60450100

CONTROL DATA

MODIFY
REFERENCE MANUAL

CDC® OPERATING SYSTEM:
NOS 2

MODIFY DIRECTIVES INDEX

OPLEDIT DIRECTIVES INDEX

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NOS 2

REVISION RECORD

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PREFACE

This manual describes the program library maintenance utility Modify. Modify is part of the Network Operating System (NOS) Version 2. Modify is used to maintain and update source files that are on libraries in a compressed format. NOS can operate on the following computer systems:

- CDC® CYBER 180 Computer Systems
  Models 810, 830, 835, 840, 845, 850, 855, 860, 990
- CDC CYBER 170 Computer Systems
  Models 171, 172, 173, 174, 175, 176, 720, 730, 740, 750, 760, 815, 825, 835, 855, 865, and 875
- CDC CYBER 70 Computer Systems
  Models 71, 72, 73, and 74
- 6000 Computer Systems

AUDIENCE

Because the advantages of Modify are best utilized by a programmer with a large volume of source program text or symbolic data, the manual is written for the experienced NOS applications or systems programmer.

ORGANIZATION

Section 1 describes the purposes and features of the Modify utility, and Section 2 provides a tutorial overview of basic Modify concepts. Section 3 decribes the MODIFY command. The remaining sections describe Modify directives and file formats. Appendix A describes the OPLEDIT utility, which is used to manage modification sets created by Modify.

SUBMITTING COMMENTS

The last page of this manual is a comment sheet. Please use it to give your opinion on the manual's usability, to suggest specific improvements, and to report any errors. If the comment sheet has already been used, you can mail your comments to:

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Additionally, if you have access to SOLVER, which is an online facility for reporting problems, you can use it to submit comments about the manual. Use NS2 as the product identifier.

CONVENTIONS

CONTROL STATEMENT

The manuals of many NOS products use the term control statement instead of the term command. This manual uses the term command almost exclusively. You can consider the two synonymous.

EXAMPLES

The following conventions apply to examples that appear in this manual:

- Examples of actual terminal sessions that appear in this manual were produced on a display terminal in NORMAL character mode unless otherwise specified. Uppercase characters represent terminal output; lowercase characters represent user input unless otherwise noted. (However, user input that is displayed within the text of this manual is shown in uppercase characters). The vertical spacing in examples does not necessarily coincide with the spacing that appears on your terminal.
- Program examples are written either in FORTRAN 5 or in COMPASS.

COMMAND FORMAT

Interpret uppercase characters within command formats literally. Lowercase characters indicate variable values which are described immediately following the line that shows the command format.

RELATED PUBLICATIONS

The following is a list of NOS operating system manuals and NOS product set reference manuals.

Control Data publishes a Software Publications Release History of all software manuals and revision packets it has issued. This history lists the revision level of a particular manual that corresponds to the level of software installed at the site.

These manuals are available through Control Data sales offices or Control Data Literature Distribution Services (308 North Dale, St. Paul, Minnesota 55103).

Control Data Publication	Publication Number
NOS Version 2 Reference Set, Volume 3, System Commands	60459680
NOS Version 2 Reference Set, Volume 4, Program Interface	60459690
FORTRAN Version 5 Reference Manual	60481300
COMPASS Version 3 Reference Manual	60492600

You might also want to consult the NOS System Information Manual. This is an online manual that includes brief descriptions of all NOS operating system and NOS product set manuals. You can access this manual by logging into NOS and entering the command EXPLAIN.

DISCLAIMER

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or undefined parameters.

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FIGURES

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INTRODUCTION 1

Modify is a NOS system utility used to maintain large source program files. Modify's primary functions are as follows:

- To store program source files in a special, compressed library format. These library files are called program libraries.
- To maintain status information and modification history information for each line of code or text in a program library.
- To allow direct modification of program libraries through the use of Modify directives.
- To output various types of files including program libraries, compiler or assembler input files, and statistical listing files.

The Modify utility is called by the MODIFY command, described in section 3. On the MODIFY command, you specify the old program library you want to modify, the output files you want Modify to generate, and the processing options for the Modify run.

You can run Modify as a batch or interactive job. When you enter an interactive MODIFY command and do not specify an input directives file, Modify prompts you to enter directives interactively.

ADDITIONAL FEATURES

Other features of Modify include:

- Formatting of lines to facilitate line-by-line modification of the file.
- Insertion, deletion, deactivation, or reactivation of individual lines within the file.
- Deactivation or reactivation of one or more groups of changes (called modification sets) previously made to the text.
- Replacement of often-used groups of lines (called common decks) by one-line calls for their insertion.
- Inclusion of both DISPLAY code (uppercase only) and ASCII code (upper and lowercase) decks on the same program library.
- Generation of an output file in a format suitable for input to an assembler or compiler.
- Limiting the range of modifications to specified records (decks).

- Output of statistical information regarding program library status and lines modified.
- Support of 63- and 64-character sets.

INPUT AND OUTPUT FILES

Figure 1-1 is a block diagram showing the execution flow of a Modify run in terms of the files used during the run.

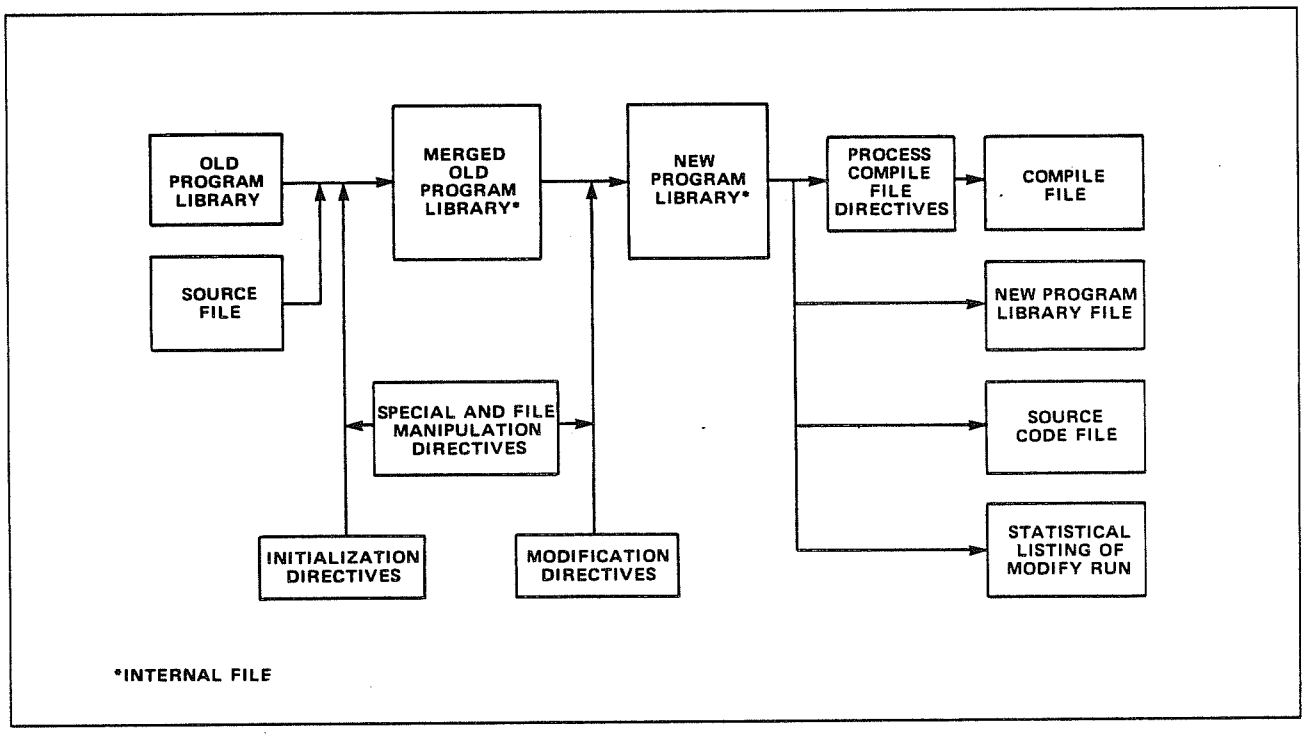


Figure 1-1. Modify Execution Flow

MODIFY INPUT FILES

As shown in figure 1-1, there are three types of Modify input files:

- Source files
- Program libraries
- Directives file

Source Files

Input source files for Modify are program files, NOS procedure files, or text files to be converted to program library format. A file must be converted to program library format before Modify can perform any other operations on it.

In program library format, a logical record is referred to as a deck. In creating a source input file for Modify, it is usually advantageous to place each program, subroutine, or procedure in a separate deck. This practice allows you to modify, reassemble, or recompile the program library in smaller, individual units.

The only special preparation required for source files before being input to Modify are the addition of one or more header lines in each deck. The first line is required and specifies the name of the deck. You can include other lines to designate a deck as a common deck or to define the code set (lowercase only or uppercase and lowercase) of the deck. Section 2 describes source file preparation in greater detail.

Program Libraries

One of the key features of Modify is the use of program libraries for storage and modification of source files. A program library is a source file that has been converted to program library format during a previous Modify run. A program library has the following special characteristics:

- It is compressed: Modify has replaced three or more consecutive blanks within a line with special compression codes.
- It is sequenced: Modify has assigned a sequence number and modification name to each line of the file. This information is printed on the compile output file.
- It is indexed: Modify has built a directory of the decks (records) on the program library file.

Modify uses program libraries for both input and output. By convention, input program libraries are referred to as old program libraries (OPLs). The primary OPL file is defined on the MODIFY command P parameter. Additional OPLs can be specified using one of the Modify directives, the OPLFILE directive.

A deck containing a frequently used group of source statements, such as a group of DATA or COMMON statements in a FORTRAN program, can be designated as a common deck. Modify has special compiler directives that allow you to call a common deck from anywhere in the program library. A call to a common deck causes Modify to insert the common deck into the compile output file at the point from which it was called. This eliminates the need for duplicate sequences of lines at multiple points within a library.

Section 9 describes the file structure of a program library file.

Directives File

You initiate the Modify utility by entering a MODIFY command. Most of the operations that Modify performs, however, are controlled by Modify directives that you enter from a directives file.

The directives file is a file containing the directives that define the operations to be performed in a particular Modify run. You have a number of options in creating the directives file.

For batch jobs, you have three options:

- You can place directives and insertion text in a NOS file. The name of the directives file is then specified on the MODIFY command I parameter (I=filename format).
- The Z parameter of the MODIFY command allows you to append directives to the MODIFY command following the command terminator.
- If both the I and Z parameters are omitted from the MODIFY command, Modify looks for the directives file in the next record following the job from which Modify was called.

For interactive jobs, you can use the I and Z parameters in the same way they are used in batch jobs. A third option is to enter directives interactively. If you do not specify either the I or Z parameter on the MODIFY command, Modify prompts you to enter directives from file INPUT.

There are numerous examples of directive files contained in the examples in sections 4 through 9 of this manual.

OUTPUT FILES

Modify produces four types of output files:

- Compile file
- New program library file
- Source output file
- Statistical list file

Compile File

The compile file is a program text file that contains the edited OPL decks with modifications incorporated by Modify. Each line of the compile file has line-sequencing information used to identify individual lines for modification. You can use the compile file as input to the COMPASS assembler or to a compiler. You can also send the compile file to an output device for printing. The MODIFY command C parameter selects compile file output. Other MODIFY parameters control various processing options that you can select when the compile file is to be input directly to a language processor.

New Program Library

The new program library file contains the same updated information as the compile file except in program library format. You can use the new program library as input to a subsequent Modify run.

Source Output File

This file contains the same updated text as the compile file except that compile file directives have not been processed or removed from the file. Line-sequencing information does not appear on the source output file unless you explicitly request it using the SORSEQ directive.

Statistical List File

The statistical list file lists information on the Modify run. This information includes details of program text changes, file status, errors, and other significant events that occur during the run.

Figures 1-2 and 1-3 provide examples of a batch job and an interactive job executing a Modify run.

```
JOBMOD.
USER,USERNUM,PASSWRD,FAMILY.
GET,MAINP.
MODIFY,P=0,F,N.
SAVE,NPL=MAINPL.
--EOR--
*REWIND MAINP
*CREATE MAINP
--EOI--
```

Input directives for MODIFY command.

End-of-information.

Figure 1-2. Modify Execution from Batch Job

```
/old,mainp
/scopy,mainp
DECK1
***    MAIN PROGRAM
       PROGRAM MAIN
       PRINT*,'BEGIN MAIN PROGRAM.'
       CALL SUB1
       PRINT*,'END MAIN PROGRAM.'
       STOP
       END
--EOR--
DECK3
***    EMPTY DECK
--EOR--
--EOF--
/modify,p=0,f,n,l=0
? *create mainp
?
 MODIFICATION COMPLETE.
/replace,npl=mainpl
```

After logging in, user requests batch subsystem.

l=0 specifies no Modify output.

Input directives are requested and entered immediately following MODIFY command. Null input line (carriage return only) terminates input.

Modify lists a completion message.

Figure 1-3. Modify Execution from Interactive Job

MODIFY EXECUTION 2

Section 2 provides an overview of Modify concepts and the basic information you need to know to run a Modify job. Topics discussed include: how to create and use Modify input files, how to use Modify directives, how to create and use modification sets, and how to control expansion of the compile file.

MODIFY DIRECTIVES

Most of the control you have over Modify execution is through the use of Modify directives. There are five kinds of Modify directives:

- **Initialization Directives** — These directives specify additional program libraries or source files to input to Modify. The MODIFY command P parameter specifies the primary OPL to be modified. If additional files are to be merged with the primary OPL, these are specified by initialization directives.
- **Modification Directives** — These directives define the actual changes to be made to individual lines or groups of lines in the OPL.
- **File Manipulation Directives** — These directives perform file positioning functions and specify alternate files from which Modify directives and insertion text are to be read.
- **Compile File Directives** — These directives allow you to control which decks of the modified OPL are written to the compile file. Common deck calls and conditional expansion directives control the selection and ordering of decks written to the compile file.
- **Special Directives** — These directives perform miscellaneous functions such as redefining the directive prefix character, moving decks within a program library, and defining the line length of input files.

Tables 2-1 through 2-5 at the end of this section provide a brief description of each of the Modify directives. You may want to refer to these tables as you read through this section.

DIRECTIVE PLACEMENT

As stated in the previous section, there are a number of ways you can enter directives for a Modify run: interactively from file INPUT; from a directives file; from the command line, using the Z parameter; or from a record following a batch job file.

The following rules describe the sequence and placement of Modify directives within the directives file:

- All initialization directives must precede all modification directives.
- File manipulation directives can be placed anywhere within the directives file.
- File manipulation directives cannot be placed in an alternate directives file (as specified by a READ or READPL directive).
- Compile file directives are not processed until the compile phase when Modify expands the compile output file. When encountered in the directives file, Modify does not recognize the compile file directives, but simply processes them as text lines. (The WIDTH, SEQ, SORSEQ, and NOSEQ compile file directives are exceptions to this rule.)
- The WIDTH, SEQ, SORSEQ, and NOSEQ compile file directives can be placed anywhere in the directives file, or they can be inserted as text lines as part of a modification set.
- Special directives can be placed anywhere in the directives file.

DIRECTIVE FORMAT

A Modify directive has the following format:

```
*dirname p1,p2,...,pn
```

Where:

*	The directive prefix character is in column 1. The asterisk (*) is the default. The PREFIX and PREFIXC directives are used to change the prefix character.
dirname	The directive name.
p_i	A directive parameter.

The directive name and parameters can be separated by any display code character having a value of 55_8 or greater; this includes all alphanumeric characters and any of the following special characters: : + - * / ( ) $ =

Some directives require specific separators, as noted in the directive descriptions. No embedded blanks are permitted within a parameter. However, any number of blanks can be placed between the directive name and the first parameter or between two parameters, provided the directive does not exceed the maximum line length.

MODIFY EXECUTION

Modify execution takes place in three phases:

- Initialization phase — Modify reads the initialization directives, converts source files to program library format, and merges all input program libraries onto a single file.
- Modification phase — Modify reads the modification directives and insertion text from the directives file.
- Compile phase — Modify incorporates modifications, expands the compile file, and writes edited decks to the selected output files.

INITIALIZATION PHASE

During the initialization phase, Modify reads the initialization directives and merges all the specified input files into a single program library. This library is the internal file referred to in figure 1-1 as the merged old program library. The merged old program library consists of all decks written from the input program libraries and source files and a directory to those decks. It is the merged old program library that is later modified by the modification directives.

Figure 1-1 shows two types of input files: old program libraries and source files.

Old Program Libraries

An old program library (OPL) is a program library created by a previous Modify run. The primary OPL is the file specified on the MODIFY command P parameter. In many cases, this is the only file input to Modify, but you can specify up to 50 additional OPLs. These additional OPL input files are specified on an OPLFILE directive placed in the input directive file.

OPL files on tape or without a directory require special handling. The COPYPL directive is used to copy an OPL from tape to a local NOS file. The COPY command copies decks from one program library to another, creating a new directory for the copied decks. Thus, COPY can be used to create a directory for an OPL that does not have a directory, to create a new directory to replace an old one, or to copy selected decks from one program library to another.

Source Files

The input file marked source file in figure 1-1 refers to source program or data files that are not yet converted to program library format. Source files to be converted must be specified in a CREATE initialization directive included in the directive file. If no OPL files are specified for a Modify run, the CREATE directive essentially creates a new program library from the original source file. If one or more OPLs are specified for the run, CREATE converts the source file and merges it with the existing program libraries.

Modify allows line lengths up to 150 characters. The 150 characters may be all uppercase, all lowercase, or mixed uppercase and lowercase. Modify assumes a default input line length of 72 characters. If you have a source file containing text lines longer than 72 characters, you should enter an INWIDTH directive specifying the maximum line length. Modify requires this information when writing files in compressed format.

Note that compile file sequence numbers, by default, are written starting in column 73 of the compile file. You can use the WIDTH compile directive to change the location of line sequence numbers on the compile and source output files.

