DataGeneral

Software Documentation

Interactive COBOL Editor (IC/EDIT)

Interactive COBOL Editor
IC/EDIT

069-000091-00

For the latest enhancements, cautions, documentation changes, and other information on this product, please see the Release Notice (085-series) supplied with the software.

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NOTICE

Interactive COBOL Editor
IC/EDIT

069-000091

This manual supersedes and replaces *IC/EDIT Interactive COBOL Editor* (055-004).

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Scope

This manual is written for programmers who are developing Interactive COBOL programs. It describes ICEDIT's operating concepts and file system, and provides descriptions and operating instructions for all ICEDIT commands.

Organization

This manual is divided into four chapters and one appendix.

Chapter 1 introduces ICEDIT's operating concepts and outlines the differences on RDOS, AOS, and AOS/VS.

Chapter 2 explains how to enter and exit ICEDIT editing sessions and how to execute ICEDIT commands. It also explains the fundamental concept of the four ICEDIT modes: Initial, Entry, Modify, and Verify.

Chapter 3 explains how to compile and print programs through ICEDIT. This chapter also contains instructions for compiling programs from the CLI for the particular benefit of the AOS and AOS/VS user, who cannot compile ICOBOL programs through ICEDIT.

Chapter 4 contains the ICEDIT commands and explains their functions through working examples.

Appendix A is a glossary.

Notational Conventions

This manual observes the following notational conventions:

The first three letters of ICEDIT commands indicate the mnemonic code for that command. For instance, the command to modify a line is written in this manual as Modify; MOD is the mnemonic code that you enter to modify a line.

Function keys are identified by the prefix F and a number. Function key 1, for instance, is written as F1.

When a procedure or command is exclusive to RDOS, it will be noted in parentheses.

The ICEDIT line terminators have different effects under different operating systems. Under RDOS, NEW LINE and CARRIAGE RETURN are normal line terminators. However, under AOS or AOS/VS, a CARRIAGE RETURN truncates from the current cursor position to the end of the line. Therefore, you should only use NEW LINE as a line terminator under AOS or AOS/VS. Instead of noting this difference throughout the manual, line terminators are called "line terminator".

End of Preface

Chapter 1
Introduction to ICEDIT

ICEDIT is a source program editor specifically designed for COBOL program development in the Interactive COBOL runtime environment. It is a line-oriented editor; source code is entered, edited, and deleted on a line-by-line basis. ICEDIT provides developers with a complete computerized facility to write, edit, compile (on RDOS only), and run Interactive COBOL programs. All runtime system users can operate ICEDIT simultaneously or execute a variety of Interactive COBOL programs at the same time.

In an RDOS system with dual grounds, batch compilations are not necessary. Users can compile (on RDOS with LJE running on the secondary console) and immediately run an Interactive COBOL program without ever leaving the terminal or affecting the operational status of any other terminal. A wide selection of Interactive COBOL utilities augment ICEDIT, including Local Job Entry (on RDOS only). In a dual ground RDOS system, LJE effectively gives users in the COBOL runtime environment access to the command line interpreter (CLI).

ICEDIT uses an integrated system of option menus and commands to provide easy access to a full range of program development tools. ICEDIT prompts for all needed responses, thus eliminating the need to memorize long command formats.

ICEDIT includes the following features to facilitate Interactive COBOL program development:

- Commands are executed by entering simple three-letter mnemonics.
- There is immediate access to any line in the file.
- There is immediate verification on the display screen of any input or action.
- An online HELP guide to ICEDIT commands and functions is always available.
- ICEDIT can be used to write free format text such as memos or CLI macros.

Certain features of ICEDIT, notably the compile function, are unavailable to the users of AOS and AOS/VS. However, the versatility of AOS and AOS/VS compensate for this limitation by offering complete facilities for compiling Interactive COBOL programs at the CLI. Instructions for compiling and printing programs at the CLI are in chapter 3 of this manual. This manual will note discrepancies between operating systems with parenthetical notes. Figure 1-1 shows a flowchart for the different operating systems.

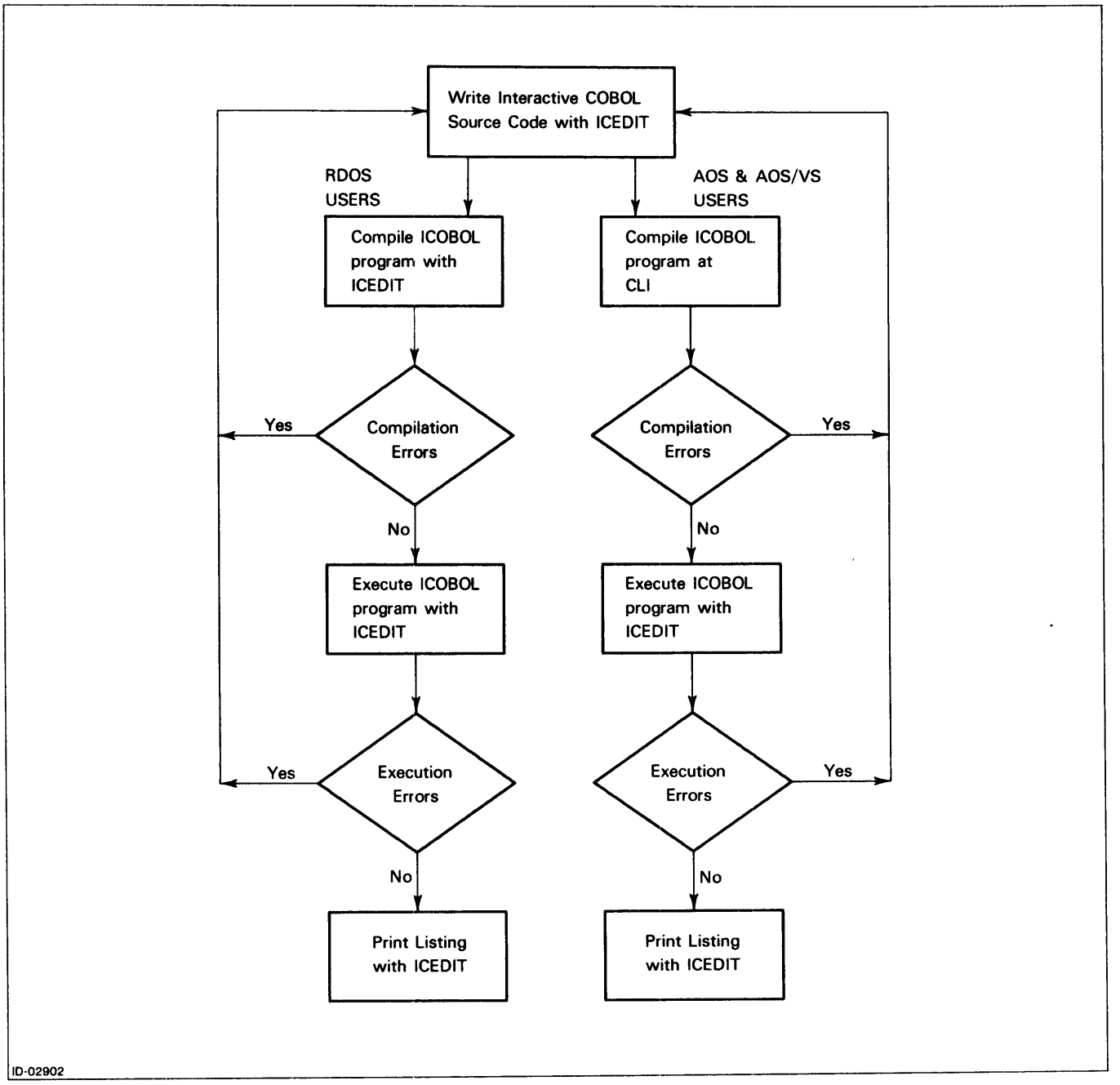

Figure 1-1. ICEDIT Flowchart for Different Operating Systems

ICEDIT Operating Concepts

The organization of ICEDIT complements the normal program development cycle of creating a program file, entering and editing source lines, compiling (on RDOS only), and running a program. ICEDIT supports this development sequence with menus, commands, files, and terminal facilities which are discussed in the following sections.

Menus

Menus provide access to all of ICEDIT's features. Each menu lists choices of action and requires only the input of a single character to make a selection. These menus include:

- Main menu, which allows the creation of new programs, editing new or existing program files, and accessing utilities associated with ICEDIT (see Figure 2-1).
- Interactive COBOL Utilities menu, which provides access to all the utilities associated with ICEDIT, as shown in Figure 2-2 (AOS, AOS/VS) and Figure 2-3 (RDOS).
- Options menu, which offers alternatives for processing an edited program, including automatic compilation (on RDOS only), as shown in Figure 2-6 (AOS, AOS/VS) and Figure 2-7 (RDOS).
- Help menu, which offers a complete selection of help screens that explain ICEDIT commands and functions, as shown in Figure 2-5.

Line Editing

To enter a command, type a three-letter mnemonic code that names the command's function. During command execution, ICEDIT's prompts control the explicit interaction between the user and ICEDIT. By responding to prompts, the user specifies how, when, and where to execute a command.

ICEDIT is a line-oriented editor; source information is entered on a line-by-line basis. Each source line includes a unique six digit line identification number. The organization of a line follows the industry standard CARD format of 80 columns per line, with columns 73-80 treated as a comment area by the compiler. The CARD format is shown in Figure 1-2.

ICEDIT numbers lines that are appended to a program in increments of 100. When a new program is opened, ICEDIT automatically starts with the Append command at line 100. Any other time the Append command is used, ICEDIT offers to start appending at the existing last line number plus 100, rounding up, if necessary, to a multiple of 100. For example, if the last line number in the file is 1100, ICEDIT offers 1200 as the first new line number. If the last line number is 1155, ICEDIT rounds 1155 to 1200 and numbers the new line 1300.

You may accept the line number offered by ICEDIT, or manually enter any other line number. If the number is less than the last line number, ICEDIT automatically goes to the Insert command.

In some commands, you must specify a single line or a group of lines as the range of an editing function. In many cases, ICEDIT offers preset or default line numbers when it prompts for specific line numbers. You may accept a preset line number by pressing the line terminator, or enter another number manually.

ICEDIT can also repeat, or reuse, a line number from the immediately preceding command. This feature provides a means of relating the current command to the preceding one. For example, after viewing line 900, the user wishes to delete the line. Pressing function key F2 when the Delete command asks for a line number automatically recalls 900.

```
|----| Columns 1-6:6 digit line number.
     | Column 7:indicator character.
      |------------Columns 8-72:COBOL source statements.-----------|
                                              Columns 73-80:comment area | ----|

000100 IDENTIFICATION DIVISION.                                        790611
000200 PROGRAM-ID. DEMOMENU.
000300 AUTHOR.         SYSTEMS PROGRAMMING GROUP.
000400 INSTALLATION.   REGIONAL HARDWARE DISTRIBUTION CENTER.
000500                 SOUTHEASTERN REGIONAL OFFICE.
000600                 DATA PROCESSING GROUP.
000700 DATE WRITTEN.   FIRST QUARTER 1984.
000800                 REVISIONS. NONE TO DATE.
000900 DATE COMPILED.  1984.
001000                 08/13/84.
001100 SECURITY.       MAIN MENU PROGRAM.
001200 ENVIRONMENT DIVISION.
001300 CONFIGURATION SECTION.
001400 SOURCE-COMPUTER.  CS-70.
001500 OBJECT-COMPUTER.  CS-70.
001600 SPECIAL-NAMES.
001700         SWITCH "A", ON STATUS IS SWITCH-A.
001800 DATA DIVISION.
001900 WORKING STORAGE SECTION.
002000 01   CHAR              PIC X.


::::::*..1....^....2....^....3....^....4....^....5....^....6....^....7..::^::
COMMAND ???                                        ICEDIT: DEMOMENU
```

Figure 1-2. CARD Format on ICEDIT Screen

Certain ICEDIT commands, such as Cut, Delete, Join, and Purge, erase lines from the program. The line numbers of erased lines may be used for entering new source material. Most ICEDIT commands refuse to overwrite existing lines; if a line number duplication occurs as lines are being inserted, the command terminates. However, the Undelete command overwrites current source with previously deleted source having the same line numbers.

Several ICEDIT commands allow the user to insert lines from another place within the program or from a different program. After being told where to insert the lines, ICEDIT prompts the user for a specific increment. The increment, between 1 and 999, determines the line numbers of the group of lines to be inserted. Accept the increments preset by ICEDIT or enter new increments manually.

Whatever the increment used, ICEDIT does not number an inserted line with an already existing number. If a match occurs, ICEDIT automatically terminates the command to prevent overwriting the existing line. In no case does ICEDIT allow the duplication of line numbers.

File System

ICEDIT processes and stores lines in two types of files: program files and support files. ICEDIT creates these files automatically, prompting the user to input an appropriate command or filename.

Program Files

For each source program, ICEDIT creates a *program file*. This is an indexed (ISAM) file that stores all source lines that are entered from the keyboard, modified during an editing session, or copied from another file.

The program file is the only file necessary for entering new source lines. At the end of an editing session, the user can immediately send the program file to the Interactive COBOL compiler (on RDOS only).

Support Files

Depending on the editing requirements, ICEDIT creates a number of *support files* to support its editing features. In general, these files store lines from a program file for subsequent use elsewhere, either in the same program file, in another program file, or by the LJE utility (on RDOS only). Refer to Table 1-1 for a summary of support files used by ICEDIT.

Filenames

Names of program and support files contain up to 8 characters. The following characters may be included in a filename: $, A-Z, and 0-9. In many cases, ICEDIT offers a "default" filename when it prompts for a filename. Accept a preset name by pressing the line terminator, or enter another name manually.

To differentiate the names of a program file and its support files, ICEDIT automatically appends a three-character extension to each support file's name. This extension consists of a period (.) and two predetermined characters. For certain support files, ICEDIT also places a two digit terminal number before the extension to further ensure the uniqueness of every filename it creates.

Terminal Facilities

ICEDIT makes full use of the terminal's keyboard and display facilities to guide you safely and swiftly through an editing session, always prompting you to type instructions and verifying the results of operations.

Screen Format

ICEDIT presents the progress and result of every command on the display screen in two sections: the *verification section* (lines 1-20) and the *command entry section* (lines 22-24). During command execution, ICEDIT displays prompts and source lines in the appropriate section, and automatically positions the cursor for entry and modification of source lines.

The cursor is the blinking underscore on the display screen. It also may be a reverse video block or blinking reverse video block depending on the specific terminal or on cursor choice if available. The cursor advances one space each time you type a character. ICEDIT automatically positions the cursor at the beginning of input fields as it prompts for instructions and source lines.

The *verification section* (lines 1-20) displays source lines as they are changed or created. This section confirms changes by providing a window to the file, thereby reducing the danger of inadvertent action.

Line 21 is a spacer between the two sections. With certain commands, ICEDIT displays reference information or prompts on this line.

