V Text Interface session still responds with a "PF" but the session terminates with error messages.

3.1.14 RC/V TEXT INTERFACE USAGE EXAMPLES

3.1.14.1 Usage Example Information

The RC/V Text Interface usage examples demonstrate the correct usage and syntax of the RC/V Text input language.

NOTE: RC/V text examples are not intended to give specific information about the characteristics of any view or form used in these examples. Please refer to 235-118-254, *Recent Change Reference*, for specific information about a form or field for a given software release.

3.1.14.2 Using the NEW, CHG, OUT, and VFY Operations on Simple Data

The following example and Exhibits 3-1 and 3-2 show user input and response for "NEW", "CHG", "OUT", and "VFY" operations.

In the examples in the following sections, the double quote character ["] is used liberally around input fields, form ids, and operations. While this is perfectly valid, keep in mind that double quotes are needed only in cases where it is necessary to protect special non-alphabetic characters or preserve lower case input fields.

*** RC/V Text Interface Example Using NEW, CHG, OUT, and VFY Operations ***	
*** On View 4.1 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE"!	OK
: FORM="4V1"&"NEW"!	NOTICE - Verify output


```
#5. SCR      1
   6. LINESCRN N
   7. DAS      1
#8. INSEP    1
#9. DESEP    1
   COUNT     0
11. RMK      TUTORIAL LCC
```

Exhibit 3-2 RC/V View 4.1 AFTER CHG Operation

3.1.14.3 Using the SET Command on List Data

The following example and Exhibit 3-3 show user input and response for the SET command on list data.

*** RC/V Text Interface Example Using SET Command on View 10.10 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE!"	OK
: FORM="10V10"&"NEW!"	NOTICE - Verify output will go to file "/rclog/RCTXaaa_687657"
: SCR="6!"	OK
: CDI="7!"	OK
: SET="SCRNDATA.PFX[1]"&"NONE!"	OK
: SET="SCRNDATA.CHG[1]"&"1!"	OK
: SET="SCRNDATA.TDV[1]"&"N!"	OK
: SET="SCRNDATA.CST[1]"&"NONE!"	OK
: SET="SCRNDATA.IECR[1]"&"N!"	OK
: SET="SCRNDATA.CBLK[1]"&"N!"	OK
: SET="SCRNDATA.PFX[2]"&"1+!"	OK
: SET="SCRNDATA.RTI[2]"&"10!"	OK
: SET="SCRNDATA.CHG[2]"&"1!"	OK
: SET="SCRNDATA.TDV[2]"&"N!"	OK
: SET="SCRNDATA.CST[2]"&"NONE!"	OK
: SET="SCRNDATA.IECR[2]"&"N!"	OK
: SET="SCRNDATA.CBLK[2]"&"N!"	OK
: NEW!	OK
: FORM="10V10"&"VFY!"	OK
: SCR="6!"	OK
: CDI="7!"	OK
: VFY!	OK
: FORM="10V10"&"OUT!"	OK
: SCR="6!"	OK
: CDI="7!"	OK
: OUT!	OK
: END;	PF
>	

NOTE: The ">" symbol is the craft shell prompt. The ":" is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

```
(5301)          5ESS SWITCH OFFICE ID
                RECENT CHANGE 10.10
                SCREENING ( CHARGING )
```

```
*1. SCR 6
*2. CDI 7
```

3. SCREENING DATA (SCRNDATA)

ROW	PFX	NPA	OFFCOD	RTI	CHGI	TDV	CST	IECR	CBLK	CONF
1	NONE	___	___	___	1	N	NONE	N	N	___

1	/CWT	Y	N	N	N	5	_____	_____	9	_____	_____	13	_____	_____
2	/CWD	Y	N	N	N	6	_____	_____	10	_____	_____	14	_____	_____
3	/CFV	N	N	N	N	7	_____	_____	11	_____	_____	15	_____	_____
4						8	_____	_____	12	_____	_____	16	_____	_____

WARNING: Deleting a CLUSTER while USE CNT is greater than zero will remove the CLUSTER from all subscribers.

Exhibit 3-4 RC/V View 12.2 AFTER NEW Operation

(5600)

5ESS SWITCH OFFICE ID
VERIFY 12.2
CLUSTER DEFINITION

*1. CLUSTER LEARN 2. REMARKS _____
USE CNT 0

4. FEATURE LIST (FEATLIST)

ROW	FEATURE	A	P	C	R	FEATURE	A	P	C	R	FEATURE	A	P	C	R	FEATURE	A	P	C	R
1	/CWT	Y	N	N	N	5	_____	_____	9	_____	_____	13	_____	_____						
2	/CWD	N	N	N	N	6	_____	_____	10	_____	_____	14	_____	_____						
3	/CPUT	N	N	N	N	7	_____	_____	11	_____	_____	15	_____	_____						
4						8	_____	_____	12	_____	_____	16	_____	_____						

WARNING: Deleting a CLUSTER while USE CNT is greater than zero will remove the CLUSTER from all subscribers.

Exhibit 3-5 RC/V View 12.2 AFTER CHG Operation

3.1.14.5 Using the LOUT Command on List Data

Exhibits 3-6 and 3-7 and the following examples show user input and response for the LOUT command on list data.

(5301)

5ESS SWITCH OFFICE ID
RECENT CHANGE 10.10
SCREENING (CHARGING)

*1. SCR 6
*2. CDI 7

3. SCREENING DATA (SCRNDATA)

ROW	PFX	NPA	OFFCOD	RTI	CHGI	TDV	CST	IECR	CBLK	CONF
1	NONE	_____	_____	_____	1	N	NONE	N	N	_____
2	1+	_____	_____	10	1	N	NONE	N	N	_____
3	_____	_____	_____	_____	0	_____	NONE	N	N	_____

19. RMK _____

Exhibit 3-6 RC/V View 10.10 BEFORE LOUT Command

*** RC/V Text Interface LOUT Example 1 ***

RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE"!	OK
: FORM="10V10"&"CHG"!	NOTICE - Verify output will go to file " "/rclog/RCTXaaa_832839"
	OK
SCR="6"!	OK
CDI="7"!	OK
LOUT="SCRN[2]"!	OK
CHG!	OK
FORM="10V10"&"VFY"!	OK
SCR="6"!	OK
CDI="7"!	OK
VFY!	OK
END;	PF

>

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

*** RC/V Text Interface LOUT Example 2 ***

RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE"!	OK
: FORM="10V10"&"CHG"!	NOTICE - Verify output will go to file " "/rclog/RCTXaaa_357127"
	OK
: SCR="6"!	OK
: CDI="7"!	OK
: LOUT="SCRN.P"&"1+!"	OK
: CHG!	OK
: FORM="10V10"&"VFY"!	OK
: SCR="6"!	OK
: CDI="7"!	OK
: VFY!	OK
: END;	OK

>

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

(5301) 5ESS SWITCH OFFICE ID
RECENT CHANGE 10.10
SCREENING (CHARGING)

- *1. SCR 6
- *2. CDI 7

3. SCREENING DATA (SCRNDATA)

ROW	PFX	NPA	OFFCOD	RTI	CHGI	TDV	CST	IECR	CBLK	CONF
1	NONE	___	___	___	1	N	NONE	N	N	___
2	___	___	___	___	0	___	NONE	N	N	___
3	___	___	___	___	0	___	NONE	N	N	___

19. RMK _____

Exhibit 3-7 RC/V View 10.10 AFTER LOUOUT Doing Example 1 -or- Example 2

3.1.14.6 Using VFY, MVFY, and SHVfy Operations in Name-Value Format

The following example and Exhibit 3-8 show user input and response for "VFY", "MVFY", and "SHVfy" operations on view 4.1.

*** RC/V Text Interface Example Using VFY, MVFY, and SHVfy Operations *** *** on View 4.1 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
>	RCV:APPTEXT!
:	OK
:	DEVICE=FILE,VFYNMVAL!
:	OK
:	FORM="4V1"&"VFY"!
:	NOTICE - Verify output will go to file "rclog/RCTXaaa_162830"
:	OK
:	LCC="ABC"!
:	OK
:	RAX="1"!
:	OK
:	VFY!
:	OK
:	FORM="4V1"&"MVFY"!
:	OK
:	LCC="ABC"!
:	OK
:	RAX="1"!
:	OK
:	MVfy!
:	OK
:	FORM="4V1"&"SHVfy"!
:	OK
:	LCC="ABC"!
:	OK
:	RAX="1"!
:	OK
:	SHVfy!
:	OK
:	END;
:	PF
>	

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

```

                    5ESS SWITCH
                    VERIFY 4.1
                    LINE CLASS CODE
(5306)
*1. LCC      ABC
*2. RAX      1
#3. SERVCL  INDIV
#4. TERM    INDIV
#5. SCR      1
 6. LINESCRN N
 7. DAS      1
#8. INSEP    1
#9. DESEP    1
   COUNT    0
11. RMK      _____
    
```

Exhibit 3-8 RC/V View 4.1 Display

*** VFY Operation Example On View 4.1 ***

```

FORM=4V1&VFY<em>LCC=ABC<ack>RAX=1<ack>SERVCL=INDIV<ack>TERM=INDIV<ack>+
SCR=1<ack>LINESCRN=N<ack>DAS=1<ack>INSEP=1<ack>DESEP=1<ack>+
COUNT=0<ack>RMK=<ack><bel><em><em>
    
```

*** MVFY Operation Example On View 4.1 ***

```

FORM=4V1&MVfy<em>LCC=ABC<ack>RAX=1<ack>SERVCL=INDIV<ack>TERM=INDIV<ack>+
SCR=1<ack>INSEP=1<ack>DESEP=1<ack>COUNT=0<ack><bel><em><em>
    
```

***** SHVfy Operation Example On View 4.1 *****

```
FORM=4V1&SHVfy<em>LCC=ABC<ack>RAX=1<ack>SERVCL=INDIV<ack>TERM=INDIV<ack>+
SCR=1<ack>INSEP=1<ack>DESEP=1<ack><bel><em><em>
```

NOTE: The plus sign shown here does not appear in the output, nor do the spaces shown on the subsequent lines. The "+" symbol is used here to show that the output data is one continuous line.
 The "" notation is the EM character (hex 19).
 The "<ack>" notation is the ACK character (hex 06).
 The "<bel>" notation is the BEL character (hex 07).
 A <bel> symbol will appear after every page break for a given form.

3.1.14.7 Using the ATTR Operation

The following examples show user input and response for the "ATTR" operation on view 4.1 and view 5.10.

***** RC/V Text Interface ATTR Example 1 On View 4.1 *****

RC/V Text Interface User Input	RC/V Text Interface Response
>	RCV:APPTXT!
:	DEVICE="FILE",VFYNMVAL!
:	FORM="4V1"&"ATTR!"
:	OK
:	OK
:	NOTICE - Verify output will go to file
:	"/rclog/RCTXaaa_"293902"
:	OK
:	ATTR!
:	OK
:	END;
:	PF
>	

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

***** ATTR Operation Example 1 On View 4.1 *****

```
FORM=4V1&ATTR<em>LCC=*<ack>RAX=*<ack>SERVCL=#<ack>TERM=#<ack>+
SCR=#<ack>LINESCRN= <ack>DAS= <ack>INSEP=#<ack>DESEP=#<ack>+
RMK= <ack><bel><em><em>
```

NOTE: The plus sign shown here does not appear in the output, nor do the spaces shown on the subsequent lines. The "+" symbol is used here to show that the output data is one continuous line.
 The "" notation is the EM character (hex 19).

The "<ack>" notation is the ACK character (hex 06).

The "<bel>" notation is the BEL character (hex 07).

A <bel> symbol will appear after every page break for a given form.

***** RC/V Text Interface ATTR Example 2 On View 5.10 *****

RC/V Text Interface User Input	RC/V Text Interface Response
>	RCV:APPTXT!
:	DEVICE="FILE",VFYNMVAL!
:	FORM="5V10"&"ATTR!"
:	OK
:	OK
:	NOTICE - Verify output will go to file
:	"/rclog/RCTXaaa_065682"
:	OK
:	ATTR!
:	OK
:	END;
:	PF
>	

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

***** ATTR Operation Example 2 On View 5.10 *****

```
FORM=5V10&ATTR<em>SRCTGN=*<ack>SRCMEM=*<ack>
SRCOE.TENTYP=*<ack>SRCOE.ENTRK1=*<ack>DESTTRUNK.MEM[1]= <ack>
DESTTRUNK.MEM[2]= <ack>DESTTRUNK.MEM[3]= <ack>
DESTTRUNK.MEM[4]= <ack>DESTTRUNK.MEM[5]= <ack>
DESTTRUNK.MEM[6]= <ack>DESTTRUNK.MEM[7]= <ack>
DESTTRUNK.MEM[8]= <ack>DESTTRUNK.OE.TENTYP[1]= <ack>
DESTTRUNK.OE.TENTYP[2]= <ack>DESTTRUNK.OE.TENTYP[3]= <ack>
DESTTRUNK.OE.TENTYP[4]= <ack>DESTTRUNK.OE.TENTYP[5]= <ack>
DESTTRUNK.OE.TENTYP[6]= <ack>DESTTRUNK.OE.TENTYP[7]= <ack>
DESTTRUNK.OE.TENTYP[8]= <ack>DESTTRUNK.OE.ENTRK1[1]= <ack>
DESTTRUNK.OE.ENTRK1[2]= <ack>DESTTRUNK.OE.ENTRK1[3]= <ack>
```

```

DESTTRUNK.OE.ENTRK1[4]= <ack>DESTTRUNK.OE.ENTRK1[5]= <ack>
DESTTRUNK.OE.ENTRK1[6]= <ack>DESTTRUNK.OE.ENTRK1[7]= <ack>
DESTTRUNK.OE.ENTRK1[8]= <ack> DESTTRUNK.CLCI[1]= <ack>
DESTTRUNK.CLCI[2]= <ack>DESTTRUNK.CLCI[3]= <ack>
DESTTRUNK.CLCI[4]= <ack>DESTTRUNK.CLCI[5]= <ack>
DESTTRUNK.CLCI[6]= <ack>DESTTRUNK.CLCI[7]= <ack>
DESTTRUNK.CLCI[8]= <ack>DESTTRUNK.ISCN[1]= <ack>
DESTTRUNK.ISCN[2]= <ack>DESTTRUNK.ISCN[3]= <ack>
DESTTRUNK.ISCN[4]= <ack>DESTTRUNK.ISCN[5]= <ack>
DESTTRUNK.ISCN[6]= <ack>DESTTRUNK.ISCN[7]= <ack>
DESTTRUNK.ISCN[8]= <ack>DESTTRUNK.LINKID[1]= <ack>
DESTTRUNK.LINKID[2]= <ack>DESTTRUNK.LINKID[3]= <ack>
DESTTRUNK.LINKID[4]= <ack>DESTTRUNK.LINKID[5]= <ack>
DESTTRUNK.LINKID[6]= <ack>DESTTRUNK.LINKID[7]= <ack>
DESTTRUNK.LINKID[8]= <ack>DESTTRUNK.MEM[9]= <ack>
DESTTRUNK.MEM[10]= <ack>DESTTRUNK.MEM[11]= <ack>
DESTTRUNK.MEM[12]= <ack>DESTTRUNK.MEM[13]= <ack>
DESTTRUNK.MEM[14]= <ack>DESTTRUNK.MEM[15]= <ack>
DESTTRUNK.MEM[16]= <ack>DESTTRUNK.OE.TENTYP[9]= <ack>
DESTTRUNK.OE.TENTYP[10]= <ack>DESTTRUNK.OE.TENTYP[11]<ack>
DESTTRUNK.OE.TENTYP[12]= <ack>DESTTRUNK.OE.TENTYP[13]= <ack>
DESTTRUNK.OE.TENTYP[14]= <ack>DESTTRUNK.OE.TENTYP[15]= <ack>
DESTTRUNK.OE.TENTYP[16]= <ack>DESTTRUNK.OE.ENTRK1[9]= <ack>
DESTTRUNK.OE.ENTRK1[10]= <ack>DESTTRUNK.OE.ENTRK1[11]= <ack>
DESTTRUNK.OE.ENTRK1[12]= <ack>DESTTRUNK.OE.ENTRK1[13]= <ack>
DESTTRUNK.OE.ENTRK1[14]= <ack>DESTTRUNK.OE.ENTRK1[15]= <ack>
DESTTRUNK.OE.ENTRK1[16]= <ack>DESTTRUNK.CLCI[9]= <ack>
DESTTRUNK.CLCI[10]= <ack>DESTTRUNK.CLCI[11]= <ack>
DESTTRUNK.CLCI[12]= <ack>DESTTRUNK.CLCI[13]= <ack>
DESTTRUNK.CLCI[14]= <ack>DESTTRUNK.CLCI[15]= <ack>
DESTTRUNK.CLCI[16]= <ack>DESTTRUNK.ISCN[9]= <ack>
DESTTRUNK.ISCN[10]= <ack>DESTTRUNK.ISCN[11]= <ack>
DESTTRUNK.ISCN[12]= <ack>DESTTRUNK.ISCN[13]= <ack>
DESTTRUNK.ISCN[14]= <ack>DESTTRUNK.ISCN[15]= <ack>
DESTTRUNK.ISCN[16]= <ack>DESTTRUNK.LINKID[9]= <ack>
DESTTRUNK.LINKID[10]= <ack>DESTTRUNK.LINKID[11]= <ack>
DESTTRUNK.LINKID[12]= <ack>DESTTRUNK.LINKID[13]= <ack>
DESTTRUNK.LINKID[14]= <ack>DESTTRUNK.LINKID[15]= <ack>
DESTTRUNK.LINKID[16]= <ack><bel><em><em>
    
```

NOTE: The plus sign shown here does not appear in the output, nor do the spaces shown on the subsequent lines. The "+" symbol is used here to show that the output data is one continuous line.
 The "" notation is the EM character (hex 19).
 The "<ack>" notation is the ACK character (hex 06).
 The "<bel>" notation is the BEL character (hex 07).
 A <bel> symbol will appear after every page break for a given form.

3.1.14.8 Using the Abbreviated Names on Simple Data

The following example and Exhibit 3-9 show user input and response for abbreviated names on simple data.

*** RC/V Text Interface Example Using Abbreviated Names On View 4.1 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE!"	OK
: FORM="4V1"&"NEW!"	NOTICE - Verify output will go to file "/rclog/RCTXaaa_883691"
LC="GD2!"	OK
RA="1!"	OK
SE="INDIV!"	OK
T="INDIV!"	OK
SC="2!"	OK
I="2!"	OK
DE="2!"	OK
RM="ABBR!"	OK
NEW!	OK
FORM="4V1"&"VFY!"	OK
LC="GD2!"	OK

RA="1"!		OK
VFY!		OK
FORM="4V1"&"OUT"!		OK
LC="GD2"!		OK
RA="1"!		OK
OUT!		OK
END;		PF

>
NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

```

                    5ESS SWITCH
                    VERIFY 4.1
                    LINE CLASS CODE

(5306)
*1. LCC          GD2
*2. RAX          1
#3. SERVCL      INDIV
#4. TERM        INDIV
#5. SCR         2
   6. LINESCRN  N
   7. DAS        1
#8. INSEP       2
#9. DESEP       2
   COUNT       0
11. RMK        ABBR

```

Exhibit 3-9 RC/V View 4.1 AFTER Using Abbreviated Names AFTER NEW Operation

3.1.14.9 Using the Abbreviated Names on List Data

The following example and Exhibits 3-10 and 3-11 show user input and response for abbreviated names on list data.

*** RC/V Text Interface Example Using Abbreviated Names On View 12.2 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTXT!	OK
: DEVICE="FILE"!	OK
: FORM="12V2"&"NEW"!	NOTICE - Verify output will go to file "/rclog/RCTXaaa_835117"
:	OK
: CLUSTER="LEARN"!	OK
: LNEW="F.F"&"/CWT"!	OK
: LNEW="F.F"&"/CWD"!	OK
: LNEW="F.F"&"/CFV"!	OK
: NEW!	OK
: FORM="12V2"&"VFY"!	OK
: CLUSTER="LEARN"!	OK
: VFY!	OK
: FORM="12V2"&"CHG"!	OK
: CLUSTER="LEARN"!	OK
: LCHG="F.F"&"/CWD"-F.A"&"N"!	OK
: LCHG="F.F"&"/CFV"-F.F"&"/CPUT"!	OK
: CHG!	OK
: FORM="12V2"&"VFY"!	OK
: CLUSTER="LEARN"!	OK
: VFY!	OK
: FORM="12V2"&"OUT"!	OK
: CLUSTER="LEARN"!	OK
: OUT!	OK
: END;	PF
>	

NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by the user. The "NOTICE -" response is one continuous line of output.

```

                    5ESS SWITCH OFFICE ID
                    RECENT CHANGE 12.2
(5600)              CLUSTER DEFINITION

*1. CLUSTER LEARN          2. REMARKS _____
   USE CNT 0

                    4. FEATURE LIST (FEATLIST)

                A                A                A                A
ROW FEATURE  A P C R  FEATURE  A P C R  FEATURE  A P C R  FEATURE  A P C R
1  /CWT      Y N N N 5  _____  _ _ _ _  9  _____  _ _ _ _ 13  _____  _ _ _ _
2  /CWD      Y N N N 6  _____  _ _ _ _ 10  _____  _ _ _ _ 14  _____  _ _ _ _
3  /CPUT     N N N N 7  _____  _ _ _ _ 11  _____  _ _ _ _ 15  _____  _ _ _ _
4  _____ _ _ _ _ 8  _____  _ _ _ _ 12  _____  _ _ _ _ 16  _____  _ _ _ _

WARNING: Deleting a CLUSTER while USE CNT is greater than zero will remove the
         CLUSTER from all subscribers.
    
```

Exhibit 3-10 RC/V View 12.2 AFTER NEW Operation

```

                    5ESS SWITCH OFFICE ID
                    RECENT CHANGE 12.2
(5600)              CLUSTER DEFINITION

*1. CLUSTER LEARN          2. REMARKS _____
   USE CNT 0

                    4. FEATURE LIST (FEATLIST)

                A                A                A                A
ROW FEATURE  A P C R  FEATURE  A P C R  FEATURE  A P C R  FEATURE  A P C R
1  /CWT      Y N N N 5  _____  _ _ _ _  9  _____  _ _ _ _ 13  _____  _ _ _ _
2  /CWD      N N N N 6  _____  _ _ _ _ 10  _____  _ _ _ _ 14  _____  _ _ _ _
3  /CPUT     N N N N 7  _____  _ _ _ _ 11  _____  _ _ _ _ 15  _____  _ _ _ _
4  _____ _ _ _ _ 8  _____  _ _ _ _ 12  _____  _ _ _ _ 16  _____  _ _ _ _

WARNING: Deleting a CLUSTER while USE CNT is greater than zero will remove the
         CLUSTER from all subscribers.
    
```

Exhibit 3-11 RC/V View 12.2 AFTER CHG Operation

3.1.14.10 Using the IGN and MSG Commands

The following example and Exhibit 3-12 show user input and response for the IGN and MSG commands.

*** RC/V Text Interface Example Using the IGN and MSG Commands ***	
*** On View 1.6 ***	
RC/V Text Interface User Input	RC/V Text Interface Response
>	RCV:APPTXT!
:	OK
:	DEVICE="FILE!"
:	OK
:	NOTICE - Verify output will go to file
:	
:	FORM="1V6"&"CHG!"

```

:          TN="2202000"!          |          "/rclog/RCTXaaa_490475"
:          FLS="Y"!              |          OK
:                               |          ?W 1 message lines <<< 0 Errors
:          MSG!                  |          1 Warning >>>
:                               |          Free terminating service YES is only for unusual
:                               |          purposes.
:          IGN!                  |          OK
:          CHG!                  |          OK
:          FORM="RC_LINE0"&"VFY"! |          OK
:          TN="2202000"!          |          OK
:          VFY!                  |          OK
:          END;                  |          PF
>
NOTE: The ">" symbol is the craft shell prompt. The ":" symbol is the RC/V Text Interface prompt. These symbols are not typed by
the user. The "NOTICE -" response is one continuous line of output.

```

SCREEN 1 OF 4	5ESS SWITCH OFFICE ID			
(5109,5111,5111A)	RECENT CHANGE 1.6			
	COMPOSITE LINE (LINE ASSIGNMENT)			
(*) 1. TN 2202000	18. MFRI	N	30. BRCS	Y
(*) 2. OE _____	19. BTN (NOT=TN) _____		31. BAUTO	N
(*) 5. PTY _____	MULTIDN	N	32. SHARED	N
(*) 6. MLHG _____	DEPENDN	N	33. SAUTO	N
(*) 7. MEMB _____	22. RAX	1	34. FLS	Y
	23. LCC	III	35. SUSO	N
9. CHNG TN 2202000	LATA	_____	36. SUST	N
10. CHNG OE L 00210000	25. COIN	N	37. ICP	N
13. CHNG PTY I	26. GST	N	38. RTI	0
14. CHNG MLHG _____	27. EL	N	HRI	0
15. CHNG MEMB _____	28. SERHLN	_____	40. BCK LNK	N
16. NEW TN _____	29. TTC	Y	41. NODL	N

Exhibit 3-12 RC/V View 1.6 AFTER CHG Operation

SCREENS 2, 3, & 4 NOT SHOWN

3.1.14.11 Using the ABORTFORM and END Commands

The following example shows user input and response for the "ABORTFORM" and END commands on view 1.6.

```

*** RC/V Text Interface Example Using the ABORTFORM and END Commands ***
*** On View 1.6 ***
RC/V Text Interface User Input          |          RC/V Text Interface Response
>          RCV:APPTXT!                  |          OK
:          DEVICE="FILE"!              |          OK
:                                     |          NOTICE - Verify output
:          FORM="1V6"&"CHG"!            |
:                                     |          will go to file "/rclog/RCTXaaa_160591"
:          TN="2202000"!                |          OK
:          FLS="Y"!                    |          OK
:                                     |          ?W 1 message lines <<< 0 Errors
:          PTY="2"!                    |          1 Warning >>>
:                                     |          ?E 2 message lines <<< 1 Error
:          MSG!                        |          1 Warning >>>
:                                     |          Party lines cannot be free terminating (FLS).

```



```

PIDB.PIDBIDCU[14]=<ack>PIDB.PIDBIDCU[15]=<ack>PIDB.PIDBIDCU[16]=<ack>+
PIDB.PIDBIDCU[17]=<ack>PIDB.PIDBIDCU[18]=<ack>PIDB.EQSTAT[13]=<ack>+
PIDB.EQSTAT[14]=<ack>PIDB.EQSTAT[15]=<ack>PIDB.EQSTAT[16]=<ack>+
PIDB.EQSTAT[17]=<ack>PIDB.EQSTAT[18]=<ack>PIDB.DIPSUSHLF[13]=<ack>+
PIDB.DIPSUSHLF[14]=<ack>PIDB.DIPSUSHLF[15]=<ack>PIDB.DIPSUSHLF[16]=<ack>+
PIDB.DIPSUSHLF[17]=<ack>PIDB.DIPSUSHLF[18]=<ack>PIDB.PIDBDFPOS[13]=<ack>+
PIDB.PIDBDFPOS[14]=<ack>PIDB.PIDBDFPOS[15]=<ack>PIDB.PIDBDFPOS[16]=<ack>+
PIDB.PIDBDFPOS[17]=<ack>PIDB.PIDBDFPOS[18]=<ack>PIDB.PIDBIDCU[19]=<ack>+
PIDB.PIDBIDCU[20]=<ack>PIDB.PIDBIDCU[21]=<ack>PIDB.PIDBIDCU[22]=<ack>+
PIDB.PIDBIDCU[23]=PSU<ack>PIDB.EQSTAT[19]=<ack>PIDB.EQSTAT[20]=<ack>+
PIDB.EQSTAT[21]=<ack>PIDB.EQSTAT[22]=<ack>PIDB.EQSTAT[23]=0<ack>+
PIDB.DIPSUSHLF[19]=<ack>PIDB.DIPSUSHLF[20]=<ack>PIDB.DIPSUSHLF[21]=<ack>+
PIDB.DIPSUSHLF[22]=<ack>PIDB.DIPSUSHLF[23]=1<ack>PIDB.PIDBDFPOS[19]=<ack>+
PIDB.PIDBDFPOS[20]=<ack>PIDB.PIDBDFPOS[21]=<ack>PIDB.PIDBDFPOS[22]=<ack>+
PIDB.PIDBDFPOS[23]=0<ack><em><em>

```

*** RC/V Text Interface Example 3 Using the SELVfy Command On View 19.12 ***

RC/V Text Interface User Input	RC/V Text Interface Response
> RCV:APPTEXT!	RC/V Text Interface session invoked
: VFYNMVAL!	Set verify format to field name-value pair
: FORM="19V12"&"SELVfy!"	Access RC view 19.12 with operation type SELVfy
: SM="13"!	Set key field
: UNIT="5"!	Set key field
: SEL=PIDB[1]!	Select PIDB list (only select row 1 equating to PIDB number)
: SELVfy!	End of select verify operation
: END;	End RC/V Text session

The following would be the output of the above RC/V Text session:

```

FORM=19v12&VFY<em>SM=13<ack>UNIT=5<ack>PIDB.PIDBIDCU[1]=DUAL<ack>+
PIDB.EQSTAT[1]=0<ack>PIDB.DIPSUSHLF[1]=2<ack>PIDB.PIDBDFPOS[1]=0<ack><em><em>

```

4. RC BATCH

4.1 RC BATCH OVERVIEW

This section describes the batch input methods for entering recent change information on the 5ESS[®]-2000 switch.

This section contains the following:

- Batch input recent change entry
- Batch input file administration
- Release of batch input recent changes
- Batch recent change examples
- Information on accessing batch recent change from text recent change for the recent change operations system (RCOS) and onsite user (that is, at the switch)
- Information on accessing batch history reports through the REPT:RCHIST message for the RCOS and onsite user.

NOTE: RCOS users must refer to 235-900-304, *Recent Change Operations Systems Interface Specification*, for information regarding the use of batch input methods over the RCOS interface.

Batch Recent Change does not support Class 28 (Global RC for Lines).

This section consists of five subsections. The structure of each subsection is as follows:

- (1) **Batch Recent Change Creation of Clerk Files** 4.2 : Describes how the batch input feature allows recent changes to be entered through the menu mode or text mode.
- (2) **Batch Mode Release** 4.3 : Describes how to release batched recent changes through menu mode, text mode and input messages.
- (3) **Batch Mode Display** 4.4 : Describes how to display batched recent changes through menu mode and input messages.
- (4) **Removing Batch Clerk Files** 4.5 : Describes how to remove batched recent changes through input messages.
- (5) **Batch Recent Change Examples** 4.6 : Contains examples for the following:
 - BMI (batch mode input) — time release mode
 - BMI — demand release mode
 - BMD (batch mode display)
 - BMR (batch mode release)

4.2 BATCH RECENT CHANGE CREATION OF CLERK FILES

The Batch Input feature for the 5ESS[®]-2000 switch allows recent changes to be entered specifying the date and

time when the recent changes should be performed (TIMEREL), or it allows recent changes to be entered as a demand (DEMAND) batch file. The recent changes can be entered at any time, stored until they are needed, and then released for use by the system. Large numbers of recent changes can be released quickly in a batch mode. Also, if the batch file was created in TIMEREL mode, once the recent changes are stored, the dates and times for release can be changed by the user. During batch input, first and second-level error checking is done. These error checks make sure that the input for field, form, and data are correct and consistent. Third-level error checking, which checks the input data against the database for consistency, is not performed until the recent change is released to the 5ESS[®]-2000 switch database. Refer to "Batch Recent Change Examples" Section 4.6, for batch input examples. Once released, recent changes are kept as history records until the system performs batch file administration processing to remove them. Administrative reporting is included to display the contents and status of all recent changes entered in batch mode, and aid in file administration activities.

4.2.1 MENU MODE

4.2.1.1 General

Refer to "Batch Recent Change Examples" Section 4.6, for examples of how to access batch mode input (BMI) from menu mode.

In BMI mode, type BMI at the menu prompt. A screen displays and the user is asked whether the input is DEMAND or TIMEREL. Demand input requires the batched recent changes to be released to the database manually. Time release input allows the batched recent changes to be released to the database automatically (through the system) at a user specified time.

4.2.1.2 Demand Mode

If demand input is selected, the user is prompted for a clerk file name. This determines the name of the file in which the batch recent change requests will be stored. All clerk files are stored in the /rclog partition on the Administrative Module (AM). Any clerk name (file name) can be assigned except names beginning with RCNEW, RCOLD, RCEVL, SODD, or GRC. For example, RCNEW3 is not allowed.