For decks containing NOS procedures, line sequence numbers must be inhibited on the compile file for the procedures to execute properly. A NOSEQ compile file directive entered for the deck accomplishes this purpose. To obtain a listing that includes the line sequence numbers, you can perform a separate Modify run that includes the sequence information on the compile file. You can also include a SORSEQ directive which causes the line sequence information to be included on the output source file.

Source files must be properly formatted before they are input to Modify. Formatting of source files may include the following steps:

- A deck name must be assigned to each record on the file.
- Common decks must be marked as such.
- Decks may be marked for expansion as DISPLAY code (uppercase only) or ASCII code (uppercase and lowercase) decks.
- Compile file directives may be inserted in the source file.

Figure 2-1 illustrates the organization of a source file containing two decks.

Except for assigning deck names, all of the listed steps are optional. Each record of the source file must have a deck name that begins in column 1 of the first line of the record. Deck names can be from one to seven characters long and can consist of alphanumeric characters and any of the following special characters:

```
+ - * / ( ) $ =
```

Common decks must have the word COMMON written on the second line beginning in column 1.

If the deck is to be marked as an ASCII or DISPLAY code deck, the code designation must appear either on the line following the deck name or on the line following the COMMON header line. The word ASCII written from column 1 of this line indicates that the deck will be expanded in uppercase and lowercase characters (6/12-bit display code) on the compile file. For uppercase characters only (6-bit display code), write the word DISPLAY on this line. If a code set is not specified, DISPLAY is assumed.

The source file may contain embedded compile file directives, or you may insert compile file directives later as part of a modification set. Generally, the compile file directives are ignored (that is, treated as text lines) during the initialization and modification phases of execution. However, there are four exceptions to this rule: the WIDTH, SEQ, NOSEQ, and SORSEQ compile file directives. When Modify encounters one of these directives during the initialization phase, the directive applies to all decks output to the compile file. When encountered during the modification phase or when embedded within program library decks, however, these directives affect only the decks with which they are explicitly associated.

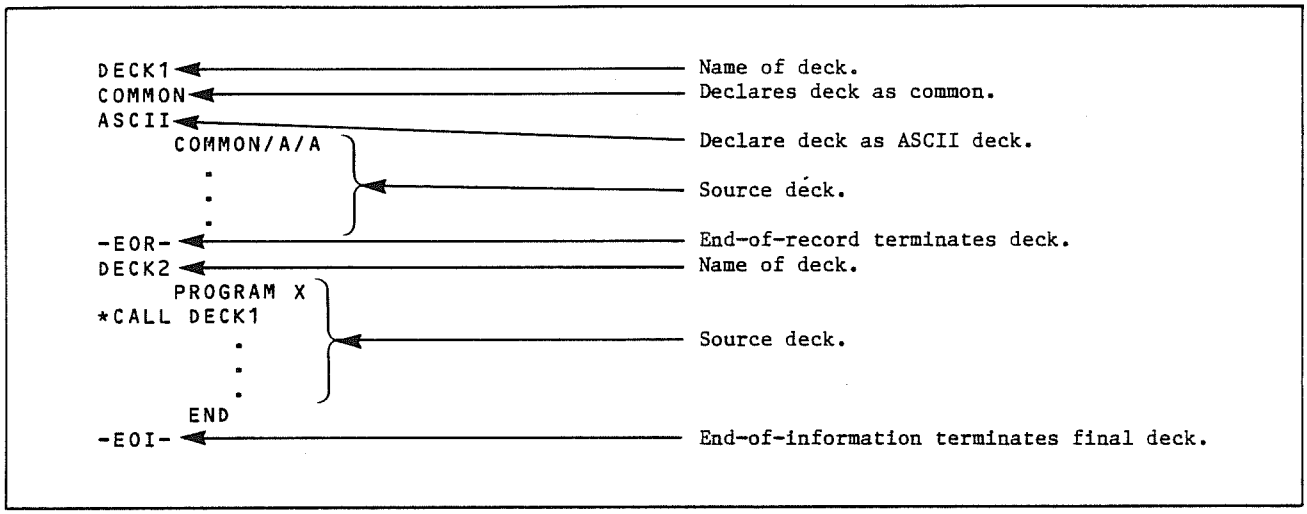


Figure 2-1. Modify Source Deck

MODIFICATION PHASE

Entry of the first modification directive ends the initialization phase and begins the modification phase of execution. During the modification phase, Modify reads the rest of the directives file and makes changes to the internal new program library (NPL) as specified by the modification directives.

During the modification phase of a Modify run, there are three major tasks to be performed:

- Defining a modification set.
- Making individual line modifications as part of a modification set.
- Activating or deactivating a modification set or sets.

It is not necessary to perform all three of these major tasks during every Modify run. In fact, it is not necessary to perform any of them. For example, if you just want to extract certain decks from the OPL without making any changes to the OPL, you can enter an EDIT directive specifying the selected decks. Those decks are then written to the output files with no changes made to the original OPL.

The following paragraphs tell you how to define and manipulate modification sets and how to modify individual lines of the OPL. Also described are the use of the EDIT directive to select decks for editing and the use of the READ and READPL directives, which allow you to define alternate files from which to read Modify directives.

Line Identifiers

Modify assigns a line identifier to each line of code or text in a program library. In sequenced output files, the line identifier comprises the line-sequencing information printed beginning in column 73 of the file. (You can change this position using the WIDTH directive.) The modification directives also use the line identifier to specify the point within a deck at which a line is to be inserted, deleted, or replaced.

The complete form of the line identifier is as follows:

```
modname.number
```

Where:

modname — The name of the modification set to which the line belongs or, if the line is not associated with a modification set, the name of the deck containing the line.

number — The sequence number of the line within the modification set or deck; must be a decimal ordinal from 1 to 162143. A blank or any character other than 0 through 9 terminates the sequence number. Normally, the numbering of lines belonging to a modification set is reset to 1 at the beginning of each deck; however, you can select continuous sequencing of line numbers by specifying the UPDATE directive.

In practice, you will probably use the abbreviated form of the line identifier more often than the complete form. The abbreviated form uses a default modname determined by a DECK or MODNAME directive. Default modnames are discussed under Line Modifications. The abbreviated form of the line identifier is as follows:

```
number
```

Where number is the same as above.

Example:

```
      IF(XVALUE.LE.0) GO TO 84                    PROCR.130
      XVALUE=XVALUE-1                             PROCR.131
      CALL XRTN (XVAL)                            MOD12.18
   84 CONTINUE                                    PROCR.136
```

This example gives you an idea of what sequenced compile file output looks like. The example represents four lines extracted from the compile file listing for a deck called PROCR. Three of the lines use the deck name for the modname portion of the line identifier. These lines belonged to the original source deck. Since lines PROCR.132 through PROCR.135 are missing, we can assume that they were deleted from the deck by a subsequent modification set.

The line marked MOD12.18 was inserted as part of a modification set called MOD12. Normally, the sequencing of lines inserted by a modification set is reset at the beginning of each deck; therefore, we might assume that deck PROCR contains 17 prior lines inserted by modification set MOD12. This is not always the case, however, since the UPDATE directive allows you to specify continuous sequencing of line identifiers without regard to deck residency.

Modification Sets

The modification directives control source file modifications at two different levels: individual lines and modification sets. Modification of individual lines is self-explanatory; the INSERT, DELETE, and RESTORE directives insert new lines of program code and delete or replace old lines of code.

The term modification set refers to a group of individual line modifications considered as a single set. The Modify utility allows you to group individual line changes together into modification sets and to assign a unique name to each set. For each line affected by a modification set, Modify enters a modification history byte in the modification table of the deck containing the line (Refer to section 9 for more information on the program library format). Using modification sets is advantageous for at least two reasons:

- Modification sets simplify the task of keeping a historical record of changes made to a program. At any time, you can obtain an output listing identifying the lines affected by a particular modification set.

- Modification sets can be manipulated as a whole. You can activate, deactivate, or purge an entire modification set using a single modification directive.

You define a new modification set by entering an IDENT directive specifying the name of the modification set. For example, the following IDENT directive establishes a modification set with the name NEWMOD:

```
*IDENT NEWMOD
```

Once you have entered an IDENT directive, any modifications you make to the file belong to that modification set until you enter another IDENT directive. Lines inserted or changed as part of the modification set are identified as such on the output files; the modification name appears as the modname portion of the line identifier.

The IDENT directive is not required. If you do not enter an IDENT directive, the default name ******* is used for the modification set. It is recommended, however, that you define a unique name for each modification set you create.

Once you have created a modification set, you can manipulate lines within it as a set, using the YANK and UNYANK directives. By specifying a particular modification set in a YANK directive, you remove the effects of the entire modification set from the program library. Any lines inserted or activated by the modification set are deactivated, and any lines deactivated by the modification set are reactivated by the YANK directive. Similarly, the UNYANK directive restores the effects of an entire modification set.

The OPLEDIT utility, described in appendix A, provides some additional tools for manipulating modification sets.

Line Modifications

Modification of lines in a program library is done on a deck-by-deck basis. Before you can enter any modifications for a particular deck, you must enter a DECK directive to identify the deck. The entry of a deck directive also establishes the default modname for line identifiers in subsequent modification directives.

Example:

```
*DECK OPT/134
*DELETE 6
```

The first line of this example opens for modification a deck called OPT/134. The first line also establishes that deck name as the default modname for subsequent modification directives. Since OPT/134 is the default modname, the second line of the example is equivalent to line:

```
*DELETE OPT/134.6
```

The default modname established by a DECK directive remains in effect until another DECK directive is entered or until a MODNAME directive is entered.

The MODNAME directive is used to explicitly change the default modname for subsequent line identifiers. The modname specified by MODNAME can be the name of any modification set previously in effect for the deck being modified. Once the default modname has been changed in this way, MODNAME can also be used to reestablish the current deck name as the default modname.

Example:

```
*DECK OPT/134
*DELETE 6
*MODNAME MOD3A
*DELETE 27
*INSERT 33
      Insert this line after line MOD3A.33
*MODNAME OPT/134
```

The third line of this example establishes the default modname MOD3A. MOD3A is the name of a modification set created during a previous Modify run. The following DELETE directive then deletes line MOD3A.27 from deck OPT/134. The fifth line instructs Modify to add an insertion line following line MOD3A.33 of the deck; the INSERT directive is followed by the line to be inserted. The last line of the example reestablishes deck name OPT/134 as the default modname.

The use of the MODNAME directive is convenient if you have several lines to be changed for the named modification set. However, since there were only two lines to be changed for MOD3A in the above example, it probably would have been more efficient to omit both MODNAME directives and simply specify the full form of the line identifier for the MOD3A lines to be changed as follows:

```
*DELETE MOD3A.27
*INSERT MOD3A.33
```

Do not confuse the default modname specified by DECK or MODNAME with the name of the current modification set as specified by the IDENT directive. DECK and MODNAME affect only the line identifiers used by the modification directives to locate changes in the deck to be modified. When the changed lines are printed in the compile file at the end of the Modify run, the modname portion of their line identifiers reflects the modification set name defined by the IDENT directive in effect at the time the changes were made.

After you have defined a DECK using the DECK directive, you can begin making modifications to individual lines in the deck. Line modifications are made using the INSERT, DELETE, and RESTORE directives.

The INSERT directive inserts one or more lines of text into a program library. The lines to be inserted are placed in the directive file following the INSERT directive.

The DELETE and RESTORE directives deactivate and reactivate, respectively, one or more lines of the program library. DELETE and RESTORE can also insert lines of text. Any text lines following DELETE or RESTORE in the directive file are inserted following the deactivated or reactivated lines in the program library.

Example:

```
*DELETE OPT/134.84
 c      Insert two
 c      comment lines.
*DECK NEWDECK
```

The DELETE directive in this example deletes line 84 of deck OPT/134 and inserts two comment lines immediately following the deleted line.

Insertion Lines

Modify continues reading insertion lines following an INSERT, DELETE, or RESTORE directive until it encounters an end-of-record or another modification directive. Modify does not process compile file directives embedded in insertion lines; they are treated as insertion lines. File manipulation directives embedded in insertion lines are processed and may change the source of insertion lines (See Alternate Directive Files below), but do not terminate insertion. In other words, if a file manipulation directive specifies an alternate directive file, Modify immediately begins reading the alternate file, but continues reading insertion text from the current file once the alternate file is exhausted.

Editing Decks

To be written to any of the output files, an OPL deck must be selected for editing, either on the MODIFY command itself or on an EDIT directive placed in the directive file. If you include directives to modify a deck in a Modify run but do not specify the deck as an edited deck, the modifications are not reflected in the output files.† Even if a deck is not modified during a Modify run, you must select the deck as an edited deck if you want to include it in the output files.

Modify has three edit modes:

- Full Edit — Edits all decks on the OPL; selected by specifying the F parameter on the MODIFY command.
- Update Edit — Edits only the OPL decks named in DECK directives in the directives file; selected by specifying the U parameter on the MODIFY command.
- Selective Edit — Edits only the OPL decks named in EDIT directives in the directives file; selected if the F and U parameters are omitted from the MODIFY command.

The full and update edits ignore any EDIT directives in the directives file. The full edit creates a new program library by editing all decks on the OPL. The update edit is normally used to generate a compile file listing of only those decks that were modified during a Modify run.

For both the full edit and update edit, decks are edited in the order they occur in the OPL. However, if any decks are added or replaced, the new or replacement decks are written to the end of the program library. If you want to restore the original deck order, you can do so by using the MOVE special directive in a followup Modify run. The MOVE directive moves a specified deck from one position in a program library to another.

When using a full or update edit, the placement of common decks in the program library is significant since decks are edited in the order they appear. If a common deck is modified during a Modify run and is also called by another deck, the calling deck receives the modified version of the common deck only if the common deck precedes the calling deck in the program library. If the calling deck precedes the common deck, then the common deck will not have been modified at the time the call is processed. For this reason, it is usually best to place the common decks at the beginning of the program library.

In a selective edit, decks are edited in the order in which the EDIT directives are encountered in the directive file unless you specify otherwise using the UPDATE special directive. The UPDATE directive tells Modify to ignore the order of the EDIT directives and edit decks in the order they appear on the OPL.

† If a common deck is called from another deck, the compile file output for the calling deck will include the common deck lines regardless of whether or not the common deck was selected for editing. However, for common deck itself to be written to the source file or new program library, the common deck must be selected for editing.

Using Alternate Directives Files

There are two file manipulation directives, READ and READPL, that direct Modify to temporarily stop reading directives from the primary directives file (specified by the I parameter of the MODIFY command) and begin reading directives from an alternate file. When Modify finishes reading directives from the alternate file, it returns to the primary directives file to read the remainder of it.

The READ directive directs Modify to begin reading directives from a specified local file. The READ directive has an option that allows you to read directives either from a single record on the file or to read the entire file.

The READPL directive directs Modify to begin reading directives from a specified deck in the OPL. This directive allows you to copy lines from one position to another within the OPL.

Modify directives placed in an alternate directives file are processed as they would be in the primary directives file with one exception: file manipulation directives may not be placed in an alternative directive file and cause Modify to abort if they are encountered there. Modification and special directives placed in an alternate file are processed normally, and compile file directives are treated as text lines.

Note that if Modify is reading insertion lines (that is, text lines following an INSERT, DELETE, or RESTORE modification directive) from the primary directives file when READ or READPL is encountered, the READ or READPL directive does not terminate insertion. When Modify finishes reading the alternate file and returns to the primary file, insertion continues until Modify encounters another modification directive.

COMPILE PHASE

During the compile phase of execution, Modify incorporates changes specified during the modification phase and writes the selected output files. Any compile file directives encountered in the OPL or in the directives file are processed at this time, and the expanded decks are written to the compile file.

Compile File Expansion

The compile file directives provide a number of ways of controlling the composition and format of the compile file output.

- Various types of call directives call common decks to be written to the compile file.
- The IF directive performs a true or false test for a specified condition to determine whether a block of lines is included or deleted from the compile file.
- You can insert file marks in the compile file using the WEOR, CWEOR, and WEOF directives.
- WIDTH, NOSEQ, and SEQ control the line length and inclusion of line sequence information.

The process of removing compile file directives and replacing them with the specified insertion or deletion operations is referred to as expansion of the compile file. Most of these expansion options are self-explanatory; however, a word about common deck calls and the IF directive might be helpful.

First of all, the IFCALL, NIFCALL, and IF directives are dependent on the previous specification of a symbolic name using the DEFINE special directive. The DEFINE directive defines a symbolic name to Modify and can also associate a numeric value with the name. Defining a symbolic name in this way is like setting a software flag that Modify checks when processing an IFCALL, NIFCALL, or IF directive.

IFCALL calls a common deck if a specified name was previously defined by a DEFINE directive, while NIFCALL calls a common deck only if the specified name was not defined.

IF Directive

The IF directive works in conjunction with ENDIF and ELSE to set off a block of lines for conditional inclusion in the compile file. The IF directive is always followed by a block of lines terminated by an ENDIF or ELSE directive. If the condition tested by IF is true, the block of lines is included in the compile file, and if the condition is false, the lines are not included.

There are two ways the IF directive can use the symbolic name defined by DEFINE. If the IF directive specifies only a symbolic name, the condition is considered to be true if the name is defined, false if the name has not been defined. The IF directive can also compare the symbolic name to a numeric value. In this case, the IF condition is either true or false depending on whether the symbolic name and the specified value were associated in a previous DEFINE directive.

Common Deck Calls

The common deck calls, CALL, CALLALL, CALLC, IFCALL, and NIFCALL provide a number of different options for calling common decks. The individual directives are described in section 6. The following are some general rules you should keep in mind when using common deck calls.

Common deck calls (except CALLALL, which is ignored when encountered as a nested call) can be nested; that is, a common deck can contain a call to another common deck. The conditional common deck call, CALLC, is useful in nested calls. CALLC performs a common deck call only on the condition that the specified deck has not already been called from the deck being edited. The entry of a new DECK resets this condition.