Table 1-1. ICEDIT Support Files

FILENAME	PURPOSE	COMMAND
filename.CU	Stores cut lines for later reinsertion.	CUT
filename.DL	Stores deleted lines for possible reuse.	DEL
filename.LF	Stores lines queued for printing through PASS under RDOS or at the CLI under AOS or AOS/VS.	PRI
filename##.LJ	Stores CLI commands for execution by LJE.	OUT
filename.01 to filename.99	Stores lines for later insertion into the same or a different program file. Up to 99 output files can be made for each program file.	OUT
filename##.CO	CARD format source file; for compilation, printing, and backup.	BYE
filename##.SR	CRT format source file; for compilation, printing, and backup.	BYE
filename##.TX	TEXT format source file; for printing.	BYE
filename.RF	Stores those lines that differ in two compared versions of a program file.	COM
COMPARE##	Stores a formatted listing of differences between two compared program files.	COM
filename.LS	Stores a compilation listing.	compiler
filename.QK	Stores compilation timing, errors, and program size information.	compiler
any filename	File for display screen format design.	CRT utility

Lines 22-24 form the *command entry section.* Input all commands, source lines, and responses to prompts in this section. With certain commands, ICEDIT displays a scale below the source entry area to help indent and align source lines.

When you enter or modify source, ICEDIT uses line 23 to organize the line according to the CARD format shown in Figure 1-2.

The Keyboard

To execute ICEDIT functions, use both the upper- and lowercase of the keyboard. However, the Interactive COBOL compiler requires that all program source, except for literal values, be entered in uppercase only.

The ALPHA-LOCK key sets uppercase alphabetic characters without having to use the SHIFT key.

The SHIFT key sets uppercase alphabetic and non-alphabetic characters.

The CARRIAGE RETURN (CR) and NEW LINE (NL) keys terminate source line entries and certain responses to prompts. See the "Notational Conventions" section in the Preface of this manual for further information about these keys.

To perform certain operations, you must use the topmost row of keys, called function keys. These keys, alone or in combination with the CTRL/CMD key and the SHIFT key:

- Verify the action of commands that delete, move, or copy lines
- Repeat commands

- Enter line numbers in the current command from the previous command
- Position the cursor to column 7, the indicator field, or column 73, the comment field
- Position the cursor to tab stops
- Enable special source line editing characters
- Call the Help screen for the current command

Chapter 2 describes the use of the function keys.

Use the ESC key to bypass a current command or prompt and return to a previous prompt.

Use the space bar or the right-arrow, left-arrow, and up-arrow keys to position the cursor when entering or modifying a source line.

- The space bar places a blank space at the cursor position and advances the cursor one space.
- The right-arrow and left-arrow keys move the cursor in either direction without affecting the source line. For greater convenience, use these keys in conjunction with the REPEAT key to move the cursor repeatedly in the direction indicated by the arrow.
- The up-arrow key returns the cursor to column 8 of the source line.

To make corrections or to delete characters, position the cursor and retype, or use the DEL, ERASE EOL, or underscore (_) keys to delete characters.

- The DEL key deletes characters to the left of the cursor. For example, if the cursor is in column 33, pressing DEL deletes the character in column 32.
- Under RDOS, the ERASE EOL key completely erases columns 8-72. The line is filled with underscores (_) and the cursor returns to column 8. Type over the underscores to enter new text. Press the line terminator to enter a blank line. In any event, the underscores are not entered as part of the source line.
- Under AOS or AOS/VS, the ERASE EOL key erases from the cursor through column 72. The cursor position does not change.
- The underscore key blanks out a line from the position of the underscore to column 72. The comment area of the line, columns 73-80, is preserved. Blanking occurs if you press the line terminator to enter the source line into the file.

Alignment Scale

ICEDIT makes it easy to indent and align source lines for program readability. The commands that add, modify, and list lines (such as Append, Insert, List, Measure, Modify, Tab, Type, and View) display a scale, shown in Figure 1-2, that permits fast, accurate changes to lines that require precise positioning. The scale includes functional tab stops and nonfunctional markers, all of which may be adjusted with ICEDIT commands.

Use the Scale command to modify ICEDIT's scale by entering any keyboard character in any position. You may also restore ICEDIT's standard scale of markers in columns 10, 15, 20, and so on.

These scale characters have no functional significance to ICEDIT, but allow you to check the alignment of source code visually. The Measure command places the currently defined scale under a specified line that ICEDIT has displayed in the screen's verification section.

In source entry and modification commands, you may tab the cursor to successive tab stops in the trailing blank area of a source line. This facilitates the indenting of source lines, as in IF...ELSE statements.

Use the Tab command to set the scale's tab stops, clear the scale of all tab stops, or restore the standard sixteen tab stops preset by ICEDIT.

To address the comment area of a source line (columns 73-80), press SHIFT-F8; this places the cursor in column 73.

Differences on RDOS, AOS, and AOS/VS Systems

The JOB and LJE utilities, the Compile option, and the Status and Job commands are all unavailable to the ICEDIT user running under AOS or AOS/VS. However, the versatility of AOS and AOS/VS compensates for the absence of these features on ICEDIT. You may compile ICOBOL programs quickly and easily from the CLI, as explained in chapter 3. Figure 1-1 provides a flowchart for program development under the different operating systems.

End of Chapter

Chapter 2
Using ICEDIT

Entering ICEDIT: The Main Menu

To execute ICEDIT from Data General's standard LOGON menu, enter R in response to the prompt OPTION (?), and ICEDIT for the RUN PROGRAM prompt. Under AOS or AOS/VS, enter ICEDIT at the CLI prompt. ICEDIT's Main menu, illustrated in Figure 2-1, is displayed. All ICEDIT sessions begin and end at the Main Menu. Select one of the functions by pressing the corresponding digit. *Do not* press a terminator key. Many of the choices prompt for a filename, which must be eight characters or less. Pressing ESC cancels the choice and redisplays the Main menu.

```
ICEDIT-nn    I N T E R A C T I V E   C O B O L   E D I T O R      mm-dd-yy
REV x.xx                                                          hh:mm


            1.   EDIT AN EXISTING PROGRAM FILE.
            2.   RELOAD SOURCE FILE TO EXISTING PROGRAM FILE.
            3.   LOAD SOURCE FILE TO NEW PROGRAM FILE.
            4.   CREATE NEW PROGRAM FILE FOR ICEDIT.
            5.   END ICEDIT.
            6.   HELP IS NEEDED.
            7.   INTERACTIVE COBOL UTILITIES.



               ENTER ICEDIT FUNCTION CHOICE _
```

Figure 2-1. Main Menu

The following sections describe the choices available on the ICEDIT Main Menu.

Edit an Existing Program File

Press 1 at the Main menu to open an already existing program file for editing. Type the filename in response to the prompt. If the file cannot be found, ICEDIT displays an error message and returns to the Main menu. When the file is opened, ICEDIT displays the first ten lines of the file for validation. Begin editing when the COMMAND prompt appears.

If the file was not created with ICEDIT, it must first be loaded with option 3, which is explained below.

Reload Source File to Existing Program File

Press 2 at the Main menu to replace the contents of an existing text file with the contents of a related program file. The names of the files must be identical. If the file cannot be found, ICEDIT displays an error message and returns to the Main menu.

The replacement file overwrites the existing text file and creates new .NX and .XD files. Before loading the file, ICEDIT offers the option of keeping the original line numbers or renumbering the line numbers in increments of 100.

Begin editing when the COMMAND prompt appears.

Load Source File to New Program File

Press 3 at the Main menu to create a new program file with the contents of an existing source file. Since ICEDIT works with indexed files, this step is necessary for converting sequential files to indexed files, such as imported programs created by another editor. The selection is also useful for creating a revision with a new name.

If it cannot find the file, ICEDIT displays an error message and returns to the Main menu. If the name of the new program file already exists, ICEDIT offers the option of overwriting the existing program file. Before loading the file, ICEDIT offers the option of keeping the original line numbers or renumbering the lines in increments of 100.

This selection accepts source lines that may have been created by other editors and exceed the ICEDIT limit of 72 compilable characters per line. At the first input line to exceed 72 characters, ICEDIT offers the option of splitting (continuing on the next line) or truncating (eliminating any source beyond column 72) such lines.

Begin editing when the COMMAND prompt appears.

Create New Program File for ICEDIT

Press 4 at the Main menu to create a new program file, and enter the filename. ICEDIT automatically executes the Append command after a revision number is entered. If the file already exists, ICEDIT displays an error message and returns to the Main menu.

End ICEDIT

Press 5 to exit from ICEDIT and return to LOGON.

Help Is Needed

Press 6 to call ICEDIT's Help utility. The Help screens describe ICEDIT features and list detailed instructions for operating the ICEDIT commands. Select the appropriate Help screen from the ICEDIT Help menu (see Figure 2-5).

Interactive COBOL Utilities

Press 7 to call the Interactive COBOL Utilities menu, which provides access to all of the utilities associated with ICEDIT as well as selected user programs. Figure 2-2 lists the utilities on AOS and AOS/VS; Figure 2-3 lists them for RDOS. Select a utility by typing the character enclosed in parentheses. These utilities are described below.

Job Initiation (RDOS users only)

Initiates LJE jobs from any terminal. When editing, initiate LJE jobs with the JOB command.

Analyze ISAM File

Reports various aspects of an indexed file, such as number of index blocks and record length.

```
ICEDIT-nn   I N T E R A C T I V E   C O B O L   U T I L I T I E S  mm-dd-yy
REV x.xx                                                           hh:mm

        (I)CEDIT LIBRARY SELECTION

        (A)NALYZE ISAM FILE           (F)ILE STATISTICS
        (P)ROGRAM COMPARISON          (C)RT FORMATTER
        (T)YPE A LINE FILE            (D)ELETE A LINE FILE
        (R)UN A PROGRAM               (G)ET PROGRAM REV #
        (1) NEWDEMO                   (2) OLDDEMO
        (3) ARTEST                    (4) APTEST
        (5) NEWS                      (6) CLEMENT1
        (7) GL$001                    (8) LAWPROG1
        (9) GL$003                    (0) HAGER

                    OPTION:  (?)


             PRESS ESC FOR ICEDIT MAIN MENU.
```

Options 0-9 are user-added options.

Figure 2-2. AOS and AOS/VS Utilities Menu

Program Comparison

Compares two program or support files that are essentially two versions of the same file. Creates a revision (.RF) file to record the differences between the files. ICEDIT's Patch command uses this file to update one version of the file with the other. When editing, call this utility with the Compare command.

Type a Line File

Displays a support file. When editing, use the Type command to perform this function.

Run a COBOL Program

Calls and runs an Interactive COBOL program. When editing, use the Run command to perform this function.

LJE Status (RDOS users only)

Displays the current status of the Local Job Entry Monitor. When editing, use the Status command to perform this function.

```
ICEDIT-nn  I N T E R A C T I V E   C O B O L   U T I L I T I E S  mm-dd-yy
REV x.xx                                                          hh:mm


        (I)CEDIT LIBRARY SELECTION


       (J)OB INITIATION                (L)JE STATUS
       (A)NALYZE ISAM FILE             (F)ILE STATISTICS
       (P)ROGRAM COMPARISON            (C)RT FORMATTER
       (T)YPE A LINE FILE              (D)ELETE A LINE FILE
       (R)UN A PROGRAM                 (G)ET PROGRAM REV #
       (1) NEWDEMO                     (2) OLDDEMO
       (3) ARTEST                      (4) APTEST
       (5) NEWS                        (6) CLEMENT1
       (7) GL$001                      (8) LAWPROG1
       (9) GL$003                      (0) HAGER


                     OPTION:  (?)


             PRESS ESC FOR ICEDIT MAIN MENU.
```

Options 0-9 are user-added options.

Figure 2-3. RDOS Utilities Menu

File Statistics

Estimates the size of a data file, given file design parameters.

CRT Formatter

Creates a 46-line support file used to sketch a screen format. Use the first 23 lines to design the screen and the second 23 lines to comment on the design. On the printed copy, choose to frame the first 23 lines with line and column numbers.

Delete a Line File

Deletes a support file. Inspect the file before deletion.

Get Program Rev #

Displays the revision level of the compiler used to compile an Interactive COBOL program. Checks the compatibility of a program's object code with the runtime system.

ICEDIT Library Selection

Displays a numbered listing of program files generated on the system, as shown in Figure 2-4. You may list all programs by pressing the line terminator, or start the listing at a particular program by entering either the first characters of the filename or the entire filename at the filename prompt.

```
ICEDIT-nn    I N T E R A C T I V E   C O B O L   L I B R A R Y    mm-dd-yy
REV x.xx                                                          hh:mm

 1. NEWDEMO
 2. OLDDEMO
 3. ARTEST
 4. APTEST
 5. NEWS
 6. GAMESWON
 7. GL$001
 8. GL$002
 9. GL$003
10. GL$004
11. LAWPROG1
12. LAWPROG2
13. ADDRESS
14. DEMOMENU
15. BUZZTEST
16. HAGERTEST
17. BUB$SORT
18. PAYROLL
19. MORTPROG
20. ELAINE
            ENTER FILE NUMBER FOR EDITING.  __          PAGE  1
```

Figure 2-4. ICEDIT Library Facility

If there are more than 60 program files, the listing extends to multiple pages. To advance the pages, press the line terminator. To return to a previous page enter -1. To return to the starting filename prompt, press ESC.

The listed filenames are numbered sequentially. To select a file for use with the Options menu, enter the number preceding the filename. The Options menu functions are described at the end of this chapter.

ICEDIT allows each terminal to specify up to ten executable Interactive COBOL programs on the Utilities menu. When it displays the menu, ICEDIT extracts the first ten lines of the line sequential file ICEDOPT$*nn* (*nn* = terminal number); each line should contain the name of an Interactive COBOL program. These ten names are added to the Utilities menu, with a single digit corresponding to each. To run one of these programs from the menu, enter the corresponding digit.

Create ICEDOPT$nn using the ICEDIT commands that create support files, such as Output. Be sure to use text format.

Executing ICEDIT Commands

The use of each ICEDIT command follows a three-step process. As it passes through the steps of a command, ICEDIT operates in different *modes*. Each mode is distinctive in the kinds of prompts ICEDIT displays and in the operations performed by the function keys:

1. In step one, ICEDIT prompts you to enter a three-letter mnemonic code.
2. In step two, *initial* mode, ICEDIT prompts you to define how, when, and where to execute a command.
3. In step three, you enter and modify source lines in *entry* and *modify* modes, or you move or delete source lines in *verify* mode. In modify mode, ICEDIT recognizes special editing characters to facilitate source line modification.

NOTE: When entering information in the initial or modify modes, you can always return to the previous prompt by pressing the ESC key. The modes are described in more detail below.

Entering Commands

Enter commands at the COMMAND prompt with three-letter mnemonic codes. ICEDIT automatically accepts the commands; **do not use a line terminator**, as it will cause you to skip over the next command or prompt.

The first three letters of a command name form the mnemonic code for that command. For example, the command to append new lines to the end of the program is Append. The capital letters APP form the mnemonic code for the command. If the user inadvertently enters an invalid mnemonic at the COMMAND prompt, ICEDIT responds with a list of valid mnemonics in alphabetical order.