4.2.1.3 Time Release Mode

If timed release input is selected, the user is prompted for a clerk identifier, which, as stated previously, is actually the file name where the batch recent change requests are stored. The user is prompted to input the VERBOSE option (Default=no). See "ACTIVATING RC/V MENU INTERFACE FROM CRAFT SHELL MODE", Section 2.1.3, for a detailed explanation of VERBOSE. After indicating the verbose option, RC_SRVOR view (B.1) is displayed on the screen. The user is then prompted for the specific service order information in the view. Refer to Exhibit 4-1 for this view.

The RC_SRVOR view consists of an order number, an item number, a message number, and the date and time that the recent change in the time release clerk file is to be released. These fields are listed in Table 4-1. The order number indicates the actual service order. The item number is a sequential number representing an individual recent change request within the service order. The message number is used when there are several dependent recent changes within an item. Otherwise, a zero should be entered. If one recent change depends upon the previous one succeeding, it must have the same item number, but must be assigned a larger message number. The date and time indicate when that recent change **should be released** to update of the 5ESS[®]-2000 switch database. Time is expressed as military time of hours and minutes (00:00 to 23:59). The date includes the month, day, and year.

NOTE: The timed release clerk file will NOT be released unless BTCHINH field of the RC_BPARAM view (B.2) is set to N. Refer to "BATCH MODE RELEASE", Section 4.3, for detailed information.

Each time a new recent change request is entered, the corresponding order information fields are updated. Note

that a service order may contain one or more recent changes. Also, the service order number does not have to be entered for each recent change request. If the user chooses not to return to the service order view between recent change requests, the corresponding fields are automatically incremented. If the message number of the previous input item is zero, then each additional recent change, will increment the item number by one. Also, the service order, clerk identifier, message number, date, and time fields assume the previous values. If the message number of the previous message is greater than zero, the item number remains the same, and the message number is incremented by ten. If the user is adding a new service order, or wishes to number the items and messages in a way different from the automatic numbering scheme, the service order form must be manually updated to reflect the new values.

The following information applies to view B.1, which is used for the time release Batch Input feature:

- CLASS.VIEW is **B.1**
- SYMBOLIC NAME is **RC_SRVOR**
- VIEW NAME is **Service Order Number**.

View B.1 shown in Exhibit 4-1 is not security protected. The definitions of the attributes are shown in Table 4-1 .

5ESS SWITCH
RECENT CHANGE B.1
SERVICE ORDER NUMBER VIEW

*1. ORDNO _____
 *2. ITNO _____
 *3. MSGNO _____
 #4. RDATE _____
 #5. RTIME _____

Exhibit 4-1 View B.1 Service Order Number

Table 4-1 BATCH RECENT CHANGE VIEW ATTRIBUTES FOR RC_SRVOR VIEW

ATTRIBUTE	DEFINITION
*1. ORDNO	Service Order Number. Enter 10 alphanumeric characters.
*2. ITNO	Batch input recent change item number. Enter 0—9999.
*3. MSGNO	Batch input recent change input number. Enter 0 — order of nondependent RC within an item number. Enter 1-9999 — order of dependent recent change within an item number.
#4. RDATE	Batch input release date. Enter 01—12 (month), 01—31 (day), and 00—99 (year).
#5. RTIME	Batch input recent change release time. Enter 0000—2359 [hours and minutes in military manner (for example, 1300, 1620)].

4.2.1.3.1 Adding Recent Changes to Existing Time Release Files

Additional recent changes can be added to a clerk file after it has been created. This can be accomplished by re-entering the BMI mode and specifying the clerk file name where previous recent changes have been stored. Insert new service order information when view B.1 is displayed.

4.2.1.3.2 Deleting Recent Changes from Existing Time Release Files

With **time release** clerk files, it is possible to allow pending recent change requests to be deleted. This is accomplished by using the RC_SRVOR view (B.1) in the same manner as other recent change views. The user must be in immediate mode. The user then enters the key attribute values ORDNO, ITNO, and MSGNO. The system reads the database and completes the remainder of the form (view). When the delete operation is specified, the information is removed from the database, and the corresponding recent change request on disk is marked as deleted.

NOTE: This procedure cannot be performed with **DEMAND** clerk files.

4.2.1.3.3 Updating Recent Changes in Existing Time Release Files

Using **time release** clerk files, it is possible to update the time and date attributes associated with a given recent change. This is accomplished by using the RC_SRVOR view (B.1) in the same manner as other recent change views. The user must be in immediate mode to enter the key attribute values ORDNO, ITNO, and MSGNO. The system reads the database and completes the remainder of the form (view). When the update operation is specified, the date (RDATE) and time (RTIME) attribute fields are changed in the database. Also, the date and the time changes are reflected for the actual recent change request on the disk.

If the user chooses to update an actual recent change rather than updating the associated time and date attribute values, the user must first delete the appropriate recent change, as described in "Deleting Recent Changes from Existing Time Release Files", Section 4.2.1.3.2, and then re-add the recent change, as mentioned in "Adding Recent Changes to Existing Time Release Files", Section 4.2.1.3.1.

NOTE: This procedure cannot be performed with **DEMAND** clerk files.

4.2.2 TEXT MODE

4.2.2.1 General

Refer to "BATCH RECENT CHANGE EXAMPLES - GENERAL", Section 4.6.1, for examples of how to access BMI from the text recent change mode.

4.2.2.2 Demand Mode

Both onsite and RCOS users can access demand-type BMI from text recent change mode. The keywords MODE=BMI, DEMAND, CLERK=clerkid[,VERBOSE]! must be used to enter BMI mode once a session is started. In the preceding message, replace "clerkid" with the desired clerk file name. Refer to "RC TEXT INTERFACE", Chapter 3, for details about text recent change.

4.2.2.3 Time Release Mode

4.2.2.3.1 General

Both onsite and RCOS users can access time release-type BMI from text recent change mode. The keywords MODE=BMI,TIMEREL,CLERK=clerkid[,VERBOSE]! must be used to enter BMI mode once a session is started. In the preceding message, replace "clerkid" with the desired clerk file name. Also, the keyword VERBOSE is optional. Refer to "RC TEXT INTERFACE", Chapter 3, for details about text recent change and the VERBOSE keyword. **After entering the BMI mode, the first form must be a BV1 form insert.** This is required by batch recent change to identify service order information for tracking subsequent recent changes and set the batch release time and date.

4.2.2.3.2 Adding Recent Changes to Existing Time Release Files

Additional recent changes can be added to a clerk file after it has been created. This can be accomplished by

re-entering BMI mode and specifying the clerk file name where previous recent changes have been stored.

4.2.2.3.3 Deleting Recent Changes from Existing Time Release Files

With *time release* clerk files, it is possible to allow pending recent change requests to be deleted. This is accomplished by using the RC_SRVOR view in the same manner as other recent change views. The user must be in immediate mode to enter the key attribute values ORDNO, ITNO, and MSGNO. When the delete operation is specified, the information is removed from the database and the corresponding recent change request on disk is marked as deleted.

4.2.2.3.4 Updating Recent Changes in Existing Time Release Files

Using *time release* clerk files, it is possible to update the time and date attributes associated with a given recent change. This is accomplished by using the RC_SRVOR view in the same manner as other recent change views. The user must be in immediate mode to enter the key attribute values ORDNO, ITNO, and MSGNO. When the update operation is specified, the RDATE and RTIME attribute fields are changed in the database. Also, the time and the date changes are reflected in the actual recent change request on the disk.

If the user chooses to update an actual recent change rather than updating the associated time and date attribute values, the user must first delete the appropriate recent change (as mentioned in "Deleting Recent Changes From Existing Time Release Files", Section 4.2.2.3.3), and re-add that recent change (as mentioned in "Adding Recent Changes to Existing Time Release Files", Section 4.2.2.3.2).

NOTE: This procedure cannot be performed with **DEMAND** clerk files.

4.3 BATCH MODE RELEASE

4.3.1 BATCH MODE RELEASE - GENERAL

Two methods of releasing recent changes are supported by batch input. The first is periodically releasing all recent changes that are past due (TIMEREL). The second is releasing all recent changes stored in a clerk file on demand (DEMAND). Up to four clerk files can be released simultaneously. The first method is automatically released by the system. The second method is invoked by entering the EXC:RCRLS input message or by using batch mode release (BMR) through Menu or Text Mode. Refer to "Input Message", Section 4.3.4 , for details of the variable fields associated to the EXC:RCRLS input message (clerk names cannot be listed in one message, they must be entered separately). BMR mode allows the immediate release of either a demand or time release batch file. It will override the time and date for time release batch files.

Automatic time release requests are determined by the batch office parameters, which are in turn controlled by the RC_BPARAM view (B.2). The BTCHINH attribute acts as an ON/OFF switch for inhibiting or allowing automatic releasing of recent changes. **The BTCHINH attribute must be set to N (no) for automatic releasing of recent changes to occur.** The BTCHITV attribute indicates how often (in hours) recent changes are to be released. The BTCHTOD attribute indicates the number of minutes past the hour that the actual process is started. The system checks this parameter information every 10 minutes and before processing any manual demand requests.

For time release (automatic) recent changes, a batch review is performed on the base relation RLBTCHREL which contains a record of every pending automatic release recent change in the system. All of the tuples (rows) of the relation are read by the system, which is searching for past due requests. All past due requests found are put into a temporary file and sorted by time, file name, service order, item number, and message number. These past due requests are then passed, one by one, to the data base management (DBM) system.

Up to four releases can be started simultaneously. Subsequent requests are blocked and have to be reentered. **Automatic** requests always have priority over **manual demand** requests. For example, when an automatic request is being processed, no other files can be released. Therefore, automatic requests cannot be blocked by an

incoming manual request. The indication to the user that a release request has been blocked is displayed at the ROP through the EXC:RCRLS output message. Also, if a **manual** request(s) is (are) running, the **automatic** request will not run. It will retry in 20 minutes. Automatic requests can only run if no manual request or a previous automatic request is currently running.

The processing of a "manual demand" involves the following:

- (1) Opening the clerk file
- (2) Releasing each recent change
- (3) Recording release status of each recent change
- (4) Closing the file
- (5) Displaying the BMR or EXC:RCRLS output messages.

As each recent change is released, TIMEREL or DEMAND, there are several steps involved.

If VERBOSE is set to yes, as each successful recent change is applied to the ODD, a recent change output message is printed on the ROP indicating the changes requested have completed. The following ROP output is an example of the recent change BATCH SUCCESS message.

```
S570-49 87-03-06 05:27:32 001811
```

```
M RC BATCH SUCCESS RC_FAKE INSERTED 6 ISLU TERM-ID = ttyv CLERK = a
```

The output message can be divided into six parts, each part conveys information to the user.

- (1) **RC BATCH SUCCESS**: Indicates status of the recent change after being applied to the ODD.
- (2) **RC_FAKE**: Indicates the view name.
- (3) **INSERTED**: Indicates the operation (for example, inserted, deleted, or updated).
- (4) **6 ISLU**: Indicates the key values of the view.
- (5) **TERM-ID = ttyv**: Input source (for RC/V MCC, TERM ID = ttyv, where "v" = terminal type; for the RCOS user, TERM ID = RCOS).
- (6) **CLERK = a** (a is the clerk file name).

If verbose is set to yes and an error is encountered when applying an recent change to the ODD, the output message is

```
RC BATCH FAILURE RC_FAKE NOT INSERTED ...
```

If recent change activity is inhibited by the manual MCC command INH:RC or by an ODD:BKUP (ODD backup), the following message will appear:

```
RC INHIBITED RC_FAKE NOT INSERTED ...
```

For time released recent changes, as each recent change is processed, the base relation RCBTCHREL corresponding tuple (row) is deleted. For both time released and demand recent changes, the status is updated in the clerk file on disk. The status is marked completed for each recent change that was successfully applied to the ODD. The status is marked in error for each recent change that was not successfully applied to the ODD.

When all requests have been processed, status information is displayed to the user in the EXC RCRLS output message.

The EXC RCRLS output message contains the summary count of the number of successful releases, the number of releases in error, or whether the entire file is processed or prematurely aborted.

The following ROP output is an example of the recent change BATCH SUCCESS message.

```
S570-49 87-03-06 05:33:32 001812
```

```
M EXC RCRLS CLERK = a b FAILURES = c, APPLIED = d
```

The output message can be divided into five parts:

- (1) **EXC RCRLS**: Indicates a Batch Recent Change job
- (2) **CLERK = a** : a indicates the clerk file name
- (3) **b**: Indicates the status of the Batch Recent Change job
 - NOT STARTED
 - STARTED
 - COMPLETED
 - ABORTED
 - STOPPED
- (4) **FAILURES = c**: Indicates the number of recent changes failed to be applied to the ODD. Note: It only appears if there are failures.
- (5) **APPLIED = d**: Indicates the number of recent changes that successfully updated the ODDs.

From a user standpoint, the control of the timing of the time release and cleanup routines is accomplished using the RC_BPARAM view. Refer to Table 4-2 for the attributes that are used to control timing and cleanup, as well as inhibiting automatic batch release, and inhibiting automatic cleanup routines.

4.3.2 MENU MODE RELEASE OF CLERK FILES (BMR)

To release a clerk file through Menu Mode, the user must enter BMR at the menu prompt. When the user first selects the BMR option, the system prompts for a file name. This file name can be a demand file name or the clerk ID of a time release file. At this time, the user is prompted to input the **VERBOSE** option (Default = no). When the file name is entered, the recent changes in the file are immediately released to the 5ESS[®]-2000 switch database in the same order that they were entered and NO sorting is done on multiple Service Orders.

4.3.3 TEXT MODE RELEASE OF CLERK FILES (BMR)

To release a clerk file through Text Mode, the user must enter MODE=BMR,CLERK=clerkid[VERBOSE]!

4.3.4 INPUT MESSAGE

In demand mode, no release time is associated with the clerk file.

NOTE: Clerk files that have been created using time release mode can also be released using the EXC:RCRLS input message. The time and date information is ignored.

These files can be released using the following EXC:RCRLS input message:

```
EXC:RCRLS,{CLERK=a[,VERBOSE][ODDEVOL[,CONCURRENT][,SKIPERR]]};
```

Where:

- a = Clerk name entered on the request. (Clerk name may have no more than eight ASCII characters and may not include blanks or special characters.)
- ODDEVOL = Release the evolved recent change file.
- CONCURRENT = Divide the evolved recent change file into multiple release clerk files and proceed on all files simultaneously.
- SKIPERR = Skip over the failed recent changes. This option is only used if the releasing of the evolved recent change file was stopped because a BKUP:ODD was required and it is necessary to reduce the retrofit time interval. The failed recent changes will be attempted during the RC reapplication cleanup phase at software retrofit.
- VERBOSE = Print on one line, detail message for each recent change applied.

Response: PF followed by EXC:RCRLS output message.

Comment: Releases all recent changes previously entered into the delayed release clerk file. The ODDEVOL, CONCURRENT, and SKIPERR options are generally used only during a switch retrofit.

The following input messages may also be used to determine the status or stop the execution of clerk files.

- OP:RCRLS[,CLERK=clerkname]
- STP:RCRLS[,CLERK=clerkname]

Refer to 235-600-700, *Input Message Manual*, for complete details of the OP:RCRLS and STP:RCRLS messages.

4.4 BATCH MODE DISPLAY

4.4.1 BATCH MODE DISPLAY - GENERAL

Records can be selected from the batch mode files by individual keys or as a group by status flag or release time. The batch mode files contain header information followed by the recent change data.

The header data contains service order information, a status flag, release, and activation times, along with the key of the recent change. This header data is formatted and then displayed to the user. When more detailed information is needed, the recent change data is converted into a mask (view) format. Then, the view is formatted for output. Refer to "Batch Mode Display of Clerk Files", Section 4.6.4, for information concerning the previously mentioned status flags and times.

The request for generating a Batch Recent Change activity report can originate from BMD or from the REPT:RCHIST craft input message. Requests made through BMD in menu mode are displayed to the RC/V terminal. Requests from the craft input message display the data on the ROP or another specified printer. The data can also be sent to an ASCII file in the /rclog partition.

There are two kinds of reports activity report and the formatted report. The activity report provides a summary of all batch recent changes, by status, for all clerk files. The formatted report is requested with selection criteria and formatting options, to allow only the required details to be generated. Through the status selection options, only records that match a desired status are selected. Through the time selection option, only records with a release time that fall within a range of times are selected. By using the status and time selection options together, finer selection is obtained.

The format options include **summary**, which displays only the recent change keys, and **detail**, which displays the recent change view.

4.4.2 MENU MODE

When the user selects the BMD option, the batch display menu is displayed on the video screen, and the following four options are given on this menu page:

- (1) Summary of clerk activity
- (2) Activity by service order number
- (3) Activity by clerk ID
- (4) Return to view or class menu.

Typing a "1" allows the user to view and print (if needed) the DELAYED RELEASE SUMMARY REPORT. Typing a "2" produces the DELAYED RELEASE REPORT BY SERVICE ORDER. Typing a "3" produces the DELAYED RELEASE REPORT BY CLERK ID. The fourth option is self-explanatory. The batch display mode is helpful to the user in performing file administration. Refer to "Batch Mode Display of Clerk Files", Section 4.6.4, for batch display examples.

4.4.3 TEXT MODE

Users cannot access BMD mode from Text Mode. The REPT:RCHIST message or menu BMD option can be used to obtain the needed information.

4.4.4 INPUT MESSAGE

The REPT:RCHIST message is used as an alternate method to display Batched Recent Changes. The format is as follows:

(format 1) REPT:RCHIST,ACTIVITY;

(format 2) REPT:RCHIST,CLERK=a[,FORMAT={SUMMARY|DETAIL}]{ALL|b} [,DEST={c|FILE}][,TIME=d-e];

Where:

a = Clerk name entered on request.
SUMMARY = For each record selected for the report, format by key only.
DETAIL = For each record selected for the report, format entire recent change record.
ALL = Report of all recent changes. Recent changes selected could be pending, completed, error, or demand.
b = One or more of the following:
COMPLETE = Report released recent changes that were successfully completed (default)
DEMAND = Report demand recent changes
ERROR = Report released recent changes that failed (default)
PENDING = Report pending recent changes.
c = Name of printer to which reports are to be routed. Default is receive-only printer (ROP).
FILE = Write the report to a file. If the clerk name is RCNEW, the report is in /updtmp/HIST.RCNEW. Otherwise the report is in /rclog/HIST.<clerk name>.
d-e = The range of times between which records are selected. The time fields are specified in month (01-12), day (01-31), year (last two digits of calendar year), hour (00-23), minute (00-59), and format (with no separators). Leading zeros must be specified. The first time

field must specify a time earlier than the second time field. Thus, choosing 0101700000 as the first time field and 1231692359 as the second time field would select all records and this time (selecting all records) is the default when no time is specified.

Response: PF followed by REPT:RCHIST output message.

Comment: Reports on the history of recent changes are printed on the ROP (if the user enters DEST = c [c = printer] or any other device on format 2, then the report will appear as specified and not on the ROP).

Format 1 outputs the activity of all recent changes entered into the delayed release clerk files. It generates a report listing the activity of recent changes for every clerk that has entered recent change in the delayed release clerk files. This report provides a summary listing of all clerk files in the system, and details by status the count of all recent changes in the system.

Format 2 outputs the history of selected recent changes entered by specific clerks into the delayed release clerk files. It generates a more detailed report specific to the recent change clerk who entered the delayed release recent changes.

The following input messages have been enhanced to cover the ability of reporting on one or two clerk files at the same time.

- OP:RCHIST[,CLERK=clerkname]
- STP:RCHIST[,CLERK=clerkname]

Refer to the input message manual for complete details of the OP:RCHIST and STP:RCHIST messages.

4.5 REMOVING BATCH CLERK FILES

4.5.1 FILE MANAGEMENT

A file system partition called "/rclog" is designated to store batch input files. When the user chooses batch input mode, a file is created using the clerk identifier as the name. If the file already exists, the input is appended to this file. The file can be accessed by normal methods. The system monitors these files to ensure that they never get too large. There is a process that runs periodically to remove released recent changes and compress the remaining recent change entries in the clerk files. Removal of disk files from the /rclog directory should always be done using the EXC:RCRMV input message (explained in detail later in this section). Also, during software release retrofit, the /rclog directory is used to store recent changes that must be applied in the new software release. Thus, batch recent change input is NOT ALLOWED during software release retrofit.

The automatic removal of released recent changes by cleanup routines will remove all records with either a completed or error status from clerk files. The automatic removal is based on the RC_BPARAM view. Field FLAGE specifies the number of days that must pass before the cleanup routines can remove files. Fields CLNHTOD and CLNMTOD access parameters that, in turn, compute the scheduled running time of the file cleanup process. The Automatic Removal feature can be turned off (inhibited) by setting the value of the CLNINH field to Y (yes). The default value for CLNINH is Y (yes). **If the user desires to schedule automatic cleanups, the value of the CLNINH field must be set to N (no).** Exhibit 4-2 shows the RC_BPARAM view and Table 4-2 lists and defines the attributes.

When deleting records, the cleanup action compresses the clerk file which eliminates holes introduced by record deletion. The deletion of timed released recent changes that have not been released requires removing the corresponding tuple (row) in the RLBTCHREL base relation. The cleanup action also removes a clerk file when all

of its records are removed. When the clerk file is removed, the corresponding tuple (row) in the RLCLRKINFO relation is also removed. Another important point is that while removing records from a file, all updates and releases to the clerk file will be blocked. This is to prevent users from corrupting the clerk file. Also, a file removal operation is never started on the same file on which a demand release is operating.

The clerk files can also have the recent changes removed on demand. This is done by entering the EXC:RCRMV message. This message initiates the removal of all records that meet the status and time selection criteria entered in the input message.

5ESS SWITCH
RECENT CHANGE B.2
BATCH OFFICE PARAMETERS

*1. OFFICEID _____
2. BTCHTOD ___
3. BTCHITV ___
4. CLNHTOD ___
5. CLNMTOD ___
6. FLAGE ___
7. BTCHINH ___
8. CLNINH ___

Exhibit 4-2 View B.2 Batch Office Parameters

Table 4-2 BATCH RECENT CHANGE VIEW ATTRIBUTES FOR RC_BPARAM VIEW

ATTRIBUTE	DEFINITION
*1. OFFICEID	Office Identifier. Enter from 1 to 8 alphanumeric characters.
2. BTCHTOD	Minutes past the hour that batch releases should be scheduled. Enter 00—59.
3. BTCHITV	Hour interval between batch releases. Enter 1—24.
4. CLNHTOD	Hour past midnight that cleanup process should be started. Enter 0—23.
5. CLNMTOD	Minutes past the hour that cleanup process should be started. Enter 0—59.
6. FLAGE	Number of days a file may age before removal. Enter 1—30.
7. BTCHINH	Inhibit automatic batch release process. Enter Y for yes or N for no.
8. CLNINH	Inhibit automatic cleanup process. Enter Y for yes or N for no.

4.5.2 INPUT MESSAGE FOR REMOVING RECENT CHANGES

The EXC:RCRMV message is used to remove recent changes from clerk files. Options to this command are specified as follows:

EXC:RCRMV,CLERK=a{[,ALL] | [,PENDING][,COMPLETE][,ERROR][,DEMAND]}[,TIME=b-b];

Where:

a = Clerkname entered on request.
ALL = Removes all recent changes. Recent changes selected could be pending, completed, error, or demand.
PENDING = Removes pending recent changes.

COMPLETE = Removes released recent changes that were successfully completed (default).
 ERROR = Removes recent changes released with error (default).
 DEMAND = Removes demand recent changes.
 b = The range of times between which records are selected. The time fields are specified in month (01-12), day (01-31), year (last two digits of calendar year), hour (00-23), minute (00-59), format (with no separators). Leading zeros must be specified. The first time field must specify a time earlier than the second time field. Thus, choosing 0101700000 as the first time field and 1231692359 as the second time field would select all records, within this range of time. When time is not specified, the default used is all records.

Response: PF followed by EXC:RCRMV output message.

Comment: Defaults are set when neither ALL, PENDING, COMPLETE, ERROR, or DEMAND are specified. Removes selected recent changes printed on the ROP.

4.6 BATCH RECENT CHANGE EXAMPLES

4.6.1 BATCH RECENT CHANGE EXAMPLES - GENERAL

Examples for batch recent changes are as follows:

- **BMI** (batch mode input) — time release mode
- **BMI** (batch mode input) — demand release mode
- **BMD** (batch mode display)
- **BMR** (batch mode release).

The batch input system for recent changes allows the user a great deal of flexibility in requesting reports. The following list contains important facts concerning usage of the system.

- There are manual input and output messages listed elsewhere in this section that can be used instead of the recent changes for data manipulation.
- An alternate method to the single-insert method may be used to input multiple recent changes of the same type. This method uses the same view and is called the change-insert operation. It can be used to save time in the batch input RC mode. Refer to "Change-Insert Operation", Section 2.1.11.2, for this method.
- After entering BMD Reporting Option 2, if the system cannot find the service order data requested, it will print the following prompt:

COULD NOT FIND SERVICE ORDER DATA. ENTER Y TO TRY ANOTHER RECORD OR M TO RETURN TO MENU \$.

- After entering BMD Reporting Option 3 and displaying the DELAYED RELEASE SUMMARY DATA REPORT BY CLERK ID, the following message will appear after the last report in the clerk file is displayed:

AT END OF CLERK FILE, ENTER Y FOR ANOTHER CLERK ID OR M TO RETURN TO MENU \$.

- If an erroneous clerk file (ID) is entered in the BMD Reporting Option 3 (ACTIVITY BY CLERK ID) DELAYED RELEASE REPORT BY CLERK ID, the following error message is displayed:

CLERK FILE DOES NOT EXIST. ENTER Y TO RETRY OR M TO RETURN TO MENU \$.

- If an empty clerk file (ID) is entered in the BMD Reporting Option 3 DELAYED RELEASE REPORT BY CLERK ID, the following message is displayed:

CLERK FILE DOES NOT EXIST. ENTER Y TO RETRY OR M TO RETURN TO MENU \$.

- Whenever an M is listed in a system prompt, it means MENU page. Typing an M produces the current menu page used to enter the batch mode.
- Whenever an IM is listed in a system prompt, it means the immediate mode of recent change entry and activation may be selected.

NOTE: When IM is entered while in BMI, the following prompt will be displayed:

DO YOU WANT TO CHANGE TO IMMEDIATE MODE YES OR NO? Y or N. Typing a Y reverts the system back to normal recent change operation.

It must be noted that recent change view B.2 must be implemented at office cutover. If view B.2 is not implemented (initialized) when the office is cutover, timed released recent changes will **NEVER** BE RELEASED. View B.2 can only be reviewed (R) or updated (U) and not inserted (I) or deleted (D). The inputs will, however, be retained in the service order files created for them upon entry.

Three special error messages (recent change driven response messages) may appear during the batch process. These messages and their causes and suggested actions are as follows.

- **BATCH RC NOT SUPPORTED DURING ODD EVOLUTION**

This message may be caused by typing BMI, BMD, or BMR during a software release retrofit. Please check with the software release retrofit personnel to find out when it is safe to enter the Batch recent change function again.

NOTE: During a software release retrofit, the recent change evolution process stores evolved recent change files in the /rclog partition.

- **SELECT MENU NUMBER FROM BMI, BMR, OR BMD ONLY**

This message is caused by an input keying error (for example, BG, BE, BMZ, BDC, JWL). Please check your required batch operation and reenter either BMI, BMR, or BMD.

- **RC BATCH DOES NOT SUPPORT CLASS 28 VIEWS**

This message is caused by either entering class 28 views while in Batch Input mode or by entering BMI while on the menu page for class 28. Class 28 views are for Global RC and are not supported by Batch.

4.6.2 BATCH MODE INPUT (CREATE A CLERK FILE)

4.6.2.1 Menu Mode - Demand Release

Batch mode input—demand release is accomplished as follows:

(1) At video terminal, when accessing the RC/V program, type:

RCV:MENU:APPRC,VERBOSE; and press **return** key.

The system returns to Main Menu with the cursor at the following prompt:

Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM, or N \$_____.(See Exhibit 4-3 .)

5ESS SWITCH
RECENT CHANGE AND VERIFY CLASSES

H RCV HELP	9 DIGIT ANALYSIS	20 SM PACK & SUBPACK
A ADMINISTRATION	10 ROUTING & CHARGING	21 OSPS FEATURE DEFINITION
B BATCH INPUT PARMS	11 CUTOVER STATUS	22 ISDN -- EQUIPMENT
1 LINES	12 BRCS FEATURE DEFINITION	23 ISDN
2 LINES -- OE	13 TRAFFIC MEASUREMENTS	24 APPLICATIONS PROCESSOR
3 LINES -- MLHG	14 LINE & TRUNK TEST	25 LARGE DATA MOVEMENT
4 LINES -- MISC.	15 COMMON NTWK INTERFACE	26 OSPS TOLL & ASSIST/ISP
5 TRUNKS	16 PSU BASED SS7	27 OSPS TOLL & ASSIST
6 AUTOMATIC CALL DIST.	17 CM MODULE	28 GLOBAL RC - LINES
7 TRUNKS - MISC.	18 SM & REMOTE TERMINALS	
8 OFFICE MISC. & ALARMS	19 SM UNIT	

Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM or N \$_____

Exhibit 4-3 Main Menu

(2) At video terminal, type **BMI** for batch mode and press return key.

The system displays a screen entitled 5ESS SWITCH, RECENT CHANGE OFFICE ID, BATCH MODE INPUT with the following prompt:

ENTER BATCH INPUT TYPE — DEMAND OR TIMEREL \$_____.

(3) At video terminal, type **DEMAND** or **D** and press **return** key.

The system displays DEMAND or **D** and adds the following prompt at the bottom of the screen:

ENTER FILE NAME \$_____.(See Exhibit 4-4 .)

NOTE: Clerk file names beginning with RCNEW, RCOLD, RCEVL, SODD, or GRC cannot be used.

5ESS SWITCH
RECENT CHANGE OFFICE ID
BATCH MODE INPUT

ENTER BATCH INPUT TYPE - (D)EMAND OR (T)IMEREL DEMAND__

ENTER FILE NAME \$ _____

Exhibit 4-4 Blank Screen with System Prompts

- (4) At video terminal, type the *file name* (in this case, DISCONNECT) and press *return* key. Please note the prompts field can only accept nine characters. Creative spelling must be utilized since the word DISCONNECT has ten letters.

The system displays the Main Menu page with BATCH and the file name (DISCONNECT) displayed in the upper right corner of the screen. It also displays the input system prompt. (See Exhibit 4-5 .)

NOTE: The system is now configured to do demand recent changes.

	5ESS SWITCH	RECENT CHANGE
RECENT CHANGE AND VERIFY CLASSES	OFFICE ID	BATCH DISCONNECT
H RCV HELP	9 DIGIT ANALYSIS	20 SM PACK & SUBPACK
A ADMINISTRATION	10 ROUTING & CHARGING	21 OSPS FEATURE DEFINITION
B BATCH INPUT PARMS	11 CUTOVER STATUS	22 ISDN -- EQUIPMENT
1 LINES	12 BRCS FEATURE DEFINITION	23 ISDN
2 LINES -- OE	13 TRAFFIC MEASUREMENTS	24 APPLICATIONS PROCESSOR
3 LINES -- MLHG	14 LINE & TRUNK TEST	25 LARGE DATA MOVEMENT
4 LINES -- MISC.	15 COMMON NTKW INTERFACE	26 OSPS TOLL & ASSIST/ISP
5 TRUNKS	16 PSU BASED SS7	27 OSPS TOLL & ASSIST
6 AUTOMATIC CALL DIST.	17 CM MODULE	28 GLOBAL RC - LINES
7 TRUNKS - MISC.	18 SM & REMOTE TERMINALS	
8 OFFICE MISC. & ALARMS	19 SM UNIT	

Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM or N \$ _____

Exhibit 4-5 Main Menu in Batch Demand Mode

4.6.2.2 Menu Mode - Time Release

Batch mode input — time release is accomplished as follows:

- (1) When accessing the RC/V program, type:
RCV:MENU:APPRC,VERBOSE; and press *return* key.

The system returns to Main Menu (classes) with the cursor at the following prompt:

Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM or N \$_____.(See Exhibit 4-3 .)

- (2) At video terminal, type **BMI** and press **return** key. The system displays the following prompt on a screen entitled "5ESS" SWITCH, RECENT CHANGE OFFICE ID, BATCH INPUT MODE:

ENTER BATCH INPUT TYPE — DEMAND OR TIMEREL \$_____.