Common decks can be designated as either ASCII (6/12-bit display code) or DISPLAY code (6-bit display code) decks by including the code set header line as the second or third line of the deck. An ASCII commmon deck can be called from a DISPLAY code deck and vice versa. Unless overridden by a CSET directive, common decks are expanded according to their ASCII or DISPLAY code designation. In other words, if an ASCII common deck is called by a DISPLAY code deck, the common deck lines are inserted into the calling deck as uppercase and lowercase lines, even though the calling deck is written in uppercase characters only.

The CSET compile file directive allows you to override the code set designation of a common deck. If a CSET ASCII or CSET DISPLAY directive is entered prior to a common deck call, the common deck is expanded in the code set specified by CSET, regardless of the code set defined for the deck. If the common deck contains nested calls to other common decks, all nested calls are also governed by this CSET directive.

The CSET directive remains in effect until another CSET is encountered or until the end of the deck. A CSET encountered within a common deck is ignored, and the line is placed in the compile file as a comment.

Table 2-1. Initialization Directives†

Directive	Description
COPY	Copies one or more records from one program library file to another; normally used to copy a program library from tape to system file.
COPYPL	Copies one or more decks from a program library file to the internal OPL scratch file. Ignores the original file directory and creates a new one for the copied decks.
CREATE	Converts a properly formatted source file to program library format.
OPLFILE	Declares additional input OPL files (that is, in addition to the file specified by the MODIFY command P parameter).

† The initialization directives are described in section 4.

Table 2-2. Modification Directives†

Directive	Description
DECK	Identifies the next deck to be modified and establishes the default deck name for subsequent line identifiers.
DELETE or D	Deactivates lines and optionally inserts replacement lines in their place.
EDIT	Specifies a deck or decks to be edited and written to the selected output files; valid only if neither the F (Full edit) nor U (Update) parameter was specified on the MODIFY command.
IDENT	Defines a new modification set.
IGNORE	Specifies that subsequent modifications for the current deck are to be ignored.
INSERT or I	Inserts lines after a specified line.
MODNAME	Specifies the name of a modification set previously defined for this deck. The specified name becomes the default modification set name for subsequent line identifiers.
PURDECK	Permanently removes a deck from the program library.
RESTORE	Reactivates lines and optionally inserts lines following the reactivated lines.
UNYANK	Reactivates a modification set.
YANK	Deactivates a modification set.

† The modification directives are described in section 5.

Table 2-3. File Manipulation Directives †

Directive	Description
BKSP	Backspaces a specified number of records on a file.
READ	Reads a record or group of records from a specified file.
READPL	Reads a deck or portion of a deck from within the program library file.
RETURN	Returns the named file to the system.
REWIND	Rewinds the named files.
SKIP	Skips a specified number of records on a file.
SKIPR	Skips past a specified record on a file.

† The file manipulation directives are described in section 6.

Table 2-4. Compile File Directives (Sheet 1 of 2) †

Directive	Description
CALL	Writes a specified common deck to the compile file.
CALLALL	Writes all decks to the compile file that have a deck name beginning with a specified character string.
CALLC	Writes a specified common deck to the compile file only if the deck has not already been called.
COMMENT	Generates a COMMENT pseudo instruction for COMPASS.
CSET	Specifies the code set (ASCII or DISPLAY) for subsequently called common decks; overrides the code set defined for a common deck.
CWEOR	Writes an EOR to the compile file only if information has been written since the last EOR was written.
ELSE	Reverses an IF directive conditional range; that is, it terminates insertion if the IF directive was true and initiates insertion if the IF directive was false.
ENDIF	Terminates insertion of lines initiated by an IF or ELSE directive.
IF	Inserts lines in the compile file if a specified attribute is true; insertion continues until an ELSE or ENDIF directive is encountered.
IFCALL	Writes a specified common deck to the compile file if a specified name has been defined (by a DEFINE special directive).

† The compile file directives are described in section 7.

Table 2-4. Compile file Directives (Sheet 2 of 2)†

Directive	Description
NIFCALL	Writes a specified common deck to the compile file only if a specified name has not been defined (by a DEFINE special directive).
NOSEQ	Inhibits inclusion of line sequence information on the compile file.
SEQ	Specifies inclusion of line sequence information on the compile file.
SORSEQ	Specifies inclusion of line sequence information on the source output file.
WEOF	Writes an EOF to the compile file.
WEOR	Writes an EOR to the compile file.
WIDTH	Defines the number of columns preceding sequence information on the compile file.

† The compile file directives are described in section 7.

Table 2-5. Special Directives†

Directive	Description
DEFINE	Defines a name to be used by conditional compiler directives (IFCALL, NIFCALL, IF) to determine the appropriate action to take.
INWIDTH	Defines the line length for Modify input files.
MOVE	Moves decks within a program library; used to reorder library decks.
PREFIX	Changes the prefix character for directives other than compile file directives.
PREFIXC	Changes the prefix character for compile file directives.
UPDATE	Specifies continuous sequencing of program library decks and forces editing of decks in the order they occur in the program library.
/	Inserts a comment line in the Modify statistical list file.

† The special directives are described in section 8.

MODIFY COMMAND 3

The MODIFY command inititiates execution of the Modify system utility. Using Modify parameters, you specify the input files, output files, and directives file for the Modify run, as well as the processing options you want to select. Processing options include a direct call to the COMPASS assembler or to a program compiler. When selected, assembler or compiler call takes place at completion of the Modify run.

For output listing files not connected to your terminal, the MODIFY command honors the page length and print density set for your job using the SET command and the PL and PD symbolic names (Refer to the NOS Reference Set, Volume 3 for more information on the SET command and PL and PD symbolic names.)

For interactive users, if the I and Z parameters are omitted from the MODIFY command, the system prompts you to enter directives interactively. The interactive prompt for Modify directives is the ? character. To terminate prompting for directives, enter a carriage return in response to the Modify prompt.

Format:

```
MODIFY, p1,p2,...,pn.
```

You can specify parameters (p_1) in any order; valid parameters are as follows:

Parameter	Description
A	Specifies whether the compile file (as defined by the C parameter) is in normal or compressed format.

Option	Description
A	Specifies compressed compile file format.
omitted	Specifies normal compile file format.

Parameter	Description
C	Defines the compile file to be generated.

Option	Description
C or omitted	Compile output is written on default file COMPILE.
C=filename	Compile output is written on file filename.
C=0	No compile file is generated.

Parameter	Description

CG — Defines the file from which systems text is to be loaded; valid only if the Q or X parameter is also specified. If both CG and CS are specified, CS is ignored.

Option	Description
CG	Loads systems text from file SYSTEXT (same as G=SYSTEXT parameter on COMPASS or compiler call).
CG=filename	Loads systems text from file filename (same as G=filename parameter on COMPASS or compiler call).
CG=0 or omitted	Loads systems text from overlay named in CS option.

CL — Defines the COMPASS listing file; valid only if the Q or X parameter is also specified.

Option	Description
CL	Lists output on file OUTPUT (same as COMPASS L=OUTPUT parameter).
CL=filename	Lists output on file filename (same as COMPASS L=filename parameter).
CL=0	Writes short list, rather than full list, to file OUTPUT (Same as COMPASS L=0 parameter).

CS — Defines overlay from which systems text is to be loaded; valid only if the Q or X parameter is also specified.

Option	Description
CS or omitted	Loads systems text from SYSTEXT overlay (same as S=SYSTEXT parameter on COMPASS or compiler call).
CS=filename	Loads system text from file filename (same as S=filename parameter on COMPASS or compiler call).
CS=0	No systems text (same as S=0 parameter on COMPASS or compiler call).

CV — Specifies character set conversion required for program library input files. Conversion is recommended if the character set of the OPL is not the same as the character set in use at the time the OPL is modified. Use the CATALOG command to determine the character set of the OPL (Refer to Volume 3 for a description of the CATALOG command). Check with your site administration to determine the character set in use at your site.

Parameter	Description

Option	Description
CV=63	Converts 64-character OPL to 63-character set.
CV=64	Converts 63-character OPL to 64-character set.
CV=0 or omitted	No conversion occurs.

NOTE

When either CV=63 or CV=64 is selected, Modify forces the C parameter to C=0 (e.g., no compile file is generated).

D — Specifies whether a directive error will abort the job; used for debugging purposes.

Option	Description
D	Job is aborted on fatal error, but not on directive error.
omitted	Either a fatal error or a directive error aborts the job.

F — Specifies whether a full edit is to be performed (that is, whether all decks on the OPL are to be edited).

Option	Description
F	All decks on the OPL are edited and written to the NPL listing, the compile file, and the source file (if these files are generated).
omitted	Decks to be edited are determined by the U parameter or by EDIT directives.

I — Defines the directive input file.

Option	Description
I or omitted	For interactive jobs, directives are on file INPUT. For batch jobs, directives are in the next record of the job file.
I=filename	Directives are contained in the next record of file filename.
I=0	No directive input.

Parameter	Description
L	Defines the Modify statistical list file. (List options for this file are specified by the LO parameter.) It is the job's responsibility to save the named file after the Modify run is completed.

Option	Description
L or omitted	Modify statistical list is written to file OUTPUT, which is automatically printed.
L=filename	Modify statistical list is written to file filename.
L=0	No statistical list file is generated.

LO — Defines the list options to be selected for the Modify statistical list file (as defined by the L parameter).

Option	Description
LO or omitted	For an output file connected to an interactive terminal, list option E is selected; otherwise, options C, D, E, M, S, T, and W are selected.
LO=$c_1c_2...c_n$	The list options (c_i); up to seven of the following options can be specified:

A List active lines in deck.
C List directives other than INSERT, DELETE, RESTORE, MODNAME, I, OR D.
D List deck status.
E List errors.
I List inactive lines in deck.
M List modifications performed.
S Include statistics on listing.
T List text input.
W List compile file directives.

Example:

```
LO=ADEMS
```

N — Defines the new program library output file. It is the job's responsibility to save the file after the Modify run is completed.

Option	Description
N	New program library is written on file NPL.
N=filename	New program library is written on file filename.

Parameter	Description

Option	Description
N=0 or omitted	No new program library file is generated.

NOTE

If a local file already exists with the same name as the new program library file, an EVICT command is issued for the local file before the new file is written. (Refer to the NOS Reference Set, Volume 3 for a description of the EVICT command.)

NR — Specifies whether the compile file is rewound at the beginning and end of the Modify run.

Option	Description
NR	The compile file is not rewound.
omitted	The compile file is rewound at the beginning and at the end of the Modify run.

P — Defines the input (old) program library file (OPL).

Option	Description
P or omitted	File OPL is the input program library file.
P=filename	File filename is the input program library file.
P=0	There is no input program library file.

Q — Defines a call to an assembler or compiler at the end of the Modify run. The directives file and statistical list file are not rewound.

Option	Description
Q	Calls the COMPASS assembler. At the beginning of the Modify run, Modify sets LO=E and sets the A parameter. At the end of the run, Modify calls the COMPASS assembler. Assembler input is assumed to be file COMPILE. All other assembler parameters are set by default. If CL is not specified with Q, comment lines beginning with an asterisk in column 1 are not written to the compile file; however, compile file directives are still processed.
Q=comp	Calls the specified compiler or assembler. At the beginning of the Modify run, Modify sets LO=E and sets the A parameter. At the end of the run, Modify calls the compiler or assembler specified by comp.
Q=0 or omitted	Modify makes no assembler or compiler call.

Parameter	Description

Option	Description

S — Specifies the file on which source output listing is written; invalid if A, Q, or X is specified. Your job must explicity save the output file.

Option	Description
S	Source output is written on file SOURCE.
S=filename	Source output is written on file filename.
S=0 or omitted	No source output is generated.

U — Specifies that an update edit is to be performed. If the F parameter is also specified, U is ignored.

Option	Description
U	Update edit; only decks defined by a DECK directive are edited and written to the compile file, new program library file, and source file.
omitted	If the F parameter is specified, a full edit is performed. Otherwise, only decks defined by EDIT directives are edited.

X — Same as the Q parameter except that the directives input file and Modify output listing file are rewound before processing.

Z — Specifies that the input directives follow the MODIFY command terminator; there is no input directives file. This parameter eliminates the need for a separate directives file when all directives fit on the same line as the command.

The first character following the terminator defines the separator character that separates the subsequent directives. The separator character can be any display code character not used in one of the directives, including a space. Directives can extend to column 72 of the line; continuation lines are not permitted. Do not place a terminator character after the directives.

Example:

```
MODIFY,Z./*EDIT,DECK1/*EDIT,DECK2
```

INITIALIZATION DIRECTIVES 4

Initialization directives define files to be used as input files for the Modify run in addition to the program library specified on the MODIFY command P parameter. All files specified by the P parameter and by the initialization directives are merged into a single program library file for modification by subsequent Modify directives.

In the case where files defined by the initialization directives contain two or more decks by the same name, only the most recently defined deck is retained on the internal OPL. In other words, whenever a deck is written to the OPL, that deck logically replaces any previous deck with the same name.

Initialization directives are placed on the directives file, and all initialization directives must precede all modification directives. The initialization directives are as follows:

- COPY
- COPYPL
- CREATE
- OPLFILE

COPY DIRECTIVE

The COPY directive copies one or more decks from a named file to the file specified by the MODIFY command P parameter. Before the copy operation begins, Modify performs an EVICT operation on the file to receive the copy; therefore, any information previously contained in this file (if it exists) is lost. (Refer to the NOS Reference Set, Volume 3 for a description of the EVICT command.) If P=0 was specified on the MODIFY command, you cannot use the COPY directive.

With the exception of file manipulation directives, COPY must be the first directive processed during the Modify run. Only one COPY operation is allowed per Modify run.

COPY can copy all or part of the original file. Any records on the file that are not in program library format are ignored. COPY creates new directory entries for decks copied, ignoring the directory on the original file.

COPY is useful when copying all or part of a program library residing on magnetic tape to a mass storage file. You can then save the copied file without having Modify create a new program library.

Format:

```
*COPY filename,deckname
```

Where:

filename	Specifies the name of a local file containing records in program library format. The file need not have a directory and may contain records not in program library format.
deckname	Specifies the last deck to be copied. If deckname is omitted, or if the named deck is not found, Modify copies all records from the current file position to end-of-file, excluding any records not in program library format.

COPYPL DIRECTIVE

The COPYPL directive copies one or more decks from a file already in program library format. The decks are copied to the Modify internal OPL file where they are merged with any other input files you have specified.

COPYPL can copy all or part of the original file. The file may reside on disk or on magnetic tape. Any records on the file that are not in program library format are ignored. COPYPL creates new directory entries for decks copied, ignoring the directory on the original file.

Format:

```
*COPYPL filename,deckname
```

Where:

filename	Specifies the name of a local file containing records in program library format. The file need not have a directory and may contain records not in program library format.
deckname	Specifies the last deck to be copied. If deckname is omitted, or if the named deck is not found, Modify copies all records from the current file position to end-of-file, excluding any records not in program library format.

CREATE DIRECTIVE

The CREATE directive creates a program library file, with a directory, from a properly formatted source file. (Refer to section 3 for a description of the source file format.) You can use CREATE to create a new program library, to add decks to an existing program library, or to replace decks on an existing program library.

Format:

```
*CREATE filename
```

Where:

filename	Specifies the name of the source file to be converted to program library format. filename must be a local file.

OPLFILE DIRECTIVE

The OPLFILE directive specifies one or more program library files to be edited during the Modify run, in addition to the file specified by the MODIFY command P parameter.

The total number of files declared by OPLFILE directives cannot exceed 50 files. If more than 50 files are specified, the excess files are ignored, and a directive message is issued.

Format:

*OPLFILE $filename_1$,$filename_2$,...,$filename_n$

Where:

$filename_i$	Specifies the name of a local program library file (with a directory) to be merged onto the internal OPL scratch file.

EXAMPLES OF INITIALIZATION DIRECTIVES

Figure 4-1 shows an interactive Modify run that creates two program libraries and uses several initialization directives. Figure 4-2 shows the same Modify run to be submitted as a batch job.

```
/old,mainp
/scopy,mainp
DECK1
***    MAIN PROGRAM
       PROGRAM MAIN
       PRINT*,'BEGIN MAIN PROGRAM.'
       CALL SUB1
       PRINT*,'END MAIN PROGRAM.'
       STOP
       END
--EOR--
DECK3
***    EMPTY DECK
--EOR--
--EOF--
/modify,p=0,l=0,f,n=mainpl,c=0
? *create mainp
?
 MODIFICATION COMPLETE.
/catalog,mainpl,r
          CATALOG OF MAINPL          FILE     1
    REC   NAME      TYPE            LENGTH    CKSUM      DATE

      1   DECK1     OPL  (64)          27     1457    85/07/30
      2   DECK3     OPL  (64)           4     1725    85/07/30
      3   OPL       OPLD                5     1310    85/07/30

      4   * EOF *       SUM =          40

 CATALOG COMPLETE.
/get,sub1
/copycf,sub1
DECK2
***    SUBROUTINE 1
       SUBROUTINE SUB1
       PRINT*,'ENTER SUBROUTINE 1.'
       CALL SUB2
       PRINT*,'EXIT SUBROUTINE 1.'
       RETURN
       END
 EOI ENCOUNTERED.
/rewind,sub1
REWIND,SUB1.
/modify,p=0,l=0,f,n=altpl1,c=0
? *create sub1
?
 MODIFICATION COMPLETE.
/catalog,altpl1,r
          CATALOG OF ALTPL1          FILE     1
    REC   NAME      TYPE            LENGTH    CKSUM      DATE

      1   DECK2     OPL  (64)          30     3217    85/07/30.
      2   OPL       OPLD                3     2117    85/07/30.

      3   * EOF *       SUM =          33

 CATALOG COMPLETE.
/get,altpl2
/catalog,altpl2,r
          CATALOG OF ALTPL2          FILE     1
    REC   NAME      TYPE            LENGTH    CKSUM      DATE

      1   DECK3     OPL  (64)          25     2116    85/06/18.
      2   OPL       OPLD                3     2517    85/06/18.

      3   * EOF *       SUM =          30

 CATALOG COMPLETE.
/
```

Listing of source file, showing end-of-record marks, to be used to create program library. Notice required deck names.