ICEDIT commands may be grouped into seven categories according to the operations they perform:

- *New Line commands* create new source lines manually or by reproducing existing source lines.
- *Modification commands* modify existing source lines.
- *Line Manipulation commands* specify the printing, positioning, or deletion of one or more lines.
- *Scale commands* use or redesign ICEDIT's standard scale and tabbing facilities.
- *Display commands* display lines from a current program file or another file.
- *Utility commands* call Interactive COBOL utilities or execute other COBOL programs.
- *Termination commands* end an editing session with several options available.

Table 2-1 lists the ICEDIT commands by categories with the mnemonic codes capitalized. A detailed description of each command's function and operation appears in chapter 4. While executing commands, ICEDIT's Help facility is available through the Help command. The Help menu summarizes all ICEDIT commands and displays instructions for any ICEDIT command. You can always display the Help screen for a command by pressing F3 while in initial mode.

Table 2-1. ICEDIT Commands

New Line Commands	
APPend	Appends new lines to the end of a program.
DUPlicate	Adds new lines by duplicating a line one or more times.
INSert	Inserts new lines between existing lines.
MOVe	Moves lines to another location in the program.
Modification Commands	
FINd	Searches for a data string and includes an option to modify the data string by replacement when found.
JOIn	Joins two contiguous lines.
MODify	Modifies one or more lines.
SPLit	Splits one line into two lines.
Line Manipulation Commands	
COPy	Copies lines from a support file into the program.
CUT	Deletes lines and stores them in support file *progname.CU* for insertion (Paste) elsewhere in the program.
DELete	Deletes lines and stores them in support file *progname.DL* for possible reinsertion (Undelete) in the same place.
OUTput	Outputs lines to a support file in CARD, CRT, CLI or TEXT format.
PASte	Pastes, or inserts, cut lines into the program.
PATch	Updates a file to its latest revision by using a revision file created by the Compare command.
PRInt	Formats lines for printing on AOS or AOS/VS, or printing via the PASS queue (RDOS users only).
PURge	Purges lines permanently.
UNDelete	Restores deleted lines to their original places in the file, and overwrites existing lines.
Scale Commands	
MEAsure	Displays the current scale beneath a specified line in the verification section of the display screen.
SCAle	Modifies the scale or restores the standard scale.
TAB	Sets and clears tabs or restores the standard tab stops.
Display Commands	
LISt	Lists program lines in groups of 20.
TOPlist	Displays the first 20 lines of the program.
TYPe	Displays lines from any line-sequential file in groups of 20.
VIEw	Displays program lines one at a time.

(continues)

Table 2-1. ICEDIT Commands (continued)

Utility Commands	
COMpare	Compares the contents of two program files, optionally creating a revision file for use with the Patch command.
HELp	Calls ICEDIT's online Help facility.
JOB	Ends editing and initiates an LJE local job (RDOS users only). Returns to Main menu after job initiation.
RUN	Ends editing and executes a COBOL program.
STAtus	Displays current status of LJE (RDOS users only).
Termination Commands	
BYE	Ends editing and offers the Options menu.
END	Ends editing and returns directly to the Main menu.

Responding to Prompts: Initial Mode

Every ICEDIT command begins in initial mode. In this mode, ICEDIT generates a series of data prompts that explicitly instruct ICEDIT how, when, and where to perform a function, and function key prompts that identify which function keys perform special ICEDIT features.

Data prompts guide the entering of line numbers, line number increments, and filenames. In certain commands, ICEDIT offers a preset, or default, value for a number or filename. To accept a preset value, press the line terminator. To enter a different value, type the characters and press the line terminator.

Line number prompts allow you to specify a single line or range of lines as the object of an editing command. Examples of line number prompts are:

```
STARTING #_____

FROM _____   THRU? _____
```

Increment prompts allow you to determine the line numbers of a group of lines to be inserted in the program.

Filename prompts allow you to name program or support files for input or to name output files. Filenames may include device and directory specifiers. Examples of filename prompts are:

```
FROM FILE:

TYPE FILENAME #1_____________
```

Character prompts offer a set of choices from which one must be chosen. Press a single key (no terminator), as prompted, to make the choice. Examples of character prompts are:

```
PRINT (Y OR N)

FORMAT? CARD = 1  CRT = 2  TEXT = 3  CLI = 4  TYPE YOUR CHOICE: _
```

The following *function key prompt* appears in the initial mode of a command:

```
FUNCTION: #1=REPEAT  #2=RESET  #3=HELP
```

In all commands that ask for the entry of a line number, you may

- Press F1 to repeat the current command after it completes execution. In the Scale and Tab commands, ICEDIT prompts you to use F1 to restore ICEDIT's standard scale or standard tab stops.
- Press F2 at the first line number prompt to reset (recall and use) the first line number used in the preceding command.
- Press F3 at the first line number prompt to call the help screen for the specific command, with the exception of Compare, Help, Job, Status, Toplist, and Type.

A message summarizing the action of the function keys appears in the command entry section of the screen.

Entering New Source Lines: Entry Mode

For entering new source, ICEDIT provides entry mode in the Append and Insert commands. In this mode, enter source on line 23 of the display screen. Source can consist of Interactive COBOL code, CLI commands or macros, or ordinary text such as memos or documentation. End source lines with the line terminator.

Enter any alphanumeric character, including both uppercase and lowercase letters, in a source line. Note, however, that the underscore character (_) acts as a line terminator, erasing everything to the end of the line.

In entry mode, enter Interactive COBOL indicator characters in column 7. These include the line continuation (–), form feed (/) and comment line (*) characters. To enter the line continuation or form feed character, press F1 to position the cursor to column 7, then type – or / followed by the line terminator. Pressing F7 enters the asterisk character in column 7 automatically.

The following function key prompt appears in Entry mode:

```
FUNCTION: #1=COL7  #2=MOD  #7=COL7*   #8=TAB  ^8=SUPERTAB
```

Function keys have the following actions in entry mode:

- Press F1 to position the cursor to column 7.
- Press F7 to enter a comment character (*) in column 7.
- Press F2 to enter modify mode.
- Press F8 to position the cursor to the first tab stop in the trailing blank portion of the line. At this point, type text in this trailing area and use F8 to move the cursor to successive tab stops. When you tab past the final tab stop on the line or press the line terminator, the entire line is restored for modification.
- Press SHIFT-F8 to position the cursor to column 73.

From entry mode, enter modify mode by pressing F2. In modify mode, several editing features facilitate source line modification.

Modifying Source Lines: Modify Mode

You modify source lines by using the commands Append, Duplicate, Find, Insert, Join, Modify, and Split. The source line to be modified appears on line 23 of the display screen.

In modify mode, change source by typing over existing characters and/or using editing characters. Editing characters allow you to indent, insert spaces, delete characters and spaces, and insert character strings in a line. As in entry mode, the underscore character erases a line from the cursor position onward. In addition, tabbing is enabled in modify mode.

In modify mode, use the line terminator to execute the editing characters and to enter the modified source line into the program. If the line contains editing characters, pressing the terminator key performs the editing functions and returns the line for further editing. After all editing is complete and the line contains no editing characters, press the line terminator to enter the source line into the file.

In modify mode, ICEDIT uses three special editing characters: the vertical bar (|), the backslash (\), and the grave (`). These characters may be used alone or in combination. These characters are treated as ordinary text characters, except in modify mode.

The *vertical bar* deletes characters and closes spaces between columns 8 and 72. Each bar deletes one character or space.

The *backslash* (\) indents or inserts spaces in a line. Each backslash entered in columns 8 to 11 inserts four spaces, for a maximum total of sixteen spaces. Each backslash entered in columns 12 to 72 inserts one space. Any characters overwritten are not lost, but shifted to the right when the backslashes are executed by pressing the terminator key.

The *grave* (`) encloses a string of characters for insertion in a source line before the point marked by the first grave. Any characters overwritten are not lost, but shifted to the right when the graves are executed by pressing the terminator key.

The following function key prompt appears in Modify mode:

```
FUNCTION: ^1=BACK  #1=COL7  #2=MOD  #7=COL7*  #8=TAB  ^8=SUPERTAB
```

The following function key actions are available in modify mode:

- Press F1 to position the cursor to column 7.
- Press SHIFT-F1 to position the cursor to column 8.
- Press F7 to enter a comment character (*) in column 7.
- Press F8 to position the cursor to the first tab stop in the trailing blank portion of the line. At this point, input text in this trailing area and use F8 to move the cursor to successive tab stops. The entire line is restored for modification when you tab past the final tab stop on the line, or when you press the terminator key.
- Press SHIFT-F8 to position the cursor to column 73.

Moving or Deleting Source Lines: Verify Mode

Verify mode allows flexibility in moving or deleting source lines. ICEDIT offers several options in command execution:

- Choose whether to display the results of a command in the verification section of the display screen.
- Execute the command on either a single line or a range of lines.
- In the Copy and Paste commands, include the comment character (*) in column 7 of each line.

The following function key prompt appears in verify mode:

```
VERIFY FUNCTION: #1=LIST  #8=NO LIST  #7=COL7* BYPASS=SPACE
<ALL=CTRL+SHIFT+#>
```

In verify mode, use the function key combinations below until all lines are processed. It is important to note that only the specified function keys execute the command. At any point, press ESC to terminate command execution.

- F1 executes the command on the source displayed on line 23, displays the results in the verification section, and continues to the next source line.
- CTRL-SHIFT-F1 executes the command on a range of lines and displays the results in the verification section.
- F8 executes the command on the source displayed on line 23, without displaying the results, and continues to the next source line.
- CTRL-SHIFT-F8 executes the command on a range of lines, without displaying the results.
- SPACE bypasses the source displayed on line 23 and continues to the next source line.
- Copy and Paste only: F7 executes the command on the source displayed on line 23, inserts a comment character (*) in column 7, displays the results in the verification section, and continues to the next source line.
- Copy and Paste only: CTRL-SHIFT-F7 executes the command on a range of lines, places a comment character (*) in column 7 of each line, and displays the results in the verification section.

The Help Facility

ICEDIT's Help facility displays full operating instructions for each command and general information about ICEDIT. The Help facility is accessible in several ways:

- Select option 6 on the ICEDIT Main menu.
- Issue the Help command at the COMMAND prompt.
- In the initial mode of a command, press F3 to call the Help screen for the given command.

Under RDOS, a listing of all ICEDIT help screens can be printed with the DO macro routine ICLISTHELP. To execute this macro through the CLI or LJE, use the command DO ICLISTHELP *filename*. This will store the help screen in *filename* and print a copy on the system printer. Under AOS or AOS/VS, simply QPRINT the files :UTIL:ICOBOL:H$+.

In addition to displaying help screens for each ICEDIT command, the Help facility also includes general information screens concerning ICEDIT and its associated utilities. The first three letters of each topic's name form the mnemonic code for calling the topic's reference screens. The Help categories (with mnemonics capitalized) are explained below:

NOTes	Summary reference information about ICEDIT.
FILes	General information about ICEDIT files.
OPTions	Operational information about the Options menu available through the BYE command and the ICEDIT Library.
LIBrary	Operational information about the ICEDIT Library.
MAcros	Operational information about macros associated with ICEDIT (RDOS only).
UTIlities	General information about utilities associated with ICEDIT.
NEW	Current information regarding new enhancements to ICEDIT.

When you call the Help utility, the Help menu lists the mnemonic for each command and general information topic and a summary description for each command, as shown in Figure 2-5. Type one of the mnemonics. Press the line terminator to accept the mnemonic that ICEDIT offers, or enter another mnemonic. Entering HEL displays instructions for using the Help utility. To exit from the Help utility at any time, press ESC.

```
====================  HELp:  The ICEDIT User's Guide=========================


 APPend adds new lines to a file.        MOVe line(s) within a Program file.
 BYE ends editing with option menu.      OUTput line(s) to a storage file.
 COMpare two files.                      PASte CUT lines back into file.
 COPy lines from a support file.         PATch revision into Program file.
 CUT lines to PASte elsewhere.           PRInt all or any part of a file.
 DELete a line or lines.                 PURge line(s) from a file.
 DUPlicate a line.                       RUN a COBOL program.
 END terminates editing.                 SCAle restores or modifies scale.
 FINd or replace character string.       SPLit a line in two.
 INSert new line(s).                    #STAtus of Local Job Entry.
#JOB initiates Local Job Entry.          TAB sets or resets standard tabs.
 JOIn adjacent lines into one line.      TOPlist first 20 lines of file.
 LISt Program file.                      TYPe contents of another file.
 MEAsure positions the scale.            UNDelete DELeted lines.
 MODify existing line(s).                VIEw a single line.


                      GENERAL INFORMATION

   NOTes     FILes     OPTions     LIBrary    #MACros   UTIlities   NEW


               Type HEL to display HELp instruction screen.

================================================================================

 CHOICE "???"  (Enter letters in quotes or press ESCape to exit.)
```

(# indicates RDOS only)

Figure 2-5. ICEDIT Help Menu

Ending an Editing Session: The Options Menu

To finish editing a program, issue the Bye or End command. Both commands ask for confirmation of the order to close the program file.

The End command returns ICEDIT directly to the Main menu where several options are available, including terminating ICEDIT and editing another program.

The Bye command calls the Options menu, which is shown in Figure 2-6 (AOS,AOS/VS) and Figure 2-7 (RDOS). This menu offers several alternatives for processing the edited program. The Options menu is also offered when a program is selected from the ICEDIT Library. In the following explanations, the term "specified program" indicates either the program just edited or the program selected from the Library.

RUN executes the specified program. The program must have been compiled previously.

EDIT starts an editing session with the specified program.

COMPILE creates and places on the Local Job Entry queue a routine to compile the specified program (RDOS only).

CREATE SOURCE creates a line sequential (support file) version of the specified program. ICEDIT prompts for CARD, CRT, or TEXT format. This file can be printed later via the CLI.

```
ICEDIT-nn    I N T E R A C T I V E   C O B O L   O P T I O N S     mm-dd-yy
REV x.xx                                                           hh:mm

PROGRAM FILE:          program-name          REVISION x.xx OF mm/dd/yy

LAST ACCESSED:         mm-dd-yy  hh:mm:ss    AT TERMINAL nn

              1.   RUN.

              2.   EDIT.

              3.   CREATE SOURCE.

              4.   PRINT SOURCE.


                 ENTER ICEDIT LIBRARY OPTION NUMBER _

              PRESS ESC FOR ICEDIT MAIN MENU.
```

Figure 2-6. AOS and AOS/VS ICEDIT Options Menu.

```
ICEDIT-nn    I N T E R A C T I V E   C O B O L   O P T I O N S     mm-dd-yy
REV x.xx                                                          hh:mm

PROGRAM FILE:          program-name          REVISION x.xx OF mm/dd/yy

LAST ACCESSED:         mm-dd-yy  hh:mm:ss     AT TERMINAL nn

              1.   RUN.

              2.   EDIT.

              3.   COMPILE.

              4.   CREATE SOURCE.

              5.   PRINT SOURCE VIA P.A.S.S..

                 ENTER ICEDIT LIBRARY OPTION NUMBER _

              PRESS ESC FOR ICEDIT MAIN MENU.
```

Figure 2-7. RDOS ICEDIT Options Menu

Under AOS and AOS/VS, PRINT SOURCE creates a line sequential (support file) version of the specified program. ICEDIT prompts for CARD, CRT, or TEXT format. ICEDIT then prompts:

```
OUTPUT DIRECTLY TO PRINTER OR TO A FILE? (P OR F) TYPE YOUR CHOICE:
```

Selecting P sends the file to the printer. Selecting F places the output in prognam*nn.xx*.