- (3) At video terminal, type **TIMEREL** or **T** and press **return** key.

The system displays TIMEREL and adds the following prompt at the bottom of the screen:

ENTER CLERK ID \$_____.(See Exhibit 4-6 .)

```

                    5ESS SWITCH
          RECENT CHANGE  OFFICE ID
                BATCH MODE INPUT
  
```

ENTER BATCH INPUT TYPE - (D)EMAND OR (T)IMEREL

timerel_

ENTER CLERK ID \$_____

VERBOSE OPTION (Y OR N) CR = N _

Exhibit 4-6 System Prompts on a Blank Screen

- (4) At video terminal, type the **CLERK ID** (9 alphanumeric characters) and press **return** key. When the verbose option is set to **Y**, a one-line detail message will be printed for each batch recent change applied.

The system displays recent change view B.1. The cursor is positioned at the first key field (ORDNO) and the following prompt is displayed:

Enter service order number: \$. (See Exhibit 4-7 .)

```

                    5ESS SWITCH
          RECENT CHANGE  B.1
                SERVICE ORDER NUMBER VIEW
  
```

```

*1. ORDNO      $ _____
*2. ITNO      _____
*3. MSGNO     _____
#4. RDATE     _____
  
```

#5. RTIME _____

Exhibit 4-7 View B.1 (RC_SRVOR) with No Fields Completed

(5) At video terminal, type the *service order number* (in this case, SO001) and press **return** key.

The system displays the service order number, moves the cursor to the next key field (ITNO), and changes the prompt to:

Recent change item number: \$.(See Exhibit 4-8 .)

```

                    5ESS SWITCH
                RECENT CHANGE  B.1
        SERVICE ORDER NUMBER VIEW

```

```

*1.  ORDNO      SO001
*2.  ITNO       $ _____
*3.  MSGNO      _____
#4.  RDATE      _____
#5.  RTIME      _____

```

Exhibit 4-8 View B.1 (RC_SRVOR) with One Field Completed

(6) At video terminal, type the *RC item number* (in this case, 1) and press **return** key.

The system displays the recent change item number, moves the cursor to the next key field (MSGNO), and changes the prompt to:

Recent change message number: \$.(See Exhibit 4-9 .)

```

                    5ESS SWITCH
                RECENT CHANGE  B.1
        SERVICE ORDER NUMBER VIEW

```

```

*1.  ORDNO      SO001
*2.  ITNO       1
*3.  MSGNO      $ _____
#4.  RDATE      _____
#5.  RTIME      _____

```

Exhibit 4-9 View B.1 (RC_SRVOR) with Two Fields Completed

(7) At video terminal, type the *RC message number* (in this case, 0) and press **return** key.

The system displays the recent change message number, moves the cursor to the next field (RDATE), and changes the prompt to:

Release date. Enter month, day, and year: \$.(See Exhibit 4-10 .)

```

                    5ESS SWITCH
          RECENT CHANGE  B.1
SERVICE ORDER NUMBER VIEW

```

```

*1.  ORDNO      SO001
*2.  ITNO       1___
*3.  MSGNO      0___
#4.  RDATE      $____
#5.  RTIME      _____

```

Exhibit 4-10 View B.1 (RC_SRVOR) with Three Fields Completed

(8) At video terminal, type the *release date* (in this case, 050595) and press **return** key.

The system displays the release date, moves the cursor to the last field (RTIME), and changes the prompt to the following:

Time to release recent change request. Use military time. \$.(See Exhibit 4-11 .)

```

                    5ESS SWITCH
          RECENT CHANGE  B.1
SERVICE ORDER NUMBER VIEW

```

```

*1.  ORDNO      SO001
*2.  ITNO       1___
*3.  MSGNO      0
#4.  RDATE      050595

```

#5. RTIME \$ _____

Time to release recent change request. Use military time.

Exhibit 4-11 View B.1 (RC_SRVOR) with Four Fields Completed

- (9) At video terminal, type the *release time* (in this case, 0230) and press *return* key.
- The system displays the release time and changes the prompt to:
- Enter Insert, Change, Validate, or Print: \$(See Exhibit 4-12 .)

5ESS SWITCH
RECENT CHANGE B.1
SERVICE ORDER NUMBER VIEW

*1. ORDNO SO001
*2. ITNO 1____
*3. MSGNO 0
#4. RDATE 050595
#5. RTIME 0230

Enter Insert, Change, Validate, or Print: \$

Exhibit 4-12 View B.1 (RC_SRVOR) with All Fields Completed

- (10) At video terminal, type *I* for insert and press *return* key.
- The system inserts the data into the database and returns to Main Menu. (See Exhibit 4-13 .)

NOTE 1: The system will return the original menu page accessed in Step 1. In this example, it happens to be Main Menu, but it could be any class menu (Main Menu to MENU28 or MENUB).

NOTE 2: The next recent change typed is then bound to the service order just inserted (in this

case, SO 001). Furthermore, any subsequent recent changes are also bound to that service order according to the criteria specified in "Batch Recent Change Creation of Clerk Files", Section 4.2 .

	5ESS SWITCH RECENT CHANGE AND VERIFY CLASSES OFFICE ID	RECENT CHANGE BATCH JWL
H RCV HELP	9 DIGIT ANALYSIS	20 SM PACK & SUBPACK
A ADMINISTRATION	10 ROUTING & CHARGING	21 OSPS FEATURE DEFINITION
B BATCH INPUT PARMS	11 CUTOVER STATUS	22 ISDN -- EQUIPMENT
1 LINES	12 BRCS FEATURE DEFINITION	23 ISDN
2 LINES -- OE	13 TRAFFIC MEASUREMENTS	24 APPLICATIONS PROCESSOR
3 LINES -- MLHG	14 LINE & TRUNK TEST	25 LARGE DATA MOVEMENT
4 LINES -- MISC.	15 COMMON NTKW INTERFACE	26 OSPS TOLL & ASSIST/ISP
5 TRUNKS	16 PSU BASED SS7	27 OSPS TOLL & ASSIST
6 AUTOMATIC CALL DIST.	17 CM MODULE	28 GLOBAL RC - LINES
7 TRUNKS - MISC.	18 SM & REMOTE TERMINALS	
8 OFFICE MISC. & ALARMS	19 SM UNIT	

Input CLASS, CLASS,VIEW, Q, R, V, BMI, BMD, BMR, IM or N \$ _____

Exhibit 4-13 Main Menu in Batch Time Release Mode

NOTE: The system is now configured to input recent changes that will be released at a later time. In this example, line class codes (LCCs) are being assigned.

(11) At video terminal, type **4.1** (Class View) and press **return** key.

The system returns the following two-line prompt on a blank screen:

Enter Database Operation

I = Insert R = Review U = Update D = Delete: \$.

Please note that with the "chaining input" method, the view can be displayed in the insert mode by typing 4.1i.

(12) At video terminal, type **I** for insert and press **return** key.

The system displays the Line Class Code View and the cursor is positioned at LCC, with the following prompt displayed:

Line class code. Enter three alphanumeric characters: \$.(See Exhibit 4-14 .)

5ESS SWITCH OFFICE ID
RECENT CHANGE 4.1

LINE CLASS CODE

```

*1.  LCC      $ ___
*2.  RAX      ___
#3.  SERVCL   _____
#4.  TERM     _____
#5.  SCR      _____
   6.  LINESCRN  _
   7.  DAS     ___
#8.  INSEP    ___
#9.  DESEP    ___
      COUNT    _____
11.  RMK      _____

```

Line class code. Enter 3 alphanumeric characters.

Exhibit 4-14 LCC View 4.1 (RC_LCC) with No Fields Completed

- (13) At video terminal, type the *LCC* (in this case, 2P1) and press **return** key.
- The system displays the line class code 2P1, moves the cursor to the next key field (RAX), and changes the prompt to:
- Rate center. Enter from 1 to 99. 0 indicates no RAX: \$.
- (14) At video terminal, type the *rate center* (in this case, 1) and press **return** key.
- The system displays the rate center of 01 and changes the system prompt to:
- This form already exists. Do you want to perform further operations on this form? (Y or N) \$.
- NOTE:** The preceding indication means that this particular line class code is already in the database. Assignments of this LCC can still be made in the database.
- (15) At video terminal, type **Y** and press **return** key.
- The system moves the cursor to the third field (SERVCL) and changes the prompt to:
- Service class. Refer to recent change MANUAL for SERVCL. \$.
- (16) At video terminal, type the *service class* (in this case, INDIV) and press **return** key.
- The system displays the service class of INDIV, moves the cursor to the next field (TERM), and changes the prompt to:
- Term treatment for line classification. Enter [AG]ING, [AS]IRA, [IND]IV, [INW]ATS, [M]LHG, [P]ARTY, [R]I, [TE]ST or [TI]NWATS.: \$.
- (17) At video terminal, type the *terminating treatment* (TERM) of the line (in this case, MLHG) and press **return** key.
- The system displays terminating treatment of MLHG, moves the cursor to the next field (SCR), and

changes the prompt to:

Screening index. Enter from 0 to 4095. 0 indicates no data. \$.

- (18) At video terminal, type the *screening index* of the line (in this case, 2) and press **return** key.

The system displays the screening index of 002, moves the cursor to the next field (LINESCRN), and changes the prompt to:

Toll/code restriction/diversion or WATS band screening? Enter Y or N: \$.

- (19) At video terminal, type the *line screening value of the line* (in this case, N) and press **return** key.

The system displays the line screening value of N for no, moves the cursor to the next field (DAS), and changes the prompt to:

Digit analysis selector. Enter from 1 to 99 or 0 (no data): \$.

- (20) At video terminal, type the *digit analysis selector number for the line* (in this case, 1) and press **return** key. Since 1 is the default value, pressing the **return** key advances the cursor to the next field while displaying the default value.

The system displays the following prompt:

Incoming separations class. Enter from 0 to 255: \$.

- (21) At video terminal, type the *incoming separations class of the line* (in this case, 2) and press **return** key.

The system displays the incoming separations class of 002, moves the cursor to the next field (DESEP), and changes the prompt to:

Destination separations class. Enter 0 to 255: \$.

- (22) At video terminal, type the *destination separations class of the line* (in this case, 3) and press **return** key.

The system displays the destination separations class of 003, moves the cursor to the last field (RMK), and changes the prompt to:

Enter an optional remark up to 16 characters: \$.

- (23) At video terminal, type the *optional remark for the line* (in this case, F.B.I.) and press **return** key.

The system displays the optional remark and moves the cursor to the following prompt:

Enter Insert, Change, Validate, or Print: \$.

- (24) At video terminal, type **I** for insert and press **return** key.

The system, after doing field, set, and form checks, inserts the data into the database. It is assumed that no errors exist in this example. FORM INSERTED is displayed in upper right corner of screen. (See Exhibit 4-15 .)

RECENT CHANGE 4.1
LINE CLASS CODE

*1.	LCC	2P1
*2.	RAX	01
#3.	SERVCL	INDIV
#4.	TERM	MLHG
#5.	SCR	002
6.	LINESCRN	N
7.	DAS	01
#8.	INSEP	002
#9.	DESEP	003
	COUNT	
11.	RMK	F.B.I.

Exhibit 4-15 LCC View 4.1 (RC_LCC) with No fields Completed (Data Inserted)

NOTE: The line class code is assigned in a file created by using view B.1. Each subsequent recent change for this service order can then be entered using the appropriate recent change view. The item numbers and message numbers will be incremented automatically. If other recent changes require different service order numbers, view B.1 must be entered each time a new service order is needed. The recent changes will be released at the time specified on the service order by view B.1. However, the recent changes can also be released immediately through BMR mode.

4.6.2.3 Text Mode - Demand Release

Batch mode input — demand release can be accomplished from text recent change mode as follows (see "RC TEXT INTERFACE", Chapter 3):

(1) To access the RC/V program, type:

RCV:APPTTEXT (see "RC/V TEXT INTERFACE", Section 3.1, for details).

(2) Type **MODE=BMI,DEMAND,CLERK=clerk name** (see the RCV:APPTTEXT message in "RC TEXT INTERFACE", Section 3.1, for details about this command line).

NOTE: Do not insert the BV1 form when requesting recent change entries to be released on DEMAND.

(3) End the recent change session by typing **END;**

```
RCV:APPTTEXT!
MODE=BMI,DEMAND,CLERK=clerk name!
FORM=4v1&NEW,LCC=ABC,RAX=1,SERVCL=INDIV,TERM=INDIV,SCR=1,INSEP=1,
DESEP=1,NEW!
```

.
.
.

```
FORM=xVx&action,attribute=value,attribute=value,...action!
END;
```

Exhibit 4-16 Enter Recent Change Through Demand Mode

4.6.2.4 Text Mode - Time Release

Batch mode input — time release can be accomplished from text recent change mode as follows (see Exhibit 4-17):

- (1) To access the RC/V program, type:

RCV:APPTTEXT *input message* (see "RC/V TEXT INTERFACE", Section 3.1, for details about the keywords associated with this command line).

- (2) Type **MODE=BMI,TIMEREL,CLERK=clerk name,VERBOSE**

(see RCV:APPTTEXT message in "RC TEXT INTERFACE", Chapter 3, for details concerning this command line).

- (3) Insert the service order information by typing **FORM=BV1&NEW** (see RCV:APPTTEXT message in "RC TEXT INTERFACE", Section 3.1, for details about the keywords associated to this command line).

After entering BMI mode, the first line must be a BV1 form insert. This is required by batch recent change to identify service order information for tracking subsequent recent changes and setting the batch release time and date.

For the first batched recent change, an associated FORM=BV1&NEW message is required. All subsequent recent changes entered can also have an associated FORM=BV1&NEW command line if desired. If not supplied, the system automatically provides this (refer to "Time Release Mode", Section 4.2.2.3). Also, if desired, the user can change the time and/or date of the service order(s) previously entered. (see "Updating Recent Changes in Existing Time Release Files", Section 4.2.1.3.3, for details).

If desired, the user can request the last service order to be displayed by typing **LASTSO**; or, if desired, the user can request the next service order key to be displayed by typing **NEXTSO**. More information about these functions can be obtained from "OPERATIONS AND COMMANDS", Section 3.1.3.

- (4) End the text recent change session by typing **END;**

RCV:APPTTEXT!

MODE=BMI,TIMEREL,CLERK=clerk name,VERBOSE!

FORM=BV1&NEW,ORDNO=SVX,ITNO=1,MSGNO=1,RDATE=121087,RTIME=2200,NEW!

FORM=4V1&NEW,LCC=ABC,RAX=1,SERVCL=INDIV,TERM=INDIV,SCR=1,INSEP=1,

DESEP=1,NEW!

.
.
.

FORM=xVx&action,attribute=value,attribute=value...action!

END;

Exhibit 4-17 Enter Recent Change Through Time Release Mode**4.6.3 BATCH MODE RELEASE OF CLERK FILES****4.6.3.1 Menu Mode**

It is assumed that the BMI option has been completed and the current class menu (in our example, the menu for Class 4.0) is displayed on the video terminal with the cursor at the system prompt. Batch mode release is accomplished as follows:

- (1) At the video terminal, type **BMR** for batch mode release and press **return** key.

The system displays a screen entitled "5ESS SWITCH RECENT CHANGE OFFICE ID BATCH MODE RELEASE" with the cursor at the following prompt:

ENTER FILE NAME \$_____.

VERBOSE OPTION (Y OR N) CR=N _.

- (2) At video terminal, type the *file name* or *clerk identifier* (in this case, JWL) and press **return** key.

The system again displays CLERK IDENTIFIER and moves the cursor to the VERBOSE prompt. At video terminal type Y for VERBOSE. (See Exhibit 4-18 .)

```

                    5ESS SWITCH
    RECENT CHANGE  OFFICE ID
                    BATCH MODE RELEASE
  
```

```

ENTER FILE NAME      JWL_____
VERBOSE OPTION (Y, N) CR = N Y__
  
```

Exhibit 4-18 Batch Mode Release Screen

- (3) At this time, the batch release operation is being performed by the system and other recent change operations may be started. Should the user desire to follow the progress of the batch release operation, the batch display mode could be reentered. Once the batch release operation is completed, whether VERBOSE option was selected or not, the following message will appear on the receive-only printer (ROP):

S570-62 89-09-21 01:29:11 001068 RCVY E k14.1cmp (Note 1)

EXC RCRLS CLERK = JWL COMPLETED APPLIED = 4 (Note 2)

NOTE 1: This is the message header.

NOTE 2: This is the batch complete message.

- (4) To back out of the RC/V program, at video terminal, type < and press **return** key.

The system removes the class 4.0 menu from the screen and replaces it with the Main Menu. The cursor is at the system prompt.

- (5) At video terminal, type **Q** or **q** for quit and press **return** key.

The system exits recent change.

4.6.3.2 Text Mode

If the user chooses time release mode to enter recent changes, it is assumed that the service order information has been inserted. Therefore, the recent changes are automatically released according to the specified RTIME and RDATE.

Previously batched form entries (demand mode) can be released through the `MODE=BMR,CLERK=clerkname[,verbose]` command. The `MODE=BMR,CLERK=clerkname[,verbose]` command is typically used to release DEMAND batched form entries. However, this command can be used to release TIMEREL batched form entries (See Exhibit 4-19). For more details of this command, refer to the RCV:APPTEXT message in "RC TEXT INTERFACE", Section 3.1 .

RCV:APPTEXT!

MODE=BMR,CLERK=clerk name,VERBOSE!

END;

Exhibit 4-19 Batch Mode Release from Text Mode

If the user wishes to create and release the clerk file in one session, the mode must be changed to immediate mode (IM) before the clerk file is released (see Exhibit 4-20).

```
RCV:APPTEXT!
MODE=BMI,DEMAND,CLERK=clerk name!
FORM=1V6&CHG!
TN=2200000!
TTC=Y!
CHG!
MODE=IM!
MODE=BMR,CLERK= clerk name!
```

Exhibit 4-20 Create and Release Batch File in One Session

4.6.4 BATCH MODE DISPLAY OF CLERK FILES

4.6.4.1 Menu Mode

4.6.4.1.1 General - Menu mode

BMD mode is used to generate reports of service order activity. There are three options (types of reports) that can be obtained in BMD mode. The text recent change mode user cannot access BMD; however, the text recent change user can access Batch Mode Input and Batch Mode Release.

- Summary of clerk activity (REPORTING OPTION 1)
- Activity by service order number (REPORTING OPTION 2)
- Activity by clerk identifier (REPORTING OPTION 3).

Batch display is accomplished as specified in "Reporting Option 1", Section 4.6.4.1.2, "Reporting Option 2", Section 4.6.4.1.3, and "Reporting Option 3", Section 4.6.4.1.4.

4.6.4.1.2 Reporting Option 1

(1) At video terminal, when accessing the RC/V program, type:

RCV:MENU: APPRC, VERBOSE; and press the **return** key.

The system returns to Main Menu with the cursor at the following prompt:

Input CLASS, CLASS.VIEW, Q, R, V, BMI, BMD, BMR, IM, or N \$_____

(2) At video terminal, type **BMD** and press **return** key.

The system displays the delayed release reporting option view with the cursor at the following prompt:

ENTER REPORTING OPTION (FROM 1 to 4) \$.(See Exhibit 4-21 .)

```
5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE REPORTING OPTIONS
```

1. SUMMARY OF CLERK ACTIVITY
2. ACTIVITY BY SERVICE ORDER NUMBER
3. ACTIVITY BY CLERK ID
4. RETURN TO VIEW OR CLASS MENU

ENTER REPORTING OPTION (FROM 1 TO 4) \$

Exhibit 4-21 Batch Mode Display Delayed Release Reporting Options

(3) At video terminal, type **1** and press **return** key.

The system displays the delayed release summary report view with the cursor at the following prompt:

ENTER M TO RETURN TO MENU \$.(See Exhibit 4-22 .)

PAGE 1

5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE SUMMARY REPORT

CLERK ID	PENDING COUNT	COMPLETED COUNT	ERROR COUNT	DEMAND COUNT
C001	1	0	0	0
C002	0	0	0	0

ENTER M TO RETURN TO MENU \$

Exhibit 4-22 Batch Mode Display Delayed Release Summary Report

(4) Type an **M** and press **return** key to produce the Main Menu page.

The system produces the Main Menu page with the cursor at the system prompt.

4.6.4.1.3 Reporting Option 2

(5) Repeat Step 2 in "Reporting Option 1", Section 4.6.4.1.2 .

Results the same as that step. (See Exhibit 4-21 .)

(6) At video terminal, type **2** and press **return** key.

The system displays the delayed release report by service order view with the cursor at SERVICE ORDER NO \$_____.(See Exhibit 4-23 .)

5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE REPORT BY SERVICE ORDER

SERVICE ORDER NO \$ _____

ITEM NUMBER _____

MESSAGE NUMBER _____

Exhibit 4-23 Batch Mode Display Delayed Release Report by Service Order

(7) At video terminal, type the *service order number* (in this case, SO 001) and press **return** key.

The system displays SO 001 and moves the cursor to ITEM NUMBER \$____.

(8) At video terminal, type the *item number* (in this case, 1) and press **return** key.

The system displays item number 1 and moves the cursor to MESSAGE NUMBER \$____.

(9) At video terminal, type the *message number* (in this case, 0) and press **return** key.

The system displays message number 0 and the following prompt:

ENTER Y TO DISPLAY RECORD OR M TO RETURN TO MENU \$. (See Exhibit 4-24 .)

```
5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE REPORT BY SERVICE ORDER
```

SERVICE ORDER NO SO001_____

ITEM NUMBER 1____

MESSAGE NUMBER 0____

ENTER Y TO DISPLAY RECORD OR M TO RETURN TO MENU \$_____

Exhibit 4-24 Batch Mode Display Delayed Release Report by Service Order Completed

(10) At video terminal, type **Y** (to display delayed release summary data report) and press **return** key.

The system displays the delayed release summary data report with the data filled in and the cursor at the following prompt:

ENTER Y TO DISPLAY DETAILED RECORD, N TO SELECT ANOTHER SERVICE ORDER, OR M TO RETURN TO MENU \$. (See Exhibit 4-25 .)

```
5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE SUMMARY DATA REPORT
```

```
CLERK ID      001
COMPL STATUS P
SO            SO001
ITEM         1
MSG          0
RELEASE      TIME: MO 5 DAY 05 YR 94 HR 12 MIN 00
ACTIVATION   TIME: MO   DAY   YR   HR   MIN  0
FORM NAME:   RC_LCC          OPERATION:  INSERT:
KEY DATA:   MHB 1
```

ENTER Y TO DISPLAY DETAILED RECORD, N TO SELECT ANOTHER SERVICE ORDER,
OR M TO RETURN TO MENU \$

Exhibit 4-25 Batch Mode Display Delayed Release Summary Data Report Pending

NOTE: The COMPL STATUS field has four possible values. These are C=Completed, E=Error, P=Pending (in time release), and D=Demand. The delayed release summary data reports appear in chronological order of entry.

(11) At video terminal, type **Y** and press **return** key.

The system displays the detailed report (the actual recent change view) with the cursor at the system prompt. (See Exhibit 4-26 .)

```

                    5ESS SWITCH
RECENT CHANGE    4.1
LINE CLASS CODE

```

```

*1.  LCC          MHB
*2.  RAX          1
#3.  SERVCL      INDIV
#4.  TERM        INDIV
#5.  SCR         1
   6.  LINESCRN  N
   7.  DAS        1
#8.  INSEP       0
#9.  DESEP       0
      COUNT      _____
11.  RMK         test data 1

```

Line Class Code. Enter 3 alphanumeric characters.

Exhibit 4-26 Batch Mode Display Detailed Report

(12) At video terminal, type **R** to return for more summary pages and press **return** key.

The system displays the same delayed release summary data report and positions the cursor at the system prompt. (See Exhibit 4-25 .)

(13) At video terminal, type **N** to select another Service Order and press **return** key.

The system displays another delayed release report by service order view with the cursor at SERVICE ORDER NO. (See Exhibit 4-23 .)

(14) Repeat Steps 7 through 9 and optionally 10 through 13 until all reports are displayed and verified.

The system responses are the same as indicated in Steps 7 through 13.

NOTE: Once the last desired detailed report is displayed and verified, return to summary by typing an **R** and pressing the **return** key. Then, type **M** and press the **return** key on the summary report to display the current MENU page (in this case, Main Menu).

4.6.4.1.4 Reporting Option 3

(15) Repeat Step 2 in "Reporting Option 1", Section 4.6.4.1.2 .

The system response is the same as indicated in Step 2.

(16) At video terminal, type **3** and press the **return** key.

The system displays the delayed release report by clerk ID. The cursor is at CLERK ID. (See Exhibit 4-27 .)

```

5ESS SWITCH
RECENT CHANGE OFFICE ID
DELAYED RELEASE REPORT BY CLERK ID

CLERK ID          $ _____

COMPLETION STATUS (P=PENDING, C=COMPLETED, E=ERROR, D=DEMAND, A=ALL)
ENTER ONE OR COMBINATIONS OF P, C, E, D, A, (e.g., ECP) _____

LO TIME (MMDDYY)  _____ (HHMM) _____

HI TIME (MMDDYY)  _____ (HHMM) _____

```

Exhibit 4-27 Batch Mode Display Delayed Release Report by Clerk ID

(17) At video terminal, type the *clerk identifier* (in this case, C001) and press the **return** key.

The system displays C001 and moves the cursor to COMPL STATUS.

(18) At video terminal, type the *completion status* (in this case, a for ALL) and press **return** key.

The system displays **a** and moves cursor to LO TIME (MMDDYY).

(19) At video terminal, type **LO TIME (MMDDYY)** and **(HHMM)** and press **return** key. The LO TIME is the earliest time. In this example, LO TIME is not selected so typing **>** moves the cursor to the following prompt:

ENTER Y TO DISPLAY OR M TO RETURN TO MENU \$. (See Exhibit 4-28 .)

(20) At video terminal, type **HI TIME (MMDDYY)** and **(HHMM)** and press **return** key. The HI TIME is the latest release time. In this example, HI TIME is not selected so typing **>** moves the cursor to the last field (LO TIME).

5ESS SWITCH
 RECENT CHANGE OFFICE ID
 DELAYED RELEASE REPORT BY CLERK ID

CLERK ID c001_____
 COMPLETION STATUS (P=PENDING, C=COMPLETED, E=ERROR, D=DEMAND, A=ALL)
 ENTER ONE OR COMBINATIONS OF P, C, E, D, A, (e.g., ECP) a_____

LO TIME (MMDDYY) > _____ (HHMM) _____

HI TIME (MMDDYY) > _____ (HHMM) _____

ENTER Y TO DISPLAY RECORD OR M TO RETURN TO MENU \$

Exhibit 4-28 Batch Mode Display Delayed Release Report by Clerk ID Completed

(21) At video terminal, type **Y** to display the summary data report and press **return** key.

The system displays the delayed release summary data report with the cursor at the following prompt:

ENTER Y TO DISPLAY DETAILED RECORD, N TO DISPLAY NEXT RECORD, OR M TO RETURN TO MENU \$. (See Exhibit 4-29 .)

NOTE: The summary report consists of one screen (view) per recent change event.

5ESS SWITCH
 RECENT CHANGE OFFICE ID
 DELAYED RELEASE SUMMARY DATA REPORT

CLERK ID C001
 COMPL STATUS P
 SO SO001
 ITEM 1
 MSG 0
 RELEASE TIME: MO 5 DAY 05 YR 85 HR 12 MIN 00

FORM NAME: RC_LCC OPERATION: INSERT:
 KEY DATA: 2P1 1

ENTER Y TO DISPLAY DETAILED RECORD, N TO DISPLAY NEXT RECORD, OR M TO RETURN TO MENU \$

Exhibit 4-29 Batch Mode Display Delayed Release Summary Data Report

(22) At video terminal, type **Y** to display the detailed report and press **return** key.

The system displays the detailed report (the actual recent change view) with the cursor at the system prompt. (See Exhibit 4-26 in "Reporting Option 2", Section 4.6.4.1.3 .)

(23) At video terminal, type **R** to return to summary and press **return** key.

The system displays the delayed release summary data report and positions the cursor at the

system prompt.

NOTE 1: The user may want to type an **N** to display the next record or an **M** to return to menu. When N has been typed enough times to exhaust all records, the following prompt appears:

AT END OF CLERK FILE ENTER Y FOR ANOTHER CLERK ID OR M TO RETURN TO MENU \$.

NOTE 2: If the user chooses to type **Y** to select another CLERK ID, the procedure must be repeated from Steps 17 through 23.

4.6.4.2 Text Mode

Onsite users and recent change operations system (RCOS) users cannot access the BMD option from text recent change mode. Batch display reports can be accessed by using the BMD option from menu mode or through the REPT:RCHIST input message. See "INPUT MESSAGE", Section 4.3.4, for details.

5. RC OFFICE RECORDS

5.1 INTRODUCTION

This section contains the following information:

- (a) Description of recent change office records for the 5ESS[®]-2000 switch
- (b) Access to recent change office records
- (c) Error message examples
- (d) View to Base Relation map.

5.2 OFFICE RECORD DEFINITION

5.2.1 OFFICE RECORD DEFINITION - GENERAL

The ESSTM switch office records are compact tabular inventories of all the data contained in the 5ESS[®]-2000 switch database. Further, they are designed to help telephone company maintenance personnel assign, administer, and maintain the 5ESS[®]-2000 switch database. The hard copy of the office records has always been available as a troubleshooting aid for maintenance personnel to verify the actual contents of the 5ESS[®]-2000 switch database if they should suspect that corruption of the database has occurred.

5.2.2 OFFICE DATA ADMINISTRATION (ODA) OFFICE RECORDS

There is another set of forms called ODA office records that are similar to and sometimes the same as ESSTM switch office records. Both ODA and ESSTM switch office records are tabular listings of the actual inventories and assignments of the database and serve as a means for administering the 5ESS[®]-2000 switch office. Copies or variations of the office record forms may be used as worksheets to aid administrative and maintenance personnel in translation inputting and data entry into the ODA process. Please note that although many similarities exist between ESSTM switch office records and ODA forms, the two are not the same and should never be interchanged. The ODA forms are used in preparing a 5ESS[®]-2000 switch for startup while ESSTM switch office records are only used in an already working 5ESS[®]-2000 switch. Where the records inventory the same data and serve the same purpose, the ODA form and ESSTM switch office record should have the same number.

The ODA office records for 5ESS[®]-2000 switch have been divided into several sections. Each section contains a number of forms that have been named and numbered. These are listed in 235-080-100, *Translation Guide TG-5* and are given as follows:

- **5050-5099:** Wireless
- **5100:** Line Data
- **5200:** Trunk Data
- **5300:** Digit Analysis, Routing and Charging Data
- **5400:** Operator Services Position System (OSPS)
- **5500:** Miscellaneous Data
- **5600:** Business and Residence Custom Services (BRCS) Features

- **5700:** Equipment
- **5800:** Engineering Assignments
- **5900:** Integrated Services Digital Network (ISDN)
- **6000:** Common Channel Signaling Number 7 (CCS7) Very Compact Digital Exchange (VCDX)
- **6400:** Operator Services Position System (OSPS)

5.2.3 ADMINISTRATIVE ASPECTS OF OFFICE RECORDS

To aid in the administration of the database, telephone company maintenance personnel should print hard copies of appropriate office record forms periodically. Since office records are available on line and at any time, they naturally have a high degree of concurrence with the 5ESS[®]-2000 switch database.

Office records are based upon the recent change and verify views of the 5ESS[®]-2000 switch and are applicable no matter what operational support system is attached to the switch. Office records can be accessed, changed, or input with standard Input/Output (I/O) messages on a message-type terminal. These systems include menu mode and text interface recent change as well as Remote Memory Administration System (RMAS) or the master control center (MCC) in the command (CMD) mode.

5.3 ACCESS AND OPERATION

5.3.1 ACCESS AND OPERATION - GENERAL

There is basically only one method of access to office records. Office records must be accessed through a group of input/output (I/O) messages from the master control center (MCC) or any other input device that has access to the craft shell (trunk and line work station or supplementary trunk and line work station).

5.3.2 SUBSYSTEM ACCESS TO OFFICE RECORDS

5.3.2.1 Overview

There are three basic RC/V input subsystems that have access to office records. These are menu mode, text interface, and Remote Memory Administration System (RMAS) which is an operational support system. No matter which subsystem a user chooses, the method of access is through input messages if the user has access to craft shell [man-machine language (MML)].