MODIFY command to create program library with name MAINPL. MAINPL is the result of converting the source text file MAINP to program library format.

The CATALOG command is a convenient means of determining the decks and their types that were written on the program library.

DECK 2 is another source deck maintained on a separate program library.

MODIFY command to create program library ALTPL1.

ALTPL2 is an alternate program library created at an earlier session.

Figure 4-1. Initialization Directives Examples (Sheet 1 of 2)

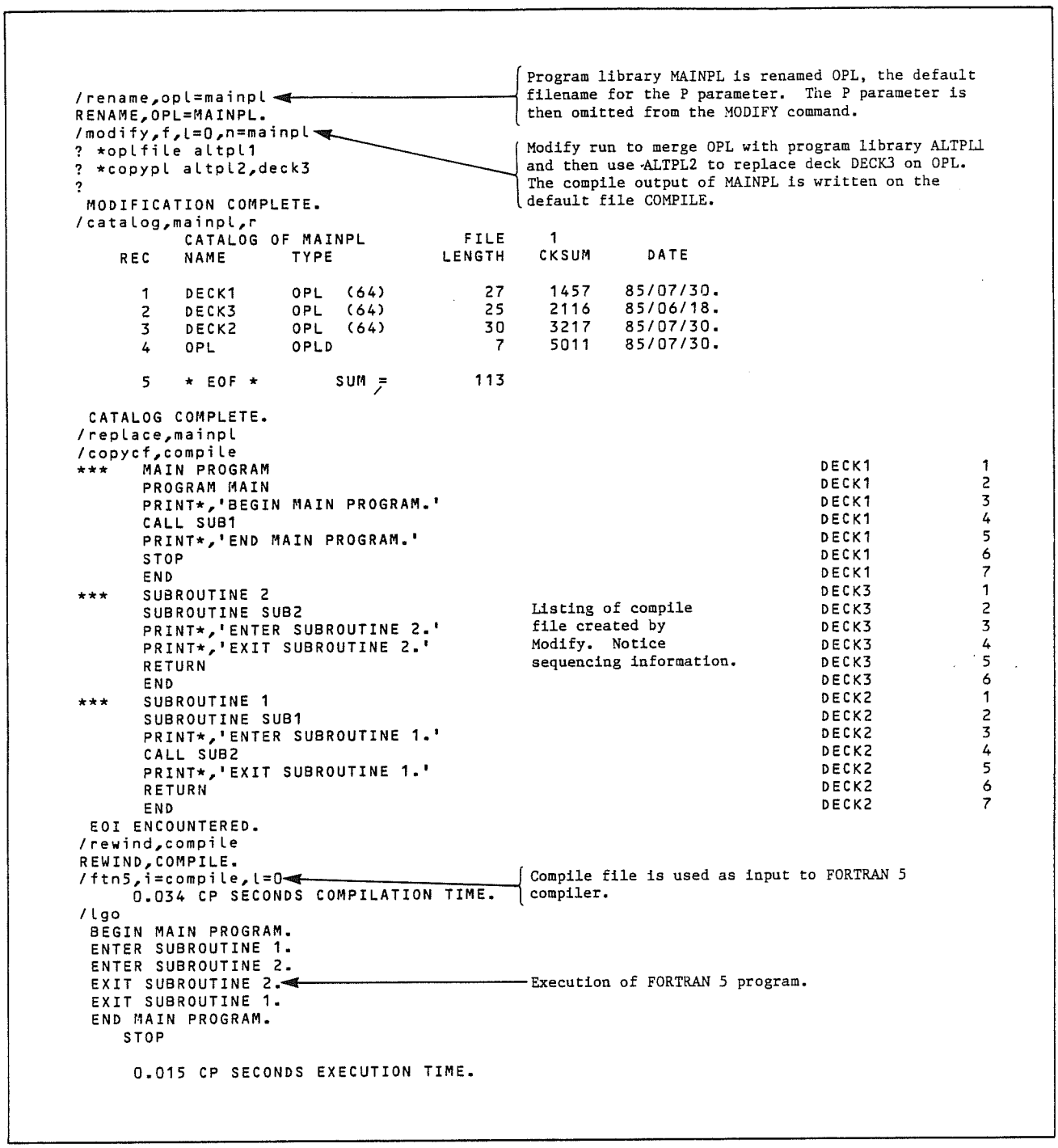


Figure 4-1. Initialization Directives Examples (Sheet 2 of 2)

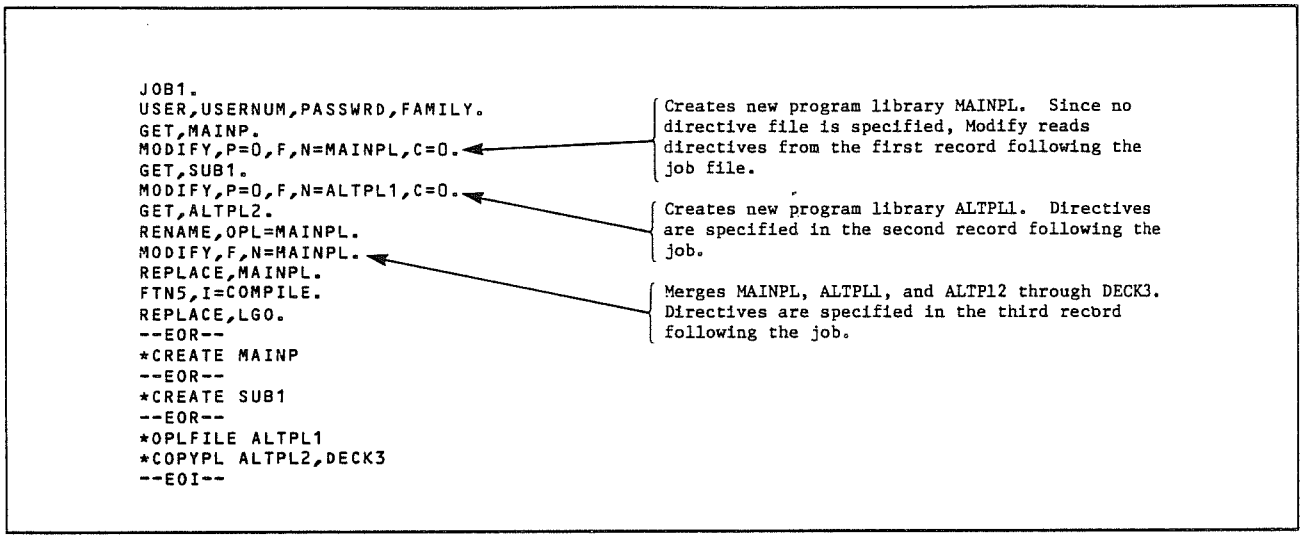


Figure 4-2. Batch Job Creating Program Libraries

MODIFICATION DIRECTIVES 5

The modification directives are used to define new modification sets and to specify changes to existing lines or modification sets.

Modification directives are placed on the directives file following the last initialization directive. The appearance of the first modification directive terminates the initialization phase.

The modification directives are as follows:

- DECK
- DELETE or D
- EDIT
- IDENT
- IGNORE
- INSERT or I
- MODNAME
- PURDECK
- RESTORE
- UNYANK
- YANK

DECK DIRECTIVE

The DECK directive identifies a deck to be modified as a part of the current modification set (refer to the IDENT directive description). This directive also establishes the default deckname (that is, the modname portion of the line identifier) for line identifiers in subsequent modification directives.

The DECK directive does not affect line identifiers assigned to insertion lines. The IDENT directive defines the modification set name (modname) for insertion lines.

A DECK directive is required for each deck associated with a modification set. The default deck name established by a DECK directive continues until the next DECK directive is processed. You can override the default deck name by specifying the full form of the line identifier (refer to Line Identifiers in section 2).

Format:

```
*DECK deckname
```

Where:

deckname	Specifies the 1- to 7-character name of the deck to be modified; deckname can consist of alphanumeric characters and any of the following special characters: + - * / ( ) $ =

DELETE (OR D) DIRECTIVE

The DELETE or D directive deletes a specified line or block of lines and optionally inserts replacement lines for the deleted lines. Lines named in a DELETE directive are logically deleted (that is, deactivated) from the program library. In other words, they remain in the program library and retain their sequencing, but they do not appear on output compile or source files. You can restore deleted lines using the RESTORE directive.

Insertion of replacement lines following a DELETE operation continues until another modification directive or an end-of-record is encountered. File manipulation directives within the insertion lines are processed and may change the source of insertion lines, but do not terminate insertion and are not inserted into the deck. Compile file directives are treated as insertion lines and are not processed.

Format:

```
*DELETE c1,c2
    or
*D c1,c2
```

Where:

c_i	Specifies a line identifier (refer to Line Identifiers in section 2). If only c_1 is specified, it identifies a single line to be deleted. If c_1 and c_2 are both specified, they identify the first and last lines of a range of lines to be deleted. Any lines occurring within the range of lines specified that are already deactivated are not affected by this directive.

EDIT DIRECTIVE

The EDIT directive identifies decks to be modified and written to the selected output files. A deck named in an EDIT directive is written to the output files regardless of whether or not any lines within that deck were actually modified. EDIT directives are ignored if either the F (full edit) or the U (update edit) parameter was specified on the MODIFY command.

Format:

```
*EDIT p1,p2,...,pn
```

Where:

p_i Specifies either a single deck name or a range of deck names to be edited. If a range of deck names is specified, p_i has the following format:

$deckname_1.deckname_2$

where $deckname_1$ specifies the first deck and $deckname_2$ specifies the last deck in a series of decks to be edited.

Decks are edited in the sequence encountered on EDIT directives unless an UPDATE directive specifies otherwise. If decks are being replaced or if new decks are added, the new decks are placed at the end of the library, thus changing the sequence of decks on the library. This should be taken into account when specifying an edit sequence.

IDENT DIRECTIVE

The IDENT directive establishes a new modification set and defines the name of the set. Subsequent DECK directives are associated with this modification set until another IDENT directive is encountered. The entry of a PURDECK directive also terminates processing of a modification set established by an IDENT directive.

The IDENT directive is optional; however, it is recommended that you include an IDENT directive each time you modify a program library. If you do not include an IDENT directive, Modify assigns the characters ******* as a default modification name.

Format:

```
*IDENT modname
```

Where:

modname Defines the 1- to 7-character name of the modification set. modname can consist of alphanumeric characters and any of the following special characters: + - * / ( ) $ =

You can use one IDENT directive for several decks, or you can use multiple IDENT directives within a deck. Within the directives file, an IDENT directive defining a modification set must precede any other directives that reference that modification set.

For each DECK directive following an IDENT directive, a new entry is created in the modification table for that deck. The entry contains the name and status (active or inactive) of the new modification set. Likewise, for each line affected by the new modification set, a new modification history byte is created. The modification history byte marks the line as being associated with that modification set. (Refer to section 9 for information on program library format.)

IGNORE DIRECTIVE

The IGNORE directive suspends processing of modification directives (except IDENT, DECK, and EDIT) for a specified deck. If the specified deck is already selected for editing (that is, if the F or U option is specified on the Modify command or if an EDIT directive is already entered for the deck), the deck is written to the selected output files in its original, unmodified form.

If the deck is not already selected for editing and is named in a subsequent EDIT directive, Modify deletes the deck name from the EDIT directive, and the deck is not written to the output files. If an ignored deck is named in an EDIT directive in the following format, a directive error is issued, and the Modify run is aborted:

EDIT $deckname_a$.$decknameb$

When Modify encounters an IDENT, DECK, or EDIT directive following an IGNORE directive, the IGNORE condition is terminated. Normal processing of modification directives resumes with the IDENT, DECK or EDIT directive.

Format:

```
*IGNORE deckname
```

Where:

deckname	Name of the deck to be ignored.

INSERT (OR I) DIRECTIVE

The INSERT directive inserts new text lines into the program library after a specified line. Lines to be inserted must immediately follow the INSERT directive.

Insertion of lines continues until another modification directive or an end-of-record is encountered. File manipulation directives within the insertion lines are processed and may change the source of insertion lines, but do not terminate insertion and are not inserted into the deck. Compile file directives within the insertion lines are treated as text lines and are not processed.

Format:

```
*INSERT c
    or
*I c
```

Where:

c	Specifies the line identifier of the line after which insertion lines are to be inserted.

MODNAME DIRECTIVE

The MODNAME directive changes the default modification set name (modname) for line identifiers in subsequent modification directives. The modification set name specified by the MODNAME directive must be the name of a modification set previously defined for the program library.

The MODNAME directive does not affect line identifiers assigned to insertion lines. The default modification set name for insertion lines is defined by the IDENT directive.

The default modification set name established by MODNAME remains in effect until another DECK or MODNAME directive is processed. To return to the default name established by the last DECK directive, you can enter another MODNAME directive specifying the name of that deck.

Format:

```
*MODNAME modname
```

Where:

modname	Defines the 1- to 7-character name of the modification set, modname can consist of alphanumeric characters and any of the following special characters: + - * / ( ) $ =

PURDECK DIRECTIVE

The PURDECK directive permanently removes a deck or group of decks from a program library. Every line of a deck is purged, regardless of the modification set it belongs to. You cannot rescind a PURDECK operation.

You can place a PURDECK directive anywhere in the directives file. It terminates any previous modification set; therefore, PURDECK cannot be followed by an INSERT, RESTORE, or DELETE directive until another IDENT directive is processed.

PURDECK has two formats. The first format defines a list of one or more decks to be purged. The second format defines the first and last decks of a series of consecutive decks to be purged.

Format one:

*PURDECK $deckname_1$,$deckname_2$,...,$deckname_n$

Where:

$deckname_i$ Specifies the name of a deck to be purged.

Format two:

*PURDECK $deckname_1$.$deckname_2$

Where:

$deckname_i$ $deckname_1$ specifies the first deck and $deckname_2$ specifies the last deck of a series of decks to be purged.

RESTORE DIRECTIVE

The RESTORE directive reactivates a line or block of lines previously deactivated by a DELETE or YANK directive. RESTORE also inserts text lines into the program library following the reactivated line or lines. Lines to be inserted must immediately follow the RESTORE directive.

Insertion of lines following a RESTORE operation continues until another modification directive is encountered or until EOR. File manipulation directives within the insertion lines are processed and may change the source of insertion lines, but do not terminate insertion and are not inserted into the deck. Compile file directives are treated as insertion lines and are not processed.

Format:

```
*RESTORE c1,c2
```

Where:

c_i	Specifies a line identifier (refer to Line Identifiers in section 2). If only c_1 is specified, it identifies a single line to be restored. If c_1 and c_2 are both specified, they identify the first and last lines of a range of lines to be restored. If any lines within the specified range of lines are already active, they are not affected by this directive.

UNYANK DIRECTIVE

The UNYANK directive rescinds a previous YANK directive. Like the YANK directive, UNYANK can specify either a single modification set or a series of modification sets beginning with the named set.

Format:

```
*UNYANK modname,*
```

Where:

modname	Specifies the name of the modification set to be reactivated.
*	Specifies that modname and all subsequent modification sets are to reactivated; applicable only to decks in which modname appears in the deck's modification table.

YANK DIRECTIVE

The YANK directive deactivates a modification set or sets. You can use this directive to deactivate a single modification set or a series of modification sets. When deactivating a series of sets (by specifying the * option), YANK deactivates all modification sets subsequent to the named set for all decks in which the named modification set is listed in the deck's modification table. (Refer to section 9 for more information on the modification table format.)

A YANK directive causes Modify to search the edited decks for all lines affected by the named modification set or sets. If a line was activated by the modification set, Modify deactivates it. If a line was deactivated by the modification set, Modify reactivates it.

Modify generates a new modification history byte for every line that changes status as a result of the YANK operation. The edited decks are effectively restored to the status they had prior to the original modification.

YANK affects only those decks that are edited by EDIT directives or by specification of the F or U parameter on the MODIFY command. This allows the use of the YANK directive on selected decks.

Format:

```
*YANK modname,*
```

Where:

modname	Specifies the name of the modification set to be deactivated.
*	Specifies that all modification sets subsequent to modname are also to be deactivated; applicable only to decks in which modname appears in the deck's modification table.