Under RDOS, PRINT SOURCE VIA P.A.S.S. creates a line sequential (support file) version of the specified program. ICEDIT prompts for CARD, CRT, or TEXT format. ICEDIT then prompts:

```
PRINT SOURCE VIA P.A.S.S. OR OUTPUT DIRECTLY TO PRINTER? (P or D)  TYPE
YOUR CHOICE:_
```

Selecting D sends the file directly to the printer. P places the file on the P.A.S.S. queue.

ESC bypasses all the options and returns control to the Main menu.

After the Options menu choice is executed, the Main menu returns.

End of Chapter

Chapter 3
Compiling and Printing Programs

This chapter explains how to compile and print programs under RDOS and under AOS and AOS/VS. RDOS takes full advantage of ICEDIT's many options; it allows you to print and compile ICOBOL programs without ever leaving ICEDIT. Under AOS and AOS/VS, the compile function is invoked at the CLI. The following sections explain how to compile and print ICOBOL programs under each operating system.

Compiling Programs with RDOS

After editing a COBOL program with ICEDIT, the program may be compiled through the ICEDIT Options menu. Use the following procedure:

- Enter BYE at the COMMAND??? prompt to end the session and call the Options menu.
- Press 3 to select COMPILE from the Options menu.
- Enter global compilation switches, separated by slashes (/). See Table 3-1 for a partial listing of available switches.

ICEDIT writes the compilation commands to an LJE job file named *progfilenn.LJ* (*nn*= terminal number). After the job file has been written, ICEDIT displays the prompt PRESS CR TO CONTINUE. At this point:

- Press CR to initiate the LJE compilation job.
- Press ESC to return to the Main menu without initiating the LJE compilation; the program may be compiled at a later time with the Job command in ICEDIT. See the Job command for information on ICEDIT Compilation Macros.

The program will be compiled under the control of LJE after LJE is started. If the runtime system is running on a system with dual grounds, and LJE is running on the other ground, the program will automatically be compiled under LJE.

The following table includes only the switches used with the COMPILE and PCOMPILE macros under RDOS. It is not an exhaustive list of switches that can be used to compile programs under RDOS. All switches listed are global switches except "I", which is a local switch. For more information on compiling ICOBOL programs, refer to the information contained in chapter 4 of the *Interactive COBOL User's Guide* (DG part number 069-705015-02 for AOS and AOS/VS, 069-705014-02 for RDOS).

Table 3-1. Compilation Switches

/C	CARD format source file. This switch is automatically included by the Compile Option (RDOS only) and all the compilation macros. Omission of this switch indicates CRT format. The compiler treats columns 73-80 as a comment field.
/E	Suppresses error messages from the compilation listing file. This switch is ignored if an error file is specified.
/N	No object program is produced. If this switch is omitted, the object program is written to *progfile.PD* and *progfile.DD*.
/L	Creates a compilation listing file: *progfile.LS*. This switch is automatically included by the ICPREP and PCOMPILE compilation macros.
/X	Adds a cross-reference table to the end of the compilation listing file.
/S	Adds a symbol table to the end of the compilation listing file.
/D	Adds a symbol table to progfile.DD, a requirement for use of the Interactive Debugger with the compiled program.
/U	Adds a "decompilation listing" (the mnemonic commands generated by the compiler) to the end of the listing file.
/I	Indexed source file. Automatically included by the Compile Option and the COMPILE and PCOMPILE compilation macros (RDOS only).

Printing Programs with ICEDIT

While editing, issue the Print command to place a range of lines from the program in a .LF file for printing at the CLI or through P.A.S.S. on RDOS. The Output command places a range of lines in a line sequential file that may be printed from the CLI.

Choose the PRINT SOURCE VIA P.A.S.S. (RDOS only) or the PRINT SOURCE (AOS or AOS/VS) selection at the Options menu to create a sequential version of the program file. Specify CARD, CRT, or TEXT format and send the output to a file (and P.A.S.S. queue under RDOS) or directly to the printer.

Compiling from the CLI

To compile an Interactive COBOL program written with ICEDIT at the CLI, type **END** at the **COMMAND???** prompt to end the session and return to the Main menu. At the Main menu, press 5 to exit ICEDIT, and exit the LOGON program to reach the CLI.

At the CLI, compile the COBOL program according to the directions and switch descriptions contained in chapter 4 of the *Interactive COBOL User's Guide* (DG part number 069-705015-02 for AOS and AOS/VS, 069-705014-02 for RDOS).

For example, suppose you have finished an ICEDIT editing session and have exited to the CLI. You want to compile your ICEDIT program file and produce a line sequential listing file (*progname.LS*) as well as the executable program (*progname.PD* and *progname.DD*). At the CLI, type:

```
ICOBOL/C/L progname/I                    (RDOS only)
ICOBOL/C/L=progname.LS progname/I        (AOS or AOS/VS)
```

Printing from the CLI

Many files produced by ICEDIT or the Interactive COBOL compiler are line sequential files and can be printed or displayed using CLI commands. The notable exceptions are the ICEDIT program files (*progname.NX* and *progname.XD*) and the executable program (*progname.PD* and *progname.DD*). For example, the listing file and error file produced by the compiler, frequently named *progname.LS* and *progname.QK*, respectively, are line sequential files. To display their contents on the screen simply use the TYPE command of the CLI:

```
TYPE progname.LS progname.QK
```

To print the contents of the files use one of the following commands:

```
PRINT progname.LS progname.QK
```
(RDOS only)

```
QPRINT progname.LS progname.QK
```
(AOS or AOS/VS)

Refer to the appropriate CLI user's manual for more advanced command usages.

There are two methods of printing ICEDIT program files from the CLI. The first method is to use the CREATE SOURCE option on the ICEDIT Options menu to make a line sequential source file *prognamenn.xx* (nn = terminal, xx = SR, CO, or TX). This file may be printed with a CLI command:

```
PRINT prognamenn.xx
```
(RDOS only)

```
QPRINT prognamenn.xx
```
(AOS or AOS/VS)

The second method of printing an ICEDIT program file from the CLI is to use the Interactive COBOL utility REORG to create a line sequential version of the indexed source file. The first and second command lines below send the source file directly to the system printer; the third command places the listing in a print file for subsequent printing from the CLI:

```
REORG/A progname/I $LPT/L
```
(RDOS only)

```
REORG/A progname/I @LPT/L
```
(AOS or AOS/VS)

```
REORG/A progname/I print-file/L
```
(RDOS, AOS or AOS/VS)

End of Chapter

Chapter 4
ICEDIT Commands

The sections in this chapter describe the operation of each ICEDIT command. The sections are arranged alphabetically by command. Each description includes an explanation of the appropriate responses to each prompt, the use of the terminal's function keys, and an illustrative example. For simplicity, the examples assume that the file being edited is a source program, but ICEDIT commands operate the same way no matter what the contents of the program file.

In many cases, a command description does not explicitly describe the use of the ESC key at each prompt. ESC is always functional, and usually performs a "cancel" function. More specifically:

- In initial mode, ESC cancels the entry, if any, at the current prompt and returns the cursor to the previous prompt. Pressing ESC at the first prompt in initial mode causes the COMMAND prompt to return.
- In entry and modify modes, ESC cancels entry or modification of the current line and terminates the command, returning the COMMAND prompt.
- In verify mode, ESC cancels processing of the currently displayed line and terminates the command, returning the COMMAND prompt.

APPend

New Line Command

Append accepts new source lines after the last line of a program. Added lines are automatically numbered in even increments of 100.

When a new program is opened, ICEDIT automatically sets the first line number to 100. When lines are appended to an existing program, ICEDIT numbers the first new line as existing last line number plus 100. If the last line number is not a multiple of 100, ICEDIT rounds the new line number to the next highest multiple of 100.

The Append command operates in initial, entry, and modify modes. In initial mode, the user may accept ICEDIT's preset line number for the source line or change it to a higher or lower value. If a lower value is entered, ICEDIT automatically switches to the Insert command. After establishing the source line number, ICEDIT prompts for text to be appended to the file (entry mode). To change these lines using ICEDIT editing characters, or to use tab stops, press F8 to enter modify mode.

Initial Mode

At the LINE # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Append.
- line number followed by the line terminator specifies the location in the program after which lines will be appended.
- line number F1 specifies the location in the program after which lines will be appended, and restarts the Append command after it completes execution.

Entry Mode

ICEDIT positions the cursor to column 8 of line 23 for entering a source line. While entering the line, the following function keys are available:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F2 places the Append command in modify mode, wherein ICEDIT may be used to edit characters and tab stops. See "Modify Mode".
- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator appends the source line to the program file. ICEDIT increments the line number by 100 and positions the cursor to column 8 for entry of another line.

Modify Mode

ICEDIT displays a source line to be modified on line 23. While modifying the line, the following function keys are available:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 moves the cursor to the first tab stop in the trailing blank portion of the line. To enter characters:
  - Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.
  - To restore the full line for modification before reaching the last tab stop, press the line terminator.

- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator appends the modified source line to the program file. ICEDIT increments the line number by 100 and positions the cursor to column 8 for entry of another line.

Example

Object: Append two lines to a program whose current last line is 1400, so that the new lines are numbered 2000 and 2100.

- At the COMMAND prompt, type `APP`.
- Initial Mode: At the LINE # prompt, enter `1900` to set the first new line number to 2000.
- Entry Mode: Enter line 2000, followed by the line terminator. ICEDIT loads line 2100. Press F2 to enter modify mode.
- Modify Mode: Press F8 twice to move the cursor two tab stops forward, enter source material, then press the line terminator to restore the full line. Press the line terminator again to append the line to the program. ICEDIT loads line 2200. To avoid entering the line, press ESC to end the Append command and return to the COMMAND prompt.

BYE

Termination Command

Bye ends an editing session. After ICEDIT displays the Options menu, select any option by entering the corresponding digit, or press ESC to return to the ICEDIT Main menu.

At the END EDITING prompt:

- `Y` ends the editing session and calls the Options menu.
- `N` cancels the Bye command and resumes the editing session.

Example

Object: End an editing session and create a source file.

- At the COMMAND prompt, type `BYE`.
- Initial Mode: At the END EDITING prompt, press `Y` to confirm the command. ICEDIT then displays the Options menu, from which the user can choose to compile (on RDOS only), print, edit, create source, or run the program just edited. Press 4 on RDOS, or 3 on AOS or AOS/VS, to select Create Source from the Options menu.

Compare allows a line by line comparison of two CARD format program files or support files. You may compare all the lines of both files or restrict the comparison to a range of lines. The results of the comparison may be stored in a revision file for use with the Patch command. This facility permits you to update an original version of a program to its current version.

Compare the files in any one of the following combinations:

- Program to program (ISAM to ISAM)
- Support to program (Sequential to ISAM)
- Support to support (Sequential to Sequential)

The line by line comparison executed by the Compare utility generates the following comparison statistics:

```
LINES FOUND ONLY IN FILE #1
LINES FOUND ONLY IN FILE #2
LINES IN BOTH FILES, DIFFERENT TEXT
TOTAL DIFFERENCES BETWEEN THE FILES
TOTAL LINES IN FILE #1
TOTAL LINES IN FILE #2
```

ICEDIT displays the line by line comparisons and statistics. To suspend the scrolling of the screen display, press CTRL-S; press CTRL-Q to resume scrolling. The data displayed on the screen is also appended to an audit file named COMPARE *nn* (*nn* = terminal number). This file may be printed from the CLI; see chapter 3 for printing instructions.

The Compare facility may also be invoked from LOGON or the Interactive COBOL Utilities menu. On AOS and AOS/VS, invoke the Compare facility with `ICX COMPARE`.

Initial Mode

Enter the names of the two files to be compared.

```
TYPE FILENAME #1
TYPE FILENAME #2
```

Include all necessary pathnames. In naming support files, include any filename extensions. Remember that ICEDIT has an 18-character limit for all filenames, excluding extensions added by the system. It is a good idea, therefore, to enter ICEDIT from the directory that contains the programs you are working with.

The first filename is used to name the optional revision file: *progfile.RF*. This revision filename is automatically recalled when the Patch command is invoked for this program. ICEDIT then asks for the range of the comparison:

```
RESTRICT COMPARE TO A RANGE OF LINES (Y OR N)
```

If you press N (for "no"), ICEDIT will compare the two files in their entirety. The program then proceeds to the CREATE PATCH FILE prompt. If you press Y (for "yes"), ICEDIT prompts for line numbers to define the comparison range. ICEDIT then asks if the revision file should be created:

```
CREATE PATCH FILE progfile.RF? (Y OR N)
```

ICEDIT then compares the files and displays statistics as illustrated below:

```
ICEDIT COMPARE UTILITY REV n.nn  CRTnn       mm-dd-yy  hh:mm:ss    PAGE 1

FILE #1 ISAM TEST1FD           FROM LINE 000000          PATCH FILE IS:
FILE #2 ISAM TEST2FD           THRU LINE 999999          TEST2FD.RF

#1 :  000100 FD  ICTEST1
#2 :  000100 FD  ICTEST2

#1 :  000500     03  ICTEST1-KEY.
#2 :  000500     03  ICTEST2-KEY.

#1 :  000600         05  CUSTOMER-NUMBER        PIC X(5).
#2 :  000600         05  CUSTOMER-NUMBER        PIC Z(5).

#1 :  000900     03  CUSTOMER-STREET            PIC X(20).
#2 :  000900         05  ADDRESS-STREET         PIC X(20).
                     .
                     .
                     .
                     .
#1 :  999999*002500TEST1FD    mm-dd-yy    hh:mm:ss
#2 :  999999*002500TEST2FD    mm-dd-yy    hh:mm:ss

END OF INPUT FILES

PRESS CR TO DISPLAY COMPARISON STATISTICS.
```

Figure 4-1. First Compare Screen

```
ICEDIT COMPARE UTILITY REV n.nn  CRTnn       mm-dd-yy  hh:mm:ss    PAGE 2

FILE #1 ISAM TEST1FD           FROM LINE 000000          PATCH FILE IS:
FILE #2 ISAM TEST2FD           THRU LINE 999999          TEST2FD.RF


LINES FOUND ONLY IN FILE #1                0
LINES FOUND ONLY IN FILE #2                0
LINES IN BOTH FILES, DIFFERENT TEXT       18
TOTAL DIFFERENCES BETWEEN THE FILES       18

TOTAL LINES IN FILE #1                    26
TOTAL LINES IN FILE #2                    26



PRESS CR TO COMPARE OTHER FILES, OR ESC TO END.
```

Figure 4-2. Second Compare Screen

Press the line terminator to move from the first screen of information to the second screen. After viewing the second screen, press the line terminator to restart the Compare command or ESC to return to the editing session, with ICEDIT performing the Toplist command automatically.