5.3.2.2 ESSTM Switch Office Records

5.3.2.2.1 General

Recent change office records exist for the 5ESS[®]-2000 switch to aid the recent change user in administering the office dependent data (ODD) that is affected by the RC process. The various office records can ALL be accessed through one of several input messages. Depending upon what record or results a user desires, the proper sequence of inputs can be selected to provide the appropriate records.

5.3.2.2.2 Scheduling

The input commands (messages) for office records are given as follows:

- (1) The OP:OFR:FORM=XXXX message prints out all the view tuples for the requested form XXXX.

- (2) The OP:OFR:CAT=XXXX message prints out all the view tuples for a CATEGORY of office records. The categories are as follows:
- Administrative processes (ADMIN)
 - Applications processor (APPROC)
 - BRCS feature definition (BRCSFD)
 - Configuration forms (CONFIG)
 - Digit analysis, routing and charging (DARC)
 - Equipment forms (EQUIP)
 - Local area signaling service (LASS)
 - Line forms (LINE)
 - Operator service position system (OSPS)
 - Packet switching forms (PKT)
 - Trunk forms (TRUNK).

5.3.2.2.3 Status Requests

The OP:OFR:STATUS message displays those office records that are scheduled for processing or are presently processing. The status types are listed as follows:

- **COMPLETED:** Job has completed successfully.
- **PENDING:** Job awaiting processing.
- **CURRENTLY PROCESSING:** Job currently active.
- **COMPLETED WITH ERRORS:** Job completed but database errors were encountered.
- **CANCELED:** A pending job was aborted or stopped by the user.
- **ABORTED PROCESSING:** A job in process was aborted or stopped by the user.
- **ABNORMAL TERMINATION:** Job did not complete processing.

There are additional options for modifying the output of the status messages. These include the PARM and SCHED options. Refer to 235-600-750, *Output Message Manual*, for these options.

5.3.2.2.4 Canceling Requests

Canceling office record requests can be accomplished by two methods and are shown as follows:

- The STP:OFR:REQID=YYY stops the processing of an office record. The REQID comes from previous output messages. It is a unique identifier for a form request.
- The ABT:OFR message aborts all processing of office record requests.

5.3.2.2.5 Device and Range Output Options

Device output options are an integral part of the OP:OFR:FORM input message as they direct the system where to send the requested office record. The various output options (devices) are described in detail in the following paragraphs.

The OP:OFR:FORM=XXXX,range=A-B version of the message prints out all the view tuples whose ranges are within a specified range (A-B). The range option provides a way to restrict the amount of output produced by a form (see 235-118-254, *Recent Change Reference*).

Another parameter, added to the OP:OFR:FORM or OP:OFR:CAT input message, allows the user the flexibility of determining where the output (*ESSTM* switch office record listing) is to be directed. The DEVICE ID field can be a teletypewriter (TTY) device, an output file in /rclog partition, or a tape device. These are given as follows:

- **FILE:** Destination file name in /rclog partition
- **FIL_FRMID:** Output to disk in /rclog partition
- **ttyC:** STLWS 7 (TTY28)
- **ttyD:** STLWS 8 (TTY29)
- **ttyE:** STLWS 9 (TTY30)
- **ttyF:** STLWS 10 (TTY31)
- **ttyG:** STLWS 11 (TTY32)
- **ttyH:** STLWS 12 (TTY33)
- **ttyI:** STLWS 13 (TTY34)
- **ttyR:** Office records printer (default value)
- **ttyT:** Traffic report printer
- **ttyU:** Belt line B
- **ttyi:** SLC[®] carrier maintenance
- **ttyj:** STLWS - fifth of six
- **ttyk:** STLWS - sixth of six
- **ttyl:** STLWS - first of six
- **ttym:** STLWS - second of six
- **ttyn:** STLWS - third of six
- **ttyo:** STLWS - fourth of six
- **ttyp:** RCV/Repair Service Bureau
- **ttyq:** RCV/Network Administration Center

- **ttyr:** ALIT/Repair Service Bureau
- **ttys:** Maintenance
- **ttyt:** Maintenance
- **ttyu:** Belt line A
- **ttyv:** Local RC/V
- **ttyw:** Remote RC/V
- **ttyx:** Maintenance Control Center/Switching Control Center System (MCC/SCCS)
- **ttyy:** Maintenance Control Center/Switching Control Center System (MCC/SCCS)
- **ttyz:** Maintenance Control Center/Switching Control Center System (MCC/SCCS)
- **mt00:** High-density tape device, rewind after I/O
- **mt04:** High-density tape device, does not rewind after I/O
- **mt08:** Low-density tape device, rewind after I/O
- **mt0c:** Low-density tape device, does not rewind after I/O
- **mt18:** Low-density tape device, rewind after I/O
- **mt1c:** Low-density tape device, does not rewind after I/O
- **null:** A fake port used to bug in the field
- **report:** Output to disk in /rclog partition
- **trace:** Trace on
- **offtrace:** Trace off

When the DEVICE ID field is set to "report", "FILE", or "FIL_FRMID", the output (the office records) is sent to disk. The "report" file option will append to the file by the name of "report" in the /rclog partition. The "FILE" file option will create an individual file for the requested form in the following /rclog partition:

OFR.O <request-id> (for office record output) OFR.E <request-id> (for error output).

The "FIL_FRMID" file option will create an individual file for the requested view in the /rclog partition in the following format:

<form_id>.O (for office record output) <form_id>.E (for error output)
--

where form_id is the form type, for example: 5171.O and 5171.E.

5.3.2.2.6 Typical Usage

The following paragraphs may help clarify the usage of office records. Check the internal operating parameters for OFR by typing the OP:OFR:STATUS=PARAM; message. The output of this message is a printing schedule listing

every day of the week as well as start time in hours, minutes and seconds, duration in hours, and other parameters. Please refer to 235-600-700, *Input Message Manual*, and 235-600-750, *Output Message Manual*, for a more detailed layout of the preceding message. Jobs should be scheduled for **low**-traffic periods and should take the form of the OP:OFR:FORM input message. The user should wait for forms to complete and then print the office records to the appropriate output device.

The list of requested forms, as displayed by the OP:OFR:STATUS command, is occasionally scanned to remove entries for forms that have completed. No active or pending form entries are ever removed. This scan is done at the same time as delayed printing is scheduled. Please note that cleanup or file removal may NOT occur on Saturday or Sunday.

Office records can be scheduled to disk during **high**-traffic periods. At some time later, the disk file output can be redirected to a printer. Some caution is required with amount of disk space used, but this usage will prevent tying up the office record printer for extended periods of time, especially with forms that produce a large amount of output.

In the OP:OFR:CAT message, the category, printing option, and device ID should be specified. In the OP:OFR:FORM message, the form number (record), key ID, printing option, and device ID should be specified. Please consult 235-600-700, *Input Message Manual*, and 235-600-750, *Output Message Manual*, for more in-depth coverage of these messages and their complete format as well as the corresponding output messages concerning office records.

5.3.2.2.7 Delay Printing

Delay Printing is a special feature supported by office records. It is used to schedule office records at a later time. Delay Printing is scheduled through the **IN:OFR:PARM,HR=XX** input message. For example, **IN:OFR:PARM,HR=23** schedules delayed printing to occur at 11 pm.

Office records that are to be included in the delayed run are scheduled in either of the two following ways:

- OP:OFR:CAT=XXXX,OPT=DELAY
- OP:OFR:FORM=XXXX,OPT=DELAY

5.3.2.2.8 Raw Format

Raw format is a secure feature supported by RC office records. It is used to create office records in a raw format. Each row of output in a "RAW" formatted office record is an instance of the Recent Change view associated with the form type being processed. Each row contains tab separated values associated with the fields defined for the particular Recent Change view. When using this format the output is machine readable and can be post processed more easily than the default formatting of office records.

Office records that are to be raw formatted are scheduled in either of the two following ways:

- OP:OFR:CAT=XXXX,FORMAT=RAW
- OP:OFR:FORM=XXXX,FORMAT=RAW

5.3.2.2.9 Output Messages

The various office record input messages each have one or more output messages that can be generated as a result of their use. Briefly, the input messages and their possible output messages are given here. The OP:OFR:FORM input message can have the OP:OFR:FORM or the OP:OFR:ERROR messages as possible outputs. The OP:OFR:CAT input message can have the OP:OFR:CAT or the OP:OFR:ERROR messages as outputs. The IN:OFR:PARM message can have the IN:OFR:PARM or the OP:OFR:STATUS messages as possible

output messages. The ABT:OFR input message has the ABT:OFR output message, and the STP:OFR input message has the STP:OFR output message as output messages.

Error messages are listed and explained in "ERROR MESSAGES", Section 5.5. These can be printed out by the various office record input messages.

5.4 USING OFFICE RECORDS

5.4.1 USING OFFICE RECORDS - GENERAL

Both office records and database query can be utilized to perform a variety of administrative type tasks. The type of task and the requirements dictate the form by which the query is entered into the system. In the following section, the examples presented are in procedural format for office records. A few selected examples of each feature are given.

5.4.2 OFFICE RECORD EXAMPLES

5.4.2.1 OVERVIEW

The following two examples are representative of typical tasks that the user might require of the office records feature.

There is a general caution that should be noted during a software release retrofit period.

CAUTION: Under NO circumstances should office records be ordered while double-logging is active. The office records process uses the same disk space as the double-logging process. If the disk space is full, recent changes will be lost.

5.4.2.2 Requesting an Office Record Category

The following example illustrates how to request an entire office record category (typical). Please note that an office records category (even a small one) will take a long time to print thus tying up the device. The user may want to select the DELAY printing option and schedule the output to the device at a time set in the IN:OFR:PARM input message.

- (1) At any input terminal, type in:

```
OP:OFR:CAT=DARC,OPT=DELAY,DEVICE="report";
```

In the preceding input message, digit analysis and routing and charging (DARC) is the category requested and the DELAY mode has been selected. The IN:OFR:PARM input message must also be specified with the desired start time. Note that the DEVICE where the office records are to be sent is the "report" file.

The system returns the following messages to the receive-only printer (ROP):

```
OP:OFR:CAT=DARC,OPT=DELAY,DEVICE="report" PF
```

```
S570-47 88-6-20 10:25:20 3030
```

```
M OP OFR CAT=DARC OPT=DELAY FORMAT=FORMATTED DEVICE=report
```

```
REQUEST ID=1 STATUS=PROCESSING SCHEDULED
```

- (2) After the appropriate print time, the office records can be retrieved from the /rlog partition and dumped to another device. This can be accomplished using the DUMP:FILE:DATA,PARTL input message. In order to report the contents of the "report" file, the OP:STATUS:LISTDIR message can be used. Please consult the 235-600-700, *Input Message Manual*, and 235-600-750, *Output Message Manual*, for specific layouts of these as well as other messages.

5.4.2.3 Requesting a Single-Office Record Form

The following example illustrates how the user may request a single-office record form. The OP:OFR:FORM input message can also be used to obtain a range of forms. Even though a single record does not take as long to print as a category, consideration should be given to printing with a delay to ease the loading of the printing device.

- (1) At any input terminal, type in:

```
OP:OFR:FORM=5171,DEVICE="tty1";
```

Note that the 5171 record output on device "tty1" which is the first supplementary trunk line work station (STLWS).

The system sends the following messages to the ROP:

```
OP:OFR:FORM=5171,DEVICE="tty1"; PF

S570-47 88-6-21 14:25:45 3133
M OP OFR FORM=5171 OPT=NONE FORMAT=FORMATTED DEVICE=tty1
REQUEST ID=1 STATUS=PROCESSING SCHEDULED
```

The system continues processing the request and will, through ROP messages, inform the user when the status of the request changes to PROCESSING HAS STARTED and again to PROCESSING COMPLETED.

- (2) Once processing is completed, the 5171 record can be viewed on the STLWS.

5.5 ERROR MESSAGES

5.5.1 ERROR MESSAGES DEFINITION

The following is a listing of system error messages that can be printed along with office record output messages:

- **ABNORMAL TERMINATION:** Form processing failed, other error messages should appear detailing the failure.
- **ABORTED PROCESSING:** A form was being processed when an abort command was issued. The form was aborted. This message is informational only.
- **CANCELED:** A form was pending (queued for processing) when an abort or stop command was issued. The form will not be run. This message is informational only.
- **CANNOT CREATE REPORT PROCESS:** The office records report process could not be started. Seek the next higher level of technical assistance.
- **CANNOT EXECUTE REPGEN:** The office records report generator process could not be started. Seek the next higher level of technical assistance.
- **CANNOT PROCESS REQUEST:** The message system call that passes initialization information for a form or query request to the report or query process failed. Seek the next higher level of technical assistance.
- **CANNOT READ SCHEDULING TABLE:** An internal error in the office records scheduling process occurred. Seek the next higher level of technical assistance.
- **CANNOT TRANSLATE OFFICE RECORD:** An unknown office record was requested. Correct the request and retry.
- **COMPLETED WITH ERRORS:** A form completed but errors (typically due to inconsistencies in the ODD) occurred. Other messages should appear detailing the errors.

- **DATA BASE ERROR:** An access to the ODD failed. Other messages should appear detailing the errors.
- **DISK ACCESS ERROR:** A system call failed while attempting to access a file on the AM file system. If the file cannot be identified, seek the next higher level of technical assistance.
- **FATAL DB SYSTEM ERROR:** An internal error in an office record process or in an ODD access routine. Seek the next higher level of technical assistance.
- **FATAL PROCESSING ERROR:** An internal error in the office records report process. Seek the next higher level of technical assistance.
- **INTERNAL PROGRAMMING ERROR:** An internal error in the office records report process. Seek the next higher level of technical assistance.
- **INVALID MESSAGE RECEIVED:** An internal error in the message passing system. Seek the next higher level of technical assistance.
- **INVALID OUTPUT DEVICE:** The device specification was incorrect on a form or category request; correct the device specification and retry.
- **INVALID REQUEST:** A form or category scheduling request has an invalid combination of parameters (typically, incorrect key for a form); correct the request and retry.
- **NO MORE VALUES TO PROCESS:** All elements from a range of values have been processed. This is likely not an error, although it may indicate that an incorrect range was specified.
- **OUTPUT DEVICE UNAVAILABLE:** The requested output device or file could not be opened. Assure that the device is ready and retry.
- **PROCESS CURRENTLY BUSY:** Likely an internal error in the office records scheduling process. If forms do not continue to process, seek the next higher level of technical assistance.
- **REQUEST ID UNKNOWN:** A specified request ID was not found in the schedule table. Use a status request to check the schedule table and retry.
- **STOPPED PROCESSING:** A form was being processed when a stop command was issued. The form was stopped. This message is informational only.
- **UNABLE TO SCHEDULE JOB:** An internal failure in the scheduling code occurred. If forms do not continue to process or no further forms can be scheduled, seek the next higher level of technical assistance.
- **UNKNOWN ERROR RETURNED:** An internal error in an office records process or in the message passing system occurred. If forms do not continue to process, seek the next higher level of technical assistance.
- **RAW FORMAT OFC REC FEATURE MUST BE PURCHASED:** The raw formatted office record feature is a secure feature (SFID 344) that must be purchased.
- **OUTPUT DEVICE INCOMPATIBLE WITH FORMAT = RAW:** Certain output devices such as printers may hang when attempting to print raw formatted office records. To avoid this situation, certain output devices are not allowed with the raw option.

5.5.2 OFFICE RECORD ERROR MESSAGES

With the advent of the 5E6 software release, office records error messages give more complete information (including base relation) than previous software releases. The following two examples illustrate a typical error

message:

```
SO-14079 89-09-08 15:13:40 14
M OP OFR ERROR
REQUEST ID 2 CAT FORM 5981 VIEW 4.48 DEVICE report
TN=2212009
Failed to Generate FEATURE (LSF/MFSCF)
Relation=FC_LINE op=READ rc=-101 mod=1 (line#=338)
Keys: module=1 member=b01c party=1
```

```
SO-14083 89-09-08 15:25:04 15
M OP OFR ERROR
REQUEST ID 2 CAT FORM 5982 VIEW 12.52 DEVICE ttyR
Feature=/CPCPUA
Failed to read the view
637-5 ACTION CONFLICT
Feature is not a Calling Party Number feature.
```

6. DATABASE QUERY

6.1 INTRODUCTION

This section contains the following information:

- (a) Description of database query
- (b) Operation of the database query feature
- (c) Error messages

6.2 DATABASE QUERY DEFINITION

6.2.1 GENERAL

The Database Query feature can be utilized for office administration, engineering, maintenance, and marketing, as well as other considerations where accurate tracking of database assignments is required. It provides the ability to query the Office Dependent Data (ODD) on frequently-used attributes for lines and trunks. Database queries are found in the RC main menu under the administrative class (A). Each database query has its own input using mapping code, which improves response time.

Database queries allow single or multiple attributes to be matched as selection criteria. Database queries can be MENU MODE or TEXT INTERFACE recent change. Status messages are printed on the receive-only printer (ROP). The requested output from database query actions can also be directed by the user to a particular device or a UNIX[®] system file. Only one report at a time can be requested or processed. If an office record job is running, the database query report is denied because both use the same control process.

A special field, "SUMMARY?", on views A.2, A.3, A.4, A.9, A.11, A.12 and A.13 specifies a "SUMMARY?" report of the parameters associated with the particular view (lines, trunks, IDPs and PICs). Setting the "SUMMARY?" field to Y yields a count (the number) of the entries found in the database matching the selection criteria. However, setting "SUMMARY?" to N yields a full report of all associated data encountered in the database that matches the selection criteria (range of TNs for example) input on the RC view. The usage and resulting output is the choice of the user.

NOTE: Only one TASC report can be scheduled or executed at a time, since all Telephone Company Administrative Support Capability (TASC) use the same resources for scheduling.

6.2.2 RECENT CHANGE CLASS A

The database query feature is supported by recent change class A. These views are listed as follows:

- **A.1:** ABORT A REPORT (RTSABORT)
- **A.2:** MULTIPLE LINE QUERY (RCQLNFST)
- **A.3:** TRUNK ASSIGNMENT REPORTS (RTSTK)
- **A.4:** INDIVIDUALIZED DIALING PLAN REPORTS (RTSIDP)
- **A.5:** TRUNK FEATURES AND ASSIGNMENTS RECORD (RTRFEAT)
- **A.6:** TRUNK GROUP RECORD (RTRGRP)
- **A.7:** LOCAL DIGIT INTERPRETATION RECORD (RTRLDIT)

- **A.8:** ROUTE INDEX EXPANSION RECORD (RTRRTI)
- **A.9:** PRESUBSCRIBED CARRIER REPORT (RCPICRPT)
- **A.10:** BRCS FEATURE GROUPING (BFG) UTILIZATION REPORT (RQBFGUTL)
- **A.11:** PACKET SWITCHING BUSINESS GROUP QUERY (RCPBGQRY)
- **A.12:** SELECTIVE CARRIER DENIAL (SCD) CARRIER REPORT (RCSCDRPT)
- **A.13:** LINE PARAMETER QUERY (RCLPQRY)

A brief description of each view follows:

Recent Change View A.1 is used to abort any database query report presently in progress. The only field on the view is ARE YOU SURE? The appropriate response is Y for yes or N for no.

NOTE: Many database queries are lengthy and require a great deal of time to print. Be sure you really want to abort the report *before* initiating the abort command.

If a lengthy report is aborted in midprinting, time can be lost (the time already spent printing a partial report and the time needed to reprocess and print the report in question a second time).

Recent Change View A.2 is the multiple line query view and is a frequently used database query view. This view can be used to query circuit lines and/or packet lines. Any range of lines in the office can be included in the report. These lines can be keyed by telephone number (TN) or originating equipment (OE) number. For example, all lines in an office that DO NOT have an assigned inter-LATA carrier can be located and printed in a report. In addition, all lines with certain features can be requested. The flexibility of this view in generating different reports makes it useful for many user applications. This view has a "SUMMARY?" field that can be used to generate an abbreviated report. Use the "UNASSIGNED REPORT?"; field on this view to report all TNs or OEs that are not currently assigned. If the "UNASSIGNED REPORT?"; field is set to Y, all query parameters after the "OE RANGE"; (except HRI) are ignored.

Recent Change View A.3 is the trunk assignment report view used to obtain a listing of a specified range (delineated by LOW TGN and UPP TGN) of trunk assignments within an office. In addition, the corresponding range of trunk groups, as well as other information, can be requested. This view also has a "SUMMARY?" field that can be used to generate an abbreviated report.

Recent Change View A.4 is the individualized dialing plan (IDP) report view and is used to obtain listings of IDP names and their corresponding members given by the range (LOW INDGT and UPP INDGT) within an office.

NOTE: Recent Change views A.5, A.6, A.7, and A.8 do not have any key fields. Any field on any of these views can be used to invoke the appropriate report. These reports are structured to look similar to existing office record reports.

Recent Change View A.5 is the trunk features and assignments record and is used to obtain a list of trunk group numbers (TGNs) associated with a given parameter that can be retrieved from the office database.

Recent Change View A.6 is the trunk group record and is used to obtain a list of TGNs with a particular set of attributes from the database.

Recent Change View A.7 is the local digit interpretation record and is used to obtain trunk information associated with a particular destination separations class (DESEP) traffic number.

Recent Change View A.8 is the route index expansion record and is used to obtain a comprehensive record of route indexes (RTIs). The user may specify a single RTI, if known, a trunk group (TGN), a TGN member number, or

dialled code. The output generated (the actual report) is a total route pattern. The report can contain a maximum of 20 alternate routes. The last reported RTI can also be entered as a search parameter. This yields a new edition of the trunk report. If the user does not enter an RTI, the report contains the TGN, TGN member number, and the dialled code to an RTI, and lists that RTI as the initial value for the report.

NOTE: Invalid TGNs (out of range or not in the database) generate unpredictable results in the report.

Recent Change View A.9 is the presubscribed carrier report record and is used to gather information on either a range of TNs or a range of presubscribed carriers such as PICs for inter-LATA carriers or PTCs for intra-LATA carriers for the office. This view also has a "SUMMARY ONLY?" field that can be used to generate an abbreviated report.

Recent Change View A.10 is the Business and Residence Custom Services (BRCS) Feature Grouping utilization report and is used to generate a report of unique feature sets used by individual terminal groups to determine optimal BRCS feature grouping. The report works with or without BFG and/or Terminal Groups.

Recent Change View A.11 is the Packet Switching Business Group Query. This query is used to identify all of the members of a specified Packet Business Group. Only one group can be queried at a time and a "SUMMARY?" field can be used to generate a report showing the query and a count of the members found.

Recent Change View A.12 is the Selective Carrier Denial (SCD) Report view. This view produces a report of those lines that have been designated as nonpaying subscribers by a particular carrier. The view provides ranges on CARRIER ID, TN, and MLHG. A "SUMMARY ONLY?" field is also available as an option on the view.

Recent Change View A.13 is the Line Parameter Query view. This view generates a report of all members that have a line parameter feature assigned to them. The line parameter feature must be specified and only one line parameter feature can be queried at a time.

6.2.3 DATABASE QUERY USES

The uses of the database query feature are many and varied. The following list contains some of the more common queries that may be requested; this list does not contain all of the possible uses of the query feature.

- Report on lines assigned to a specific line class code (LCC) and rate center (RAX).
- List all lines that do not have an assigned presubscribed inter-LATA carrier (PIC).
- List all lines having touch-tone calling (TTC) that are being billed to a specific number.
- List all lines that have a particular call forwarding feature activated.
- Report on all lines assigned to a cluster and a specific feature.
- List all members of a multiline hunt group (MLHG).
- List all TGNs with a BRCS terminal group feature assigned.
- List all TGNs with dialing plan access treatment (DPAT) categories of 1 to 32.
- Print an inter-LATA carrier report.
- Determine which features should be grouped as a BFG.
- Determine feature penetration (for marketing) on the switch.
- List all equipped and unassigned TNs or OEs.

There are other jobs that can also be handled using the class A recent change views. These can be defined by the user.

6.3 ACCESS AND OPERATION

Both recent change/verify (RC/V) input methods (text interface or menu mode) can be used to access the database query feature. The method used depends on user preference and the nature of the request. For example, a simple request may only require four or five input lines and use of the text interface input method may be preferred. An extensive request with many selection choices may be more easily entered using menu mode since it does not require the user to remember a lot of detail about a large RC view (for example, view A.2).

6.4 DATABASE QUERY FEATURE

6.4.1 FEATURE DEFINITION

The database query feature, along with the office records capability, provides an important tool for the administration and maintenance of the office database. Access to the database query feature can be accomplished through Recent Change class A views.

6.4.2 INPUTS AND RESPONSES

6.4.2.1 General

The inputs to and responses from a database query depend upon the user's choice of recent change input method (Menu or Text Interface).

6.4.2.2 Menu Mode Recent Change

Reports generated by class A recent change views can be started or aborted by the user from any video terminal capable of displaying RC/V views. This is initiated by the user typing the RCV:MENU:APPRC input message (see 235-600-700, *Input Message Manual*). The system then displays the main menu (MENU 0) on the screen. If the user then enters **A** and presses the RETURN key, the system displays View Menu A (the administrative menu). The user can then select the appropriate RC view from the menu to request the database query report needed.

6.4.2.3 Text Interface Recent Change

The Text Interface Recent Change Input System is another method of requesting a database query. The message structure (layout) for RC/V text interface is that of a single logical message. The input message, however, may consist of several lines of data linked by continuation characters at the end of each line. Also, a single, continuous input message containing all of the desired fields is acceptable. Using the text interface system, the reports generated by class A recent change views can be started or aborted by the user from any teletypewriter linked to the office database. This is done by typing the RCV:APPTXT input message (see 235-600-700, *Input Message Manual*) to access the text interface. In text interface, there are no displayed menus or views, so the user must be very familiar with the class A menu and its associated views. The FORM ID and selection criteria must be included in the input message. This message is used after access to text interface has been established, and contains all data necessary to activate the proper RC view and generate the database query report. See "RC TEXT INTERFACE", Chapter 3, for additional details about the use of text recent change.

6.5 DATABASE QUERY EXAMPLES

6.5.1 GENERAL

The following examples are typical tasks that a user might perform using the database query feature. In the interest

of brevity, the printed output of the database query request is not shown. Instead, a brief description of the output format is given. Care should be taken not to tie up the printer during peak office traffic periods.

6.5.2 QUERY THROUGH A SINGLE-SELECTION CRITERIA USING TEXT INTERFACE

Performing a query through a single selection criteria as well as a range of selection criteria is more easily done using the text interface method of recent changes. The advantages are speed and ease of entry to the user familiar with recent change, and in particular recent change class A. However, for the less familiar user, it is suggested that Menu Mode Recent Change be used. The advantages are the display of an entire view (all view fields) and on-screen prompting for input values.

- (1) At any input terminal, type in **RCV:APPTXT,DEVICE=ttyR!**

The system displays OK indicating an APPTXT session has been started.

- (2) Type in the body of the text message as follows:

```
FORM=Av2&NEW!
summary=N!
feat1="/cfv"!
cf_active=Y!
NEW!
```

The system displays OK after each line of input. Next, after querying the database, a four-column tabular listing is printed containing: (1) TN, (2) OE, (3) FORWARD TO TN, and (4) the call forwarding variable (CFV) feature name associated with each of the telephone numbers the query has found in the database.

NOTE: For any field that requires the value to be in lower case characters, the value must be enclosed within double quotes. This is necessary to preserve the lower case letters. Example: "value".

6.5.3 QUERY THROUGH A SELECTION CRITERIA RANGE USING MENU MODE

Querying the database for a range of items is a method of identifying such things as all lines within a particular thousands group that have the touch-tone calling option on them. In addition, if the user wanted to know the billing telephone number associated with these lines, that can also be included in the query request. The following example illustrates this:

- (1) At a video terminal running craftshell, type in **RCV:MENU:APPRC** and press the RETURN key.

The system returns the following message:

```
RCV:MENU:APPRC; PF
```

- (2) Type in an **A** (Menu A for administration) and press the RETURN key.

The system displays Menu A on the video terminal with cursor at system prompt.

- (3) Type in a **2** (View 2) and press the RETURN key.

The system displays View A.2 (LINE ASSIGNMENT REPORTS) with cursor at the key attribute "SUMMARY?".

- (4) Type in a **N** for NO and press the RETURN key.

The system displays the N in the "SUMMARY?" field, moves the cursor to the second attribute (UNASSIGNED REPORT?) and changes the system prompt.

- (5) Type in a **N** for NO and press the RETURN key.

The system displays the N in the "UNASSIGNED REPORT?"; field, moves the cursor to the third attribute (LINES WITH TN's ONLY?) and changes to the system prompt.

- (6) Type in a **Y** for Yes and press the RETURN key.

The system displays the Y in the third attribute field, moves the cursor to the fourth attribute (OUTPUT DEVICE) and changes the system prompt.

- (7) Type in a **ttyR** (office records printer) and press the RETURN key.

The system displays ttyR in the fourth attribute field, moves the cursor to the fifth attribute (TN TYPE), and changes the system prompt.

- (8) Type in **CKT**; for circuit (or press the RETURN key for default). The next two fields, GRC NAME and VIEW NUM can be bypassed.

The cursor is now on the TN field.

- (9) Type in a 10-digit telephone number in the FROM field (lower range TN). (In this example, the TN is 816-727-3000.)

The system displays the 10-digit TN in the FROM field, moves the cursor to the TO field of the attribute TN, and changes the system prompt.

- (10) Type in the upper range TN (10-digit) (in this example, 816-727-3999) and press the RETURN key.

The system displays the 10-digit TN in the TO field, moves the cursor to the next attribute (OE), and changes the system prompt.

- (11) Press the RETURN key to advance the cursor beyond the OE attributes (since they are not needed in this example).

The system moves the cursor to the BTN (billing TN) field and changes the system prompt.

- (12) Type in 10 zeros (**0000000000**) in the FROM field (the lower range of the attribute).

The system displays the 10 zeros, moves the cursor to the TO field, and changes the system prompt.

- (13) Type in 10 nines (**9999999999**) in the TO field (the upper range of the attribute), and press the RETURN key.

The system displays the 10 nines, moves the cursor to the next attribute, and changes the system prompt.

- (14) Press the RETURN key to advance the cursor past the unnecessary attributes until the cursor is resting at touch-tone calling (TTC).

The system advances the cursor to the TTC field and displays the appropriate prompt.

- (15) Type in a **Y** for Yes and press the RETURN key.

The system displays a Y in the TTC field, moves the cursor to the next attribute, and changes the prompt.

- (16) Press the RETURN key to advance the cursor past the unnecessary attributes until the view is completed, or simply type in > (greater-than symbol) to get to the end of the form.

The system advances the cursor past the remaining attributes and displays the appropriate system prompt

(ENTER INSERT, CHANGE, VALIDATE, Screen#, or PRINT: _).

(17) Type in an **I** for Insert and press the RETURN key.

The system will begin processing the query request and send the output to the device specified in the input message.

Once the request is processed and the search of the database is completed, the data is sent to the office records printer. In this example, the telephone numbers of all the lines in the 727-3 thousands group that have touch-tone calling are displayed in a three-column tabular listing along with their originating equipment number and billing telephone numbers.

If there are no more query requests to initiate, the user may exit recent change at this time.

(1) Type in a **q** and press the RETURN key.

The system exits the recent change function.

7. GLOBAL RC — LINES

7.1 GLOBAL RECENT CHANGE OVERVIEW

7.1.1 WHAT IS GLOBAL RECENT CHANGE?

Global Recent Change (Global RC) for Lines allows service providers to query the 5ESS[®]-2000 switch database for all lines that match a specified query criteria and then update a single field or group of fields, for the selected set of lines. The feature accomplishes recent changes of a possibly large set of lines with as few as three user actions.

The Multiple Line Query view (A.2) for general analog and Integrated Services Digital Network (ISDN) lines fields, and the Line Parameter Query view (A.13) for Message Group Name are used to specify the query criteria.

The changeable fields supported by Global RC are a subset of nonkey fields found on the following views: Composite Line (1.6), Analog Line/BRCS (Business Residence Custom Service) Assignment (1.8), Digital Subscriber Line (23.2), and DSL/BRCS Assignment (23.8).

The Global RC views are supported by the RC menu interface (including MCC - Poke 196) and RC text interface. Facilities Management (FM) and RC batch release do not support Global RC.

To use Global RC to update a nonpositional list item (that is, features in the Feature List, Message Service (MSS) List, the Call Forwarding List and the Delfeat List found on views 28.3 and 28.5), the RC Text Interface must be used. **RC Menu Interface will not work for nonpositional list for views 28.3 and 28.5.**

7.1.2 PERFORMING GLOBAL RECENT CHANGE

It is recommended to perform office dependent data (ODD) backup prior to performing global recent change. Refer to 235-105-210, *Routine Operations and Maintenance Procedures*, Procedure 5.31 for ODD backup.