EXAMPLES OF MODIFICATION DIRECTIVES

Figure 5-1 contains a number of examples of modification directive usage.

```
/get,opl=mainpl
/modify,f,l=0,n=mainpl
? *ident mod1 <-- This modification set is given name MOD1.
? *deck deck3
? *delete deck3.1
? ***   subroutine 2, deck deck3.
? *deck deck2
? *d 1 <-- Refer to listing of compile file in figure 4-3 to
? ***   subroutine 1, deck deck2.   reference line sequence numbers.
? *insert 3
? *     call subroutine sub2
? *     in deck2.
? *delete 7
? ***   end deck2.
? *deck deck1
? *d 1
? ***   main program, deck deck1.
?
 MODIFICATION COMPLETE.
/copycf,compile
***   MAIN PROGRAM, DECK DECK1.                                  MOD1      1
      PROGRAM MAIN                                               DECK1     2
      PRINT*,'BEGIN MAIN PROGRAM.'                               DECK1     3
      CALL SUB1                                                  DECK1     4
      PRINT*,'END MAIN PROGRAM.'                                 DECK1     5
      STOP                                                       DECK1     6
      END                                                        DECK1     7
***   SUBROUTINE 2, DECK DECK3.                                  MOD1      1
      SUBROUTINE SUB2                 Listing of compile         DECK3     2
      PRINT*,'ENTER SUBROUTINE 2.'    file created by Modify.    DECK3     3
      PRINT*,'EXIT SUBROUTINE 2.'                                DECK3     4
      RETURN                                                     DECK3     5
      END                                                        DECK3     6
***   SUBROUTINE 1, DECK DECK2.                                  MOD1      1
      SUBROUTINE SUB1                                            DECK2     2
      PRINT*,'ENTER SUBROUTINE 1.'                               DECK2     3
*     CALL SUBROUTINE SUB2                                       MOD1      2
*     IN DECK2.                                                  MOD1      3
      CALL SUB2                                                  DECK2     4
      PRINT*,'EXIT SUBROUTINE 1.'                                DECK2     5
      RETURN                                                     DECK2     6
***   END DECK2. <-- User inadvertently                          MOD1      4
 EOI ENCOUNTERED.   deleted END statement.
/modify,l=0,p=mainpl,n=mpl1,c=com1
? *ident mod2
? *deck deck2
? *restore 7
? *d mod1.3 <-- Modification run to restore deleted
? *edit deck2   line and delete line MOD1.3.
?
 MODIFICATION COMPLETE.
/copycf,com1
***   SUBROUTINE 1, DECK DECK2.  Compile file contains           MOD1      1
      SUBROUTINE SUB1            only edited deck(s).            DECK2     2
      PRINT*,'ENTER SUBROUTINE 1.'                               DECK2     3
*     CALL SUBROUTINE SUB2                                       MOD1      2
      CALL SUB2 <-- Note deleted line.                           DECK2     4
      PRINT*,'EXIT SUBROUTINE 1.'                                DECK2     5
      RETURN                                                     DECK2     6
      END <-- END statement restored.                            DECK2     7
***   END DECK2.                                                 MOD1      4
 EOI ENCOUNTERED.
/modify,l=0,p=mpl1,n=mpl2,c=com2
? *ident mod3
? *deck deck2
? *modname mod1
? *restore 3 <-- Line deleted in previous Modify run is restored.
? *edit deck2
?
 MODIFICATION COMPLETE.
```

Figure 5-1. Modification Directive Examples (Sheet 1 of 2)

```
copy,com2
***    SUBROUTINE 1, DECK DECK2                                    MOD1        1
       SUBROUTINE SUB1                                             DECK2       2
       PRINT*,'ENTER SUBROUTINE 1.'                                DECK2       3
*      CALL SUBROUTINE SUB2                                        MOD1        2
*      IN DECK2.  <------------------------ Restored line.         MOD1        3
       CALL SUB2                                                   DECK2       4
       PRINT*,'EXIT SUBROUTINE 1.'                                 DECK2       5
       RETURN                                                      DECK2       6
       END                                                         DECK2       7
***    END DECK2.                                                  MOD1        4
 EOI ENCOUNTERED.
/rewind,mainpl,mpl2
REWIND,MAINPL,MPL2.
/libedit,i=0,p=mainpl,l=0,b=mpl2,c  <-- The LIBEDIT utility provides a convenient means
 EDITING COMPLETE.                      of replacing or adding records on a file.
/catalog,mainpl,r
          CATALOG OF MAINPL          FILE     1
    REC   NAME      TYPE            LENGTH    CKSUM      DATE

      1   DECK1     OPL  (64)          36     1221    85/08/14.
           MOD1

      2   DECK3     OPL  (64)          34     1075    85/06/18.
           MOD1

      3   DECK2     OPL  (64)          55     3330    85/08/14.
           MOD1      MOD2       MOD3

      4   OPL       OPLD               11     7477   85/08/14.

      5   * EOF *       SUM =         160

 CATALOG COMPLETE.
/replace,mainpl                          <-- Temporary modification run to deactivate
/modify,l=0,p=mainpl,c=com3,n=nplx           modification set MOD3 and selectively
? *ident modx                                edit deck DECK2.
? *deck deck2
? *yank mod3
? *edit deck2
?
 MODIFICATION COMPLETE.
/catalog,nplx,r
          CATALOG OF NPLX            FILE     1
    REC   NAME      TYPE            LENGTH    CKSUM      DATE

      1   DECK2     OPL  (64)          55     5530    85/08/14.
           MOD1      MOD2      (MOD3 )
                                    <-- Yanked modification set is enclosed in parentheses.
      2   OPL       OPLD                3     2117    85/08/14.

      3   * EOF *       SUM =          60

 CATALOG COMPLETE.
/copy,com3
***    SUBROUTINE 1, DECK DECK2.                                   MOD1        1
       SUBROUTINE SUB1                                             DECK2       2
       PRINT*,'ENTER SUBROUTINE 1.'                                DECK2       3
*      CALL SUBROUTINE SUB2                                        MOD1        2
       CALL SUB2                  Compare with previous            DECK2       4
       PRINT*,'EXIT SUBROUTINE 1.' compile file of DECK2.          DECK2       5
       RETURN                                                      DECK2       6
       END                                                         DECK2       7
***    END DECK2.                                                  MOD1        4
 EOI ENCOUNTERED
```

Figure 5-1. Modification Directive Examples (Sheet 2 of 2)

FILE MANIPULATION DIRECTIVES 6

File manipulation directives provide control of file positioning and the use of alternate input files during the initialization and modification phases of a Modify run. File manipulation directives can be inserted in the directives file defined by the MODIFY command I parameter; they cannot be placed in alternate input file as specified by a READ or READPL directive. The file manipulation directives are as follows:

- BKSP
- READ
- READPL
- RETURN
- REWIND
- SKIP
- SKIPR

Note that the manipulation of the following files by these directives is restricted:

INPUT	NPL
OUTPUT	SCR1
COMPILE	SCR2
SOURCE	SCR3
OPL	

When specified on the MODIFY command, these file names are reserved and cannot be named in a file manipulation directive. For example, if the S parameter is specified, file name SOURCE is reserved and should not be used. File names SCR1, SCR2, and SCR3 are always reserved.

BKSP DIRECTIVE

The BKSP directive repositions the named file one or more logical records in the reverse direction. It does not backspace beyond the beginning-of-information.

Format:

```
*BKSP file,n
```

Where:

file	Specifies the name of the file to be repositioned.
n	Specifies the number of records to backspace. If n is omitted, a value of 1 is assumed.

READ DIRECTIVE

The READ directive instructs Modify to temporarily stop reading directives and insertion text from the primary directives file and to start reading from a specified alternate input file. The alternate file can be in either directives file format or in source file format. Modify reads the alternate file until an end-of-record or end-of-file is encountered (depending on the READ directive format specified), then returns to the original input file and begins reading the next directive following the READ directive.

The READ directive has three formats. The first format reads an entire file in directives file format. The second format reads a specified record (until end-of-record) in source file format. The third file reads an entire file (until end-of-file or a zero-byte record is encountered) in source file format. Note that the second and third formats of READ assume that the first line of each record is the record name. This line is discarded without processing.

Format 1:

```
*READ filename
```

Where:

filename	Specifies the name of a file in directive file format.

Format 2:

```
*READ filename,deckname
```

Where:

filename	Specifies the name of a file in source file format.
deckname	Specifies the name of the deck to be read from file filename.

Format 3:

```
*READ filename,*
```

Where:

filename	Specifies the name of a file in source file format.
*	Instructs Modify to read all records of file filename.

READPL DIRECTIVE

The READPL directive instructs Modify to temporarily stop reading the directives file and to start reading from a specified deck within the OPL. This directive allows you to copy text lines from one point in the OPL to another.

Note that READPL cannot read the new version of a deck that has been modified during the same Modify run. If you want to modify a deck and copy it to another part of the program library, these two operations must be done in separate Modify runs; otherwise, READPL copies the old version of the deck.

Format:

*READPL deckname,c_1,c_2

Where:

deckname	Specifies the name of the OPL deck from which text is to be read.
c_1,c2	Specifies the portion of deckname to be read. If omitted, the entire deck is read. c_1 and c_2 specify the first and last lines of a range of lines to be read. If c_1 is specified, c_2 must also be specified (that is, at least two lines must be read).

RETURN DIRECTIVE

The RETURN directive returns the specified file or files to the system.

Format:

*RETURN $file_1$,$file_2$,...,$file_n$

Where:

$file_i$	Specifies the name of a file to be returned.

REWIND DIRECTIVE

The REWIND directive repositions one or more files to beginning-of-information.

Format:

```
*REWIND file1,file2,...,filen
```

Where:

$file_i$	Specifies the name of a file to be rewound.

SKIP DIRECTIVE

The SKIP directive repositions a file forward a specified number of records. If an end-of-information is encountered before the specified number of records has been skipped, the file is positioned at end-of-information.

Format:

```
*SKIP filename,n
```

Where:

filename	Specifies the name of the file to be repositioned.
n	Specifies the number of records to be skipped. If omitted, a value of 1 is assumed.

SKIPR DIRECTIVE

The SKIPR directive repositions the named file forward past a specified record. It does not position the file past end-of-information. If Modify is unable to locate the specified record in the forward search, it positions the file at end-of-information and issues an error message.

Format:

```
*SKIPR filename,recname
```

Where:

filename	Specifies the name of the file to be repositioned.
recname	Specifies the name of the record after which the file is to be positioned.

EXAMPLES OF FILE MANIPULATION DIRECTIVES

Figure 6-1 shows several examples of the file manipulation directives.

```
/old,dirfil <------------------------- Alternate directives file.
/scopy,dirfil
      PRINT*,'LINE 1 ADDED BY MODIFICATION SET MODX.'
--EOR--
      PRINT*,'LINE 2 ADDED BY MODIFICATION SET MODX.'
--EOR--
DECKX
      PRINT*,'LINE 3 ADDED BY MODIFICATION SET MODX.'
--EOR--
*EDIT DECK1
*EDIT DECK2
*EDIT DECK3
--EOR--
--EOF--
/old,opl=mainpl
/get,dirfil
/modify,l=0,n=newpl,c=comx
? *skip dirfil,2
? *ident modx
? *deck deck2
? *i 2
? *read dirfil,deckx
? *bksp dirfil,2
? *deck deck3
? *i 3                                  Directive file.
? *read dirfil
? *rewind dirfil
? *deck deck1
? *i 4
? *read dirfil
? *skipr dirfil,deckx
? *read dirfil
? *return dirfil
?
 MODIFICATION COMPLETE.
/copycf,comx
***   MAIN PROGRAM, DECK DECK1.                                  MOD1      1
      PROGRAM MAIN                                               DECK1     2
      PRINT*,'BEGIN MAIN PROGRAM.'                               DECK1     3
      CALL SUB1                                                  DECK1     4
      PRINT*,'LINE 1 ADDED BY MODIFICATION SET MODX.'            MODX      1
      PRINT*,'END MAIN PROGRAM.'                                 DECK1     5
      STOP                                                       DECK1     6
      END                                                        DECK1     7
***   SUBROUTINE 1, DECK DECK2.                                  MOD1      1
      SUBROUTINE SUB1                                            DECK2     2
      PRINT*,'LINE 3 ADDED BY MODIFICATION SET MODX.'            MODX      1
      PRINT*,'ENTER SUBROUTINE 1.'                               DECK2     3
*     CALL SUBROUTINE SUB2                                       MOD1      2
*     IN DECK2.                                                  MOD1      3
      CALL SUB2                                                  DECK2     4
      PRINT*,'EXIT SUBROUTINE 1.'                                DECK2     5
      RETURN                          Compile file containing    DECK2     6
      END                             modifications from         DECK2     7
***   END DECK2.                      alternate directives       MOD1      4
***   SUBROUTINE 2, DECK DECK3.       file.                      MOD1      1
      SUBROUTINE SUB2                                            DECK3     2
      PRINT*,'ENTER SUBROUTINE 2.'                               DECK3     3
      PRINT*,'LINE 2 ADDED BY MODIFICATION SET MODX.'            MODX      1
      PRINT*,'EXIT SUBROUTINE 2.'                                DECK3     4
      RETURN                                                     DECK3     5
      END                                                        DECK3     6
 EOI ENCOUNTERED.
```

Figure 6-1. File Manipulation Directives Examples (Sheet 1 of 2)

```
/catalog,newpl,r
          CATALOG OF NEWPL                FILE     1
    REC   NAME      TYPE                  LENGTH   CKSUM      DATE

      1   DECK1     OPL  (64)               46     1441    85/07/30.
           MOD1      MODX

      2   DECK2     OPL  (64)               65     7103    85/07/30.
           MOD1      MOD2       MOD3          MODX

      3   DECK3     OPL  (64)               44     0054    85/06/18.
           MOD1      MODX

      4   OPL       OPLD                     7     7403    85/07/30.

      5   * EOF *       SUM =              206

 CATALOG COMPLETE.
/rewind,comx
REWIND,COMX.
/ftn5,i=comx,l=0
     0.040 CP SECONDS COMPILATION TIME.
/lgo
 BEGIN MAIN PROGRAM.                                  }
 LINE 3 ADDED BY MODIFICATION SET MODX.               }
 ENTER SUBROUTINE 1.                                  }
 ENTER SUBROUTINE 2.                                  }
 LINE 2 ADDED BY MODIFICATION SET MODX.               } Execution of modified program.
 EXIT SUBROUTINE 2.                                   }
 EXIT SUBROUTINE 1.                                   }
 LINE 1 ADDED BY MODIFICATION SET MODX.               }
 END MAIN PROGRAM.                                    }
    STOP

     0.016 CP SECONDS EXECUTION TIME.
```

Figure 6-1. File Manipulation Directives Examples (Sheet 2 of 2)

COMPILE FILE DIRECTIVES 7

The compile file directives provide control over the formatting of the compile file, including the insertion of common decks into the compile file. You can embed compile file directives in the source deck when you originally create a program library, or you can insert compile file directives into a deck as part of a modification set. When included in the directives file, compile file directives are not recognized as directives during the modification phase of Modify processing; they are simply treated as text lines to be inserted.

The compile file directives are as follows:

- CALL
- CALLALL
- CALLC
- COMMENT
- CSET
- CWEOR
- ELSE
- ENDIF
- IF
- IFCALL
- NIFCALL
- NOSEQ
- SEQ
- SORSEQ
- WEOF
- WEOR
- WIDTH

CALL DIRECTIVE

The CALL directive writes a copy of a common deck to the compile file. The CALL directive itself is not written to the compile file, but it is written to the new program library and source output files. Common deck calls may be nested; that is, a common deck may itself contain a call to another common deck. However, a common deck may not call itself.

Format:

```
*CALL, deckname
```

Where:

deckname	Specifies the name of the common deck to be written to the compile file.

CALLALL DIRECTIVE

The CALLALL directive writes all decks to the compile file that have a deck name beginning with a specified character string. CALLALL cannot be used in a common deck. If encountered in a common deck, it is ignored.

Format:

```
*CALLALL string
```

Where:

string	A 1- to 7-character string that specifies the initial characters of decks to be called.

Example:

The following call calls all common decks whose names begin with the characters CMD:

```
*CALLALL CMD
```

CALLC DIRECTIVE

The CALLC directive performs a conditional call to a common deck. The deck called by CALLC is written to the compile file only if that deck has not already been called from the deck being edited. Entry of a new DECK directive resets this condition. The use of CALLC for nested common deck calls inhibits the inclusion of duplicate copies of a common deck within the same compile file deck.

Format:

```
*CALLC deckname
```

Where:

deckname Specifies the name of the common deck to be written to the compile file.

COMMENT DIRECTIVE

The COMMENT directive creates a COMPASS language COMMENT pseudo instruction in the following format:

LOCATION	OPERATION	VARIABLE SUBFIELDS
COMMENT	crdate	moddate comments

Where:

crdate Creation date in the format yy/mm/dd.

moddate Modification date in the format yy/mm/dd.

comments Comment string up to 70 characters long.

The comment begins in column 3. Modify obtains the dates from the operating system.

Format:

```
*COMMENT comments
```

Where:

comments Comment string up to 70 characters long.

CSET DIRECTIVE

The CSET directive overrides the code set designation for subsequently called common decks. When a CSET directive precedes a common deck call in the directive file, the common deck is expanded in the compile file in the code set specified by CSET, regardless of the code set defined for the common deck.

When in effect, the CSET directive also governs the code set for nested common deck calls. CSET remains in effect until the end of the deck containing CSET or until another CSET directive is encountered. A CSET directive encountered in a common deck is ignored and is written to the compile file as a comment.

Format:

```
*CSET charset
```

Where:

charset — Can be either of the following:

- ASCII — Specifies expansion of common decks in 6/12-bit display code (uppercase and lowercase characters).
- DISPLAY — Specifies expansion of common decks in 6-bit display code (uppercase characters only).

CWEOR DIRECTIVE

The CWEOR directive conditionally writes an end-of-record (EOR) to the compile file. The EOR is written on the condition that information has been written since the last EOR. The CWEOR directive inhibits writing of successive EORs to the compile file.

Format:

```
*CWEOR
```

ELSE DIRECTIVE

The ELSE directive reverses the effect of the preceding IF directive. When the IF directive causes the following lines to be written to the compile file, ELSE terminates the insertion. If the lines following IF were skipped, ELSE terminates the skip and begins inserting the lines immediately following the ELSE directive. ENDIF terminates the insertion of lines initiated by ELSE.

Format:

```
*ELSE
```

ENDIF DIRECTIVE

The ENDIF directive marks the end of the conditional insertion lines controlled by an IF directive. If lines are being skipped as a result of the IF or ELSE directive, ENDIF terminates skipping and resumes normal processing with the line following ENDIF. If lines are not being skipped when ENDIF is encountered, ENDIF has no effect and processing continues with the next line.

Format:

```
*ENDIF
```

IF DIRECTIVE

The IF directive provides for the conditional insertion of lines into the compile file. The IF directive defines a true or false condition to be tested by Modify. When Modify processes an IF directive and finds the condition to be true, all text lines following the IF directive are written to the compile file until an ELSE or ENDIF directive terminates the insertion. If the condition is false, all lines following the IF directive are skipped until an ELSE or ENDIF directive terminates skipping and resumes normal processing.

Format:

```
*IF attr,tname,tvalue
```

Where:

attr — Defines the test attribute; must be one of the following:

DEF	tname is defined by a DEFINE directive.
UNDEF	tname is not defined by a DEFINE directive.
EQ	tname equals tvalue.
NE	tname does not equal tvalue.

tname — Specifies a 1- to 7-character name to be compared to names previously defined by a DEFINE directive.

tvalue — Specifies a numeric value to be compared to the value set by a DEFINE directive. This parameter is not valid when the DEF or UNDEF attribute is specified.