Example

Object: Compare the two files ACCTS03.SO and ACCTS04.SO.

- At the COMMAND prompt, type `COM`.
- Initial Mode. At the FILENAME prompt, enter `ACCTS03.SO AND ACCTS04.SO`. At the RESTRICT COMPARE prompt, press `N` to have the comparison include the complete files. If the files will not be used to update one another, press `N` at the CREATE PATCH FILE prompt.

ICEDIT displays a line by line listing of the differences between the files. Press the line terminator to view a summary listing of the differences between the files. If there are no more files to compare, press ESC to return the COMMAND prompt.

Copy transfers the contents of any support file to the program being edited. The user may copy the entire support file or a range of lines from the file. Because Copy does not purge lines from the file, the user may copy from a support file as many times as necessary. Copy accepts both CARD and CRT format support files. The length of the filename field is 18 characters.

ICEDIT inserts copied lines in increments of 2, unless a different increment between 1 and 999 is specified. ICEDIT copies only lines with unique line numbers. If a support file line to be copied has the same line number as one in the program, ICEDIT ends the Copy command and returns to the COMMAND prompt.

Copy operates in initial and verify modes. In initial mode, specify the support filename, range of lines, and line number increment. In verify mode, execute Copy on the entire range of lines, on one line at a time, or bypass (not copy) some of the lines specified in initial mode. Results of the copy may be displayed, and comment characters (*) may be entered in column 7.

Initial Mode

At the AFTER prompt:

- F2 recalls the first line number used in the preceding command; press the line terminator to enter the number.
- F3 displays the Help screen for Copy.
- line number followed by the line terminator specifies the location in the program at which ICEDIT will insert the copied lines.
- line number F1 specifies the program lines after which lines are to be inserted, and restarts the Copy command after it completes execution.

At the FROM FILE prompt:

- *filename* specifies the Copy file. Include pathnames up to 18 characters in length.

At the INCREMENT prompt:

- number followed by the line terminator enters the line number increment that determines the sequence numbers of the lines as they are copied into the program. ICEDIT presets an increment of 2; pressing the line terminator alone enters this default value.

At the AFTER SKIPPING prompt:

- number followed by the line terminator specifies the number of lines in the Copy file to skip before copying lines. Press the line terminator alone to start at the first line.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 copies the displayed source line into the program, lists it in the verification section of the screen, and continues to the next line in the range to be copied.
- CTRL-SHIFT-F1 copies all remaining lines in the range into the program and lists them in the verification section of the screen.
- F8 copies the displayed source line into the program without listing it, and continues to the next line in the range to be copied.
- CTRL-SHIFT-F8 copies all remaining lines in the range into the program without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be copied.

- F7 copies the displayed source line inserting the comment character (*) in column 7, lists it in the verification section of the screen, and continues to the next line in the range to be copied.
- CTRL-SHIFT-F7 copies all lines remaining in the range, placing the comment character (*) in column 7 of each line, and lists them in the verification section.

Example

Object: Insert after line 450 of the program the entire contents of support file JJP.05 with line number increments of 2.

- At the COMMAND prompt, type `COP`.
- Initial Mode: At the AFTER prompt, enter `450`. At the FROM FILE prompt, enter `JJP.05`. At the INCREMENT prompt, press the line terminator alone to accept the preset value 2. At the AFTER SKIPPING prompt, press the line terminator to indicate that no lines should be skipped.
- Verify Mode: At the VERIFY FUNCTION prompt, press CTRL-SHIFT-F1 to copy all lines from JJP.05 into the program and list them in the verification section of the screen.

Cut permits the moving of lines within a program file. You may cut one line or a group of lines, which ICEDIT stores in *progfile.CU*. Use the Paste command to insert cut lines at another position in the program file.

ICEDIT generates only one .CU file for each program file; this file stores only the most recently cut lines. Therefore, it is important to paste immediately the cut lines into the program file before issuing another Cut command; otherwise, ICEDIT will overwrite and lose previously cut lines stored in the .CU file. (See the Paste command.)

The Cut command operates in initial and verify modes. In initial mode, enter the range of lines to be cut. In verify mode, execute Cut on the entire range of lines or one line at a time. Choose whether or not to display the results and whether to bypass (not cut) some lines in the range specified in initial mode.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Cut.
- line number followed by the line terminator specifies the beginning of the range of lines to be cut.
- line number F1 restricts the range of the command to one line by entering the same line number at both the FROM and THRU prompts, and restarts the Cut command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be cut.
- line number F1 specifies the end of the range of lines to be cut and instructs ICEDIT to restart the CUT command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 cuts the displayed source line from the program, lists it in the verification section of the screen, and continues to the next line in the range to be cut.
- CTRL-SHIFT-F1 cuts all remaining lines in the range from the program and lists them in the verification section.
- F8 cuts the displayed source line from the program without listing it, and continues to the next line in the range to be cut.
- CTRL-SHIFT-F8 cuts all remaining lines in the range from the program without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be cut.

Example

Object: Cut lines 460 through 625, except line 540, from the program.

- At the COMMAND prompt, type `CUT`.
- Initial Mode: At the FROM prompt, enter `460`. At the THRU prompt, enter `625`.
- Verify Mode: At the VERIFY FUNCTION prompt, press F8 several times to cut lines one at a time. When ICEDIT displays line 540, press SPACE to bypass the line, then press CTRL-SHIFT-F8 to cut the remainder of the lines.

Delete removes and stores one or more lines from a program file for later use with the Undelete or Copy commands. ICEDIT automatically stores deleted lines in an associated support file, *progfile.DL.*

Deleted lines may be used repeatedly, without overwriting prior .DL file contents, because ICEDIT appends the most recently deleted lines to those already in the file. Note, however, that reloading a program file (choice 2 on the Main menu) which has a .DL file purges the .DL file's contents.

Delete operates in initial and verify modes. In initial mode, specify a line or range of lines to delete. In verify mode, execute the delete on single lines, on the entire range of lines, or bypass (not delete) particular lines from the range specified in initial mode. Choose whether to display deleted lines.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Delete.
- line number followed by the line terminator specifies the beginning of the range of lines to be deleted.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and instructs ICEDIT to restart the Delete command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be deleted.
- line number F1 specifies the end of the range of lines to be deleted and restarts the DELete command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 deletes the displayed source line from the program, lists it in the verification section of the screen, and continues to the next line in the range to be deleted.
- CTRL-SHIFT-F1 deletes all remaining lines in the range from the program and lists them in the verification section of the screen.
- F8 deletes the displayed source line from the program without listing it, and continues to the next line in the range to be deleted.
- CTRL-SHIFT-F8 deletes all remaining lines in the range from the program without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be deleted.

Example

Object: Delete lines 678 and 1050 from the program.

- At the COMMAND prompt, type DEL.
- Initial Mode: At the FROM prompt, type 678, then press the line terminator to enter the number at both the FROM and THRU prompts. This also instructs ICEDIT to restart the Delete command after processing line 678.
- Verify Mode: At the VERIFY FUNCTION prompt, press F1 to delete the line and list it in the verification section of the screen. ICEDIT restarts the Delete command.
- Initial Mode: At the FROM prompt, type 1050, then press the line terminator twice to enter the number at both the FROM and THRU prompts.
- Verify Mode: At the VERIFY FUNCTION prompt, press F1 to delete the line and list it in the verification section of the screen.

DUPlicate

New Line Command

Duplicate creates one or more copies of a line at the line's location. Duplicate a line as many times as necessary. Duplicate interweaves lines in the file as long as line numbers do not match. If ICEDIT detects matching line numbers, it ends the Duplicate command and returns to the COMMAND prompt.

Duplicate operates in initial and modify modes. In initial mode, enter the number of the line to be duplicated, and a line number increment from 1 to 999. ICEDIT presets line number increments of 1, 2, 10, or 100, depending on the existing line numbers before and after the insertion point, or any increment number between 1 and 999 may be specified. In MODIFY mode, ICEDIT displays the selected line; you may edit the line prior to duplicating it in the file.

Initial Mode

At the LINE # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Duplicate.
- line number followed by the line terminator specifies the line to be duplicated.
- line number F1 specifies the line to be duplicated and instructs ICEDIT to restart the Duplicate command after it completes execution.

At the INCREMENT prompt:

- number followed by the line terminator enters the line number increment, determining the numbers of the lines to be added to the program. ICEDIT presets an increment value; pressing the line terminator alone enters this value.

Modify Mode

ICEDIT displays the line to be duplicated on line 23. Modify the line before entering it in the program by overstriking characters and using the following function keys:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 positions the cursor to the first tab stop in the trailing blank portion of the line. As characters are entered:
  - Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.
  - Press the line terminator to restore the full line for modification.
- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator. The line terminator enters the modified duplicate line into the program file. ICEDIT loads another duplicate of the modified line for optional modification and entry. This cycle continues until the command is cancelled by ESC, or until a duplicate line would overwrite an existing line.

Example

Object: Line 400 reads "IF VALUE = 1 PERFORM PROCESS-1". The objective is to create two more lines that read "ELSE IF VALUE = 2 PERFORM PROCESS-2" and "ELSE IF VALUE = 3 PERFORM PROCESS-3".

- At the COMMAND prompt, type `DUP`.
- Initial Mode: At the LINE # prompt, enter 400. At the INCREMENT prompt, enter `10` to number the new lines 410 and 420.
- Modify Mode: ICEDIT loads line 410, an exact duplicate of line 400. Insert the string "ELSE " using the grave (') editing character. Then, move the cursor to change the 1's to 2's and press the line terminator to enter the line in the program. ICEDIT loads line 420, an exact duplicate of line 410. Change the 2's to 3's, and press the line terminator. ICEDIT loads another duplicate with line number 430. Press ESC to end the command.

END

Termination Command

End terminates the editing session and ICEDIT returns directly to the Main menu.

Initial Mode

At the END EDITING prompt:

- `Y` ends the editing session and returns to the ICEDIT Main menu.
- `N` cancels the END command and resumes the editing session.

Example

Object: End an editing session and return directly to the ICEDIT Main menu.

- At the COMMAND prompt, type **END**.
- Initial Mode: At the END EDITING prompt, press `Y` to confirm the command. ICEDIT displays the Main menu.

Find searches a program for all occurrences of any data string and optionally replaces it with another string. Search all or part of the program for the specified string. Find provides several options:

- Global search/replace (find/replace strings all at once)
- Global search (find all occurrences of a string in the file)
- Sequential search/replace (find/replace one string at a time)
- Sequential search (find one string at a time)

Search and replacement strings may contain a maximum of 30 characters. Strings may contain leading, embedded, and trailing blanks. Use the grave (`) character in the search string to match any single character.

ICEDIT offers to log search and replacement operations in *progfile.LF*. To create a printed audit of the Find operations, choose this option. ICEDIT automatically places this file on the PASS queue (on RDOS only). AOS and AOS/VS users may print this file directly at the line printer.

Control the Find command's search routine by responding to a prompt that asks whether to find and list all occurrences of the string, or only the next occurrence. Or, choose to invoke the string replacement routine which offers similar options: replace all occurrences of the string, or only the next occurrence. Users may also choose to change the replacement string or return to the search routine.

Initial Mode

At the STARTING # prompt:

- F2 recalls the first line number used in the preceding command. To enter the number, press the line terminator.
- F3 displays the Help screen for Find.
- line number followed by the line terminator specifies the line at which ICEDIT will start searching for a character string.
- line number F1 enters both line number at the STARTING # prompt and line number + 2000 at the THRU prompt, and instructs ICEDIT to restart the Find command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be processed.
- line number F1 specifies the end of the range of lines to be processed and instructs ICEDIT to restart the FINd command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number that is 2000 greater than the FROM entry. Pressing the line terminator or F1 enters that number.

At the PRINT ALSO prompt:

- `Y` instructs ICEDIT to append a log of search and replacement operations to file *progfile.LF*. ICEDIT automatically places this file on the PASS queue (RDOS users only). AOS and AOS/VS users may print this file directly at the line printer.
- `N` indicates that no logging should take place.

The Search Routine

At this point, ICEDIT begins the Find command's search routine, and prompts for a data string. Type a character string up to thirty characters long and press the line terminator. ICEDIT locates the first occurrence of the string within the search range, displays the source line on line 23, and prompts:

```
FIND (A)LL OR (N)EXT OR (R)EPLACE
```

Whenever ICEDIT displays this prompt:

- **A** Instructs ICEDIT to locate all occurrences of the data string in the search range. The Find command ends and the COMMAND prompt returns.
- **N** Instructs ICEDIT to locate the next occurrence of the data string in the search range. ICEDIT displays the source line on line 23 and redisplays the FIND (A)LL OR (N)EXT ... prompt.
- **R** Instructs ICEDIT to begin its string replacement routine for the line currently displayed, as shown in the example below.
- **ESC** Ends the Find command and returns the COMMAND prompt.

The String Replacement Routine

ICEDIT prompts for a replacement value; type a character string up to thirty characters long and press the line terminator. ICEDIT prompts:

```
REPLACE (A)LL OR (N)EXT OR (V)ALUE OR (F)IND
```

Whenever ICEDIT displays this prompt:

- **A** Instructs ICEDIT to replace all occurrences of data string in the search range with replacement value. Multiple instances of data string within a single line are all replaced. The Find command ends and the COMMAND prompt returns.
- **N** Instructs ICEDIT to replace all instances of data string in the line currently displayed with replacement value. ICEDIT locates the next occurrence of data string in the search range, displays the source line on line 23, and redisplays the REPLACE (A)LL ... prompt.
- **V** Permits the modification of the replacement value. After entering a new value, the REPLACE (A)LL ... prompt returns.
- **F** Ends the string replacement routine and returns the first search prompt: FIND (A)LL OR (N)EXT ...

Example

Object: Change all occurrences of "APEX AVIATION ASSOCIATION" to "WINGS OVER WILSONVILLE".

At the COMMAND prompt, type **FIN**.

- Initial Mode: At the STARTING # prompt, press the line terminator to enter **0**. At the THRU prompt, enter **9400**, the number of the program's last line. This ensures that the search range includes the entire program. At the PRINT ALSO prompt, press N, since there is no need for a record of the changes. At the DATA STRING prompt, enter **APEX AVIATION ASSOCIATION**.

  ICEDIT locates the first occurrence of "APEX AVIATION ASSOCIATION" and displays the line in which it occurs. At the FIND (A)LL OR (N)EXT ... prompt, press R to start the string replacement routine.