The first step in the Global RC process is to query the switch database and retrieve all lines that match a specified query criteria using the Multiple Line Query view (A.2) or the Line Parameter Query view (A.13). The matching lines are written to a file that is later used by the database update process for Global RC.

Global RC can be viewed as a three-step operation. Figure 7-1 presents a high-level view of this feature, what each step involves, and what files are created at each step.

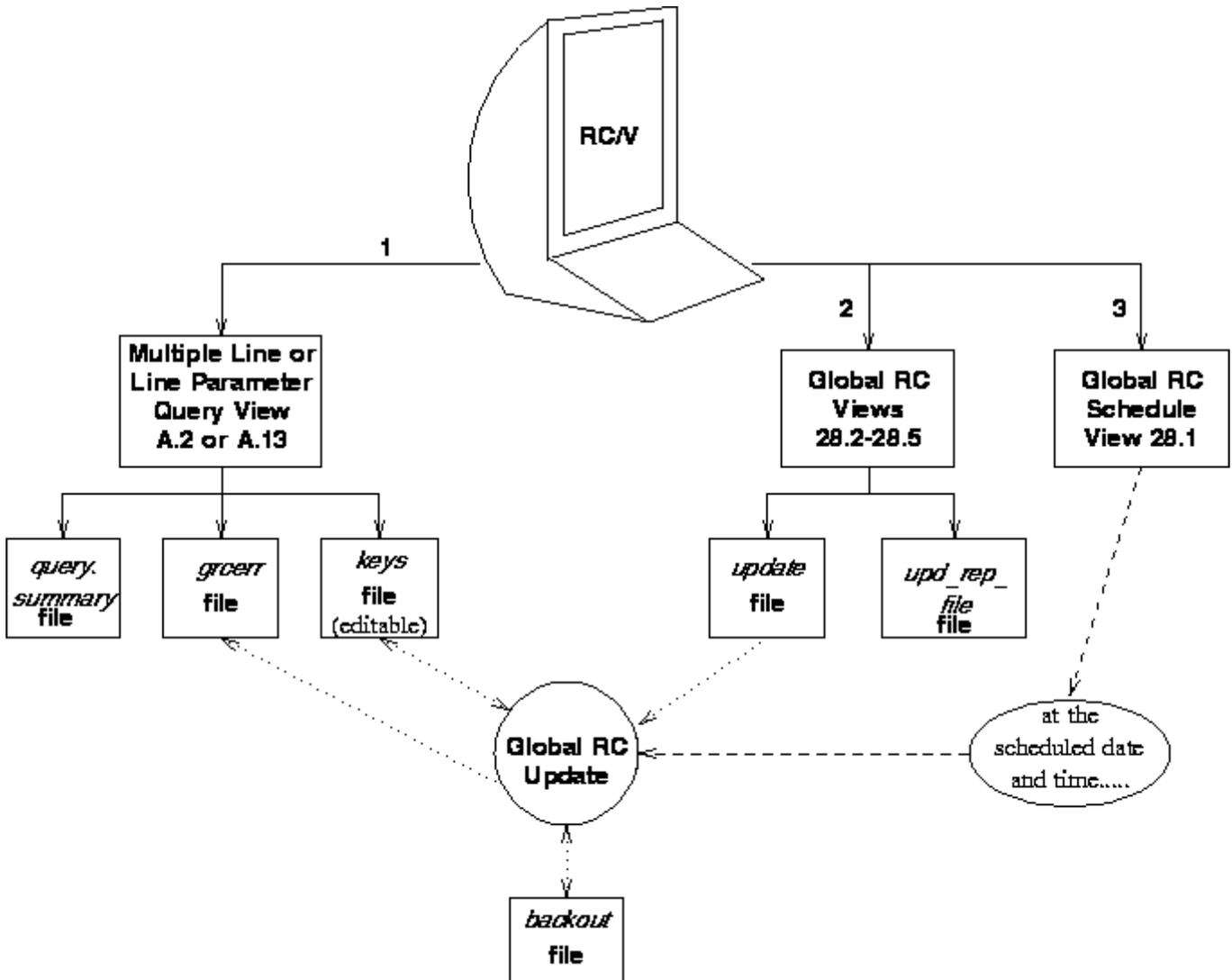


Figure 7-1 Global Recent Change for Lines

The Global Recent Change (GRC) NAME that is associated with the GLOBAL RC update must be entered when the query output is going to be used for Global RC. This causes a directory with the same GRC NAME to be created under */rclog/GRC* on the 5ESS®-2000 switch. For example, if TEST1 is entered in this field, the directory structure */rclog/GRC/<TEST1>* is created. All files created and used by the Global RC update with the particular GRC NAME are stored under this directory.

7.2 STEPS INVOLVED WITH A GLOBAL RC

7.2.1 QUERY ANALOG OR ISDN LINES (STEP 1)

7.2.1.1 Query Procedure

The first step in the Global RC process is to query the switch database and retrieve all lines that match a specified query criteria. The Multiple Line Query view (A.2) and the Line Parameter Query view (A.13) are used for this. The matching lines are written to a file that is later used by the database update process (Step 3) for Global RC.

Three GRC-only fields are on the first screen of view A.2 and A.13 (Exhibit 7-1):

RC supports. The query process attempts to determine what types of TNs are not updatable and marks the STATUS field in the **keys** file as NU (Not Updatable.) Examples of these types of TNs are as follows:

- Secondary-Only Telephone Numbers (TNs)
- Dependant TNs
- XAT TNs
- HRI (Hundreds Route Index) TNs
- Listed TNs for a packet MLHG.

Table 7-1 shows the STATUS field values and description.

Table 7-1 STATUS FIELD VALUE DESCRIPTIONS

VALUE	DESCRIPTION
BS	Backout Succeeded
BF	Backout Failed
NU	Not Updatable
QS	Query Succeeded
UF	Update Failed
US	Update Succeeded

The update process bypasses any line in the keys file that has a status of NU. If the lines that were not updated by Global RC need to be updated, the user must use the view that supports that data to update it manually (for example, view 23.40 must be used to update XAT TNs).

There are some TNs/OEs that cannot easily be determined to be nonupdatable by Global RC. These TNs/OEs are treated as valid keys and written to the **keys** file. When the update process attempts to update a nonsupported key, the error message that is generated is written to `/rclog/GRC/<grcname>/grcerr` along with the key that was used for the update. Once the user determines the cause for the update failure, he/she can use the view that supports the key that failed and update it manually.

If errors are encountered during the query, they are written to the **grcerr** file.

When the query process completes, it creates a summary report and prints an output message to the receive-only printer (ROP). The summary report is stored in `/rclog/GRC/<grcname>/query.summary`. This report contains the selection criteria used for the query. The output message contains the number of lines that matched the query criteria and the location of the summary file (refer to the GRC QUERY output message).

7.2.1.2 Considerations When Running a Query

If lines are inserted into or deleted from the office data after the query is complete and they are within the range of the query, these changes will not be reflected in the **keys** file. If an update is attempted on a line that has been deleted, an error will occur. Likewise, if a line that matches the query criteria is inserted after the query completes, it is not be updated by Global RC.

7.2.2 SELECT ATTRIBUTE(S) TO BE CHANGED (STEP 2)

7.2.2.1 General - Select Attribute(s) to be Changed (Step 2)

Class 28 contains the following five views:

- 28.1 - Global RC Schedule view

- 28.2 - Global RC Update view for 1.6
- 28.3 - Global RC Update view for 1.8
- 28.4 - Global RC Update view for 23.2
- 28.5 - Global RC Update view for 23.8.

The GRC NAME entered on view A.2 or A.13 is a required key on every view within this class. Inserts on views 28.2, 28.3, 28.4 and 28.5 are only allowed after the query has completed and an output message has been printed to the ROP.

7.2.2.2 Perform Attribute(s) Selection

The Global RC Update views (28.2 - 28.5) are used to specify the fields to update. The Global RC Update views are special in that:

- (1) The views appear very similar to their associated views except they have been modified to add a GRC NAME field. This additional field functions as a key to the view.
- (2) The original key fields do not appear on these views. All fields that cannot be updated by a Global RC job remain on the Update views but are in the *no change* mode and are not numbered. The cursor reaches only fields that can be updated by Global RC. The only exception to this is nonpositional lists (that is, feature lists). These fields are numbered and can be reached by the cursor but cannot be updated for Global RC using the RC Menu. The RC text interface must be used for these updates.
- (3) The dash or hyphen character "-" indicates that the field is to be updated to NULL.

The 28.2 - 28.5 views support insert and delete operations only. Insert and delete perform the following actions:

OPERATION	ACTION
insert (i)	Specifies which fields for Global RC to update and their new values.
delete (d)	Removes an update specification previously defined.

The information entered on the "Update view" is saved in two files: /rclog/GRC/<grcname>/upd_rep_file and /rclog/GRC/<grcname>/update. Refer to "FILES CREATED BY GLOBAL RC", Section 7.4 , for detailed information about these two files.

7.2.3 SCHEDULE GLOBAL RC REQUEST (STEP 3)

7.2.3.1 Scheduling Procedure

Prior to scheduling the Global RC job, the user should determine the file system space availability for the /rclog file system by using the REPT:SPACE command and the RC log files' space availability by using the OP:RCSTAT command. See "LIMITATIONS", Section 7.9 , and "RESOURCES", Section 7.9.2 , for space requirement. If the /rclog file system is too full, files will have to be removed to free space. If the RC logging space is not sufficient, an ODD backup will be needed. The Global RC job is scheduled using the Global RC Schedule view (28.1) after the query is complete and the fields to be updated are selected using a Global RC Update view (Exhibit 7-2).

5ESS SWITCH
RECENT CHANGE 28.1
GLOBAL RECENT CHANGE SCHEDULING

*1. GRC NAME _____
 (*) 2. SECTION _____
 #3. CLERK ID _____
 #4. PASSWORD _____
 5. MODE _____
 6. RDATE _____
 7. RTIME _____
 8. SPLIT _____
 9. SPLIT SIZE _____
 10. MAX ERRORS _____
 11. VERBOSE _____

Exhibit 7-2 Global RC Schedule View 28.1

A description of each field in Exhibit 7-2 is described in Table 7-2.

Table 7-2 VIEW 28.1 FIELD DESCRIPTIONS

FIELD	DESCRIPTION/RESTRICTION	EXAMPLES
GRC NAME	This is a key field and is the name used to identify the Global RC job. This name has a one-to-one correspondence to the name used in the GRC NAME field of the Multiple Line Query view A.2, which generated the input data for this global recent change.	job2
SECTION	An optional key numeric field used to identify a particular section or split file. <i>On the insert operation, this field must be blank.</i>	6
CLERK ID	This required field is used to associate a particular clerk's id with this Global RC job request. PASSWORD and CLERK ID together provide security for the scheduling and execution of Global RC jobs. It has to be specified for insert operations only.	robin
PASSWORD	This field is used to enter the CLERK ID's password. Refer to the GRC PASSWORD in 235-600-700, <i>Input Message Manual</i> .	4more
MODE	This field is used to specify whether an update or a backout is to be done.	update
RDATE	The date on which the Global RC is to begin. If the RDATE is specified, the RTIME must also be specified.	072191
RTIME	The time at which the Global RC is to begin. If the RTIME is specified, the RDATE must also be specified.	0350
SPLIT	A y/n field to specify whether to divide the /rclog/GRC/<grcname>/keys file into two or more smaller split files containing a specified number of keys per file. <i>This field can only be entered during an insert operation.</i>	Y
SPLITSIZE	The maximum number of keys each new split file should contain. The minimum allowed SPLITSIZE is 500 keys per SPLIT file; the default is 10,000. Split must be "Y" if SPLITSIZE is specified.	500
MAXERRORS	The maximum number of errors allowed before the Global RC job will halt; the default is 25.	12
VERBOSE	A y/n field to specify whether output messages for updates are to be sent to the ROP as each Global RC update is performed.	Y

If the MODE field is left blank, the Global RC job is scheduled as an update. If the RDATE and RTIME fields are left blank, the Global RC job is scheduled to run 1 minute from the current time.

When the SPLIT field contains a yes (Y), there are 500 or more keys, the **keys** file is divided (copied) into smaller

files, each containing the number of keys specified in the SPLITSIZE field. All sections of the split are scheduled with the same RDATE and RTIME. To change these times, each section must be rescheduled separately with an update on view 28.1 or using the Global RC Input Message SCHED:GRC.

The Global Recent Change Schedule view (28.1) supports the Review, Insert, Update, and Delete operations. These are standard RC Menu Operations and perform the following actions.

OPERATION	ACTION
review (r)	Reviews a previously scheduled Global RC job.
insert (i)	Schedules a new Global RC job.
update (u)	Changes a previously scheduled job. All nonkey fields except for SPLIT and SPLIT_SIZE can be changed/updated.
delete (d)	Removes every file and directory associated with the GRC NAME provided. SECTION must be provided if the Global RC job has been split, but when one section of a Global RC job is specified for a delete, all sections of the job (the files and directory) are removed. Jobs that have been HALTED or are IN PROGRESS cannot be removed. If one section of a SPLIT job is HALTED or IN PROGRESS, the job cannot be removed. (The RMV:GRC input message can be used in place of the delete operation.)

If a review, update, or delete is being done on a Global RC job that is split, the SECTION *must* be specified. Otherwise an error message will print stating that no keys are found.

7.2.3.2 Considerations When Using the RC Text Interface

The **SET** and **LOUT** commands in RC Text should be *avoided* for Global RC since data can be lost and unexpected results can occur. For example, the command **SET="FL.F[2]"&"/CFDAIO"** will replace the second feature in the feature list, regardless of its current value, with /CFDAIO. The **LNEW** command should be used to add a feature to a line. Similarly, the **LOUT="FL.f[2]"** command will remove the second feature in the feature list, regardless of its value. The DELFEAT fields on views 28.3 and 28.5 should be used to delete features from lines.

7.2.3.3 Considerations for Retrofit

Global RC is inhibited during the Retrofit double logging period. When scheduling a Global RC, a check is made to see if double logging is enabled. If it is, the Global RC is not scheduled and a GRC:ERROR output message informs the user that Global RCs cannot be run during the double logging interval. If a Global RC job is running and double logging is enabled, the job will abort, and a GRC:ERROR output message is printed. Jobs that are already scheduled to run will start and abort immediately without doing any updates.

The REPT:GRC input message can be used to determine the current status of all Global RC jobs. This should be run before Retrofit double logging is enabled. The need for the Global RC updates should be reevaluated after the Retrofit.

7.2.4 DATABASE UPDATE

7.2.4.1 General

When it is time for the Global RC job to run, the process *RCgrcupd* is created. This process uses the keys in the */rclog/GRC/<grcname>/keys* file to read the view that is to be updated and applies the updates specified in the */rclog/GRC/<grcname>/update* file.

When updates are successful, the original data from the view is saved in */rclog/GRC/<grcname>/backout* file in binary form.

When an update fails, the error messages associated with the failure are saved in the */rclog/GRC/<grcname>/grcerr* file. A time stamp heading is written to this file each time that an update or backout process has begun and the first failure has been encountered. Failed updates can be retried after the error conditions have been corrected, by using the SCHED:GRC command. It is recommended the user verify that the error conditions have been corrected by

running a TEST:GRC on a subset of the failed updates. See "GLOBAL UPDATE TEST", Section 7.6.4 .

7.2.4.2 Update Capability

To apply global updates to the database, Global RC first reads the **keys** file for the keys of the RC view that is being updated. Global RC attempts to update any line with a status of Query Succeeded (QS), Backout Succeeded (BS), or Update Failed (UF). Each update stored in the **update** file is applied to the designated field on the view.

If the update is successful, the original line data (before the update was applied) is copied to the **backout** file. A status of Update Succeeded (US) is written into the STATUS field of the **keys** file and the relative position of the backout data in the **backout** file is saved in the INDEX field of the **keys** file.

If an error occurs when updating a line, a status of UF is written in the STATUS field of the **keys** file. All error messages are written to the **grcerr** file along with the keys that were used to read the view.

If a request to halt the Global RC job is made, the database update process gracefully halts after the update it is currently processing is applied to the database. Otherwise, each line of the **keys** file is read and the update procedure is repeated until all lines are updated.

The status of the double logging and Recent Change inhibit bits are checked after each update. If either of the bits is set, the process dies and the Global RC job is aborted. A GRC ERROR output message prints stating the reason for the abort.

A Global RC job halted by the STP:GRC input message can be restarted using the EXC:GRC input message. The database update process starts at the top of the **keys** file and updates any line that has a status of QS, BS, or UF.

NOTE: All failed updates are retried before the update continues with the remaining lines.

7.3 STEPS INVOLVED IN BACKOUT OF A GLOBAL RC

7.3.1 BACKOUT OF GLOBAL RC REQUEST

The capability to back out a Global RC update is needed in the event that a Global RC update is performed, and later it is determined that the updates are not wanted. This may occur before the update has been completed by using the STP:GRC command to stop the update and then performing backout as described in "STATES/USER ACTIONS FOR A GLOBAL RC JOB", Section 7.5 . This backout capability is limited to the ability to restore a view that has been updated to how it looked before the updates were applied. If changes to a line view cause other view's (for example feature views) data to be changed, these commands may not restore automatically when a backout is attempted. When a Global RC is backed out, all lines are returned to their original status (that is, before the Global RC update was applied); therefore, all recent changes done on any of the lines between the time that the Global RC update was completed and the backout was completed will be lost.

To back out a Global RC, a "backout" request may be issued by either of the following two methods:

- (1) Use recent change menu view 28.1 in update mode.
- (2) Issue the SCHED:GRC input command.

NOTE: The backout will only attempt to back out changes to lines with a status of "US" or "BF" (as specified in the /rcllog/GRC/<grcname>/keys file).

Method 1: Perform a backout by updating the Global RC view 28.1.

- (1) Select view 28.1 in update mode (28.1u).

(2) Fill in or change the appropriate fields on the view as shown in Table 7-3 .

Table 7-3 VIEW 28.1 UPDATE DESCRIPTION

FIELD	VALUE	DESCRIPTION
GRCNAME	jobname	Name of job to be backed out
SECTION	section #	If job was split into sections
CLERK ID	clerk id	Will be filled in by system
PASSWORD	password	Security code
MODE	BACKOUT	Schedule a backout
RDATE	MMDDYY	Day in future to run job or blank for today
RTIME	HHMM	Time in future to run job or blank for one minute from now
MAXERR	1-65535	Maximum number of failures before job stops
VERBOSE	Y or N	Print updates to read only printer (ROP)?

(3) Update the view.

Method 2: Perform a backout with the input command SCHED:GRC.

SCHED:GRC,NAME=a[,SECT=b],MODE=BACKOUT[,RDATE=c,RTIME=d][,MAXERR=e] [,VERBOSE=f]

Where:

- a = the job name
- b = the section number (if applicable)
- c = the date (mmddyy)
- d = the time (hhmm)
- e = the maximum number of errors allowed
- f = Y or N

If RDATE and RTIME are not specified, the job is scheduled to run one (1) minute from the current time.

In order to verify that the job is scheduled and to routinely monitor the job's status, use the REPT:GRC[,NAME=jobname] input message command.

After the backout is completed, the **keys** file will reflect the line status in the following manner:

- Status of "BS" - Backout was successful for this line
- Status of "BF" - Backout was unsuccessful for this line.

The same operations that can be performed on a Global RC update (that is, halt, cancel, continue, etc.) can be performed on a Global RC backout.

While the backout job is running, the user may periodically monitor the file system space availability for the /rclog file system by using the REPT:SPACE command and the RC log files available space by using the OP:RCSTAT command.

7.3.2 Considerations

If the **keys** file is corrupted, all Global RC updates and backouts may fail. Any line with data that cannot be interpreted is skipped, and an error message is printed to the **grcerr** file.

Changes made to the data on a view being updated with Global RC between the time the Global RC update runs and the time the Global RC backout runs will be lost. The Global RC backout procedure restores the view to how it looked before the Global RC update ran.

7.4 FILES CREATED BY GLOBAL RC

7.4.1 rclog/GRC FILES

The Global RC feature creates two files that are used by all jobs. Each Global RC job creates eight more files when it runs. The two files created for the Global RC feature are as follows:

- **/rclog/GRC/.schedule** - A hidden, binary file that contains an entry for each Global RC job that has been scheduled.
- **/rclog/GRC/.passwd** - A hidden file that contains an entry for each clerk-id and associated encrypted password.

Each Global RC job creates eight files when it runs.

NOTE: While the process is running, some temporary files are also created.

The final files created are as follows:

- (1) **/rclog/GRC/<grcname>/keys** - An editable file that contains all lines/ports that match the query selection criteria.

If a split had occurred, several **keys.#** files will be created. The minimum allowed SPLIT_SIZE is 500 keys per SPLIT file; the default is 10,000. The **keys** file contains the following fields and every line/port has data in some or all of these fields:

STATUS	INDEX	TNTYPE	TN	OETYPE	OE	PTY	MLHG	MEMB
--------	-------	--------	----	--------	----	-----	------	------

- **STATUS** is the status of the line [It is set to either Query Succeeded (QS) or Not Updatable (NU) by the query process and is changed by the update process to Update Failed (UF) or Update Succeeded (US) or by the Backout Failed (BF) or Backout Succeeded (BS)]
- **INDEX** is an offset into the file /rclog/GRC/<grcname>/backout. [It is initially set to 0 (a fixed length) and is changed by the update process.]
- **TNTYPE** is the TN type, either circuit (C) or packet (P).
- **TN** is the telephone number that matched the query criteria.
- **OETYPE** is the OE type.
- **OE** is an originating equipment number.
- **PTY** is the party identifier of the OE.
- **MLHG** is a multiline hunt group number.
- **MEMB** is a member number of the MLHG.

An example of the **keys** file follows [number signs (#) delimit comments]:

```
#STATUS:INDEX:TNTYPE:TN:OETYPE:OE:PTY:MLHG:MEMB
QS:00000:C:8152200100:L:0010000163:I:6:1
QS:00000:C:8152200101:L:0010002140:I::
QS:00000:C:8152200102:L:0010002142:I:4:1
QS:00000:C:8152200104:L:0010002163:I::
```

```

QS:00000:C:8152200105:L:0010005043:I::
QS:00000:C:8152200106:L:0010000160:I::
QS:00000:C:8152200107:L:0010000001:I::
QS:00000:C::L:0010002152:I::
QS:00000:C:8152200110:L:0010005051:I::
QS:00000:C::L:0010002143:I::
QS:00000:C:8152200113:L:0010002143:I::
QS:00000:C:8152200114:L:0010005061:I:3:1
QS:00000:C:8152200115:L:0010000162:I::

```

NOTE: As the previous sample file depicts, there may be various combinations of keys. If a TN that matches the query criteria exists, it is written to the file and is the key used by the update process when applying the update. There may be times when a port does not have a TN. The update process uses whatever key is available to apply the update.

- (2) **/rclog/GRC/<grcname>/query.summary** - A readable file that contains the selection criteria that was used for the query and the number of lines in the office that matched the criteria. The contents of this file can be reviewed through the REPT:GRC input message with the QUERY option specified.
- (3) **/rclog/GRC/<grcname>/grcerr** - A readable file that contains any errors that occurred while the query was running or while the database update process was running. A time stamp heading is printed to the file as soon as a Global RC update or backout job runs and the first failure has occurred. The DUMP:F-ALL input message can be used to dump the contents of this file to an output device.

An example of a **grcerr** file follows:

```

***** ADMINISTRATIVE REPORT PROCESSING ERROR *****
ADMINISTRATIVE VIEW ERROR: TN: 8152200110
RELATION: FC_PORTTYP  MODULE: 20
KEYS: port.member = b457  port.module = 20
RETURN CODE: -137

*****
*****
GLOBAL RC STARTED - Thu Dec 17 13:19:29 1996

*****
*****
UPDATE C 8152200106 L 00100160 I

mgupdate() - hrdkey() failed

199-369 ACTION CONFLICT

This view does not support LTSB lines.

UPDATE C 8152200113 L 00102143 I

199-29 FAILURE TO COMPLETE OPERATION

Update of line/DSL data has failed.

53-2 DATABASE SYSTEM ERROR: an SM is in RC backout

RT_DNTRAN READ failed (sercomp4:-151); pcr=2.

686-5 RELATION KEY INFORMATION

dn.noc=1 dn.digits=0212

```

- (4) **/rclog/GRC/<grcname>/upd_rep_file** - A readable file that contains the updates to be applied to the views. This information shows which fields will be updated by Global RC and to what values. This file is not used by the update process. It is created so the user can determine which fields will be updated by Global RC. The contents of this file can be printed using the REPT:GRC input message with the UPDSPEC option specified.

- (5) **/rclog/GRC/<grcname>/update** - This file is written in a format internal to Global RC. It contains the updates that are used by the Global RC update process.

For example, if an update to change MFRI to no (N) was specified on view 28.2, the following **upd_rep_file** would be created:

```
MFRI=N
```

The **update** file created for this same update would be as follows:

```
A$-17$-N$-$$-
```

- (6) **/rclog/GRC/<grcname>/backout** - A binary file that contains the data for each line before the Global RC update. This file can be used to restore the view field data to the values they had before the Global RC update was done.
- (7) **/rclog/GRC/<grcname>/viewnum** - A hidden, readable file that contains the view number used for the Global RC. This file is created to prevent the user from doing a query for a set of lines and then trying to specify the update on a view different from what was specified for the query.
- (8) **/rclog/GRC/<grcname>/hist_rep_file** - A readable file that contains all the commands and user actions that have been entered for the Global RC job. The contents of this file can be reviewed using the REPT:GRC input message with the HISTORY option specified.

7.4.2 SPLITTING THE KEYS FILE

Recall that in the insert mode for the Global RC Schedule view 28.1, the user can split the **keys** file into sections by entering a yes (Y) in the SPLIT field and specifying a SPLIT_SIZE. When this is done, the **keys** file is divided (copied) into smaller files, each containing the number of keys specified in the SPLIT_SIZE field. The naming convention for these smaller files is the Global RC **keys** file with a "." and a number appended to it which represents the section number. Non-split keys files are always labeled as "keys" and their section number appears as 0 in the REPT:GRC. The numbering starts at 1 and increases for each file until the split has completed. For example, assume a Global RC job named *MANY_KEYS* has run a query and identified 8,500 matching keys. A decision is made to split the file into smaller files of 3,000 keys each. The new SPLIT files have the names **keys.1**, **keys.2**, and **keys.3**. All these files are located in the /rclog/GRC/MANY_KEYS directory and the original **keys** file is deleted.

When the **keys** file is split into sections, the database update process creates a **backout** file for each **keys** file. The **backout** files follow the same numbering convention as the **keys** files. Using the previous example, the update process creates the files **backout.1**, **backout.2**, and **backout.3**, which contain the backout information for **keys.1**, **keys.2**, and **keys.3**, respectively.

7.5 STATES/USER ACTIONS FOR A GLOBAL RC JOB

This section provides a high-level description of the different "states" and "user actions" available in the Global RC process.

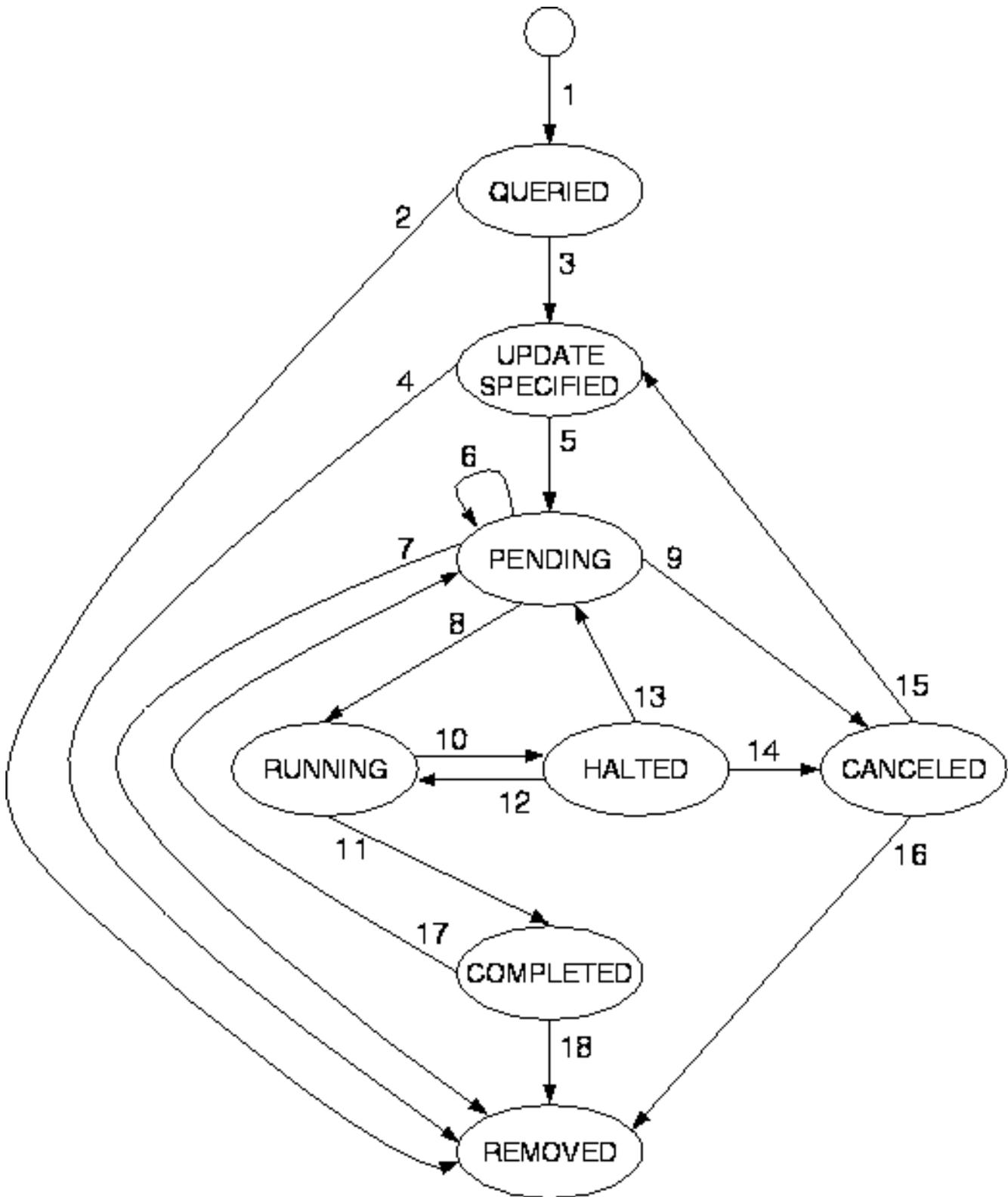


Figure 7-2 State Diagram of a Global Recent Change

Figure 7-2 depicts the state diagram of the Global RC process. A description of the action(s) that take place at each path is as follows:

Path 1: Create a Global RC.

The craft uses the Multiple Line Query view (A.2) or the Line Parameter Query view (A.13) to query the database for all lines that match a specified criteria and to enter the name of a Global RC. The Global RC is now in the **Queried** state.

Paths 2, 4, 7, 16, 18: Remove a Global RC.

The craft issues a command (RMV:GRC) or uses delete on view 28.1 to remove a Global RC job. A Global RC job is automatically removed after seven days unless it is in the pending, running, or halted state.

Path 3: Specify Updates.

The fields to be updated are selected on one of the Global RC update views (28.2 - 28.5).

Path 5: Schedule a Global RC.

The craft uses the new Global Recent Change Schedule view (28.1) to schedule a Global RC. The fields to be updated are selected on Global RC update views (28.2 - 28.5). The Global RC is now in the **Pending** state.

Paths 6, 13, 15, 17: Reschedule a Global RC.

The craft issues a command (SCHED:GRC) or uses update on view 28.1 to reschedule a Global RC job.

Path 8: Line updates begin.

A Global RC begins performing line updates at its scheduled release date and time. The Global RC is now in the **Running** state.

Paths 9, 14: Cancel a Global RC.

The craft issues a command (CLR:GRC) to cancel (unschedule) a Global RC. To continue with this update, the user must now issue a SCHED:GRC command or re-enter view 28.1. The Global RC is now in the **Canceled** state.

Path 10: Halt a Global RC.

The craft issues a command (STP:GRC) to stop performing line updates. The user may issue a command (EXC:GRC) to continue this update. The Global RC is now in the **Halted** state.

Path 11: Complete a Global RC.