IFCALL DIRECTIVE

The IFCALL directive conditionally writes a common deck to the compile file. The common deck is called only if a specified name has been defined by a DEFINE directive during the modification phase.

Format:

```
*IFCALL cname,deckname
```

Where:

cname	Specifies the name to be checked for definition by a DEFINE directive.
deckname	Specifies the name of the common deck to be written to the compile file.

NIFCALL DIRECTIVE

The NIFCALL directive conditionally writes a common deck to the compile file. The common deck is called only if a specified name has not been defined by a DEFINE directive during the modification phase. The NIFCALL directive itself is not written to the compile file but is written to the new program library and source output files.

Format:

```
*NIFCALL cname,deckname
```

Where:

cname	Specifies the name to be checked for definition by a DEFINE directive.
deckname	Specifies the name of the common deck to be written to the compile file.

NOSEQ DIRECTIVE

The NOSEQ directive inhibits the inclusion of line sequencing information on the compile file.

Format:

```
*NOSEQ
```

SEQ DIRECTIVE

The SEQ directive instructs Modify to write line sequencing information to the compile file. SEQ is usually used to reverse the effect of a previous NOSEQ directive.

Format:

```
*SEQ
```

SORSEQ DIRECTIVE

The SORSEQ directive specifies that compile file line sequencing information is to be printed on the source output file (specified by the MODIFY command S parameter). The sequence information appears in columns 81 through 95 of the source output file.

Format:

```
*SORSEQ
```

WEOF DIRECTIVE

The WEOF directive writes an end-of-file (EOF) to the compile file.

Format:

```
*WEOF
```

WEOR DIRECTIVE

The WEOR directive writes an end-of-record (EOR) to the compile file.

Format:

```
*WEOR
```

WIDTH DIRECTIVE

The WIDTH directive sets the maximum line length for lines written to the compile file. The line length set by this directive refers to the length of the line up to, and excluding, the line sequencing information written to the compile file.

A WIDTH directive can be entered either during the initialization phase or during the compile phase. A WIDTH directive entered during the compile phase applies only for the deck containing the WIDTH directive. A WIDTH directive entered during the initialization phase is applicable for all decks except those containing a compile phase WIDTH directive. An initialization WIDTH directive is overridden by a WIDTH directive entered for a particular deck during the compile phase.

If no WIDTH directive is entered, Modify uses a default value of 72 columns for compile file output.

Format:

```
*WIDTH n
```

Where:

n	Specifies the length of compile file lines excluding line sequencing information. The maximum value for n is 150 columns.

COMPILE FILE DIRECTIVE EXAMPLES

Figure 7-1 shows several examples of compile file directive usage.

```
/old,opl=mainpl                                  Copy of source file to be incorporated into
/get,csub                                        program library.
/copycr,csub
DECK4
          IDENT  SUB3
          ENTRY  SUB3
*COMMENT  CALL DECK DECK5
***       CALL COMMON DECK.                      Notice call to common deck DECK5.  If MYTEXT is
*NIFCALL  MYTEXT,DECK5 <-------------------------defined during the modification run, DECK5 is
 SUB3     DATA   0            ENTRY/EXIT        not written on the compile file.
          ORIGIN JOT
          EQ     SUB3         RETURN
          USE    //
JOT       BSS    1
          END
 COPY COMPLETE.
/copycr,csub
DECK5
COMMON
 ORIGIN   MACRO  A
          SA1    66B          GET JOB ORIGIN
          MX0    24
          BX6    -X0*X1
          AX6    24
          SA6    A            STORE JOB ORIGIN
          ENDM
 COPY COMPLETE.
/modify,f,p=0,l=0,n=mainpl,c=com1,s=mainp
? *oplfile opl
? *rewind csub
? *create csub
? *ident mod4                                    Modify run to create new program library
? *deck deck1                                    consisting of source file and OPL.
? *i 2
?       common jot
? *1 3
?       call sub3
?       if(jot.eq.3)print*,'interactive job.'
?       if(jot.ne.3)print*,'batch job.'
? *deck deck4
? *i 0
? *weor
? *deck deck3
? *i 0                                           Addition of compile file directives.
? *weor
? *deck deck2
? *d mod1.4
? *i 0
? *weor
?
 MODIFICATION COMPLETE.
/catalog,mainpl,r
          CATALOG OF MAINPL          FILE    1
    REC   NAME      TYPE            LENGTH   CKSUM     DATE

      1   DECK1     OPL  (64)           60    4621   85/08/14.
           MOD1      MOD4

      2   DECK3     OPL  (64)           37    4355   85/06/18.
           MOD1      MOD4

      3   DECK2     OPL  (64)           61    7616   85/08/14.    Since no modifications
           MOD1      MOD2      MOD3       MOD4                   are made to the common
                                                                 deck (DECK5), it is
      4   DECK4     OPL  (64)           50    1677   85/08/14.    acceptable to have the
           MOD4                                                  common deck after the
                                                                 calling deck (DECK4) on
      5   DECK5     OPLC (64)           27    6354   85/08/14.    the program library.  The
      6   OPL       OPLD                13    4046   85/08/14.    next section shows how to
                                                                 arrange the decks on the
      7   * EOF *        SUM =         312                       program library.

 CATALOG COMPLETE.
```

Figure 7-1. Compile File Directives Examples (Sheet 1 of 3)

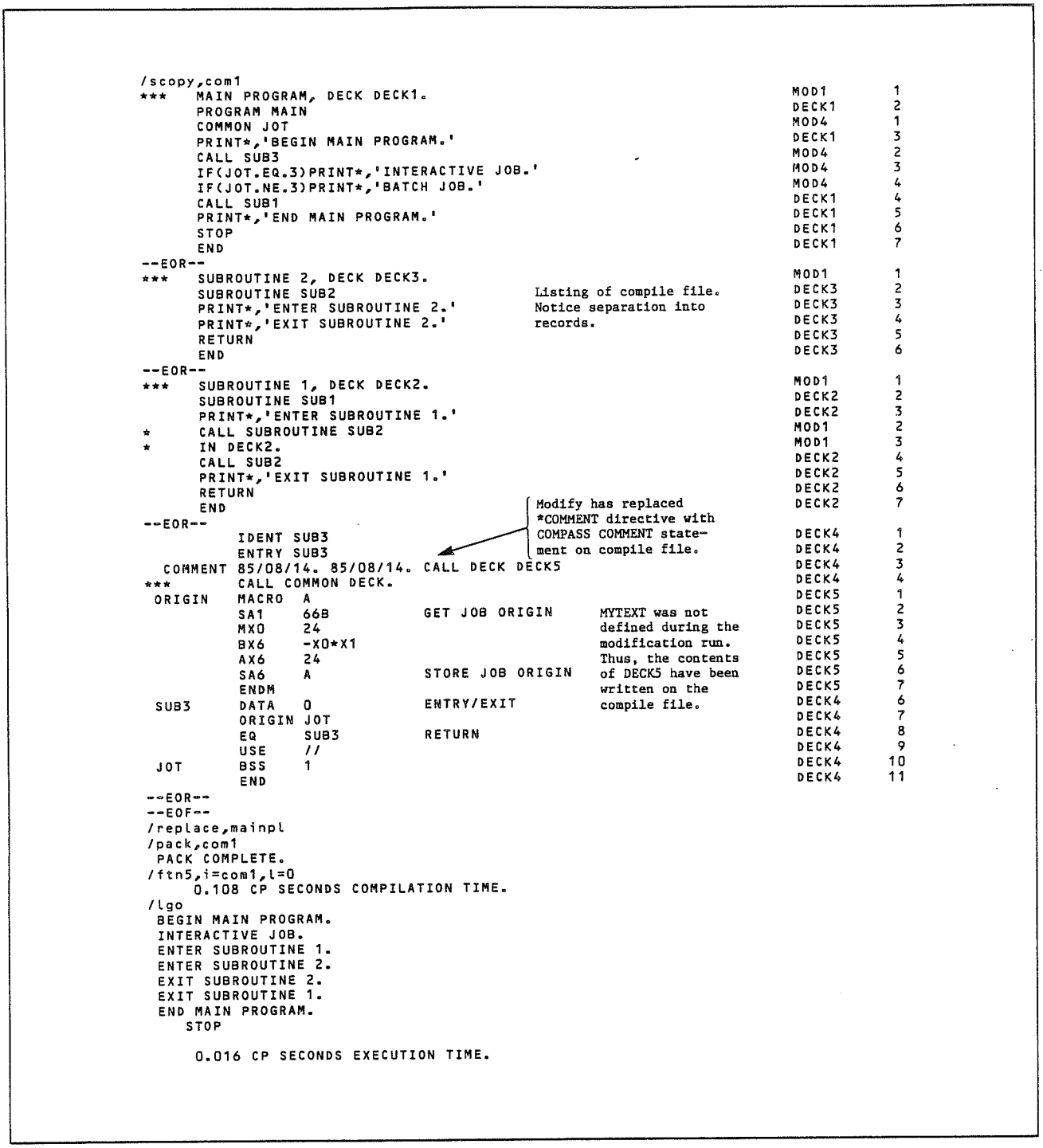


Figure 7-1. Compile File Directives Examples (Sheet 2 of 3)

```
/scopy,mainp
DECK1
***    MAIN PROGRAM, DECK DECK1.
       PROGRAM MAIN
       COMMON JOT
       PRINT*,'BEGIN MAIN PROGRAM.'
       CALL SUB3
       IF(JOT.EQ.3)PRINT*,'INTERACTIVE JOB.'
       IF(JOT.NE.3)PRINT*,'BATCH JOB.'
       CALL SUB1
       PRINT*,'END MAIN PROGRAM.'
       STOP
       END
--EOR--                                          Contents of source file created by Modify.
DECK3
*WEOR
***    SUBROUTINE 2, DECK DECK3.
       SUBROUTINE SUB2
       PRINT*,'ENTER SUBROUTINE 2.'
       PRINT*,'EXIT SUBROUTINE 2.'
       RETURN
       END
--EOR--
DECK2
*WEOR
***    SUBROUTINE 1, DECK DECK2.
       SUBROUTINE SUB1
       PRINT*,'ENTER SUBROUTINE 1.'
*      CALL SUBROUTINE SUB2
*      IN DECK2.
       CALL SUB2
       PRINT*,'EXIT SUBROUTINE 1.'
       RETURN
       END
--EOR--
DECK4
*WEOR
          IDENT  SUB3
          ENTRY  SUB3
*COMMENT  CALL DECK DECK5
***       CALL COMMON DECK.                      Source file contains call to common deck.
*NIFCALL  MYTEXT,DECK5
 SUB3     DATA   0           ENTRY/EXIT
          ORIGIN JOT
          EQ     SUB3        RETURN
          USE    //
 JOT      BSS    1
          END
--EOR--
DECK5
COMMON
 ORIGIN   MACRO  A
          SA1    66B         GET JOB ORIGIN
          MX0    24
          BX6    -X0*X1
          AX6    24
          SA6    A           STORE JOB ORIGIN
          ENDM
--EOR--
--EOF--
```

Figure 7-1. Compile File Directives Examples (Sheet 3 of 3)

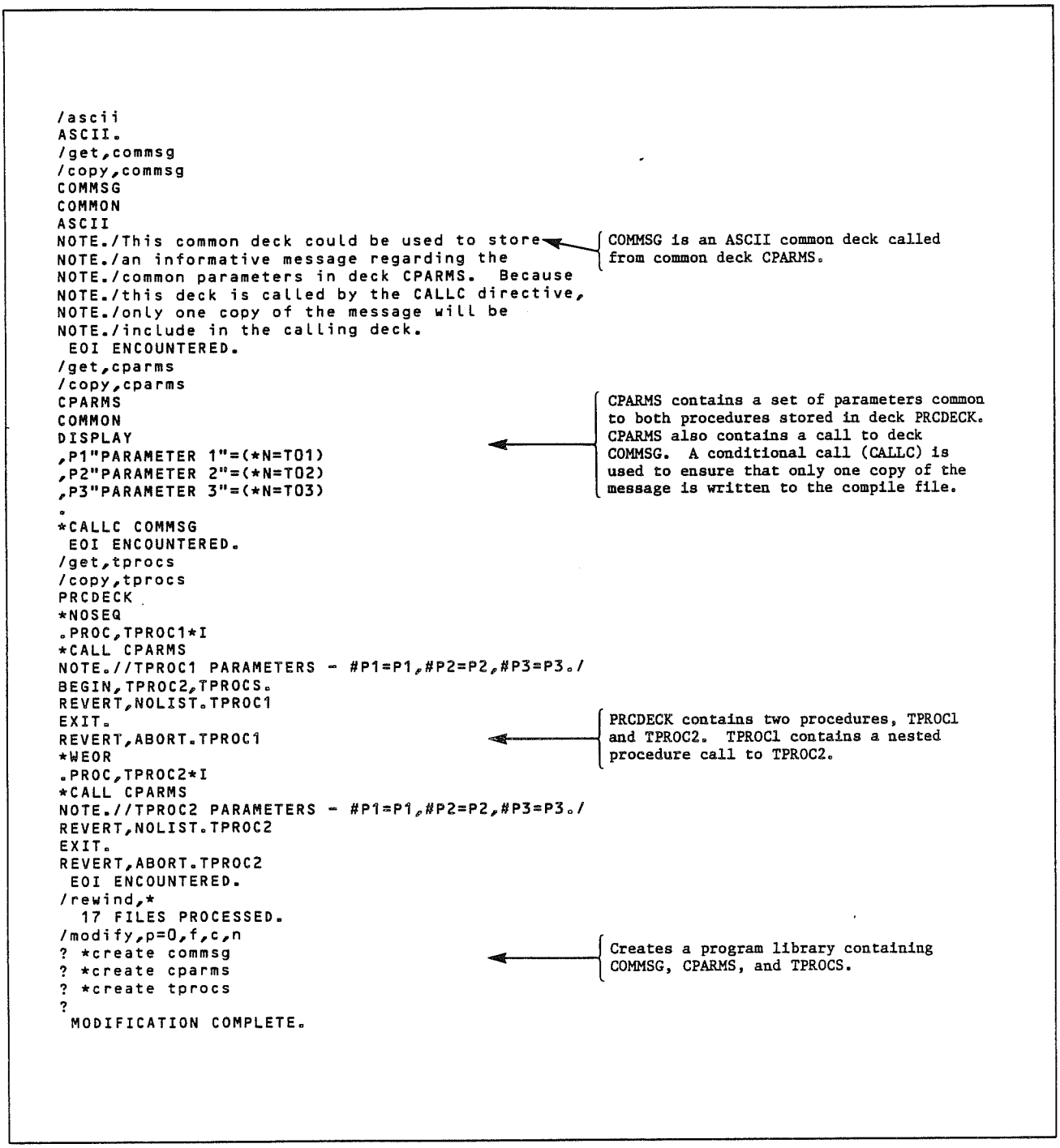


Figure 7-2. NOS Procedure File With ASCII Deck (Sheet 1 of 3)

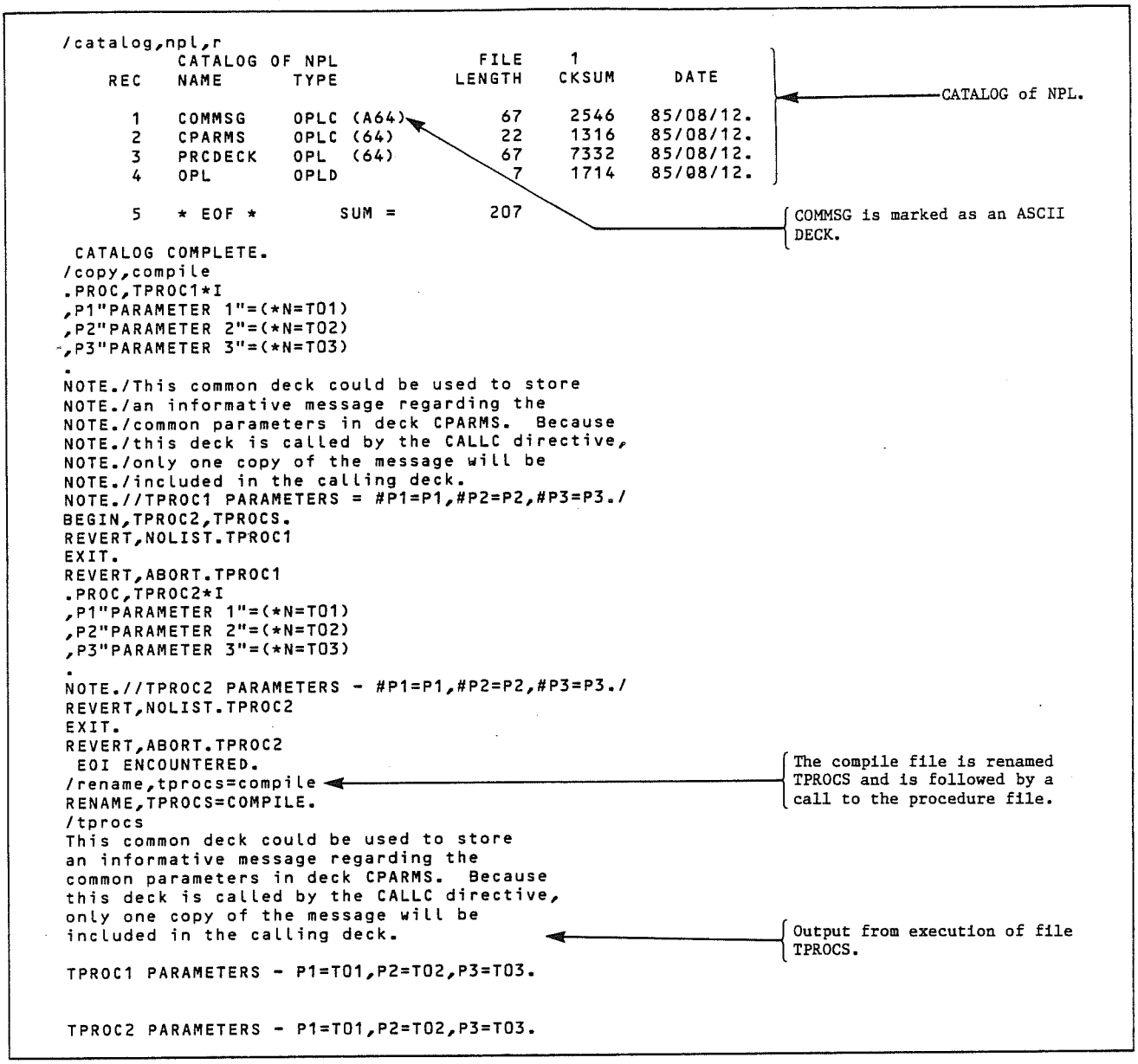


Figure 7-2. NOS Procedure File With ASCII Deck (Sheet 2 of 3)