  At the REPLACEMENT VALUE prompt, enter **WINGS OVER WILSONVILLE**. At the REPLACE (A)LL ... prompt, press A. ICEDIT performs the string replacement throughout the program, listing the altered lines in the verification section of the screen.

Help calls the Help menu, which lists information screens concerning ICEDIT command operations and related features and functions. To view a Help screen, type the three character mnemonic listed on the Help menu. If help information on this particular subject exceeds twenty lines, ICEDIT redisplays the mnemonic in the prompt field. Press the line terminator to display the next screen of help information, or type the mnemonic for another subject.

At the last Help screen for any subject, ICEDIT places the reference NEX in the prompt field. To continue reading sequentially through the help files, press the line terminator to move to the next command. Type BAC to return to the first page of the current reference. For help on another subject, enter its mnemonic.

At any time, press ESC to return to the Help menu. Another ESC terminates the Help command and automatically executes the Toplist command.

At the CHOICE or TYPE REFERENCE prompt:

- mnemonic followed by the line terminator selects a subject for Help. Press the line terminator alone to accept the mnemonic displayed by ICEDIT.
- NEX displays the first page for the next Help subject.
- BAC displays the first page for the current Help subject.
- ESC returns the Help menu. Either continue to select Help screens or press ESC again to end the Help command. ICEDIT automatically executes the Toplist command.

Example

Object: View the Help screens for the Modify command.

- At the command prompt, type HEL.
- Initial Mode: ICEDIT displays the Help menu and prompts you to enter a three character reference. Type MOD with no terminator. The first of the Modify Help screens appears. Press the line terminator to view the second screen. After seeing the necessary information, press ESC to return to the Help menu, then ESC again to end the Help command.

Insert allows new source lines to be inserted between existing lines of a program file. ICEDIT presets line number increments of 1, 2, or 10, depending on the existing line numbers before and after the insertion point, or any increment number between 1 and 999 may be specified. ICEDIT inserts only unique line numbers; if an inserted line would have the same number as an existing line, ICEDIT ends the Insert command and returns to the COMMAND prompt.

Insert operates in initial, entry, and modify modes. In initial mode, enter the number of the line after which text is to be inserted. Then, enter a line number increment. In entry mode, type in the lines to be inserted. Press F2 to enter modify mode, and make any necessary modifications.

Initial Mode

At the AFTER prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Insert.
- line number followed by the line terminator specifies the location in the program after which ICEDIT will insert lines typed on the keyboard.
- line number F1 specifies the location in the program after which ICEDIT will insert lines and instructs ICEDIT to restart the Insert command after it completes execution.

At the INCREMENT prompt:

- number followed by the line terminator enters the line number increment, determining the numbers of the lines to be inserted in the program. ICEDIT presets an increment value; pressing the line terminator alone enters the value.

Entry Mode

ICEDIT positions the cursor to line 23 for entry of a source line. While entering lines:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F2 places the Insert command in modify mode, where the ICEDIT editing characters and tab stops may be used. See Modify Mode.
- The tab key F8 will not function properly in the entry mode.
- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator inserts the typed line in the program file. ICEDIT increments the line number using the specified increment value, and positions the cursor to column 8 for entry of another line. ESC cancels the current source line, ends the Insert command, and returns the COMMAND prompt.

Modify Mode

ICEDIT displays the source line being inserted on line 23. While modifying the line:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 positions the cursor to the first tab stop in the trailing blank portion of the line. To help enter characters:

  - Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.
  - Press the line terminator to restore the full line for modification.
- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator inserts the modified source line in the program file. ICEDIT increments the line number using the specified increment value, and positions the cursor to column 8 for entry of another line. This cycle continues until the command is cancelled with ESC or the number of an inserted line would be greater than that of an existing line.

Example

Object: Insert lines numbered 870 and 880.

- At the COMMAND prompt, type `INS`.
- Initial Mode: At the AFTER prompt, enter `860`. At the INCREMENT prompt, enter `10`. It does not matter whether line 860 exists or not.
- Entry Mode: To enter line 870, type the text and press the line terminator. ICEDIT loads line 880. While typing line 880, the word "COLUMN" is inadvertently omitted. To use ICEDIT's string insertion capability, press F8 to enter modify mode.
- Modify Mode: Move the cursor to the insertion point, then type `'COLUMN '`. Press the line terminator to execute the insertion and return the modified line. Finish typing the line, then press the line terminator to insert it into the program. ICEDIT loads line 890. To prevent the line from being entered, press ESC to end the command.

Job ends an editing session and places job files on the Local Job Entry (LJE) queue. It is possible to queue a single .LJ file, a single .MC file, or a number of job files created at the terminal. Check the online/offline status of the system printer before queuing a job.

At the completion of the Job command, the ICEDIT Main menu returns.

At the COMMAND prompt, type `JOB` to start command execution. The queuing process involves two job entry screens. At either screen, press ESC to cancel the Job command and return to the Main menu.

At the first Job Entry screen:

- F1 checks the online/offline status of the system printer.
- The line terminator proceeds to the second screen, where the name of a local job file is entered.

At the second Job Entry screen:

- The line terminator alone places all files whose names end with nn.LJ (nn = terminal number) on the execution queue.
- *filename* plus the line terminator places the specified .LJ file on the execution queue. Do not include the .LJ extension when entering the filename.
- *filename* F8 creates a local job file with the contents of the specified .MC file, and places the file on the execution queue. Do not include the .MC extension when the filename is entered.

After completing the job queuing procedure, ICEDIT returns to the Main menu.

Example

Object: Place local job file COMPILE3.LJ on the LJE execution queue.

- At the COMMAND prompt, type `JOB`. At the first job entry screen, press F1 to verify that the system printer is online. Then press the line terminator to proceed to the second job entry screen.
- At the second job entry screen, type `COMPILE3` and press the line terminator. The job file COMPILE3.LJ is queued, and the ICEDIT Main menu returns.

NOTE: The JOB command creates the .LJ file for LJE, or places a macro routine onto the LJE execution queue. The following macro routines, which reflect the actual processes of compilation under RDOS, can be called directly at the CLI, or through LJE. They provide the interface between ICEDIT and LJE, setting up the .LJ file and returning to ICEDIT. The macros accept compilation switches as indicated in the command lines below. See Figure 3-1 for a partial listing of compilation switches.

The PCOMPILE Macro (on RDOS only)

Use this macro to compile a program file and get a printed listing of the source code and the error file. The directory specifier permits executing from the master directory a program located in a subdirectory or on another disk.

```
DO PCOMPILE directory-name progname[,X][,S][,U][,N][,D]
```

Use up to three switches.

The ICPREP Macro (on RDOS only)

The ICPREP macro also produces listing and error files, but does not print them. If ICPREP is used consistently throughout the program's development, it will maintain a line-sequential backup consisting of the previous version of the program.

```
DO ICPREP progname[,S][,X][,U][,N]
```

The CLI commands in this routine do the following:

- Rename *progname.SR*, if it exists, to *progname.BU*.
- Extract (via REORG) a new *progname.SR* file from the program file.
- Compile *progname.SR* and create a listing file (*progname.LS*) and error file (*progname.QK*).
- Display a listing of all support files related to the program file.

The listing (.LS) and error (.QK) files can be displayed or printed from the CLI using the TYPE and PRINT commands, as described in chapter 3.

The COMPILE and ICDJQ Macros (on RDOS only)

These macros do a "quick" compile of a program file without producing a listing file. COMPILE resembles PCOMPILE because the directory specifier allows you to execute from the master directory a program located in a subdirectory or on another disk, as long as the pathname is 8 characters or less. ICDJQ resembles ICPREP because it maintains a line-sequential backup of the previous version of the program.

```
DO COMPILE directory-name,progname [,X][,S][,U][,N][,D][,L]
```

Use up to three switches.

```
DO ICDJQ progname[,D][,L]
```

The RETURNTO File

The four DO macros described above and the BYE compilation routine have an identification facility. The contents of the file RETURNTO are added as a heading (logo) to the compilation error file (*filename.QK*). Use RETURNTO to print identification information at the beginning of the error file. Each working directory (hence, each programmer) can have its own logo to identify compilation listings.

Join allows you to connect columns 8 through 72 of two consecutive source lines and to edit the joined line.

- If the joined line does not exceed 72 characters, the second line number disappears, becoming available for reuse.
- If the joined line exceeds 72 characters, the second line receives the overflow, with the continuation character (-) in column 7. If this operation results in splitting a literal between two lines, ICEDIT automatically enters quotation marks where required.

After ICEDIT joins the lines, the source line may be edited in modify mode prior to entering it in the program.

Initial Mode

At the LINE # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Join.
- line number followed by the line terminator names the first line of the pair to be joined.
- line number F1 names the first line of the pair to be joined, and instructs ICEDIT to restart the Join command after it completes execution.

Modify Mode

ICEDIT displays the joined line on line 23. While modifying the line:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 moves the cursor to the first tab stop in the trailing blank portion of the line. While entering characters:
  - Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.
  - Press the line terminator to restore the full line for modification.
- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator or ESC enters the modified joined line in the program. The COMMAND prompt returns.

Example

Object: Join consecutive lines 2300 and 2350.

- At the COMMAND prompt, type `JOI`.
- Initial Mode: At the LINE # prompt, enter `2300`. ICEDIT joins the two lines and loads the resulting line for modification.
- Modify Mode: Use backslashes (\) to insert spaces for visual effect, pressing the line terminator once to execute the editing characters, then a second time to enter the joined line and end the command.

List displays a range of twenty lines from a program, starting at the beginning or at a specified line number. List can scroll twenty lines at a time through the program, forward or backward.

Initial Mode

At the STARTING # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for List.
- line number followed by the line terminator specifies the location in the program at which the listing will start.
- line number F1 specifies the location in the program at which the listing will start, and instructs ICEDIT to restart the List command after it completes execution.

At the MORE prompt:

- `Y` displays the next twenty lines of the program.
- - displays the previous twenty lines of the program.
- `N` ends the List command and returns the COMMAND prompt.
- command mnemonic ends the List command and starts execution of the ICEDIT command named by the three character mnemonic.

Example

Object: List in the verification section of the screen lines 4500 to the end of the program.

- At the COMMAND prompt, type `LIS`.
- Initial Mode: At the LINE # prompt, enter `4500`. ICEDIT displays the twenty lines beginning at 4500, then asks `MORE (Y OR N)?`. Press Y to list the next twenty lines, and continue to do so until ICEDIT has listed the remainder of the program.

MEAsure *Scale Command*

Measure displays ICEDIT's scale directly beneath any line in the verification section of the display screen. ICEDIT displays temporary line numbers from 1 through 20 at the left margin of the verification section. Identify the line to be measured by entering the appropriate temporary number.

Initial Mode

At the LINE # prompt:

- number followed by the line terminator specifies the line under which ICEDIT is to display the scale. After displaying the scale, ICEDIT redisplays the LINE # prompt, allowing another line to be measured.

Example

Object: Measure lines 450 and 500 that ICEDIT has displayed in the verification section.

- At the COMMAND prompt, type **MEA**.
- Initial Mode: ICEDIT overwrites the left margin of the screen with line numbers from 1 to 20. Since program line 450 is on line 6 of the verification section, enter **6** at the LINE # prompt. ICEDIT displays the current scale below the line and returns to the LINE # prompt. Since program line 500 is on line 8 of the verification section, enter **8**. ICEDIT places the scale below the line and asks for another line number. Press ESC to end the command.

Modify enables you to edit existing source lines, one at a time or in groups. Modify enables use of the ICEDIT editing characters and direct overstriking of text characters. ICEDIT tab stops may also be used.

At the COMMAND prompt, type **MOD** to start command execution with editing characters and tabbing enabled. Alternatively, type **mod** to start command execution with editing characters treated as normal text characters and with tabbing disabled. In initial mode, specify the range of lines to be modified.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Modify.
- line number followed by the line terminator specifies the beginning of the range of lines to be modified.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and restarts the Modify command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be modified.
- line number F1 specifies the end of the range of lines to be modified and instructs ICEDIT to restart the Modify command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

Modify Mode

The ICEDIT editing characters perform the following operations in modify mode:

- A backslash (\) in columns 8-11 indents the source line four spaces, with a maximum total of sixteen spaces.
- A backslash (\) in columns 12-71 shifts characters to the right one space.
- A vertical mark (|) in columns 8-71 deletes one space or character.
- Graves (`) insert an enclosed string at the point on the source line marked by the first grave.

ICEDIT displays a source line to be modified on line 23. While modifying the line:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 positions the cursor to the first tab stop in the trailing blank portion of the line. While entering characters:
  - Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.

- Press the line terminator to restore the full line for modification.

- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.
- The line terminator enters the modified source line in the program file. ICEDIT loads the next line in the FROM – THRU range. After processing the last line in the range, the COMMAND prompt returns.
- ESC cancels the current source line and ends the Modify command, returning the COMMAND prompt.
- SHIFT-F1 returns the cursor to column 8.

Example

Object:Make line 450 into a comment line after having listed it with the View command.

- At the COMMAND prompt, type **MOD**.
- Initial Mode: At the FROM prompt, press F2 to recall 450 from the previous command, then press the line terminator to enter this number at both the FROM and THRU prompts.
- Modify Mode: ICEDIT loads line 450 for modification. Press F7 to enter the comment character (*) in column 7. Then, press the line terminator to enter the modified line in the program.

Move reproduces a single line or range of lines at a different location in the program. The group of lines is processed as a unit (lines may not be selected using the verify mode function keys), and are not deleted from their original position in the file. Move reproduces text only as long as two line numbers do not match. If a moved line would have the same line number as an existing line, ICEDIT ends the Move command and returns to the COMMAND prompt.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Move.
- line number followed by the line terminator specifies the beginning of the range of lines to be moved.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and restarts the Move command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be moved.
- line number F1 specifies the end of the range of lines to be moved and restarts the Move command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

At the INSERT AFTER prompt:

- line number followed by the line terminator specifies the location in the program to which the lines are to be moved.

At the INCREMENT prompt:

- number plus the line terminator enters the line number increment that determines the line numbers of the moved lines. ICEDIT presets an increment of 2; pressing the line terminator alone enters this value. When the increment is entered, ICEDIT inserts a copy of the specified range of lines. At the end of this process, the COMMAND prompt returns.

Example

Object: Place copies of consecutive lines 400, 450, and 500 after line 800, numbering the copies 810, 820, and 830.

- At the COMMAND prompt, type `MOV`.
- Initial Mode: At the FROM prompt, enter `400`. At the THRU prompt, enter `500`. At the INSERT AFTER prompt, enter `800`. At the INCREMENT prompt, enter `10`. ICEDIT performs the operation, then returns the COMMAND prompt.

Output creates a permanent storage file in CARD, CRT, TEXT, or CLI format for all or part of the program, and, on RDOS only, creates command files for the Local Job Entry (LJE) utility. You may output a range of lines or one line at a time.

If you accept ICEDIT's preset output filenames, the files will be numbered sequentially: *progfile.01* - *progfile.99*. You may change the output filename at the TO FILE prompt. ICEDIT also has a provision for automatically naming a local job file *progfile.LJ*. However, using this facility overwrites any existing LJE file with the same name. To supply another LJE filename, be sure to include the .LJ extension (on RDOS only).