A Global RC completes performing line updates. The Global RC is now in the **Completed** state.

Path 12: Continue a Global RC.

The craft issues a command (EXC:GRC) to continue performing line updates, if this job has been in the halted state. The Global RC is now in the **Running** state.

7.6 INPUT MESSAGES

7.6.1 GENERAL

Numerous input messages have been created as part of Global RC. They can be broken down into three areas: (1) monitoring and controlling the Global RC process, (2) security, and (3) global update test.

7.6.2 MONITORING AND CONTROLLING THE GLOBAL RC PROCESS

There are five input messages used for controlling the Global RC process and two for monitoring it. The input message pages give detailed explanations of each message and its syntax. But, briefly, they are as follows:

- **MONITORING THE GLOBAL RC PROCESS**

- (1) **REPT:GRC[,NAME=a[,SECT=b]][,DEVICE="c"][,BATCH][,HISTORY] [,UPDSPEC][,QUERY]**
Requests a report of the GRC activity be printed using the REPT:GRC output message. The NAME field refers to the name of a GRC job. If NAME is not entered, the schedule and any requested optional information for all GRC jobs will be displayed. If NAME is entered, a more detailed status of the named job will be reported.

If a named GRC job has been split into sections, reports on all sections will be output unless a specific section is chosen using the SECT command line option.

When BATCH is specified, a list of all time-release batch jobs will print. When HISTORY is specified, a history of all commands executed for all GRC jobs will be printed unless a GRC NAME is specified. If a GRC NAME is specified, only the history for that GRC NAME will be printed. When UPDSPEC is specified, a list of the updates defined for all GRC jobs will be printed unless a GRC NAME is specified. If a GRC NAME is specified, the list of updates for only that GRC NAME will be printed. When QUERY is specified, the query criteria for all GRC jobs will be printed unless a GRC NAME is specified. When a GRC NAME is specified, only the query criteria for that GRC NAME will be printed.

- (2) **REPT:SPACE,FS="a"**
Requests that a report indicating the space available in the specified file system be generated.

- **CONTROLLING THE GLOBAL RC PROCESS**

- (1) **CLR:GRC[,NAME=a[,SECT=b]]**
Requests that a global recent change (GRC) job that is waiting in the queue be canceled. This allows the user to unschedule a GRC job. If NAME is not specified, the name of the last GRC job that was scheduled is used. If the GRC job has been split, SECT must be provided. See SCHED:GRC item 5 of this list.
- (2) **EXC:GRC**
Requests that a GRC operation that is halted be restarted. This command restarts the GRC process that was halted using the STP:GRC command. The REPT:GRC command can be used to determine which job that is.
- (3) **STP:GRC**
Requests that the execution of the current GRC job be halted. This command stops the processing GRC job gracefully. The EXC:GRC continues job execution.
- (4) **SCHED:GRC,NAME=a[,SECT=b],MODE=c[,VERBOSE=d][,MAXERR=e] [,RDATE=f,RTIME=g]**
Requests that a GRC job be rescheduled. This command allows the user to change the options specified when the GRC job was scheduled. If the GRC job has been split, SECT must be provided. If RDATE and RTIME are not specified, the job is scheduled to run one (1) minute from the current time.
- (5) **RMV:GRC,NAME=a**
Requests that the specified GRC job be removed from the switch. This command deletes every file and

directory associated with the job. If a terminal is active in the /rclog/GRC/grcname directory that is being removed, during the execution of this command, once the command has been executed, commands such as ls and pwd will not work until the working directory has been changed to an existing one.

7.6.3 SECURITY

An input message has been defined to enforce security measures for the Global RC. This input message defines a clerk-id and associated password or deletes an existing one. (Recall that CLERKID and PASSWORD are required fields on the Global RC Schedule view 28.1.)

The input message is as follows:

- **EXC:GRCPASSWORD,CLERKID=a,[PASSWD=b|DELETE]**

NOTE: CLERKID can be from 1 to 10 alphanumeric characters and PASSWD from 1 to 8 alphanumeric characters.

This input message can **only** be executed from the MCC or SCC terminals, and only one password is allowed per clerk-id. To change a clerk-id's password, use this message used with the same clerk-id but with a different password.

7.6.4 GLOBAL UPDATE TEST

7.6.4.1 General

The **TST:GRC** input message provides the ability to test a selected range of lines for a Global RC update to ensure that the correct updates are applied to the database.

NOTE: The TST:GRC **DOES** update the ODD.

This input message has two variations. The first variation is used to test the updates on one TN or a range of TNs. If one TN is entered, then a 7 digit or 10 digit TN is entered; however, if a range of TNs is entered, then a 10 digit TN must be entered. The other variation is used to test the updates on one MLHG, or a range of MLHGs and an optional member or range of members.

- **TST:GRC,NAME=a[SECT=b],TN=c[-d]**
- **TST:GRC,NAME=a[,SECT=b],MLHG=e[-f],[MEMB=g[-h]]**

The TST:GRC command actually performs the updates to the database for the selected lines or MLHGs. The status after the test is either US or UF. Once these lines are marked US, the schedule update does not attempt to update the lines again.

In order for the test to be done, the keys specified in the input message must exist in the **keys** file.

The Global RC job must be scheduled before the TST:GRC input message is issued. Once the command is issued, the test is performed immediately if there are no other Global RC jobs running. If there is a job running, the user is told to try the test later. The TST:GRC command cannot be scheduled. It can only be performed on jobs scheduled for updates, not those scheduled for backouts.

Test lines should be selected from the set of lines that are known to be updatable by using the DUMP:FILE-ALL command on the keys file. If the test is successful, the probability of the remainder of the update completing successfully is more certain. Regardless of whether the test succeeds or fails, the Global RC job remains in the

pending state.

7.6.4.2 Steps to Backout the Global Update Test

After the test is completed or has been halted with a STP:GRC input message, the Global RC job is scheduled for immediate backout (See "BACKOUT OF GLOBAL RC REQUEST", Section 7.3.1). After the backout is completed, reschedule the Global RC job for its original date and time.

NOTE: It is very important to reschedule the Global RC job. If it is not, it will never be run.

7.7 OUTPUT MESSAGES

Various messages are output from the Global RC process. Some of these messages are for information only. Others signal a problem has been encountered. Here is a list of information-only OMs (output messages).

- The following message reports the status of a global recent change (GRC) job.

```
GRC STATUS NAME = a SECTION = [b] STATE = c
REMARKS = d
[e]
```

- The following message indicates that the global recent change (GRC) query operation has completed. The number of lines that match the query criteria and the name of the file that contains the query criteria are given.

```
GRC QUERY LINES_MATCHED = a
SUMMARY_FILE = b
```

- The following message displays the number of bytes available in the file system and the usage percentage.

```
REPT SPACE FS = a BYTES_AVAILABLE = b c% FULL
[d]
```

- The following message displays the GRC job schedules. Optional information may also be printed including Batch job schedules. Several formats are available depending on the options used on the REPT:GRC input message.

```
[1] GRC REPORT BATCH RECENT CHANGE SCHEDULE
[a]
[2] GRC REPORT BATCH RECENT CHANGE SCHEDULE
CLERK NAME RDATE RTIME
b c d
. . .
. . .

[3] GRC REPORT GLOBAL RECENT CHANGE SCHEDULE
GRC_NAME SECT CLERK_ID RDATE RTIME STATUS REMAINING
UPDATES
e f g h i j k
. . .
. . .

[4] GRC REPORT GLOBAL RECENT CHANGE SCHEDULE
[]
[5] [GRC REPORT NAME = e SECTION = f
NON UPDATABLE = m
UPDATE NOT APPLIED = n
UPDATE FAILED = o
BACKOUT SUCCESSFUL = p
-----
REMAINING UPDATE = q
UPDATE SUCCESSFUL = r
BACKOUT FAILED = s
-----
UPDATED LINES = t
TOTAL LINES = u
```

```

[6] [GRC REPORT HISTORY
GRC NAME=e
v
.
.]
[7] [GRC REPORT QUERY SUMMARY
GRC NAME=e
.
.]
[8] [GRC REPORT UPDATE SUMMARY
GRC NAME=e VIEW=x
y
.
.]

```

If a GRC NAME is specified on the REPT:GRC input message, only information about that GRC job is printed. If GRC NAME is not specified on the REPT:GRC input message, information on all GRC jobs printed.

If the GRC job has been split and the SECT is not specified on the REPT:GRC,NAME=GRCNAME input message, information on all sections is printed. If the GRC job has been split and the SECT is provided on the REPT:GRC,NAME=GRCNAME input message, only the information about the requested section is printed.

Format 1 prints when the BATCH option of the REPT:GRC command is specified and there are no Batch jobs scheduled.

Format 2 prints when the BATCH option of the REPT:GRC command is specified and there are Batch jobs scheduled. It lists each Batch job for each Clerk ID and when they are scheduled to run.

Format 3 prints information on GRC jobs. When GRC NAME is not specified on the REPT:GRC input message, it lists all GRC jobs in the system and the current status for each one. If GRC NAME is specified on the REPT:GRC input message, only information about that GRC job is printed.

Format 4 prints when there are no GRC jobs scheduled.

Format 5 prints when GRC NAME is specified on the REPT:GRC input message. It tells how many lines cannot be updated with GRC, how many lines have not had updates applied yet, how many updates failed, how many backouts were successful, how many updates were successful, and how many backouts failed. Sub-totals of the number of remaining updates and the number of updated lines are provided as well as a total of the number of lines that matched the query criteria for this job.

Format 6 prints when the HISTORY option of the REPT:GRC command is specified. It gives a history of all user actions associated with the GRC job(s).

Format 7 prints when the QUERY option of the REPT:GRC command is specified. It lists the query criteria specified for the GRC job(s).

Format 8 prints when the UPDATE option of the REPT:GRC command is specified. It lists the line fields to be updated by the GRC job.

The Global RC process has two (2) OMs that signal a problem has been encountered.

- GRC ERROR [MODE = a NAME = b SECTION = c]
REASON = d
[e]
- GRC FAILURE NAME = a SECTION = b
REASON = c
[d]

The GRC ERROR output message is output for various reasons, some of which are as follows:

- (1) A communication link could not be established between two processes.
- (2) The DBrc process has timed out.
- (3) The maximum number of errors specified on view 28.1 has been exceeded.
- (4) A file needed by the update process could not be found, opened, or written to.
- (5) Double logging or RC is inhibited.

If the GRC ERROR output message is printed because of previous problems like numbers 1 and 2, then the user should first check that the CMP is operating normally, and then reschedule the Global RC job to run later. When the maximum number of errors has been reached (number 3), the user should first look at the **grcerr** file and try to fix the reported problems, and then reschedule the Global RC job while increasing the number of MAXERRs allowed. If a file that the update process needs is missing (number 4), the user should take the actions necessary to create that file again (that is, run another query from view A.2 or select the fields to be updated from the 28.2-28.5 views). If global updates are needed and a software release retrofit has started (number 5-part 1), the need for these updates should be reevaluated after the new software release has been installed. If RC is inhibited (number 5-part 2), the Global RC job should be rescheduled to run when RC is no longer inhibited.

Other errors cause the GRC ERROR output message to print, but the REASON field should give enough information so that the user knows what action to take.

The GRC FAILURE output message is generated only when a Global RC job aborts because of a resource failure. It states which file system is low on free space (/log, /smlog, /rclog). The user should take whatever action is necessary to free up space (remove unnecessary files, do an ODD backup) for that particular file system. After this is done, the Global RC job can be rescheduled to run again. This output message also causes a minor alarm to fire.

7.8 EXAMPLES

7.8.1 GENERAL

The following are some examples of how Global RC might be used.

7.8.2 CHANGING PIC

Scenario: All lines in the office with a PIC of 624 need to be updated to 288.

To accomplish this task with Global RC, the following steps should be taken:

- (1) If a clerk-id and associated password have not been established, the EXC:GRCPASSWORD input message must be issued from the MCC.
- (2) Use the REPT:SPACE,FS="/rclog" command to determine how much /rclog system space is available in the /rclog directory. If the file system space is low, take whatever actions are necessary to free up some space.
- (3) Using the A.2 Multiple Line Query view, run a query with the following information: SUMMARY=N, LINES WITH TN'S ONLY=N, TN TYPE=ANLG, GRC NAME=PICANLG, VIEW NUM=28.2 for all TNs with a PIC in the range from 624 to 624.
- (4) Wait for the output message indicating that the query has completed. Check the **grcerr** file for any errors.

- (5) Bring up view 28.2 in the insert mode for GRCNAME=PICANLG. Change PIC to 288. Insert the view.
- (6) Bring up view 28.1 in the insert mode. Use GRCNAME=PICANLG, CLERK ID=<clerk-id>, PASSWORD=<password>. Set RDATE and RTIME for the day and time that the Global RC job should begin. Insert the view.

Since the scenario described states that all TNs need to have a PIC of 624 updated to 288, another Global RC job needs to be scheduled to change all ISDN circuit lines:

- (1) Use the REPT:SPACE,FS="/rclog" command to determine how much space is available in the /rclog directory. If the file system space is low, take whatever actions are necessary to free up some space.
- (2) Using the A.2 Multiple Line Query view, run a query with the following information: SUMMARY=N, LINES WITH TN'S ONLY=N, TN TYPE=ICKT, GRC NAME=PICICKT, VIEW NUM=28.4 for all TNs with a PIC in the range from 624 to 624.
- (3) Wait for the output message indicating that the query has completed. Check the **grcerr** file for any errors.
- (4) Bring up view 28.4 in the insert mode for GRCNAME=PICICKT. Change PIC to 288. Insert the view.
- (5) Bring up view 28.1 in the insert mode. Use GRCNAME=PICICKT, CLERK ID=<clerk-id>, PASSWORD=<password>. Set RDATE and RTIME for the day and time that the Global RC job should begin. Insert the view.

When a Global RC jobs completes, the **grcerr** file should be checked for any errors that occurred. Likewise, the **keys** file should be checked for any line that contains a status of NU. The user should then determine if any of these lines either in the **grcerr** or the **keys** file need to be updated manually.

7.8.3 ADDING /CFDA

Scenario: The call forwarding feature /CFDA is to be added to all ISDN circuit lines in the office that fall within the TN range of 6307130000 and 6307139999 and currently have the feature /CFBL.

To accomplish this task with Global RC, the following steps should be taken:

- (1) If a clerk-id and associated password have not been established, the EXC:GRCPASSWORD input message must be issued from the MCC.
- (2) Use the REPT:SPACE,FS="/rclog" command to determine how much space is available in the /rclog directory. If the file system space is low, take whatever actions are necessary to free up some space.
- (3) Using the A.2 Multiple Line Query view, run a query with the following information: SUMMARY=N, LINES WITH TN'S ONLY=N, TN TYPE=ICKT, GRC NAME=CFGRC, VIEW NUM=28.5 for TNs between 6307130000-6307139999 with FEAT1=/CFBL.
- (4) Wait for the output message indicating that the query has completed. Check the **grcerr** file for any errors.
- (5) Using APPTEXT, enter the following:

```
FORM=28V5&NEW!
GRCNAME=CFGRC!
LNEW="FL.F"/CFDA"!
LNEW="CF.F"/CFDA"!
LCHG="CF.F"/CFDA-"CF.DN"&"6307136001"!
NEW!
```

- (6) Bring up view 28.1 in the insert mode. Use GRCNAME=CFGRC, CLERK ID=<clerk-id>, PASSWORD=<password>. Set RDATE and RTIME for the day and time that the Global RC job should begin. Insert the view.

When the Global RC job completes, the **grcerr** file should be checked for any errors that occurred. Likewise, the **keys** file should be checked for any line that contains a status of NU. The user should determine if the lines in the **grcerr** or the **keys** file need to be updated manually.

7.9 LIMITATIONS

7.9.1 LIMITATIONS - GENERAL

Certain limitations exist with the Global RC feature.

7.9.2 RESOURCES

The Global RC feature can use a substantial amount of file system space. The amount of space depends on the number of lines that are updated. Before beginning a Global RC job, the user should first use the REPT:SPACE and OP:RCSTAT input messages to determine how much /rclog file system and RC log space is available respectively. This message provides the ability to judge the amount of file system space remaining, the likelihood of the Global RC job exceeding the remaining space, and the need for an ODD backup before beginning the update.

Most of the files associated with Global RC are written in the /rclog directory. The Global RC query process takes about 3000 bytes of space plus 50 bytes for each line that matches the query criteria. Therefore, for a query that matches 650 lines, a total of 35,500 bytes of space are needed $[3000 + (650 * 50) = 35,500]$.

The amount of space needed for a Global RC update depends on how many lines in the keys file are updatable and which view number is used for the update. The following gives the amount of space required per line for each Global RC view:

VIEW NUMBER	SPACE REQUIRED
28.2 (1.6)	300 bytes
28.3 (1.8)	1100 bytes
28.4 (23.2)	1200 bytes
28.5 (23.8)	1600 bytes

Since RC will be inhibited when the RC log space reaches 100 percent full, this space should be checked by using the OP:RCSTAT command.

The REPT:GRC,NAME=jobname input message can be used after the query has completed to determine how many updates are remaining. This number should be multiplied by the number from the table to determine how many bytes of space will be needed.

Using the previous example, if 650 lines match the query criteria, are updatable using Global RC, and the update is specified for view 28.5, a total of 910,000 bytes of space is needed in the /rclog directory $(650 * 1400 = 910000)$.

If the Global RC has many problems, the grcerr file can use a large amount of space.

As the Global RC job is running, the user may periodically monitor the size of the RC log files by using the OP:RCSTAT command and back up the ODD when the RC log files reach 80 percent of capacity.

When the update process detects that 80 percent of the /rclog file system is full or RC logging is 80 percent full, it sends a GRC FAILURE output message and gracefully stops. When the RC logging is 80 percent full, an ODD backup is needed at this time. Before the ODD backup is done, lines should be sampled and tested to assure that the Global update has proceeded normally. This is important since some ability to restore the database to a pre-Global update state is lost as a result of the backup. If the /rclog file system is 80 percent full, file cleanup will be

required.

7.9.3 JOB SCHEDULING/RUNNING

The Global RC feature allows numerous jobs to be scheduled for execution. Once an update has started for a particular job, an update cannot be started for a different job until the first one has completed, aborted, or been canceled. If a Global RC job is halted, the job must be rescheduled, canceled, or run to completion before another Global RC job can begin. Only one Global RC process can be running or halted at any time.

7.9.4 UPDATES

High risk fields, which are those that could result in serious service impact if altered by error, are blocked on the Global RC Update views (28.2-28.5). Currently, the fields blocked on views 28.2 and 28.3 associated with views 1.6 and 1.8 are as follows:

ASSOC OE	CHNG PTY	SAUTO
BAL NTWK	CHNG TN	SCD SCRNING
BAUTO	COMP LOSS	SERHLN
BCK LNK	DEPENDDN	SHARED
BRCS	HRI	SLLC
CHNG MEMB	LEAD PORT	SPEC TRN
CHNG MLHG	MULTIDN	STH
CHNG OE	NEW TN	TR303 NAILUP

The fields blocked on views 28.4 and 28.5 associated with views 23.2 and 23.8 are as follows:

ACD POS NUM	DS1	PPB1 MLHG
ACSR GRP	DS1 TS	PPB1 TERM
ACSR INH	DSL CLS	PPB1 TN
B1 SERV	EL	PPB1 TS
B2 SERV	ISCN	PPB2 DFIDB
BAND	ISCN 1	PPB2 ISCN
BAUTO	ISCN 2	PPB2 MLHG
BC LNK	LNR HNT TN	PPB2 TERM
BRCS	MDPKT	PPB2 TN
CHL SEL	MODEM ACCESS TN1	PPB2 TS
CKT MLHG	MODEM ACCESS TN2	QTR TS
CKT TERM	MTERM	RBV TGN
CKT TN	MULTIDN	RSTR MP
CUGHX	NEW TN	SAUTO
CUT DGTS	NT1 TYPE	SERHLN
D ISCN	ODB	SHARED
D SERV	ODB ISCN	STH
DFLT SRV	ODB TN	TAUTO
DPIDB	OE	TKS
DPKT MLHG	PM GRP	TS
DPKT TERM	PPB1 DPIDB	USPID
DPKT TN	PPB1 ISCN	

A maximum of three features may be deleted at a time by a Global RC job. This is done using the **DELFEAT** fields found on the last page of the 28.3 and 28.5 views.

There is no restriction on the number of field changes allowed per a Global RC job, as long as the fields are on the same view.

Features within a cluster cannot be updated or removed with Global RC (although the query identifies them and writes them to the **keys** file). Current RC practices must be followed to update cluster features manually.

7.10 WARNINGS

- (1) This is a very powerful feature that has the potential to drastically harm data. The ODD should be backed up on tape before a large Global RC job is attempted.

- (2) The backout capability has limitations:
 - When a Global RC is backed out, all lines are returned to their original status (that is, before the Global RC update was applied), therefore all recent changes done on any of the lines since then will be lost.
 - If an update on a view causes other related changes to the ODD, it may not be possible to restore the original data that is in the **backout** file.
- (3) Lines that the A.2 query matches on probably will not equal the number of lines updated by Global RC because of lines marked NU in the **keys** file and because certain types of lines are not updatable by the views that Global RC supports.
- (4) When updating a feature list (or any other nonpositional list), APPTTEXT must be used.
- (5) Features within a cluster cannot be updated.

7.11 AUTOMATIC FILE CLEANUP

A job is scheduled to run every night at 1:00 a.m. to clean up old files in the /rclog/GRC directory. Any directory for a job that is more than seven days old is automatically removed including all its contents. The exception to this is any job whose status is PENDING.

If a Global RC update or backout job is running or halted at 1:00 a.m., cleanup runs as soon as the job is completed, cancelled or rescheduled.

If a Global RC job has been split into sections, all sections are checked for PENDING jobs. If any section is PENDING, the job is not removed.

In order for jobs to be automatically cleaned up, the status must be COMPLETED, CANCELED, ABORTED, INCOMPLETE or SPECIFIED.

PENDING jobs can be removed at any time using the RMV:GRC IM.

8. DBRC PROCESS AND PERFORMANCE IMPACT

8.1 INTRODUCTION

This section provides information on the number of DBRC processes supported on the 5ESS[®]-2000 switch at one time. It also describes what impacts the RC performance from both the RC response time and the RC throughput perspectives.

8.2 PROCESS LIMITATION

The 5ESS[®]-2000 switch can support 10 DBRC processes at one time. A DBRC process is a UNIX[®] process linked with the CMP.

The following list contains the DBRC processes. The three processes preceded with an asterisk run constantly. Therefore **seven** additional DBRC processes can be supported simultaneously.

NOTE: Two invocations of the same process (that is, *apptext*) count as two DBRC processes.

- *apprc* - RC menu interface invoked by "rcv:menu:apprc"
- *apptext* - RC Apptext invoked by "rcv:apptext"
- *mcrtrc* - RC menu interface invoked by poking 196 on MCC or STLWS
- *odbe* - Online Data Base Editor invoked by "rcv:menu:odbe"
- (*) *rccntl* - RC Batch control process monitoring RC Batch work to be done
- *rcwork* - RC Batch child process invoked by *rccntl* to do releases, clean up or reports associated with RC Batch clerk files
- (*) *RCasrsys* - Automatic Customer Station Rearrangement (ACSR) control process monitoring ACSR work to be done
- *RCasrterm* - ACSR child process invoked by *RCasrsys* to update the ODD in response to an ACSR request to move a telephone number to a new equipment location
- *RCfmterm* - Facilities Management process
- *RCgrcupd* - Global RC process
- (*) *RCcp3bofr* - Office records control process monitoring office record requests
- *RCofrpt* - Office records process invoked by *RCcp3bofr* to produce office records
- *RCtsrpt* - Process which performs A.2 queries
- *ACSR* - Allowing ACSR invoked by "alw:acsr"
- *CPU* - Report of active side of CPU when invoked by "vfy:cpu"
- *MLHG* - Report of multiple line hunt group on the switch invoked by "vfy:mlhg"
- *REPORT* - Report of global recent change jobs invoked by "grc:report"
- *RED* - ODD audit on redundant data invoked by "exc:sodd:red"

8.3 RC PERFORMANCE CONSIDERATIONS

8.3.1 RC RESPONSE TIME VS. RC THROUGHPUT

RC performance has two components: RC response time and the RC throughput. RC response time is the time from the entry of the entire recent change, not including typing time, to the return of the data entry control to the clerk. RC throughput, on the other hand, is the number of recent changes that can be completed in a given time period. This is usually reported as the number of recent changes that can be completed in a one hour time span.

8.3.2 THE RC STREAM FACTOR

8.3.2.1 WHAT IS AN RC STREAM?

One factor that impacts the RC performance is the number of RC streams running concurrently. An RC stream is defined as an RC *UNIX*[®] process that either updates or reads the ODD. The following list contains 10 RC streams. See "PROCESS LIMITATION", Section 8.2, for the corresponding task functions.

- *apprc*
- *apptext*
- *mcrtrc*
- *odbe*
- *rcwork*
- *RCasrterm*
- *RCfmterm*
- *RCgrcupd*
- *RCofrpt*
- *RCtsrpt*

8.3.2.2 ROP EXAMPLE

The input command OP:RCUSER prints a report to the ROP listing all of the RC streams that are currently invoked on the switch. Following is an example of the output from OP:RCUSER.

```
OP RCUSER 2 ACTIVE RC USERS
RC PROCESS      TTY/LOGICAL/CLERK-ID PART 1 OF 1
RCV:MENU,APPRC  TERM-ID = ttyg
RCV:MENU,APPRC  TERM-ID = ttyf
```

8.3.2.3 RC STREAM IMPACT ON PERFORMANCE

Running a single stream gives the best RC response time but minimum RC throughput. With two streams, RC response time degrades and the RC throughput increases. At three RC streams, RC response time degrades further while the RC throughput continues to increase. At four or more RC streams, both RC response time and the RC throughput degrade severely.

In summary, as more RC streams are added, the RC response time degrades. As more RC streams are added, the

RC throughput increases until it peaks at three streams. **However, the preceding summary is a general guideline; depending on the configurations of your office and the type of RC processes running, the RC performance may be different at your office.**

The main reason for the decline in the RC throughput with over three streams is that the number of failed recent changes increases. They generally fail as a result of resource busy errors, usually caused by locking at either tuple or relation level. Therefore, the optimal combination for RC response time and RC throughput is to run between two and three RC streams simultaneously.

8.4 HELPFUL HINTS

Some helpful hints to increase RC performance are as follows:

- *Schedule RC Batch jobs, Global RC jobs and office records for 10:00 pm or after 1:00 am.* Avoid midnight because many audit processes are running at that time.
- *For Global RC, key the RC view A.2 by a TN range to achieve fastest completion.* To key by OE or MLHG will result in 10 percent longer process time.
- *Use ranges on office record requests.* Using ranges require less resources since the process does not need to go through all of the office records.
- *An optimal combination for the RC response time and RC throughput is to run between two and three RC streams simultaneously.*

9. ASSIGNMENT EXAMPLES

This section provides a convenient reference for entering recent changes into the 5ESS®-2000 switch. It is intended to aid the user with straightforward step-by-step assignment procedures, reducing the need for searches in detailed information while entering recent changes. The instructions are presented in graphic form examples supplemented with overviews and brief descriptions.

The table of contents lists the Recent Change tasks by sequential example numbers assigned to random ordered titles.

NOTE: Throughout these examples, fields on views are specified with values. These values are only examples! Actual values used will (most likely) vary from office to office.

9.1 HOW TO ENTER SYSTEM INTO RECENT CHANGE MODE

OVERVIEW:

Figure 9-1 is the procedure for setting the system in the Recent Change (RC) mode. All subsequent task examples begin assuming the system is in RC mode.

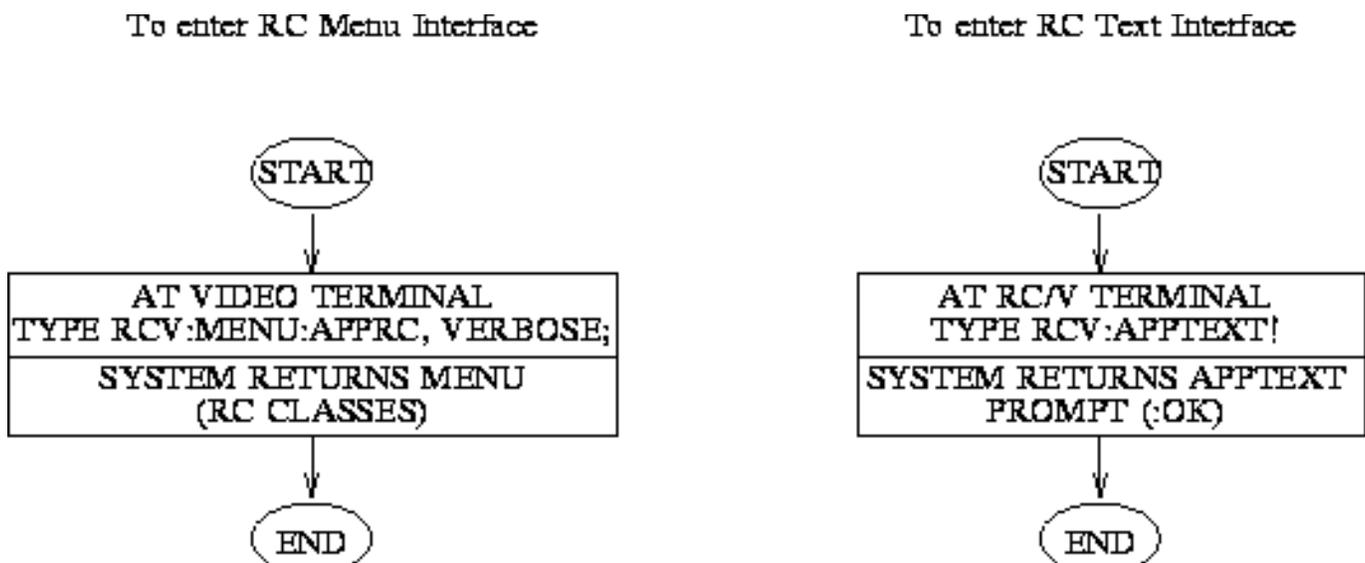


Figure 9-1 Example of How to Enter System Into Recent Change Mode Example of How to Enter System Into Recent Change Mode

9.2 ASSIGNING A POTS LINE WITH TOUCH-TONE CALLING

OVERVIEW:

This task demonstrates the assignment of a specific POTS line TN with Touch-Tone Calling.

- Enter view 1.6 in the insert (i) mode.
- Complete the 1.6 view using service order information.
- When all field information has been specified, use the VALIDATE operation to check for errors and/or warnings.
- Correct errors and note any warnings.
- Insert view 1.6 into database.

- Back out of RC mode.

Refer to Figure 9-2 .