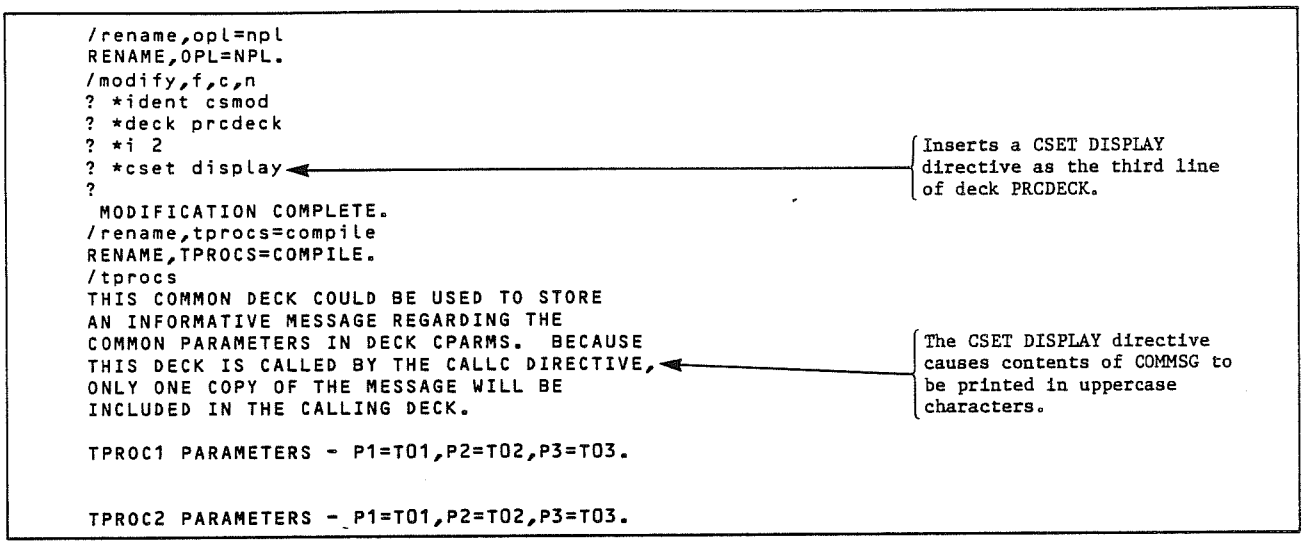


Figure 7-2. NOS Procedure File With ASCII Deck (Sheet 3 of 3)

SPECIAL DIRECTIVES 8

The special directives control miscellaneous operating features of Modify. You can place special directives anywhere in the directives file.

The special directives are as follows:

- DEFINE
- INWIDTH
- MOVE
- PREFIX
- PREFIXC
- UPDATE
- /

DEFINE DIRECTIVE

The DEFINE directive defines a name and associated value to be used by conditional compiler directives, IF, IFCALL, and NIFCALL. The IF directive uses a defined name to test for a true or false condition. IFCALL calls a common deck if a specified name has been defined by a DEFINE directive. NIFCALL calls a common deck if a specified name has not been defined by a DEFINE directive.

Format:

```
*DEFINE dname,dvalue
```

Where:

dname — Defines a 1- to 7-character name consisting of alphanumeric characters and special characters: + - * / ( ) $ =

dvalue — Defines a numeric value assigned to dname. The maximum value for dvalue is 177777_8. If dvalue is omitted, a value of 0 is assumed.

INWIDTH DIRECTIVE

The INWIDTH directive defines the maximum line length of Modify input files. Since Modify program libraries use a compressed format, Modify must know the maximum line lengths of files to be compressed. The INWIDTH directive can be placed anywhere in the directives file.

Format:

```
*INWIDTH n
```

Where:

n	Number of characters per line on input files. The maximum value that can be specified for n is 150 characters; 72 characters is the default line length.

MOVE DIRECTIVE

The MOVE directive repositions (reorders) one or more decks within a program library. For a deck to be repositioned by a MOVE directive, it must have been selected for editing by selection of the F or U parameter on the MODIFY command or by specification of an EDIT directive.

The MOVE directive repositions decks by placing them after a specified deck within the program library. The first parameter of the MOVE directive ($deckname_r$) defines the deck after which the repositioned decks are to be inserted. The remaining parameters define the decks to be moved and the order in which they are to be positioned.

Format:

*MOVE $deckname_r$,$deckname_1$,$deckname_2$,...,$deckname_n$

Where:

$deckname_r$	Specifies the deck following which the repositioned decks are to be placed.
$deckname_i$	Specifies the decks to be moved in the order they are to be reinserted following $deckname_r$.

PREFIX DIRECTIVE

The PREFIX directive changes the prefix character for subsequent Modify directives except compile file directives. (To change the prefix character for compile file directives, use PREFIXC.) The asterisk (*) is used for the prefix character if no PREFIX directive is entered.

Format:

```
*PREFIX c
```

Where:

c Defines the prefix character; c can be any graphic character except a blank.

PREFIXC DIRECTIVE

The PREFIXC directive changes the prefix character for compile file directives. The asterisk (*) is used for the prefix character if no PREFIXC directive is entered.

Format:

```
*PREFIXC c
```

Where:

c Defines the prefix character; c can be any graphic character except a blank.

UPDATE DIRECTIVE

The UPDATE directive affects the sequencing of lines in the compile file and the order in which Modify edits decks.

With respect to line sequencing, UPDATE instructs Modify to sequence lines continuously from one deck to the next in the edit sequence. Normally, Modify resets the line sequence number to 1 at the beginning of each deck.

With respect to the editing sequence, UPDATE instructs Modify to edit decks in the order they appear in the OPL. This directive overrides the sequence determined by the EDIT directives if the EDIT directives occur in some other order.

The UPDATE directive remains in effect until the end of the Modify run.

Format:

```
*UPDATE
```

/ DIRECTIVE

The / directive inserts a comment line into the Modify statistical list file; otherwise, this directive is ignored. The / directive can occur anywhere in the directives file.

Format:

```
*/ comment
```

Where:

comment — Defines a comment string of up to the maximum line length.

Example:

```
*/ ******MODIFICATIONS******
```

EXAMPLES OF SPECIAL DIRECTIVES

Figure 8-1 shows several examples of special directives usage. Note that compile file directives can be ignored (depending on the language processor) by changing the compile file directive prefix character.

```
/old,opl=mainpl
/modify,f,c=com1,n=mainpl,l=0
? */  change prefix character to #
? *prefix #                                          <- Change Modify directive prefix character.
? #ident mod6
? #deck deck4
? #i 4
?           space  4                                 <- Change compile file prefix character so directives on program library will be interpreted as comments.
? #prefixc #
? #move deck5,deck1,deck2,deck3,deck4
?
 MODIFICATION COMPLETE.
/catalog,mainpl,r
          CATALOG OF MAINPL          FILE     1
    REC   NAME      TYPE            LENGTH   CKSUM      DATE
      1   DECK5     OPLC (64)          27     6354    85/08/14.   <- The common deck (DECK5) now comes before any deck that might call it.
      2   DECK1     OPL  (64)          60     4621    85/08/14.
           MOD1      MOD4

      3   DECK2     OPL  (64)          61     7616    85/08/14.
           MOD1      MOD2       MOD3       MOD4

      4   DECK3     OPL  (64)          37     4355    85/06/18.
           MOD1      MOD4

      5   DECK4     OPL  (64)          54     3334    85/08/14.
           MOD4      MOD6

      6   OPL       OPLD               13     1535    85/08/15.

      7   * EOF *       SUM =         316

 CATALOG COMPLETE.
/replace,mainpl
```

Figure 8-1. Special Directive Examples (Sheet 1 of 3)

```
/scopy,com1
***    MAIN PROGRAM, DECK DECK1.                                          MOD1        1
       PROGRAM MAIN                                                       DECK1       2
       COMMON JOT                                                         MOD4        1
       PRINT*,'BEGIN MAIN PROGRAM.'                                       DECK1       3
       CALL SUB3                                                          MOD4        2
       IF(JOT.EQ.3)PRINT*,'INTERACTIVE JOB.'                              MOD4        3
       IF(JOT.NE.3)PRINT*,'BATCH JOB.'                                    MOD4        4
       CALL SUB1                                                          DECK1       4
       PRINT*,'END MAIN PROGRAM.'                                         DECK1       5
       STOP                                                               DECK1       6
       END                                                                DECK1       7
*WEOR                                                                     MOD4        1
***    SUBROUTINE 1, DECK DECK2.                                          MOD1        1
       SUBROUTINE SUB1                                                    DECK2       2
       PRINT*,'ENTER SUBROUTINE 1.'                                       DECK2       3
*      CALL SUBROUTINE SUB2                                               MOD1        2
*      IN DECK2.                                                          MOD1        3
       CALL SUB2                                                          DECK2       4
       PRINT*,'EXIT SUBROUTINE 1.'                                        DECK2       5
       RETURN                                                             DECK2       6
       END                                                                DECK2       7
*WEOR                                                                     MOD4        1
***    SUBROUTINE 2, DECK DECK3.        Listing of compile file.          MOD1        1
       SUBROUTINE SUB2                  Compile file directives           DECK3       2
       PRINT*,'ENTER SUBROUTINE 2.'     have been ignored.                DECK3       3
       PRINT*,'EXIT SUBROUTINE 2.'                                        DECK3       4
       RETURN                                                             DECK3       5
       END                                                                DECK3       6
*WEOR                                                                     MOD4        1
            IDENT  SUB3                                                   DECK4       1
            ENTRY  SUB3                                                   DECK4       2
*COMMENT    CALL DECK DECK5                                               DECK4       3
***         CALL COMMON DECK.                                             DECK4       4
            SPACE 4                                                       MOD6        1
*NIFCALL    MYTEXT,DECK5                                                  DECK4       5
 SUB3       DATA   0            ENTRY/EXIT                                DECK4       6
            ORIGIN JOT                                                    DECK4       7
            EQ     SUB3         RETURN                                    DECK4       8
            USE    //                                                     DECK4       9
 JOT        BSS    1                                                      DECK4      10
            END                                                           DECK4      11
--EOR--
--EOF--                                  EXAMPLE is defined before
/modify,c=com2,l=0,n=mainpl,u            modset MOD7 is identified.  Thus,
? *define example <-------------------   when modset MOD7 goes into effect
? *ident mod7                            during this modification run,
? *deck deck1                            EXAMPLE will be defined but not
? *modname mod4                          as part of modset MOD7.
? *insert 2
? *if def,example
?       print*,'example has been defined.'
? *else
?       print*,'example has not been defined.'
? *endif
?
 MODIFICATION COMPLETE
/copycf,com2
***    MAIN PROGRAM, DECK DECK1                                           MOD1        1
       PROGRAM MAIN                                                       DECK1       2
       COMMON JOT                                                         MOD4        1
       PRINT*,'BEGIN MAIN PROGRAM.'                                       DECK1       3
       CALL SUB3                                                          MOD4        2
       PRINT*,'EXAMPLE HAS BEEN DEFINED.' <-----  Inserted line.          MOD7        2
       IF(JOT.EQ.3)PRINT*,'INTERACTIVE JOB.'                              MOD4        3
       IF(JOT.NE.3)PRINT*,'BATCH JOB.'                                    MOD4        4
       CALL SUB1                                                          DECK1       4
       PRINT*,'END MAIN PROGRAM.'                                         DECK1       5
       STOP                                                               DECK1       6
       END                                                                DECK1       7
 EOI ENCOUNTERED.
/
```

Figure 8-1. Special Directive Examples (Sheet 2 of 3)

```
modify,c=com3,l=0,p=mainpl        EXAMPLE is not defined during this modification
? *edit deck1                     run.  The *ELSE path in modset MOD7 will be taken.
?
 MODIFICATION COMPLETE.
/copycf,com3
***    MAIN PROGRAM, DECK DECK1.                                              MOD1        1
       PROGRAM MAIN                                                           DECK1       2
       COMMON JOT                                                             MOD4        1
       PRINT*,'BEGIN MAIN PROGRAM.'                                           DECK1       3
       CALL SUB3                                                              MOD4        2
       PRINT*,'EXAMPLE HAS NOT BEEN DEFINED.' <------ Inserted line.          MOD7        4
       IF(JOT.EQ.3)PRINT*,'INTERACTIVE JOB.'                                  MOD4        3
       IF(JOT.NE.3)PRINT*,'BATCH JOB.'                                        MOD4        4
       CALL SUB1                                                              DECK1       4
       PRINT*,'END MAIN PROGRAM.'                                             DECK1       5
       STOP                                                                   DECK1       6
       END                                                                    DECK1       7
 EOI ENCOUNTERED.
/
```

Figure 8-1. Special Directive Examples (Sheet 3 of 3)

MODIFY FILE FORMATS 9

Types of Modify files significant to Modify execution are as follows:

- Source files
- Program library files
- Directives file
- Compile file
- Statistical list file

SOURCE DECKS AND FILES

A source file is a collection of information either prepared by the user or generated by Modify (MODIFY command S option).

USER-PREPARED INPUT SOURCE FILES

You prepare a source deck for input to Modify by inserting the appropriate header lines at the beginning of the deck. The first line of a deck must always contain the deck name. If the deck is to be designated as a common deck or as an ASCII or DISPLAY code deck, this information is placed on the lines following the deck name. Section 2 gives detailed information on header line formats. You may also insert compile file directives into the source language deck to control compile file output from Modify. An end-of-record terminates each source deck. An end-of-file or end-of-information terminates a group of decks. The deck name, COMMON statements, and code set designator are not placed on the program library.

Modify source decks should not be confused with a compiler or assembler program. A Modify source deck can contain any number of FORTRAN programs, subroutines, or functions; COMPASS assembler IDENT statements; or sets of data. Typically, each Modify deck contains one program for the assembler or compiler or one set of data.

MODIFY-GENERATED SOURCE FILES

The source file generated as output by Modify contains a copy of all active lines within decks written on the compile file and new program library. The source file is optional output from Modify and is controlled through use of the S option on the MODIFY command. Once generated, the source file can be used as source input on a subsequent Modify run. The file is a coded file that contains 150-column images. Any sequencing information beyond the 150th column is truncated unless the SORSEQ directive has been entered. When the F parameter is selected on the MODIFY command, the source file contains all lines needed to recreate the latest copy of the program library.

When the U parameter is selected, the source file contains only those decks named on DECK directives; that is, only the decks updated during the current Modify run.

When neither F nor U is selected, the source file contains only those decks explicity requested on EDIT directives.

PROGRAM LIBRARY FILES

Program library files (figure 9-1) provide the primary form of input to Modify. When a program library file is input, it is an old program library and has a default name of OPL. When it is output, it is a new program library and has a default name of NPL. During execution of Modify, the program library files must reside on disk.

Before writing the new program library, an EVICT is performed on the file. Refer to NOS Reference Set, volume 3, for a description of the EVICT command.

A program library consists of a record for each deck on the library. The last deck record is followed by a record containing the library directory. EDIT directives and the MODIFY command options determine the contents of the new program library. Only edited decks are written on the new program library.