LJE command files must be in CLI or TEXT format and must contain complete CLI instructions or CLI command files. To place an LJE file on the execution queue during an ICEDIT session, issue the Job command (on RDOS only).

Output operates in initial and verify modes. In initial mode, enter the range of lines to be Output, then choose the Output filename and file format. In verify mode, execute OUTput on the entire range of specified lines, on one line at a time, or bypass particular lines. You may choose whether to display output lines.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Output.
- line number plus the line terminator specifies the beginning of the range of lines to be output.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts and restarts the Output command after it completes execution.

At the THRU prompt:

- line number plus the line terminator specifies the end of the range of lines to be output.
- line number F1 specifies the end of the range of lines to be output and instructs ICEDIT to restart the Output command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

At the TO FILE prompt:

- filename plus the line terminator specifies the output file. ICEDIT presets a filename; pressing the line terminator alone enters that name. Include pathnames, but remember to limit them to 18 characters or less.

  If you are outputting an LJE job file (on RDOS only), the filename must end with the .LJ extension. For convenience, enter LJ followed by a space and the line terminator to create *progfilenn.LJ* (*nn* = terminal number), or enter any filename ending with the .LJ extension.

At the FORMAT prompt:

- 1 specifies CARD format (columns 1 - 80).
- 2 specifies CRT format (columns 7 - 72).

- 3 specifies TEXT format (columns 8 - 72).
- 4 specifies CLI format (columns 8 - 72). CLI format need be used only for CLI command files that include continuation lines (lines that end with "^"). ICEDIT always outputs .LJ files in this format.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 outputs the displayed source line, lists it in the verification section, and continues to the next line in the range to be output.
- CTRL-SHIFT-F1 outputs all remaining lines in the range and lists them in the verification section.
- F8 outputs the displayed source line without listing it, and continues to the next line in the range to be output.
- CTRL-SHIFT-F8 outputs all remaining lines in the range without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be output.

Example

Object: Output lines 1050 through 1300 to a card format file named RECFORD.

- At the COMMAND prompt, type `OUT`.
- Initial Mode: At the FROM prompt, enter `1050`. At the THRU prompt, enter `1300`. At the TO FILE prompt, type `RECFORD`. Enter `1` at the FORMAT prompt.
- Verify Mode: At the VERIFY FUNCTION prompt, press CTRL-SHIFT-F8 to output all lines in the range without listing them in the verification section of the display screen.

Paste inserts at one or more locations lines previously cut from a program with the Cut command. You may insert single lines or the entire range of cut lines back into the file.

Paste replaces cut lines in the program file as long as two line numbers do not match; should this occur, ICEDIT ends the Paste command and returns to the COMMAND prompt. ICEDIT offers a preset line increment of 2 for pasted lines; however, any increment between 1 and 999 may be specified.

Paste operates in initial and verify modes. In initial mode, specify the line number after which lines are to be pasted, and the increment value for pasted lines. Because pasted lines are stored in file *progfile.CU*, no filename must be specified. In verify mode, execute Paste on one line at a time, on a range of lines, or bypass (not paste) selected lines. Insert comment characters wherever convenient, and selectively display pasted lines.

Initial Mode

At the AFTER prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Paste.
- line number followed by the line terminator specifies the location in the program after which ICEDIT will paste lines from the .CU file.
- line number F1 specifies the line in the program after which ICEDIT pastes lines from the .CU file, and restarts the Paste command after it completes execution.

At the INCREMENT prompt:

- number followed by the line terminator enters the line number increment, which determines the new line numbers of the pasted lines. ICEDIT presets an increment of 2; pressing the line terminator alone enters this value.

At the AFTER SKIPPING prompt:

- number followed by the line terminator specifies the number of lines of the .CU file to skip before beginning to paste lines into the program. Press the line terminator alone to start at the first line of the file.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 pastes the displayed source line, lists it in the verification section, and continues to the next line in the range to be pasted.
- CTRL-SHIFT-F1 pastes all remaining lines in the range and lists them in the verification section.
- F8 pastes the displayed source line without listing it, and continues to the next line in the range to be pasted.
- CTRL-SHIFT-F8 pastes all remaining lines in the range without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be pasted.
- F7 pastes the displayed source line inserting the comment character (*) in column 7, lists it in the verification section, and continues to the next line in the range to be pasted.

- CTRL-SHIFT-F7 pastes all remaining lines in the range placing the comment character (*) in column 7 of each line, and lists them in the verification section.

Example

Object: Paste the 4th, 5th, and 7th lines of the .CU file into the program as lines 1320, 1340, and 1360.

- At the COMMAND prompt, type `PAS`.
- Initial Mode: At the AFTER prompt, enter `1300`. At the INCREMENT prompt, enter `20`.
- Verify Mode: At the VERIFY FUNCTION prompt, press F1 twice to paste the 4th and 5th lines into the program, listing them in the verification section. Then, press the space bar once to bypass the 6th line. Press F1 to paste and list the 7th line. Having pasted all the needed lines, press ESC to end the command.

Patch inserts into the program the contents of a revision file created by the Compare utility. The revision file contains the line by line differences between the version of the program being edited and another version with which it was compared. This allows the updating of an earlier version of a program to a later version. For instance, Patch can update a master source program at the home office with changes installed at a user site.

With the Patch command, you may insert the entire contents of the revision file or only a specified range of lines. Within the specified range, selectively insert or bypass each revised program line. ICEDIT displays the line currently in the program along with the revised line to be inserted:

PROGRAM LINE TO BE DELETED:
(line number and current program line)

REVISION LINE TO BE INSERTED:
(same line number and revised program line)

If a line currently in the program was revised or deleted after being compared, then ICEDIT also displays the line that existed at the time of comparison:

EXPECTED LINE:
(program line used for the comparison)

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Patch.
- line number followed by the line terminator specifies the beginning of the range of lines from the revision file to be patched into the program.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and restarts the Patch command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be patched into the program.
- line number F1 specifies the end of the range of lines to be patched into the program and restarts the Patch command after it completes execution.

NOTE: At the THRU prompt, ICEDIT presets the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

At the FROM FILE prompt:

- *filename.RF* plus the line terminator specifies the revision file whose contents are to be patched into the program. Press the line terminator alone to enter the filename preset by ICEDIT.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 patches the displayed source line into the program, lists it in the verification section, and continues to the next line in the range to be patched.
- CTRL-SHIFT-F1 patches all remaining lines in the range into the program and lists them in the verification section of the display screen.
- F8 patches the displayed source line into the program without listing it, and continues to the next line in the range to be patched.
- CTRL-SHIFT-F8 patches all remaining lines in the range into the program without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be patched.

Example

Object: Update the program LEDGER12 by patching in all lines from the revision file LEDGER12.RF.

- At the COMMAND prompt, type `PAT`.
- Initial Mode: At the FROM prompt, press the line terminator to enter `0`. This indicates that patching is to start at the beginning of the revision file. At the THRU prompt, enter a number larger than the last line number in the revision file. At the FROM FILE prompt, press the line terminator to accept the preset filename.
- Verify Mode: At the VERIFY FUNCTION prompt, press CTRL-SHIFT-F8 to patch all lines at once, without listing them in the verification section.

Print outputs a copy of all or part of a program to a file. Under RDOS, the file *progfile.LF* is placed on the P.A.S.S. queue. Under AOS or AOS/VS, the file may be printed from the CLI with the QPRINT command after leaving the ICEDIT editor. If the file specified at the TO FILE prompt already exists, ICEDIT has three options: to append the lines to the existing file allowing you to write a series of excerpts to a single print file during an edit pass; to purge existing lines from the file before outputting the new lines; or to select another filename under which the new lines will be stored and printed.

The file *progfile.LF* is purged each time you start an editing session with the program at the same terminal. Therefore, print out your listing before starting another edit pass on the file.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Print.
- line number followed by the line terminator specifies the beginning of the range of lines to be printed.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and restarts the PRInt command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

At the TO FILE prompt:

- *progfile.LF* appears as ICEDIT's preset file. Press the line terminator to enter this file, or specify an alternate filename and press the line terminator.
- If the file already exists, the following prompt appears: `PRESS FUNCTION KEY: #1 TO OVERWRITE, #8 TO APPEND, OR ESC TO RENAME.` F1 places the specified text in the file, purging any contents currently present. F8 appends the specified range of text to the file. ESC returns to the TO FILE prompt allowing another filename to be entered.

You are next prompted for the format desired in the .LF file:

```
FORMAT? CARD=1 CRT=2 TEXT=3 CLI=4    TYPE YOUR CHOICE: _
```

If CARD or TEXT format is chosen, then the following question appears, with CARD or TEXT in the blank:

```
INCLUDE COL 73-80 OF ____ (Y or N)? _
```

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 appends the displayed source line to the file, lists it in the verification section, and continues to the next line in the range to be printed.
- CTRL-SHIFT-F1 appends all remaining lines in the range to the file and lists them in the verification section.

- F8 appends the displayed source line to the file without listing it, and continues to the next line in the range to be printed.
- CTRL-SHIFT-F8 appends all remaining lines in the range to the file without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be printed.

Example

Object: Append all lines, except the first two, from the beginning of the program through line 1000 to *progfile.LF*.

- At the COMMAND prompt, type `PRI`.
- Initial Mode. At the FROM prompt, press the line terminator to enter `0`. At the THRU prompt, enter `1000`. In response to the TO FILE prompt, enter the line terminator to accept *progfile.LF* as the output file. ICEDIT asks whether to OVERWRITE, APPEND, or RENAME. Press F8 to choose APPEND. At the FORMAT prompt, press 3 for TEXT format. Enter `Y` at the prompt `INCLUDE COL 73-80 OF TEXT (Y or N)?`
- Verify Mode. At the VERIFY FUNCTION prompt, press SPACE twice to bypass the first two lines. Then press CTRL-SHIFT-F1 to send the remainder of the lines in one step, listing them in the verification section.

PURge

Line Manipulation Command

Purge completely erases a line or a range of lines from a file. Unlike lines erased with the Delete command, purged lines cannot be recalled with the Undelete command.

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceeding command. Press the line terminator to enter the number.
- F3 displays the Help screen for the Purge command.
- line number followed by the line terminator specifies the beginning of the range of lines to be purged.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts and restarts the Purge command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be purged.
- line number F1 specifies the end of the range of lines to be purged and restarts the Purge command after it completes execution.

NOTE: At the THRU prompt, ICEDIT displays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 purges the displayed source line from the program, lists it in the verification section of the screen, and continues to the next line in the range to be purged.
- CTRL-SHIFT-F1 purges all remaining lines in the range from the program and lists them in the verification section.
- F8 purges the displayed source line from the program without listing it, and continues to the next line in the range.
- CTRL-SHIFT-F8 purges all remaining lines in the range from the program without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be purged.

Example

Object: Purge all lines after line 4300 from the program

- At the COMMAND prompt, type `PUR`.
- Initial Mode: At the FROM prompt, enter `4300`. At the THRU prompt, enter `777777`, since this is larger than the program's greatest line number.
- Verify Mode: At the VERIFY FUNCTION prompt, press the space bar once to bypass line 4300. Then press CTRL-SHIFT-F1 to purge the remainder of the lines in one step, listing them in the verification section.

Run ends the editing session and executes an Interactive COBOL program. The program must have been previously compiled. The program name may include pathnames, but must be 18 characters or less.

Initial Mode

At the RUN PROGRAM prompt:

- *progname* followed by the line terminator specifies the Interactive COBOL program to be executed.
- ESC cancels the Run command and returns the COMMAND prompt.

Example

Object: End the editing session and run the program MORTPROG.

- At the COMMAND prompt, type `RUN`.
- Initial Mode: ICEDIT prompts for the entry of a program name. Enter `MORTPROG`. ICEDIT closes the program file which was being edited and passes control to MORTPROG.

Scale modifies the scale that ICEDIT provides for all commands that display or modify source lines. You may also restore the standard ICEDIT scale, with markers in columns 10, 15, 20, etc.

Initial Mode

ICEDIT loads the current scale on line 23 for modification. Press F1 to restore the standard ICEDIT scale. To revise the scale, type any characters, then press the line terminator.

Example

Object: Erase the current scale markers and place asterisk markers in columns 32, 54, and 65.

- At the COMMAND prompt, type `SCA`.
- Initial Mode. ICEDIT displays the current scale on line 23. To erase the current markers, press F1, restoring the standard scale. Then move the cursor to columns 32, 54, and 65, typing an asterisk at each. Press the line terminator to enter the revised scale.

Split creates two consecutive source lines from one source line. Before executing the split, ICEDIT displays the line for modification. After the split, the second part of the line may be modified.

In initial mode, enter the number of the line to be split and an increment to determine the number of the second part of the split line. ICEDIT loads the line in entry mode, allowing the user to edit it before splitting. To execute the split, enter a tilde (~) at the split location and press the line terminator. After executing the split, ICEDIT loads the second part of the line in modify mode, allowing further editing.

Initial Mode

At the LINE # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Split.
- line number followed by the line terminator specifies the line to be split.
- line number F1 specifies the line to be split and restarts the Split command after it completes execution.

At the INCREMENT prompt:

- number followed by the line terminator enters the line number increment to determine the number of the second part of the split line. ICEDIT presets an increment of 10; pressing the line terminator alone enters this value.

After entering an increment, ICEDIT displays on line 23 the source line to be split. Modify the whole line prior to splitting it in entry and modify modes.

Entry Mode

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F2 places the Split command in modify mode, wherein the ICEDIT editing characters and tab stops may be used. See "Modify Mode" below.
- The line terminator splits the line at the position where a tilde (~) has been entered. The second part of the line is loaded for modification.
- CTRL-SHIFT-F1 positions the cursor to column 8.
- ESC cancels the Split command, returning the COMMAND prompt.

Modify Mode

Before ICEDIT splits the line, the user may enter modify mode by pressing F2. After the line is split, ICEDIT automatically loads the second part of the line for modification. In modify mode:

- F1 positions the cursor to column 7.
- F7 enters the comment character (*) in column 7.
- F8 positions the cursor to the first tab stop in the trailing blank portion of the line. As characters are entered:

- Press F8 to move the cursor to successive tab stops. After reaching the last tab stop, F8 restores the full line for modification.
- Press the line terminator to restore the full line for modification.

- SHIFT-F8 positions the cursor to column 73, the beginning of the comment field. To return the cursor to column 8, press the line terminator.

Before the split:

- The line terminator splits the line at the position where a tilde (~) has been entered. The first part of the line is loaded for modification.
- ESC cancels the Split command, returning the COMMAND prompt.

After the split:

- The line terminator or ESC enters the modified second part of the source line in the program.

Example

Object: Split line 450, adding the words "PERFORM BUB$SORT" at the beginning of the second part.