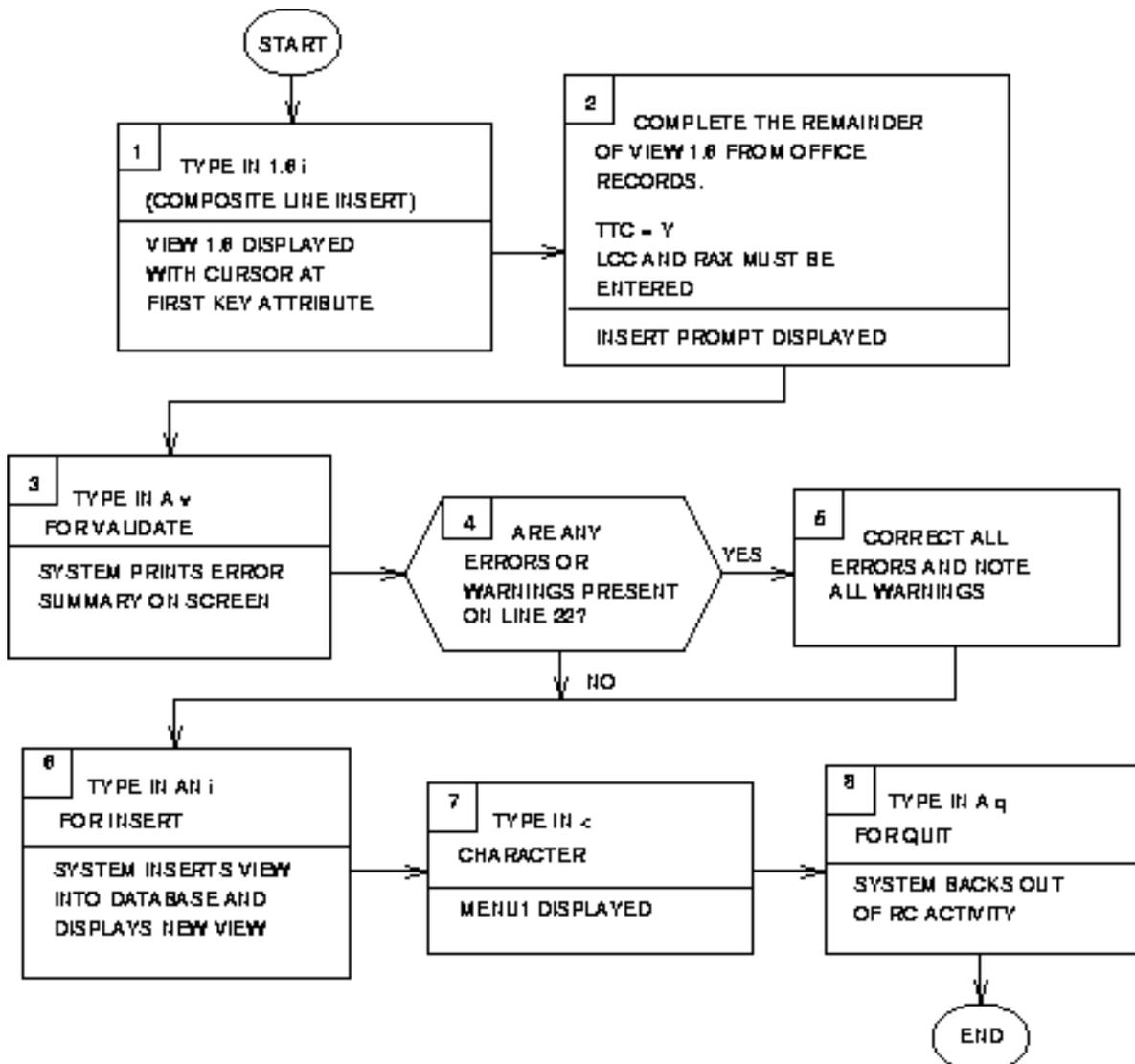


Figure 9-2 Example of Assigning a POTS Line With Touch-Tone Calling Example of Assigning a POTS Line With Touch-Tone Calling

9.3 CHANGING LINE EQUIPMENT NUMBER OF EXISTING COIN LINE

OVERVIEW:

This task demonstrates the updating of a view to change the Line Equipment number of an existing Coin Line.

- Bring up a 1.6 view in the update mode.
- Enter the OE and PTY presently assigned to the TN.
- When system has displayed screen 1 of the view, enter a **c** for change at the prompt.

- When system prompt appears, enter the number associated with the CHNG OE field.
- After the system moves the cursor to the CHNG OE field, enter the new OE.
- Use the change field mode to make any other desired changes.
- Return to update mode by depressing the return key at the "change field" prompt.
- Update the database.
- Exit from RC mode.

Refer to Figure 9-3 .

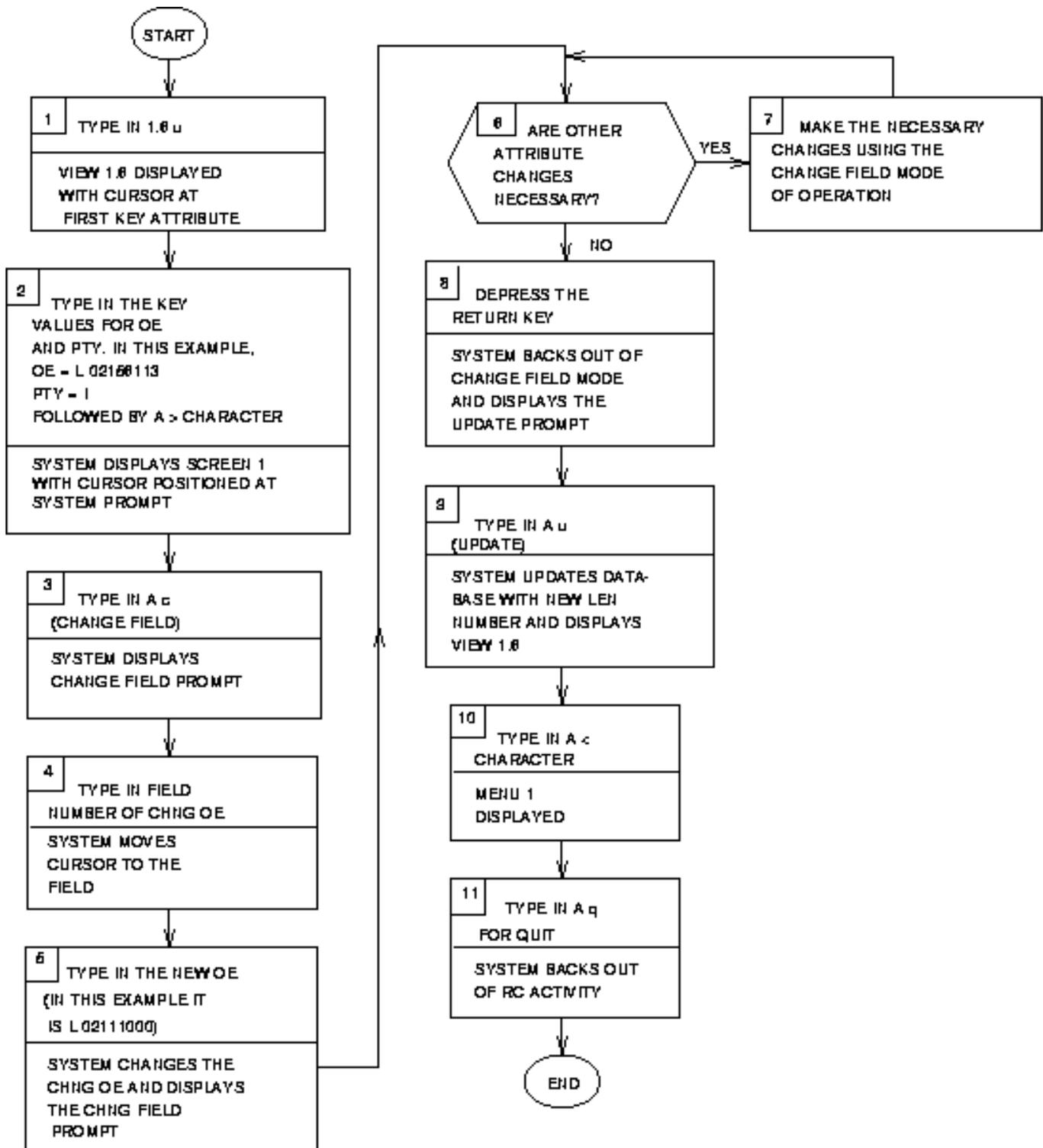


Figure 9-3 Example of Changing Line Equipment Number of Existing Coin Line Example of Changing Line Equipment Number of Existing Coin Line

9.4 ASSIGNING AN MLHG WITH INDIVIDUALIZED DIALING PLAN FEATURES

OVERVIEW:

This task defines an Individualized Dialing Plan and assigns it to a multiline hunt group.

- Use view 12.17 to define and insert feature options as required.
- Use view 12.51 to define Speed Calling feature.
- Use view 9.10 to define IDP Group.
- Use view 9.11 to define IDP Alternate Code Treatment.
- Use view 9.12 to set IDP Intercom requirements.
- Use view 9.13 to assign all Dial Codes.
- Use view 4.2 to set up Abbreviated Dialing.
- Use view 3.5 to make MLHG line assignments.
- Use view 1.6 (analog) to make line assignments.
- Use view 1.8 to update Feature List.
- If necessary, use view 1.10 to add more line assignments.
- Back out of RC mode.

Refer to Figures 9-4 through 9-7 .

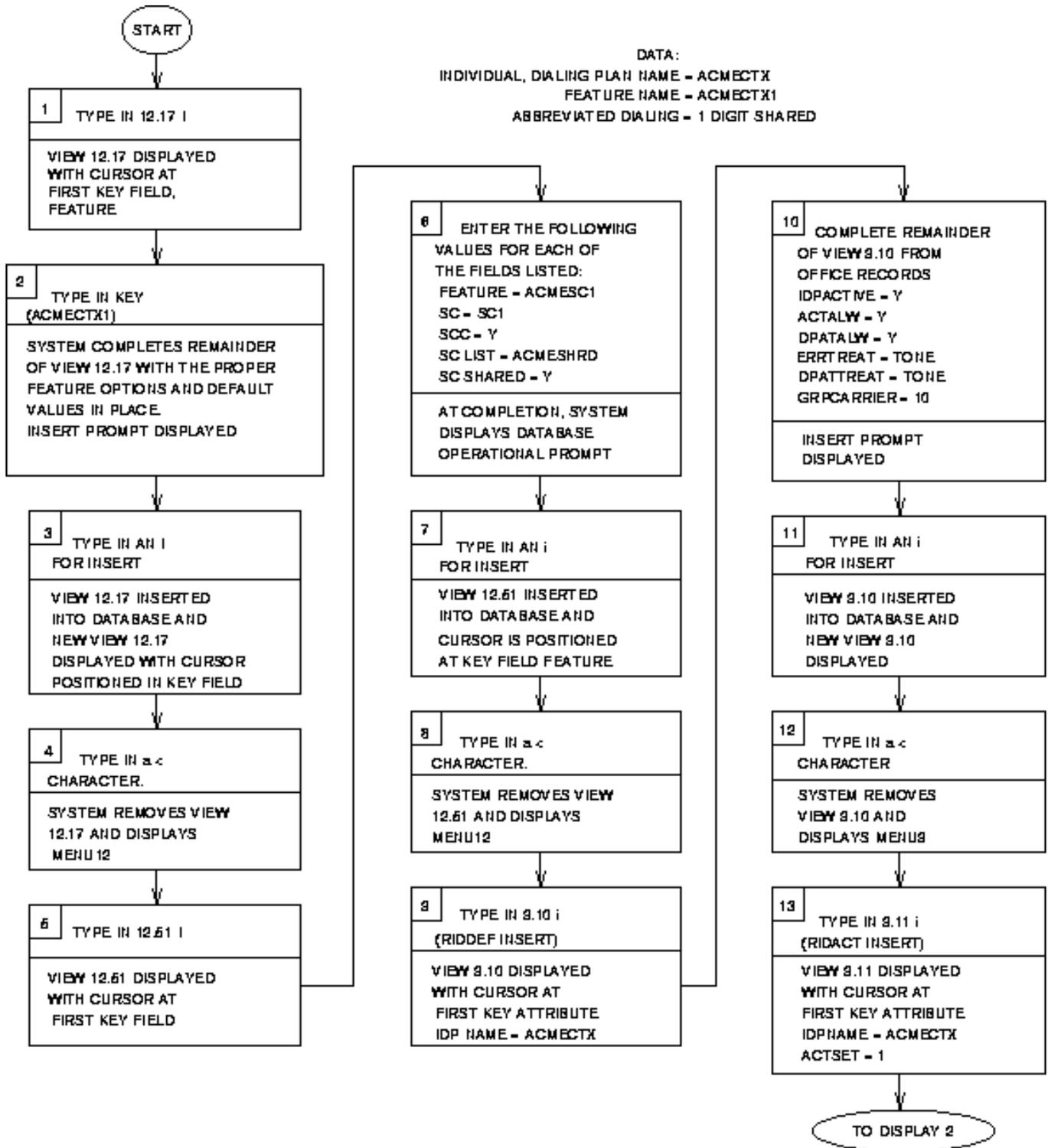


Figure 9-4 Example of Assigning an MLHG With Individualized Dialing Plan (Display 1 of 4)

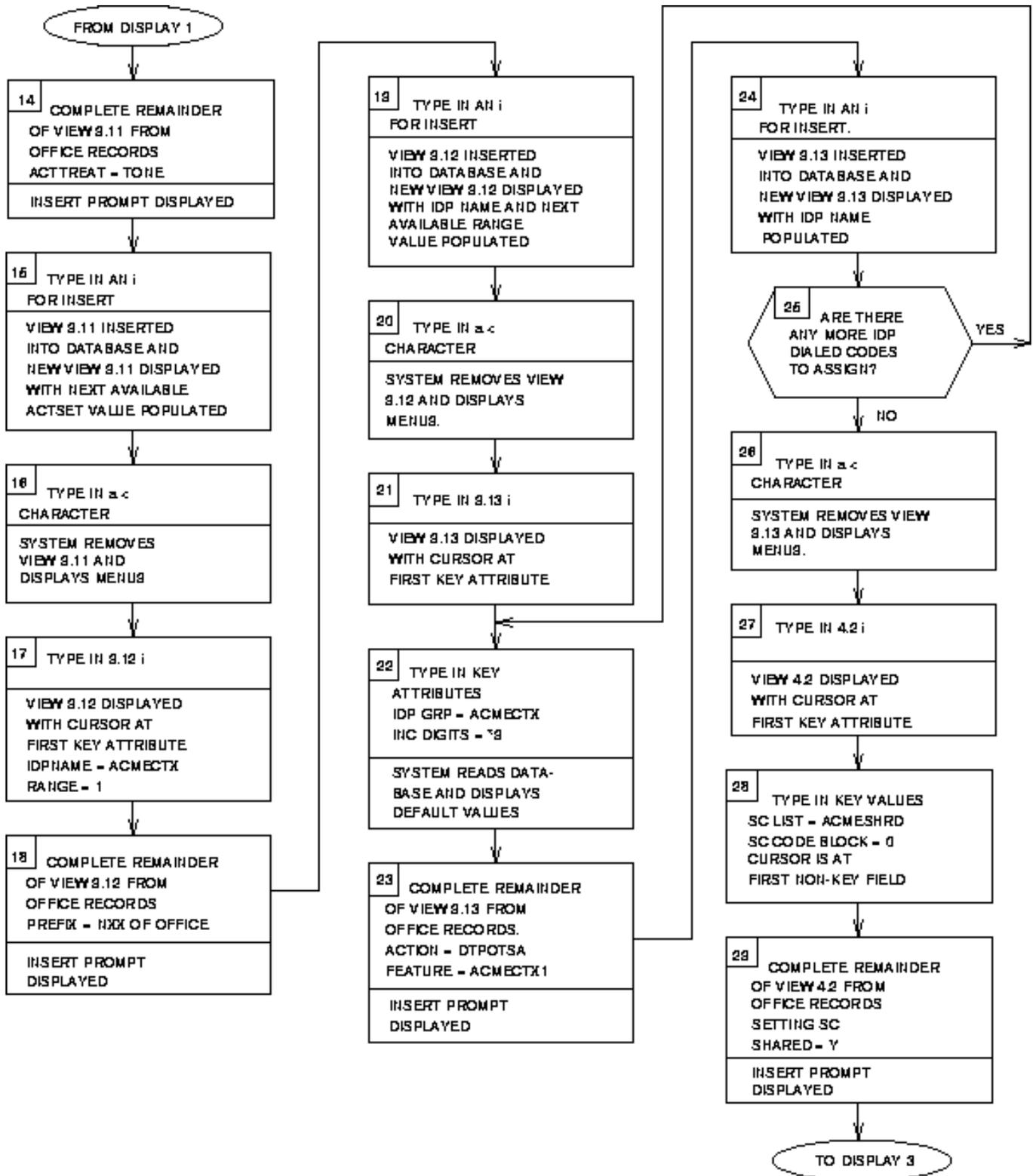


Figure 9-5 Example of Assigning an MLHG With Individualized Dialing Plan (Display 2 of 4)

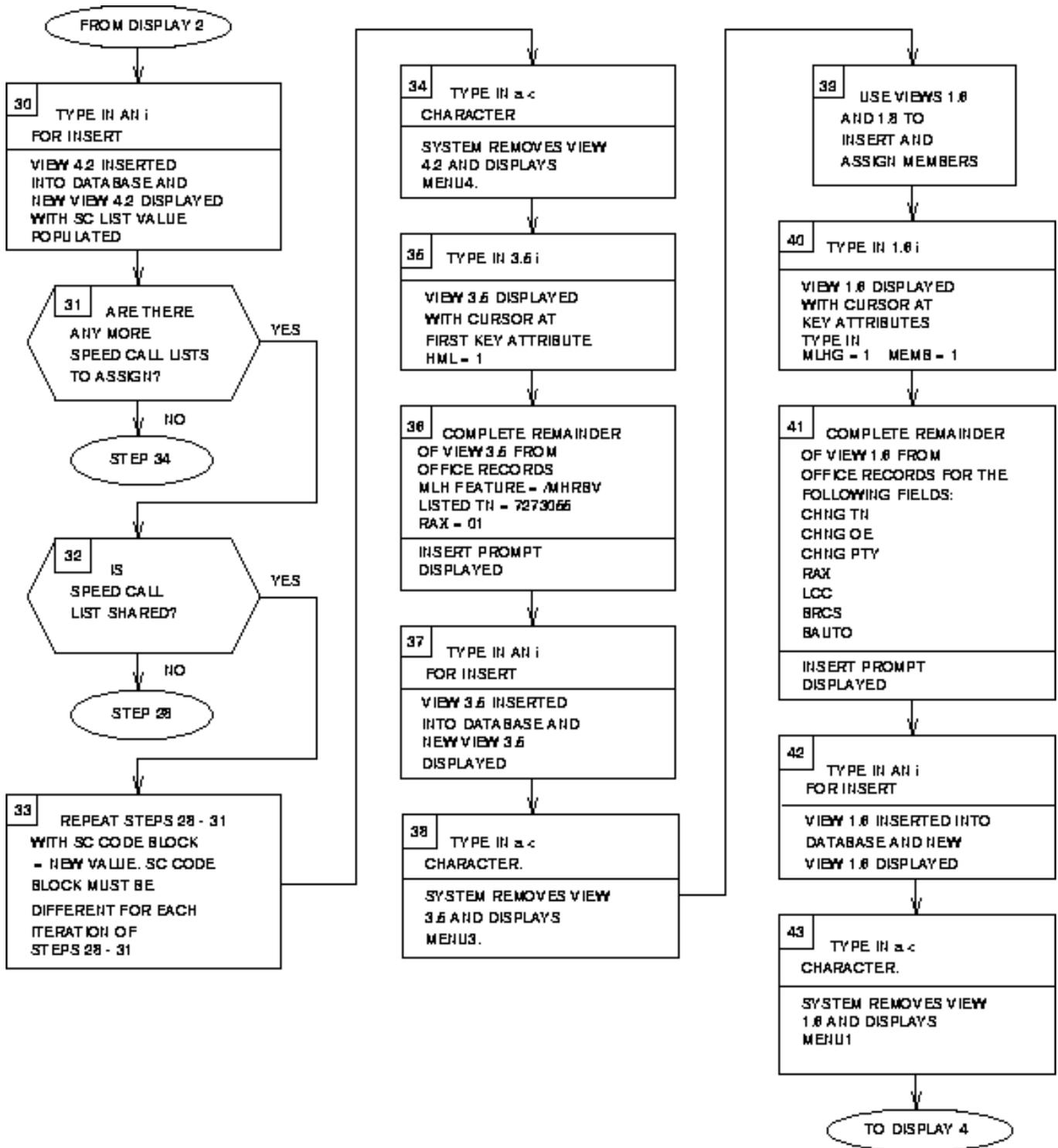


Figure 9-6 Example of Assigning an MLHG With Individualized Dialing Plan (Display 3 of 4)

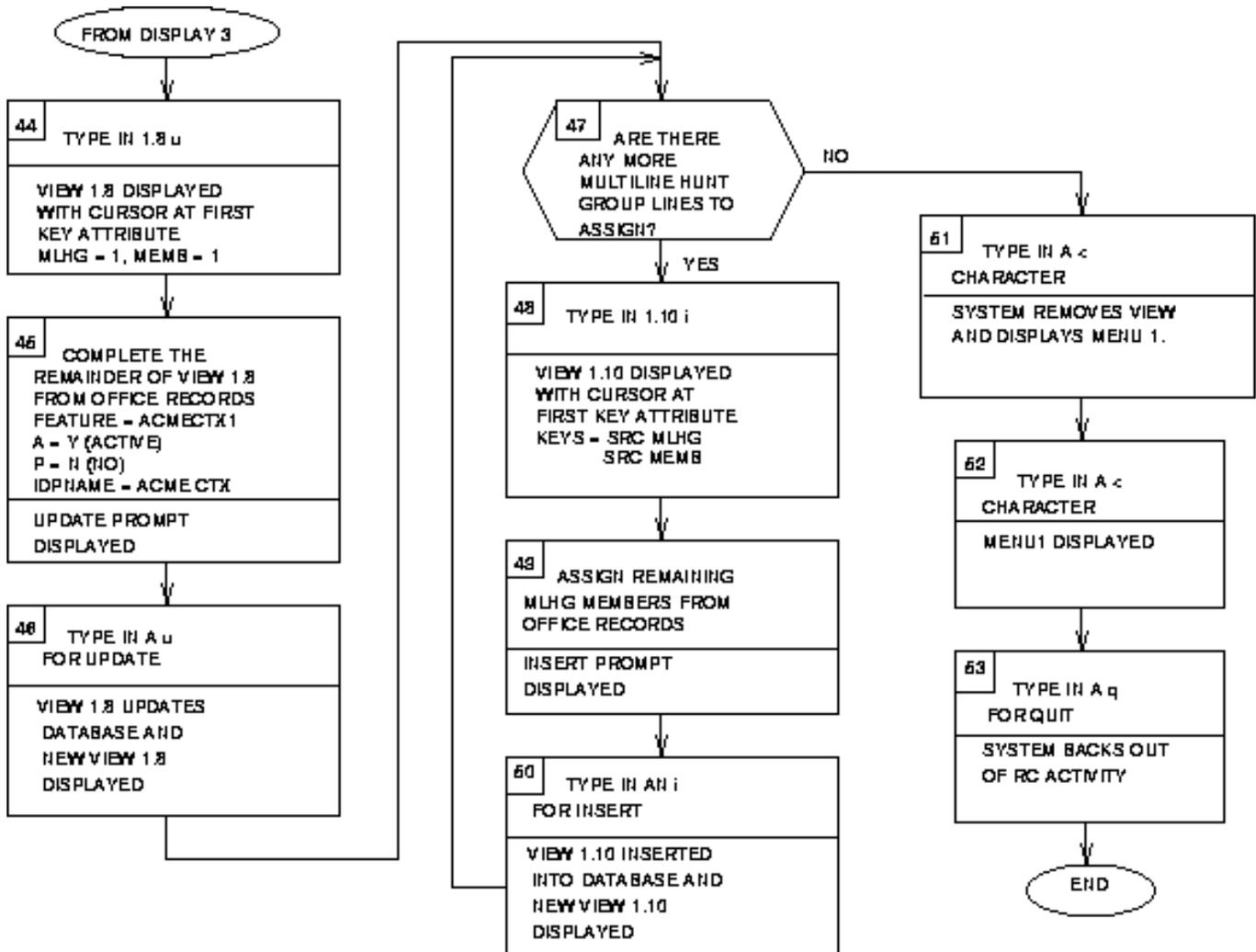


Figure 9-7 Example of Assigning an MLHG With Individualized Dialing Plan (Display 4 of 4)

9.5 ASSIGNING NON-HUNT LINES IN A MULTILINE HUNT GROUP

OVERVIEW:

This task assigns non-hunt designations to lines in multiline hunt groups.

Determine if multiline hunt group already exists and, if not, use view 3.5 to establish the group. Determine if multiline hunt group member exists and, if not, use view 1.6 to establish members in non-hunt status. If hunt group and member numbers already exist, use view 1.6 to designate specific member numbers as non-hunt.

Refer to Figure 9-8 .

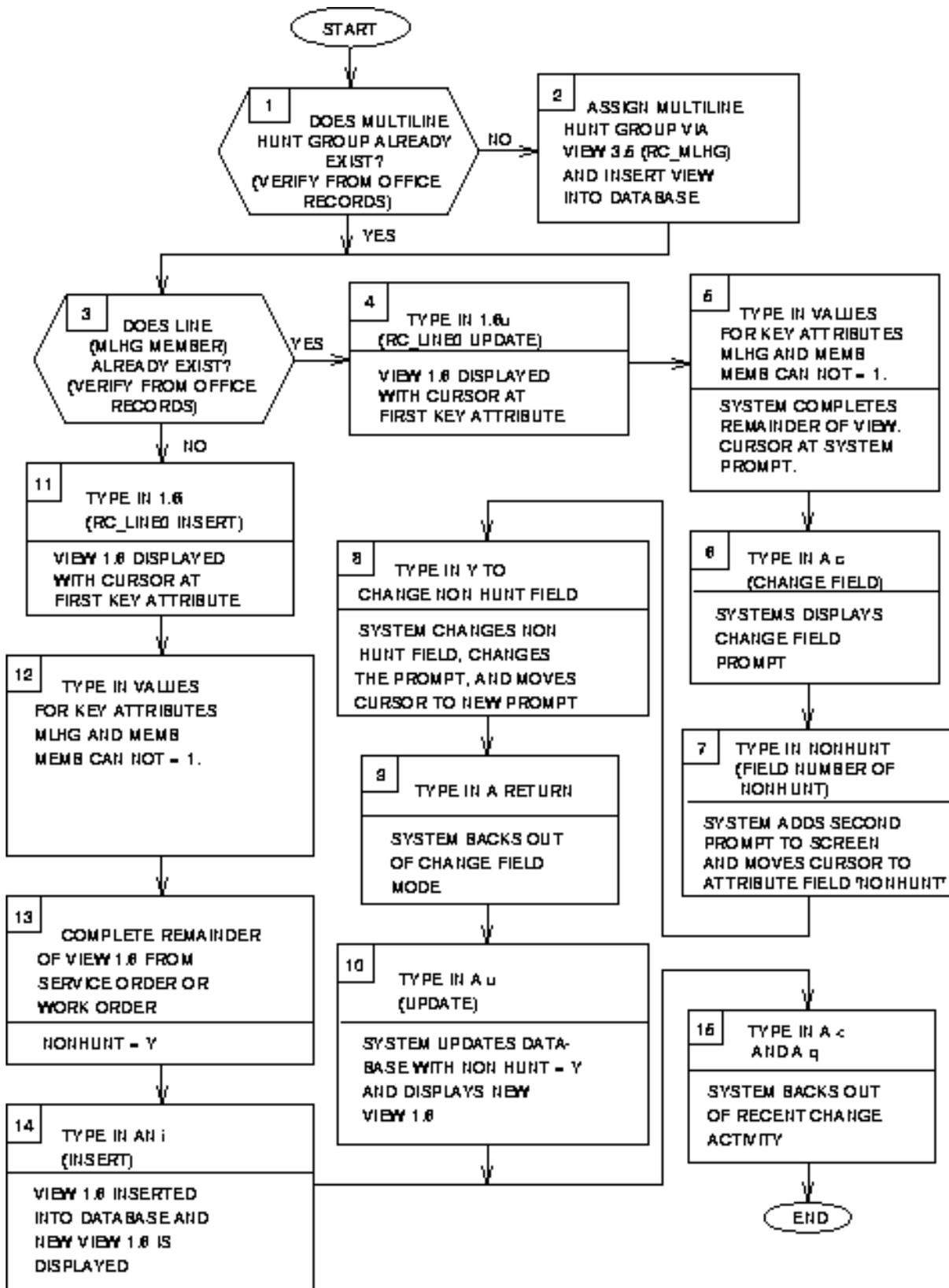


Figure 9-8 Example of Assigning Non-Hunt Lines in a Multiline Hunt Group Example of Assigning Non-Hunt Lines in a Multiline Hunt Group

9.6 ASSIGNING NON-HUNT LINES USING MULTIDN METHOD

OVERVIEW:

This task illustrates non-hunt designations for members being assigned to lines in multiline hunt groups.

Assume that a multiple hunt group and members already exist. Use view 3.3 to designate non-hunt status for an existing group and members.

Refer to Figure 9-9 .

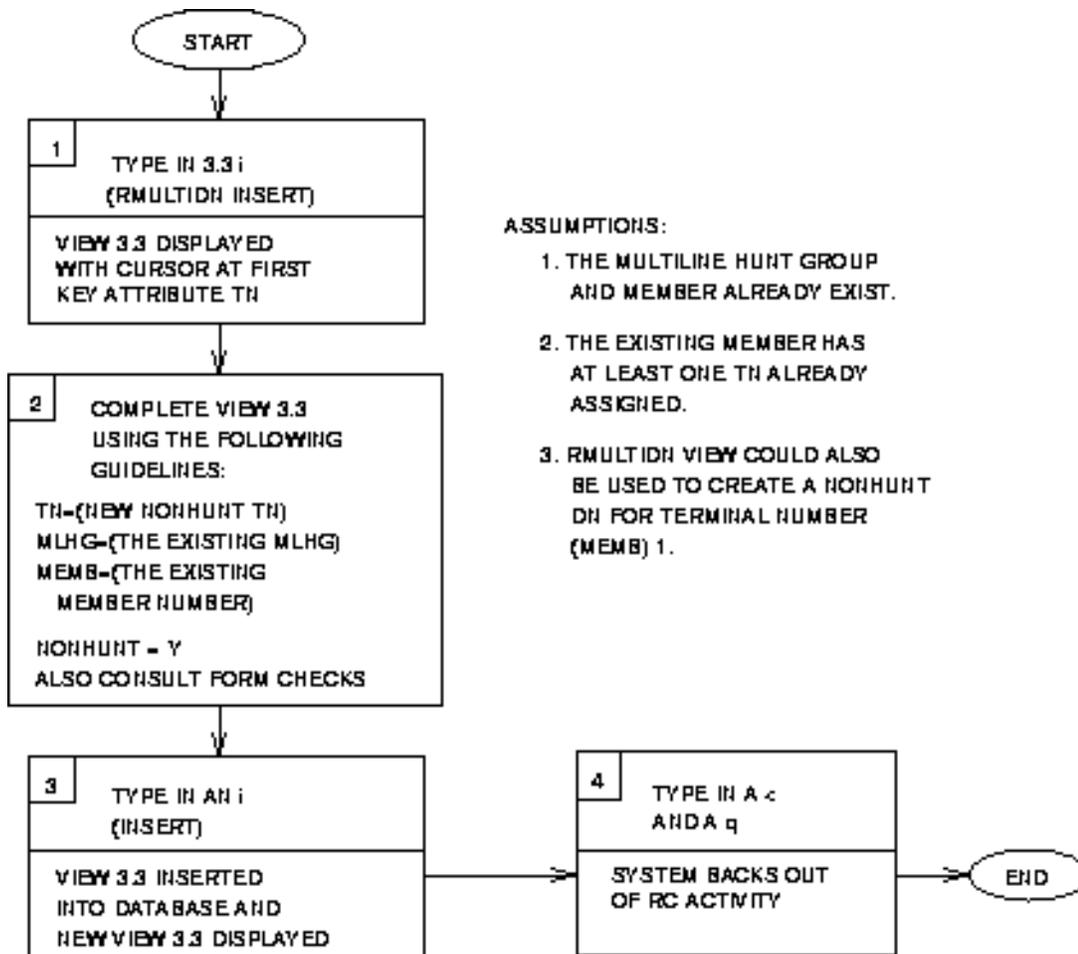


Figure 9-9 Example of MULTIDN Method of Assigning Non-Hunt Lines Example of MULTIDN Method of Assigning Non-Hunt Lines

9.7 ASSIGNING A LINE CLASS CODE AND TIMING DIGIT PARAMETERS

OVERVIEW:

Any recent change that involves line assignments must include Line Class Code Assignments and Timing Digit Parameters. This example describes both procedures.

Use view 8.5 to establish Timing Digit Parameters with data from office records. Use view 4.1 to assign Line Class Codes and identify any error and/or warnings.

Refer to Figure 9-10 .