- At the COMMAND prompt, type `SPL`.
- Initial Mode: At the LINE # prompt, enter `450`. At the INCREMENT prompt, enter `10`, so that the second part will have line number 460.
- Entry Mode: ICEDIT loads line 450. Position the cursor to the column at which the split should take place, type ~, and press the line terminator. ICEDIT splits the line, entering the first part as a new line 450. It loads the first part of the split line as line 450 in modify mode.
- Modify Mode: Type the string `'PERFORM BUB$SORT '` at the beginning of line 460 to insert the PERFORM statement in the line. Then press the line terminator to enter the modified line in the program.

STAtus (RDOS users only) *Utility Command*

Status displays the most recent status message produced by the Local Job Entry Monitor (LJE), along with information on the last job queued at the terminal.

Status may also be used to test the online/offline status of the system printer.

WARNING: If the printer is offline, the terminal becomes locked; no further work can be done at the terminal until one the following conditions is met:

- The printer is placed back online.
- Runtime system operation is aborted from the master terminal.

NOTE: When the printer is offline, CTRL-D has no effect.

At the COMMAND prompt, type STA to start command execution. ICEDIT displays the LJE status screen. At this point:

- The line terminator updates the status screen.
- F1 checks the online/offline status of the system printer.
- ESC ends the Status command and returns the COMMAND prompt.

Example

Object: Determine whether LJE has executed the job file COMPILE3.LJ, which was queued earlier.

- At the COMMAND prompt, type STA. The LJE status screen appears, showing that the most recently completed job queued from the terminal was PRINTACC.LJ.
- Press the line terminator after waiting a few moments to update the status screen. If the job has not been started, press ESC to return the COMMAND prompt.

Tab modifies the tab stops used by several commands in modify mode. ICEDIT allows the restoration of the standard set of tab stops: in columns 12, 16, 20, ..., 72.

Select any keyboard character to mark the tab stops; ICEDIT offers the standard marker, the exclamation point (!). After selecting a tab stop marker, type the character at up to sixteen locations between column 8 and column 72.

Any characters other than the tab stop marker entered with the TAB command will remain on the ICEDIT scale. This enables you to enter several sets of tab stops at once, as illustrated in the example below.

Initial Mode

At the TAB SET CHARACTER prompt:

- character followed by the line terminator establishes character as the tab stop marker and loads the current scale on line 23 for modification. Press the line terminator alone to accept the exclamation point as the standard tab stop marker.
- character F1 establishes character as the tab stop marker, restores the scale (markers in columns 10, 15, 20, etc.), and loads the scale on line 23 for modification. Press F1 alone to accept the standard tab stop marker (!), and restore the standard scale. This does not, however, restore the standard tab stops; do this at the next prompt.

At the MARK TAB STOPS prompt:

- Enter the tab stop marker in up to sixteen positions on the scale. After finishing, press the line terminator to enter the new tab stops. Alternatively, press F1 to enter ICEDIT's standard tab stops (columns 12, 16, 20, ..., 72).

Example

Object: Enter tab stops marked by "A" in columns 20, 40, and 60; and enter "B" in columns 35 and 55 for future use as tab stops.

- At the COMMAND prompt, type `TAB`.
- Initial Mode: ICEDIT loads the current scale on line 23. At the TAB SET CHARACTER prompt, type `A` and press F1 to restore the standard scale.
- At the MARK TAB STOPS prompt, enter `A` in columns 20, 40, and 60, and `B` in columns 35 and 55. Then press the line terminator to enter the modified tab stops. The "A" tab stops are now in effect.

To use the "B" tab stops, issue the TAB command and enter `B` as the tab stop marker; it is not necessary to change the scale at all.

TOPlist *Display Command*

Toplist displays the first twenty lines of the program. ICEDIT switches automatically to the List command to allow the display of more lines.

Initial Mode

At the MORE prompt:

- `Y` displays the next twenty lines of the program.
- `-` displays the previous twenty lines of the program.
- `N` ends the Toplist command and returns the COMMAND prompt.
- command mnemonic ends the Toplist command and starts execution of the specified command.

Example

Object: List the first twenty lines of the program.

- At the COMMAND prompt, type `TOP`. ICEDIT lists the lines in the verification section and returns to the COMMAND prompt.

Type displays the contents of any line-sequential file (e.g., an ICEDIT support file). Include pathnames when naming the file, but restrict pathnames to 18 characters or less, excluding extensions. ICEDIT allows you to examine the file from its beginning or after skipping a number of lines. It displays twenty lines at a time, asking each time it pauses whether to continue.

Initial Mode

At the FROM FILE prompt:

- *filename* followed by the line terminator specifies the file to be displayed. Include any filename extensions, and include a device and/or directory specifier. If the file is sequentially organized, the AFTER SKIPPING prompt is displayed. If the file has ISAM organization, the FROM LINE prompt is displayed.

At the AFTER SKIPPING prompt (sequential organization):

- number followed by the line terminator specifies the number of lines in a sequential file to skip before starting to display the file. Press the line terminator alone to start at the first line.

At the MORE prompt:

- `Y` displays the next twenty lines of the program.
- `N` or ESC ends the Type command and returns the COMMAND prompt.

At the FROM LINE prompt (ISAM organization):

- Enter the line terminator to start at the first line.

At the THRU LINE prompt:

- Line number followed by the line terminator specifies the end of the range of lines to be typed.
- Twenty lines are displayed.
- The MORE prompt is displayed.

Example

Object: List the second hundred lines of line sequential file ACCTS08.CO.

- At the COMMAND prompt, type `TYP`.
- Initial Mode. At the FROM FILE prompt, enter `ACCTS08.CO`. At the AFTER SKIPPING prompt, enter `100`. ICEDIT skips the first hundred lines of the file and lists the next twenty in the verification section. At the MORE prompt, press `Y` to list the next twenty lines. Continue to press `Y` at the MORE prompt while examining the second hundred lines of ACCTS08.CO. Then, press `N` to end the command.

Undelete restores previously deleted lines to a program, one at a time or in groups (see the Delete command).

Lines to be restored are retrieved from *progfile.DL* and inserted with their original line numbers. When a deleted line is restored, it overwrites any existing line with the same number. The Undelete command does not purge the contents of *progfile.DL*. This file is purged, however, if *progfile.DL* is used to reload a program file (choice 2 on the ICEDIT Main menu).

Initial Mode

At the FROM prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for Undelete.
- line number followed by the line terminator specifies the beginning of the range of lines to be restored to the program.
- line number F1 restricts the range of the command to one line by entering line number at both the FROM and THRU prompts, and restarts the Undelete command after it completes execution.

At the THRU prompt:

- line number followed by the line terminator specifies the end of the range of lines to be restored.
- line number F1 specifies the end of the range of lines to be restored and restarts the Undelete command after it completes execution.

NOTE: At the THRU prompt, ICEDIT redisplays the number entered at the FROM prompt. Pressing the line terminator or F1 enters that number, restricting the scope of the command to one line.

Verify Mode

At the VERIFY FUNCTION prompt:

- F1 restores the displayed source line, lists it in the verification section, and continues to the next line in the range to be restored.
- CTRL-SHIFT-F1 restores the entire range of lines and lists them in the verification section.
- F8 restores the displayed source line without listing it, and continues to the next line in the range to be restored.
- CTRL-SHIFT-F8 restores the entire range of lines without listing them.
- SPACE bypasses the displayed source line and continues to the next line in the range to be restored.

Example

Object: Restore line 1200 after having deleted lines 1000 through 1500.

- At the COMMAND prompt, type **UND**.
- Initial Mode: At the FROM prompt, enter **1200**. At the THRU prompt, press the line terminator to enter the preset value 1200.
- Verify Mode: At the VERIFY FUNCTION prompt, press F8 to restore line 1200 without listing it in the verification section.

View displays a single line or a series of consecutive lines in the command entry section of the display screen.

Initial Mode

At the LINE # prompt:

- F2 recalls the first line number used in the preceding command. Press the line terminator to enter the number.
- F3 displays the Help screen for View.
- line number followed by the line terminator specifies the line to be viewed.
- line number F1 specifies the line to be viewed and instructs ICEDIT to restart the View command after it completes execution.

At the MORE prompt:

- `Y` displays the next line of the program.
- - displays the previous line of the program.
- `N` or ESC ends the View command and returns the COMMAND prompt.
- command mnemonic ends the View command and starts execution of the command named by the three character mnemonic.

Example

Object: View line 490.

- At the COMMAND prompt, type `VIE`.
- Initial Mode: At the LINE # prompt, enter `490`. ICEDIT displays the line on line 23 and asks `MORE (Y OR N)?`. Press ESC to end the command.

End of Chapter

Appendix A
Glossary

COMMAND ENTRY SECTION
The part of the display screen (lines 22 - 24) used to enter ICEDIT commands, respond to ICEDIT prompts, and enter and modify source lines.

CURSOR
A blinking underscore that indicates where the next character will appear.

DO MACRO
A file containing CLI commands to be executed by the Local Job Entry Monitor or directly at the CLI (RDOS only).

EDITING CHARACTERS
Characters that facilitate source line alteration in modify mode: character deletion, space insertion, and character-string insertion.

ENTRY MODE
The step in ICEDIT command execution which enters new source lines into a program or alters an existing line without the use of editing characters.

FUNCTION KEY
One of the keys above the typewriter keypad. Many ICEDIT functions are implemented through the use of function keys.

HELP MENU
Offers a comprehensive selection of HELP screens that explain ICEDIT commands and functions.

INCREMENT
A numerical value which, in conjuction with a "starting line" value, numbers a group of lines being inserted into a program. For example, an increment of 25 and a starting value of 600 would generate the line numbers 625, 650, 675, etc.

INITIAL MODE
The step in ICEDIT command execution in which ICEDIT prompts for line numbers and filenames to define editing operations.

LIBRARY MENU
Provides access to all ICEDIT program files in the system. After selecting a file, the Options menu appears.

MAIN MENU
The ICEDIT menu which offers options to create new programs, edit new or existing programs, and access utilities associated with ICEDIT.

MODIFY MODE
The step in ICEDIT command execution used to modify source lines with the aid of ICEDIT's editing characters.

OPTIONS MENU
The menu which offers options to call and run a program, edit and compile programs (RDOS only), create and print source files.

PRESET VALUE
A default value offered by ICEDIT for a line number, line-number increment, or filename.

PROGRAM FILE
An indexed (ISAM) file that stores all source lines entered from the keyboard, modified during an editing session, or copied from another file.

RESET LINE NUMBER
A line number used in the previous command which is recalled for use in the present command.

SUPPORT FILE
A file that supports the editing features of ICEDIT by storing source lines from a program file for subsequent use elsewhere in the same program, in another program, or by the Local Job Entry Monitor (RDOS only).

UTILITIES MENU
Provides access to all the utilities associated with ICEDIT.

VERIFICATION SECTION
The part of the display screen (lines 1-20) in which ICEDIT displays source lines to confirm editing operations and to provide an up-to-date window into the program.

VERIFY MODE
The step in ICEDIT command execution used to execute the moving or deleting of a range of lines.

End of Appendix

Related Documents

Interactive COBOL Documents

Interactive COBOL User's Guide (RDOS, DG/RDOS) **069-705014**
Interactive COBOL User's Guide (AOS and AOS/VS) **069-705015**

Supply the programmer with information relating specifically to Interactive COBOL on the given operating systems. Each document describes the file system, system calls, the runtime system, the compiler, and the debugger. Lists of error messages and their meanings are provided.

Interactive COBOL Utilities (RDOS, DG/RDOS) **069-705020**
Interactive COBOL Utilities (AOS, AOS/VS) **069-705021**

Describe the Interactive COBOL utilities on your operating system. Summarizes the uses and contexts of the utilities, and includes an alphabetical reference that provides detailed operating instructions and examples.

SCREEN: Screen Format Editor **055-006**

Explains the IC/SCREEN or CLI/SCREEN programs, which are special purpose editors for designing, coding, and displaying screen formats. The manual describes how the programmer can compose a screen image by typing in literal and data fields as they will appear to the program user. The Interactive COBOL source code for this image is generated automatically.

CRT/EDIT: Display Terminal Text Editor **055-000005**

Describes the use and operations of CRT/EDIT, a string-oriented editor designed for creating, modifying, and maintaining programs. It produces source program files that can be submitted to the Interactive compiler. The editor may also be used to produce prose text. The manual provides an overview of the editor and command reference sections that describe basic and advanced commands.

JOBS User's Guide **055-000042**

Describes the Job Organization Batch Stream utility. JOBS places CLI macros and Interactive COBOL programs on a queue to be executed at the end of the day. The manual describes how to use JOBS and illustrates how it can be applied to typical situations.

RDOS and DG/RDOS Documents

Introduction to RDOS **069-400011**

Introduces RDOS concepts to readers who are unfamiliar with the operating system and its capabilities.

How to Load and Generate RDOS **069-400013**

Guides the reader step by step through the RDOS system generation process. The manual serves the first-time user and the user who wants to generate a system tailored to specific requirements.

RDOS/DOS Command Line Interpreter **069-400015**

Introduces the command line interpreter (CLI) and describes its operations and advanced functions. It also highlights the features and operating procedures of the batch monitor.

Using DG/RDOS on DESKTOP GENERATION Systems **069-000056**

Explains how to install and operate DG/RDOS software on your system.

AOS and AOS/VS Documents

Learning to Use Your Advanced Operating System (AOS) **069-000018**

Summarizes AOS system utilities and leads the reader through practice sessions. It explains the steps required to run FORTRAN, COBOL, and assembly language programs.

Command Line Interpreter User's Manual (AOS and AOS/VS) **093-000122**

Describes the command line interpreter (CLI), which is the primary interface to the system for the system manager, operator, and most users. The manual explains how users can run utilities, execute programs, maintain files, and build command "macros" by means of the CLI.

AOS Programmer's Manual **093-000120**

Serves as a primary reference for assembly language programmers. It describes in detail the external features of AOS, including the AOS system calls and information required for an in-depth understanding of the operating system. Other topics included are process concepts, memory management, file I/O, and multitasking.

Learning to Use Your AOS/VS System **069-000031**

Serves as a basic introduction to the Advanced Operating System/Virtual Storage for programmers and nonprogrammers. It summarizes the system utilities and gives an overview of AOS/VS products. It also leads the reader through practice sessions with editors and illustrates the creation and execution of programs written in FORTRAN, COBOL, BASIC, and assembly language.

How to Generate and Run AOS/VS on Your ECLIPSE® MV/Family Computer 093-000243

Explains how to start up, run, and shut down an AOS/VS system. Describes how to buld an AOS/VS system tailored to a user's hardwarre and software.

AOS/VS Programmer's Manual
Vol 1: System Concepts **093-000355**
Vol 2: System Calls **093-000241**

Serves as a primary reference for assembly language programmers. It describes the external features of AOS/VS, including system calls and information required for understanding the operating system. Other topics included are virtual memory concepts, interprocess communication, file structure and maintenance, file I/O, multitasking, and binary synchronous communication.

Using AOS on DESKTOP GENERATION Systems **069-000058**

Explains how to install and operate AOS software on your system.

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