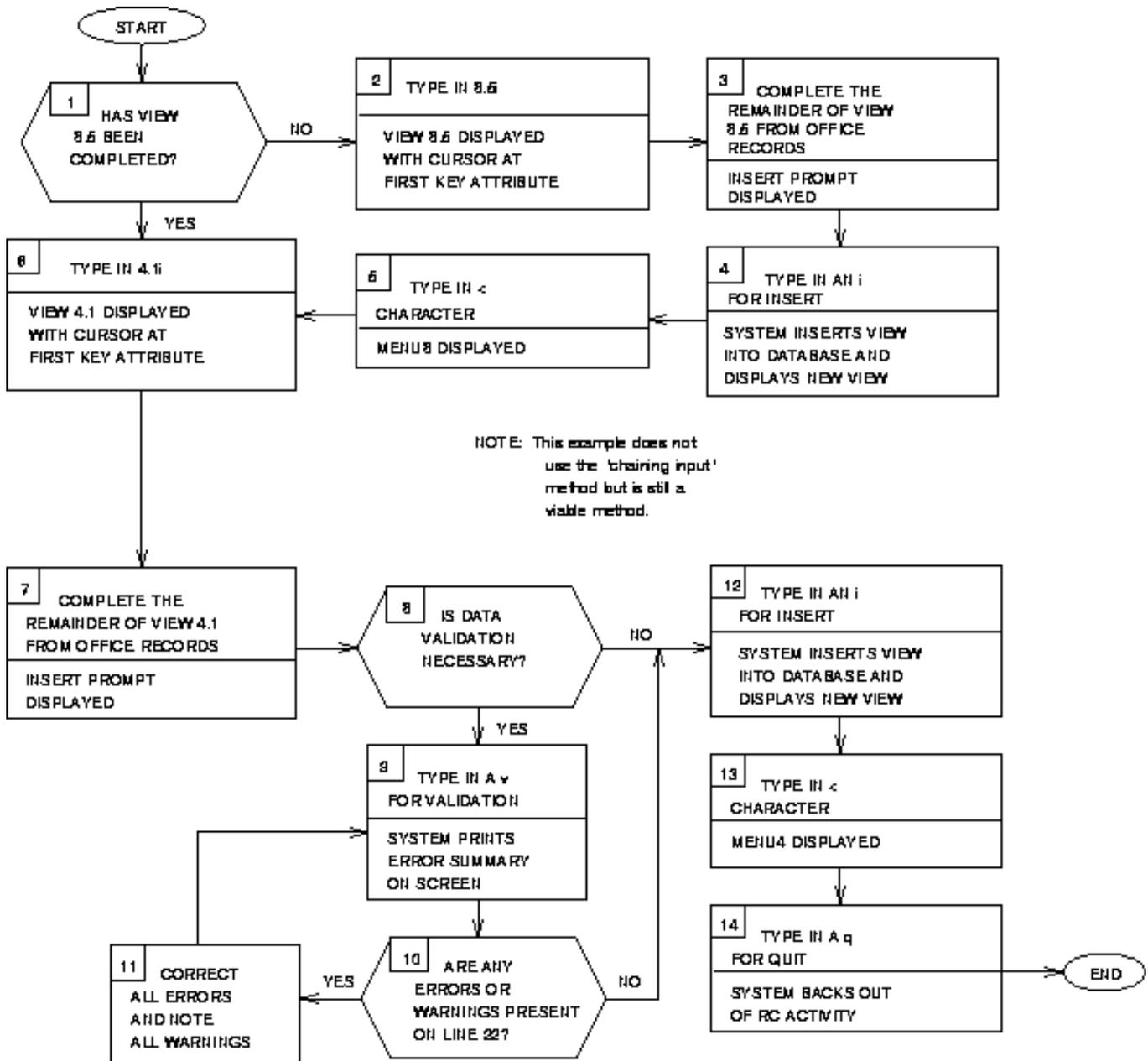


Figure 9-10 Example of Assigning a Line Class Code Example of Assigning a Line Class Code

9.8 ADDING A NEW TRUNK GROUP AND MEMBERS

OVERVIEW:

This task illustrates the assignment of a trunk group and its associated members. When a new group is defined, assign at least one member even if it is a "dummy." Trunk members may be changed individually or on a group basis.

NOTE: Caution must be exercised when changing members as a whole group, because certain field values may results in default values being assigned that are undesired.

- Use view 5.3 to define and insert transmission class data, if required.

- Use view 5.1 to assign a trunk group to the database.
- Use view 5.5 to add member number(s) to group.

Refer to Figures 9-11 and 9-12 .

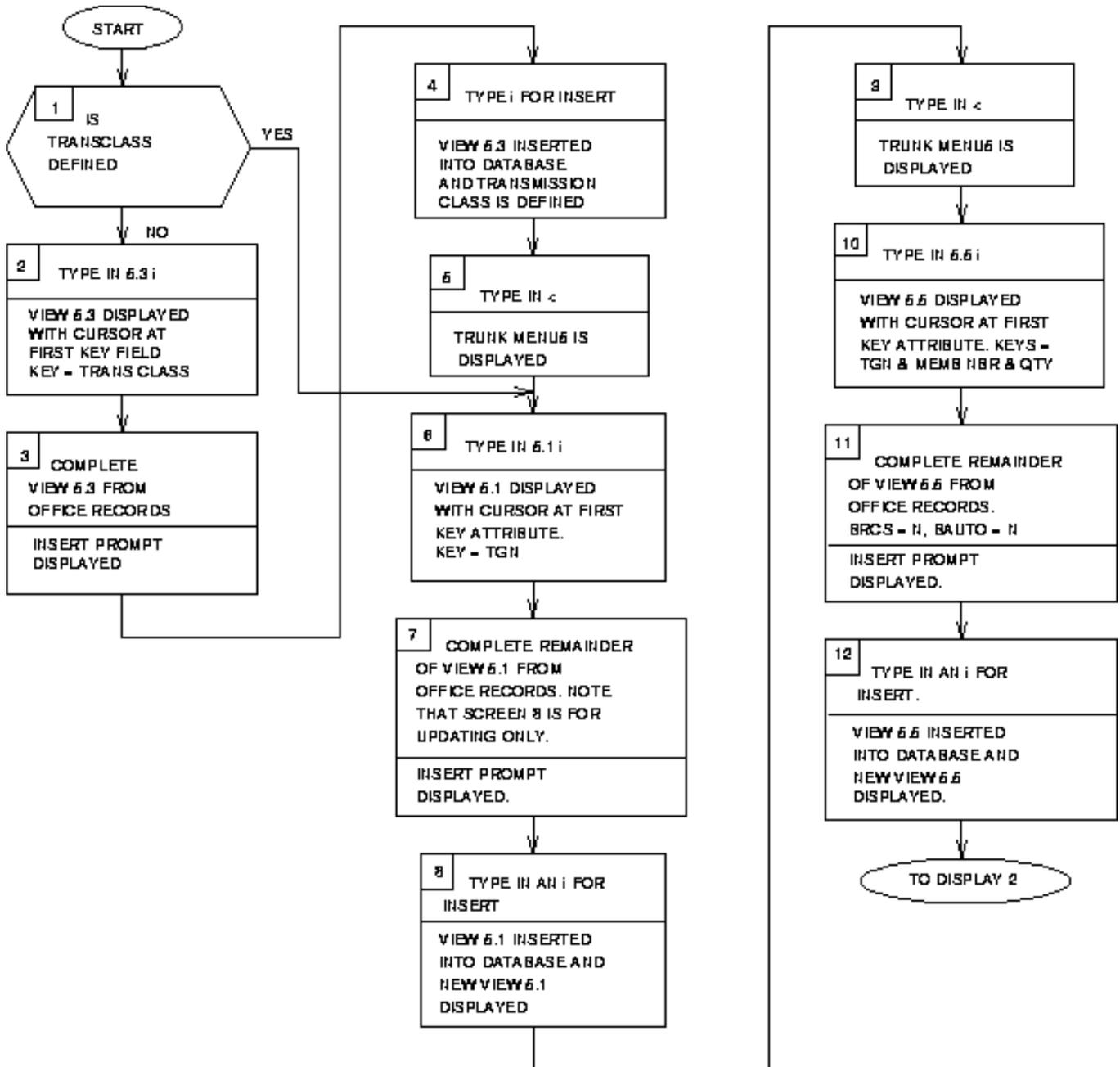


Figure 9-11 Example of Adding a New Trunk Group and Members (Display 1 of 2)

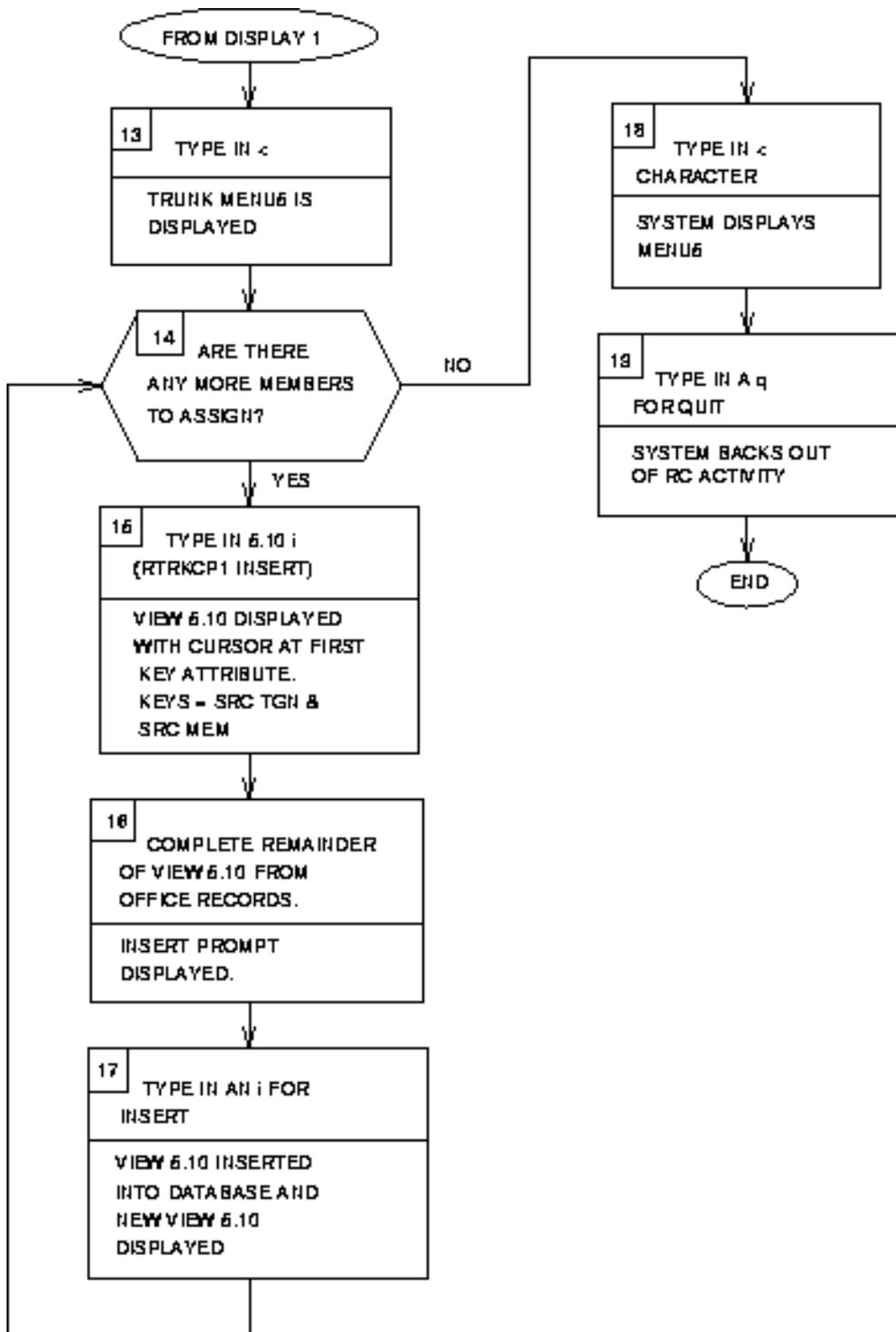


Figure 9-12 Example of Adding a New Trunk Group and Members (Display 2 of 2)

9.9 DELETING A MEMBER FROM A TRUNK GROUP AND DELETING A TRUNK GROUP

OVERVIEW:

This task demonstrates the deletion of all members of a trunk group, followed by deletion of the trunk group. View 5.5 is used to delete the members and view 5.1 is used to delete the group.

NOTE: The example assumes the use of "1" for the QTY field on view 5.5. In certain circumstances, this field can be used to delete multiple members with one Recent Change operation.

Refer to Figure 9-13 .

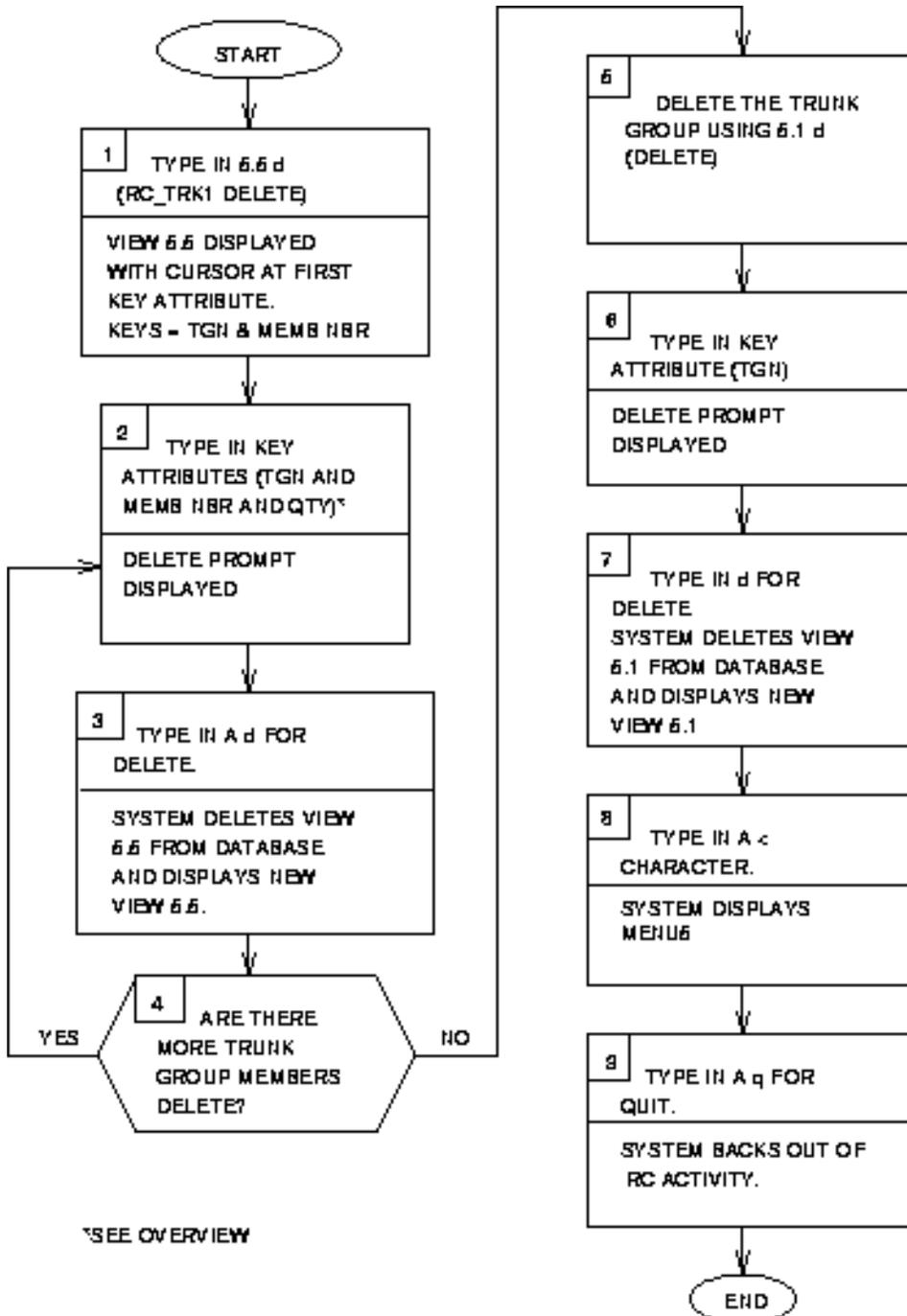


Figure 9-13 Example of Deleting a Member From a Trunk Group

9.10 ASSIGNING A PREFIX/FEATURE DIGIT INTERPRETER TABLE

OVERVIEW:

This task demonstrates the assignment of Digit Interpreter Table data. When the data has been determined, checks must be made to identify any other RC views affected by the table.

Use views 9.1 and 9.2 to enter the Office Record data reflecting Prefix/Feature Digit Interpretation. Determine any other RC views affected by the table data, then access and complete the respective views as necessary.

Refer to Figure 9-14 .

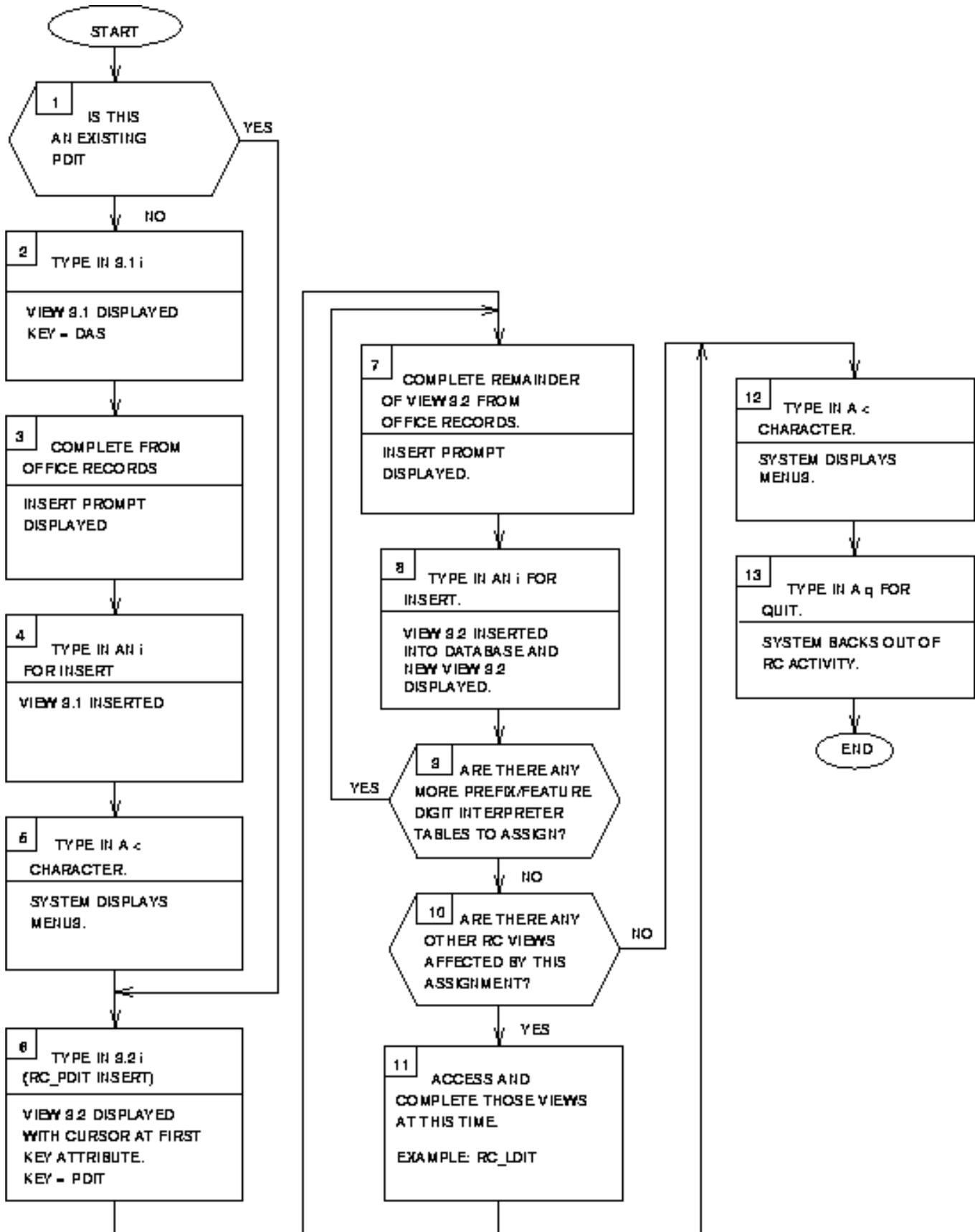


Figure 9-14 Example of Assigning a Prefix/Feature Digit Interpreter Table Example of Assigning a Prefix/Feature Digit Interpreter Table

9.11 ASSIGNING A FIXED ROUTE INDEX

OVERVIEW:

This task demonstrates the assignment of a Fixed Route Index to determine correct call rate and route treatment.

- Use views 10.10 and 4.1 to ensure that Screening and Code Indexes have been assigned.
- Use view 10.1 to assign the Fixed Route Index for the subject DN(s).
- Use views 10.2 and 10.11 to ensure that the Routing Index and the Charge Index Expansion are correctly defined.

Refer to Figure 9-15 .

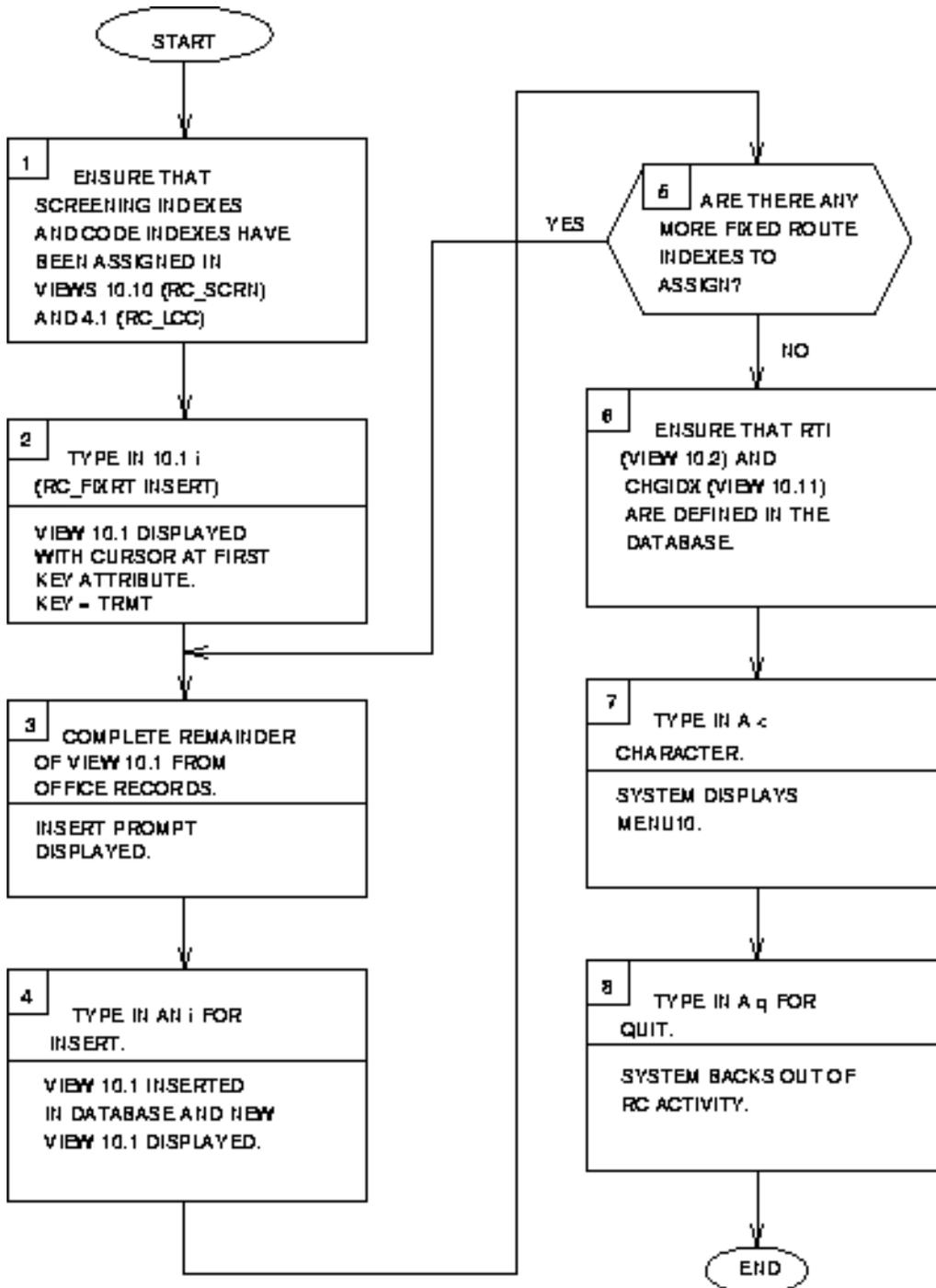


Figure 9-15 Example of Assigning a Fixed Route Index Example of Assigning a Fixed Route Index

9.12 CHANGING AN OFFICE DIVISION OF REVENUE COUNT FROM PEG TO USAGE

OVERVIEW:

This task changes switch revenue counting from PEG to USAGE.

Using view 8.1 in the update mode, find the DRCOUNTTYPE field and enter change mode. Go to the DRCOUNTTYPE field and change PEG to USAGE. Return to update mode and enter change into the database.

This task changes the entry at a specific RC view attribute to switch revenue counting from PEG to USAGE.

Refer to Figure 9-16 .

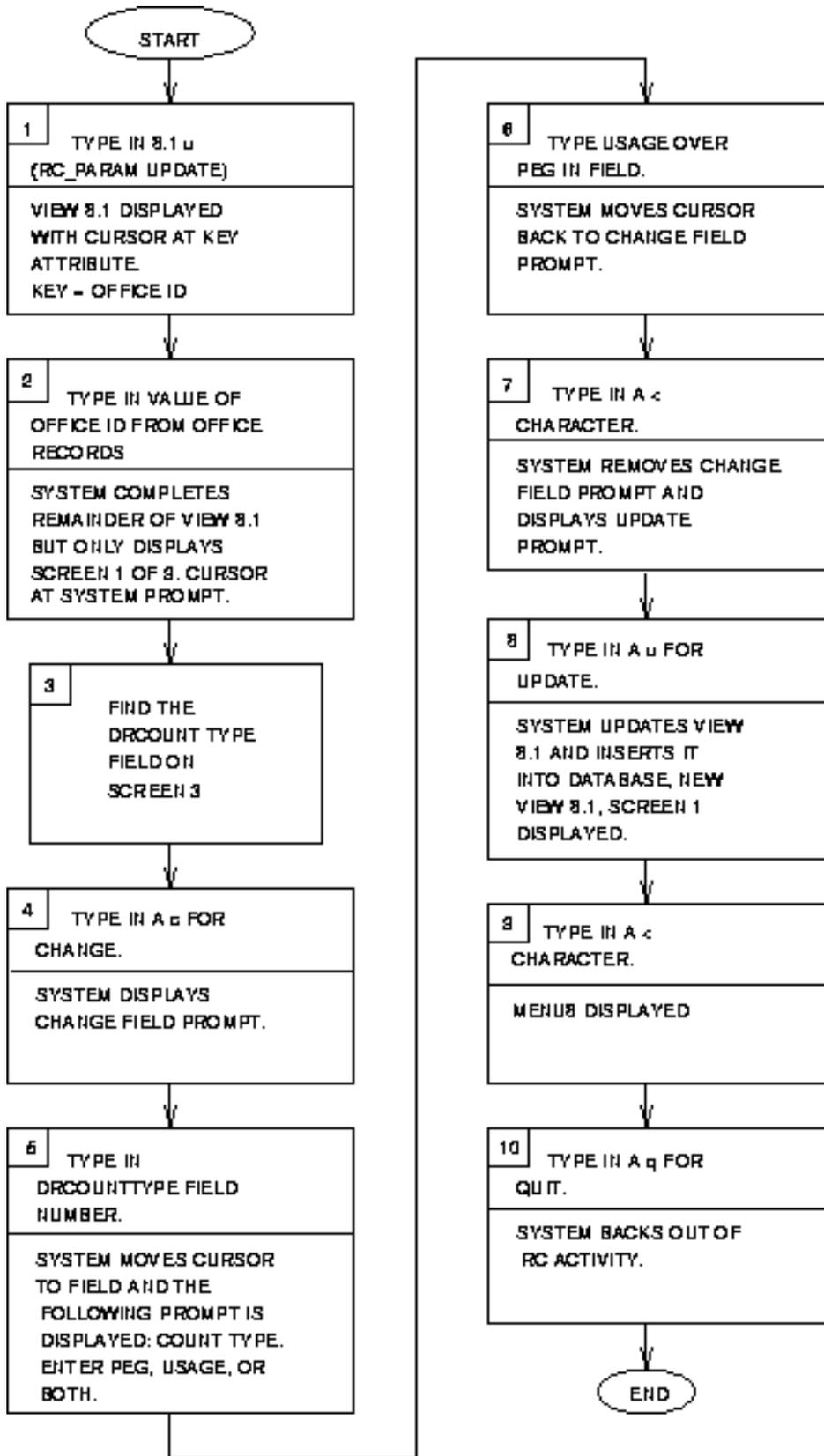


Figure 9-16 Example of Changing an Office Division of Revenue Count From Peg to Usage Example of Changing an Office Division of Revenue Count From Peg to Usage

GLOSSARY

This section provides acronyms and abbreviations used in this document.

-- GLOSSARY --

ACK

Acknowledge

AP

Attached Processor

ARS

Automatic Route Selection

ASM

Administrative Services Module

BAUTO

BRCS Autoform

BFG

BRCS Feature Group

BMI

Batch Mode Immediate (RC)

BMI

Beginning Of Managed Introduction

BMR

Batch Mode Release

BRCS

Business And Residential Custom Services

BRI

Basic Rate Interface

BRI

Batch-Review Inhibited Relation

BST

Bitmap Salvage Technique

CAR

Customer Assistance Request

CLCI

Common Language Circuit Identification

CM1

Communications Module 1

CM2

Communications Module 2

CMD

Command

CPE

Customer Premises Equipment

CST

Central Standard Time

DB

Database

DB

Database Subsystem

DBM

Database Manager

DBM

Database Mode

DEN

Digital Equipment Number

DISP

Display

DN

Directory Number

DSL

Digital Subscriber Line

ECD

Equipment Configuration Data

ECD

Equipment Configuration Database

FOA

First Office Application

FAC

Facilities

FAC

Facility Administration And Control

FAC

Feature Assignment And Construction

FM

Facilities Management

FM

File Manager

HSM

Host Switching Module

IGN

Ignore

IM

Immediate Mode (RC)

IM

Input Manual

IM

Input Message

IM

Interface Module (now SM)

IOP

Input/Output Processor

ISDN

Integrated Services Digital Network

LASS

Local Area Signaling Services

LATA

Local Access And Transport Area

LCC

Line Class Code

LEC

Local Exchange Carrier

LEN

Line Equipment Number

MC

Master Control

MCC

Maintenance (Master) Control Center

MCC

Master Control Console

MLHG

Multi-Line Hunt Group

MML

Man Machine Language

MMRSM

MultiModule Remote Switching Module

MSG

Message

MSG

Message Switch

NOC

Normalized Office Code

NPA

Numbering Plan Area

NSC

Network Service Center

NSC

Network Services Complex

NSC

Network Software Center

NSC

Network Systems Corporation

NXX

Office Code (Part Of Dialed Number)

OA&M

Operations, Administration, And Maintenance

ODA

Office Data (Assembler)

ODA

Office Data Administration System

ODA

Office Database Administrator

ODB

Office Database

ODBE

Office Database Editor

ODD

Office Dependent Data

OE

Office Equipment (OEN)

OFR

Office Records

OKP

Operational Kernel Process

OP

Operation

ORIG

Originating

OS

OSDS Subsystem

OS

Operating System

OS

Operations Support

OS

Operations System

OSPS

Operator Services Position System

OTC

Operating Telephone Company

OTR

Operational Trouble Report

OTR

Operator Trouble Report

PARAM

Parameters

PF

Printout Follows

RAO

Revenue Accounting Office

RBOC

Regional Bell Operating Company

RC

Recent Change Subsystem

RC/V

Recent Change And Verify

RCOS

Recent Change Operations System

RCV

Recent Change And Verify

REPT

Report

RMAC

Remote Memory Administration Center

RMAS

Recent Change Memory Administration System

RMAS

Remote Memory Access System

RMAS

Remote Memory Administration System

ROP

Read Only Printer

ROP

Receive Only Printer

RSM

Remote Switching Module

NARTAC

North American Regional Technical Assistance Center

RTR

Real Time Reliable

SAUTO

Shared Autoform

SCCS

Switching Control Center System

SM

Switching Module

STLWS

Supplementary Trunk And Line Work Station

SU

Software Update

TASC

Telephone Company Administrative Support Capability

TG

Translation Guide

TG

Trunk Group

TG-5

5ESS[®] Switch Translation Guide

TGN

Trunk Group Number

TLWS

Trunk And Line Work Station

TMS

Time Multiplexed Switch

TMS

Transmission Measuring Set

V

Verify

VDT

Video Display Terminal

VER

Verify

VFY

Verify

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