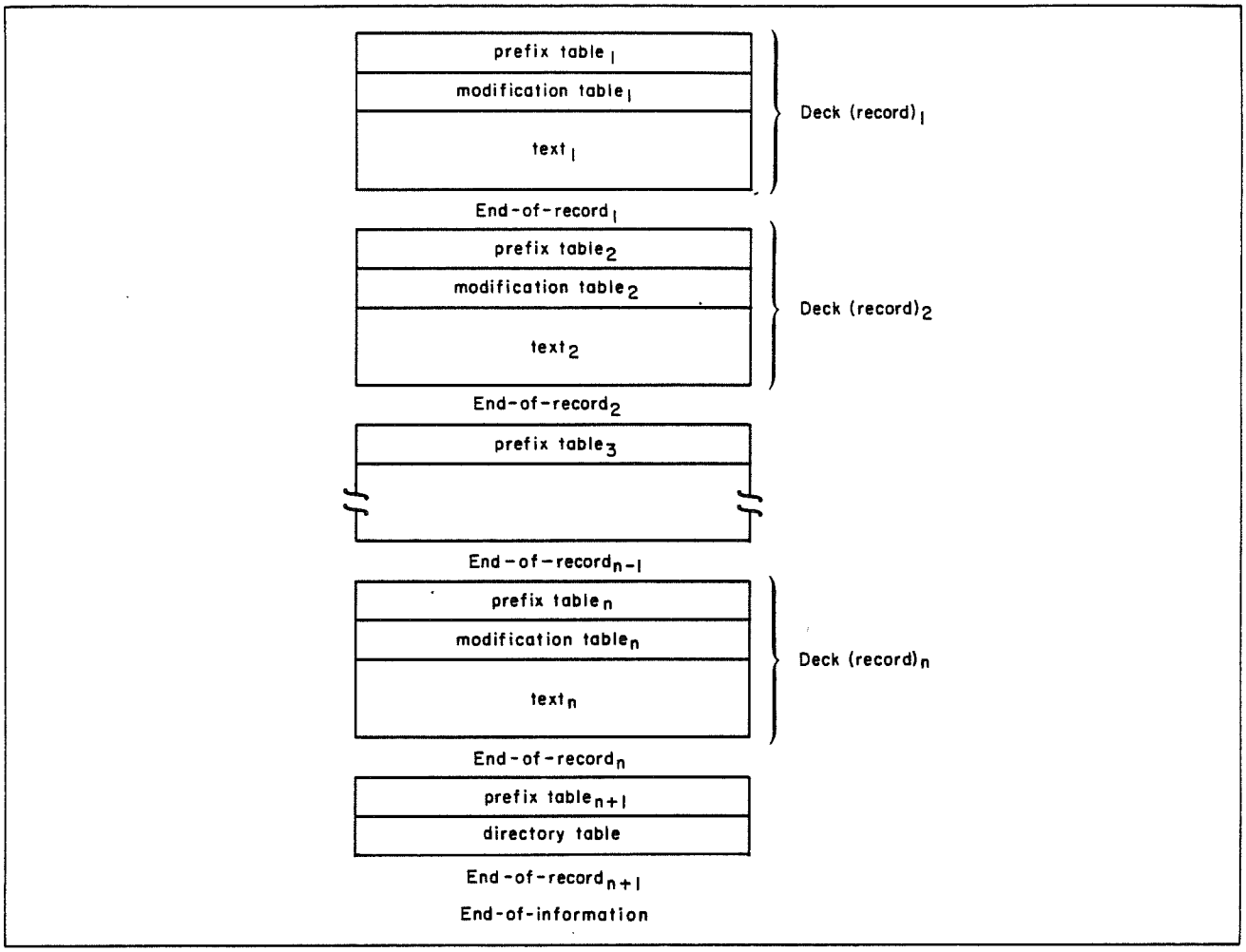
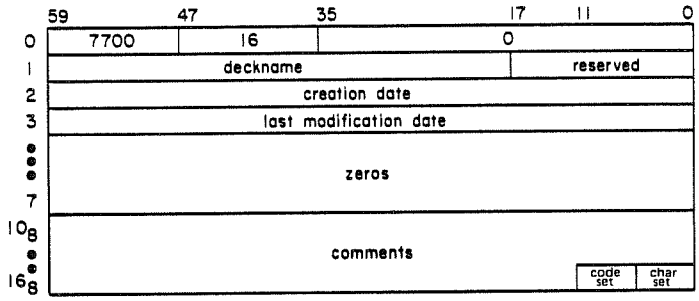


Figure 9-1. Library File Format

DECK RECORDS

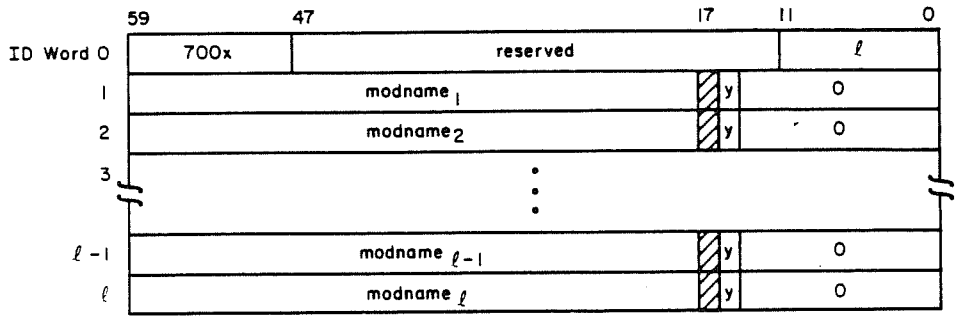
Each deck record consists of a prefix table, a modification table, and text.

Prefix Table Format



ID Word	Bits	Field	Description
0	59-48	Table type	Identifies table as prefix table.
	47-36	wc	Word count; length of table is 16_8 words.
	35-00	none	Reserved for future system use.
1	59-18	deckname	Name of deck obtained for source deck identification line; 1 to 7 characters.
	17-00	none	Reserved for future system use.
2	59-00	creation date	Date that deck was created. Format of date is as follows: yy/mm/dd
3	59-00	latest modification date	Date of most recent entry in modification table. Format of the date is the same as for creation date.
16_8	11-06	code set	Identifies code set used to create this deck. 01 ASCII (6/12-bit display code) 00 DISPLAY (6-bit display code)
16_8	05-00	char set	Identifies character set used to create this deck. 00_8 63-character set 64_8 64-character set

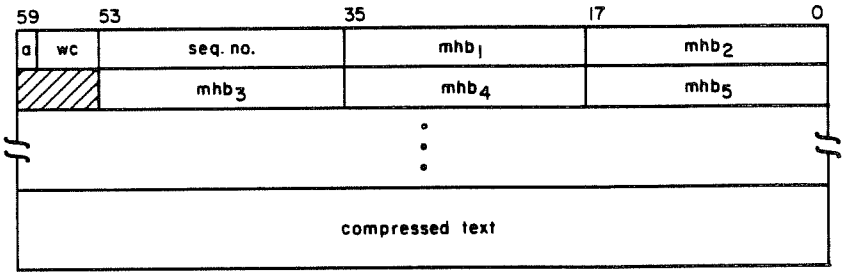
Modification Table Format



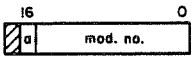
ID Word	Bits	Field	Description
0	59-48	Table type	Identifies table as modification table. The least significant digit indicates whether the deck is common or not as follows: 1 Deck is not common. 2 Deck is common.
	47-12	none	Reserved for future system use.
	11-00	ℓ	Number of modification names in table.
word$_i$	59-18	modname$_i$	1- to 7-character modification set name. Each modification to a deck causes a new entry in this table.
	16	y_i	YANK flag is as follows: 0 Modifier is not yanked. 1 Modifier is yanked.

Text Format

Text is an indefinite number of words that contain a modification history and the compressed image of each line in the deck. Text for each line is in the following format:



Bits	Field	Description
59	a	Activity bit is as follows: 0 Line is inactive. 1 Line is active.
58-54	wc	Number of words of compressed text.
53-36	seq no	Sequence number (octal) of line according to position in deck or modification set.
35-18 and subsequent 18-bit bytes	mhb_i	Modification history byte. Modify creates a byte for each modification set that changes the status of the line. Modification history bytes continue to a zero byte. Since this zero byte could be the first byte of a word and the compressed line image begins a new word, the modification history portion of the text could terminate with a zero word. The format of mhb_i is as follows:



a Activate bit is as follows:

0 Modification set deactivated the line.
1 Modification set activated the line.

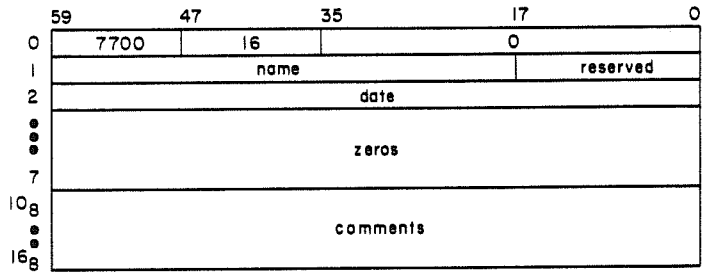
mod no Index to the entry in the modification table that contains the name of the modification set that changes the line status. A modification number of zero indicates the deck name.

Bits	Field	Description
	compressed text	The compressed image of the line is display code. One or two spaces are each represented by 55_8; they are not compressed. Three or more embedded spaces are replaced in the image as follows: 3 spaces replaced by 0002 4 spaces replaced by 0003 . . . . 64 spaces replaced by 0077_8 65 spaces replaced by 007755_8 66 spaces replaced by 00775555_8 67 spaces replaced by 00770002_8 Trailing spaces are not considered as embedded and are not included in the line image. On a 64-character set program library or compressed compile file, a 00 character (colon) is represented as a 0001 byte. A 12-bit zero byte marks the end of the line.

DIRECTORY RECORD

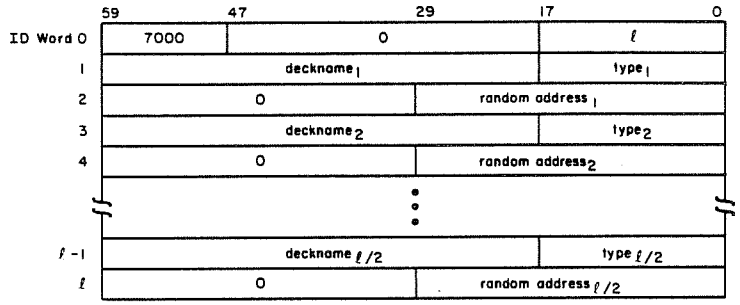
The library file directory contains a prefix table followed by a table containing a two-word entry for each deck in the library. Directory entries are in the same sequence as the decks on the library.

Prefix Table Format



name A Modify-generated directory has the name OPL. However, if the name of the directory is changed (by LIBEDIT, for example), that name is retained on new program libraries then generated.

Directory Table Format



ID Word	Bits	Field	Description
0	59-48	Table type	Identifies table as program library directory.
	17-00	ℓ	Directory length excluding ID word.
1, 3, ..., ℓ -1	59-18	$deckname_i$	Name of program library deck; 1 to 7 characters, left-justified.
	17-00	$type_i$	Type of record: 6 Old program library deck (OPL). 7 Old program library common deck (OPLC). 10 Old program library directory (OPLD).
2, 4, ..., ℓ	29-00	random $address_i$	Address of deck relative to beginning of file.

NOTE

Other record types are defined for NOS but are ignored by Modify (refer to NOS Reference Set, volume 3, for a complete description of record types).

DIRECTIVES FILE

The directives file contains the Modify directives record. This record consists of initialization, file manipulation, and modification directives, and any source lines (including compile directives) to be inserted into the program library decks. An option of the MODIFY command designates the file from which Modify reads directives. Normally, the directive file is the job INPUT file. READ and READPL directives cause Modify to stop reading directives from the directives file named on the MODIFY command and to begin reading from some other file containing directives or insertion lines.

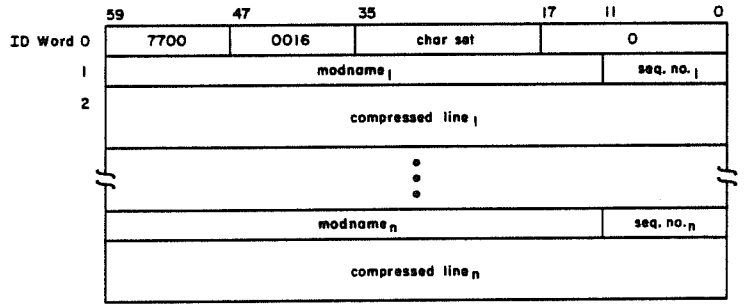
COMPILE FILE

The compile file is the primary form of output for Modify. It can be suppressed by the C=0 parameter of the MODIFY command if compile file output is not required.

If a compile file is specified on the MODIFY command, Modify writes the edited programs on it in a format acceptable as source input to an assembler, compiler, or other data processor. Through MODIFY command parameters and directives, you can specify whether the text on the file is to be compressed or expanded, sequenced or unsequenced. If the text is expanded, you can also specify the width of each line of text preceding the sequence information.

Expanded compile file format for each line consists of x columns of the expanded line (where x is the width requested), followed by 14 columns of sequence information, if sequencing information is requested, and terminated by a zero byte. An end-of-record terminates the decks written on the compile file.

COMPRESSED COMPILE FILE FORMAT



char set	Character set of record. 0000_8 signifies 63-character set. 0064_8 signifies 64-character set.
seq no_i	Sequence number of the line relative to the modification set identified by modname.
compressed line	A line in compressed form. Refer to the compressed text description on the previous page for text formats of deck records.

STATISTICAL LIST FILE

Depending on list options selected on the MODIFY command, statistical list output for Modify contains the following items:

- Input directives
- Status of each deck

  Modifiers are listed first, followed by a list of activated lines, deactivated lines, active lines, and inactive lines as they are encountered. To the left of each line are two flags: a status flag and an activity flag. The status flag can be I (inactive) or A (active). The activity flag can be D (deleted) or A (activated). Following these lines are the unprocessed modifications and errors, if any. The last line contains a count of active lines, inactive lines, and inserted lines.

- Statistics

  This includes lists of the following:

  - Decks on program library
  - Common decks on program library
  - Decks added by initialization directives
  - Decks on new program library
  - Decks written on compile file

  A replaced deck is enclosed by parentheses. Completing the statistics is a line containing counts of the number of lines on the compile file and the amount of storage used during the Modify run.

- Errors

  Modify prints the line in error, if any, above the diagnostic message. Error messages other than those identified as fatal can be overridden through selection of the MODIFY command D (debug) option.

SCRATCH FILES

Modify uses scratch files in the following situations:

- Scratch File 1 (SCR1) — Used when common decks are modified and no new program library is requested.
- Scratch File 2 (SCR2) — Used when insertions overflow memory.
- Scratch File 3 (SCR3) — Used when a CREATE or COPYPL directive is processed. This file is in program library format.

These files are returned by Modify at the end of the Modify run.

CREATE PROGRAM LIBRARY

EXAMPLE 1

This example illustrates how Modify can be used to construct a file in program library format from source decks. This example contains only one source deck (PROG), consisting of a FORTRAN 5 program. The deck is terminated by an end-of-file mark. The next record on the job file contains the directives. It is the job's responsibility to save the newly created program library (TAPE) for use in future Modify runs.

Unless C=0 is specified, a compile file is generated. This example shows the compile file (COMPILE) being used as input to the compiler. The compiler places the compiled program on file LGO. The LGO command calls for loading and execution of the compiled program.

```
MODJOB.
USER,USERNUM,PASSWRD,FAMILY.
COPYBF,INPUT,SOURCE.
MODIFY,P=0,N=TAPE,F.
FTN5,I=COMPILE.
 .
 . <-------------------- File-related commands.
 .
LGO.
--EOR--
PROG
 .
 .
 .
(SOURCE DECK)
 .
 .
 .
--EOF--
*REWIND SOURCE
*CREATE SOURCE <-------- Directives Input.
--EOI--
```

EXAMPLE 2

This example illustrates creation of a library from source decks on a source file other than the job file. After the library has been created, it can be modified, edited, and written on a compile file for use by an assembler or compiler.

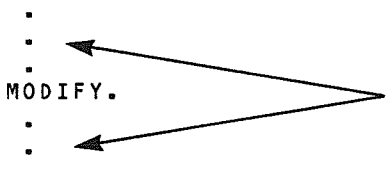
```
Contents of File SALLY:
TOM
COMMON
 .
 .
 .
(SOURCE DECK FOR TOM)
 .
 .
 .
--EOR--
JACK
COMMON
 .
 .
 .
(SOURCE DECK FOR JACK)
 .
 .
 .
--EOR--
RON
 .
 .
 .
(SOURCE DECK FOR RON)
 .
 .
 .
*CALL TOM
*IFCALL REQ,JACK
--EOI--
```

```
Job Deck:
Job command
 .
 .  <-------- File-related commands.
 .
MODIFY,N,F,P=0.
 .
 .
 .
--EOR--
*REWIND SALLY
*CREATE SALLY
 .
 .
 .
*DEFINE REQ
 .
 .
 .
--EOR--
 .
 .
 .
```

Directives Input.

EXAMPLE 1

In this example, Modify uses all default parameters. The sequencing information shown for inserted lines is assigned during modification.




```
--EOR--
*IDENT  MOD10
*DECK  BOTTLE
*/ *****MODIFICATIONS
*D      10
*D       4
(TEXT LINE TO BE INSERTED IS ASSIGNED MOD10.1)
*D      20,22
(TEXT LINES TO BE INSERTED ARE ASSIGNED TO MOD10.2 THROUGH MOD10.4
*I      MOD9.30
(TEXT LINE TO BE INSERTED IS ASSIGNED MOD10.5)
*EDIT  BOTTLE
--EOI--
```

Modification set MOD10.

EXAMPLE 2

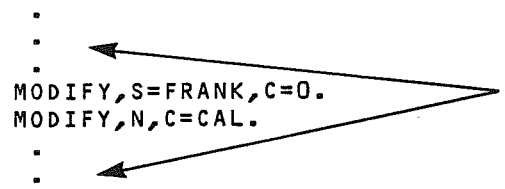
This job modifies deck EDNA for replacement on the program library. No compile file is produced.

```
 .
 .
 .
MODIFY,N,C=0.                          File-related commands.
 .
 .
 .
--EOR--
*IDENT    A2                           Modification set A2.
*DECK     EDNA
*MODNAME    A1
*/ *****MODIFICATIONS
*D   30                                Delete line A1.30.
 TAG      RJ       CHECK               Insert line A2.1.
*MODNAME EDNA
*I  7011
 ERR      SA1      LIST1               Insert lines A2.2 through A2.5
          ZR       X1,ABORT            after EDNA.7011.
          PRINT    (0*** ERROR 131  ***)
          EQ       ABORT
*D  7644,7650                          Delete lines EDNA.7644 through
*EDIT  EDNA                            EDNA.7650.
--EOI--
```

MOVE TEXT

EXAMPLE 1

The following job calls Modify twice. On the first call, Modify deactivates all but lines 32 through 54 and writes the source for these lines on source file FRANK. On the second call, Modify deletes the remainder of the lines and reinserts the saved lines at the beginning of KEN.



```
.
.
.
MODIFY,S=FRANK,C=0.          File-related commands.
MODIFY,N,C=CAL.
.
.
.
--EOR--
*IDENT MOV1                  Modification set MOV1.
*DECK KEN
*D    1,31                   Delete lines before line KEN.32.
*D   55,63                   Delete lines KEN.55 through KEN.63.
*EDIT KEN                    Transfer remaining lines (KEN.32 through
--EOR--                       KEN.54) to source file FRANK.
*IDENT MOV2                  Modification set MOV2.
*REWIND FRANK
*DECK KEN
*D    32,54                  Delete remainder of lines in KEN.
*I    0                      Insert lines at beginning of KEN.
*READ FRANK,KEN              Read insertion text from deck KEN on file
*EDIT  KEN                    FRANK.
--EOI--
```

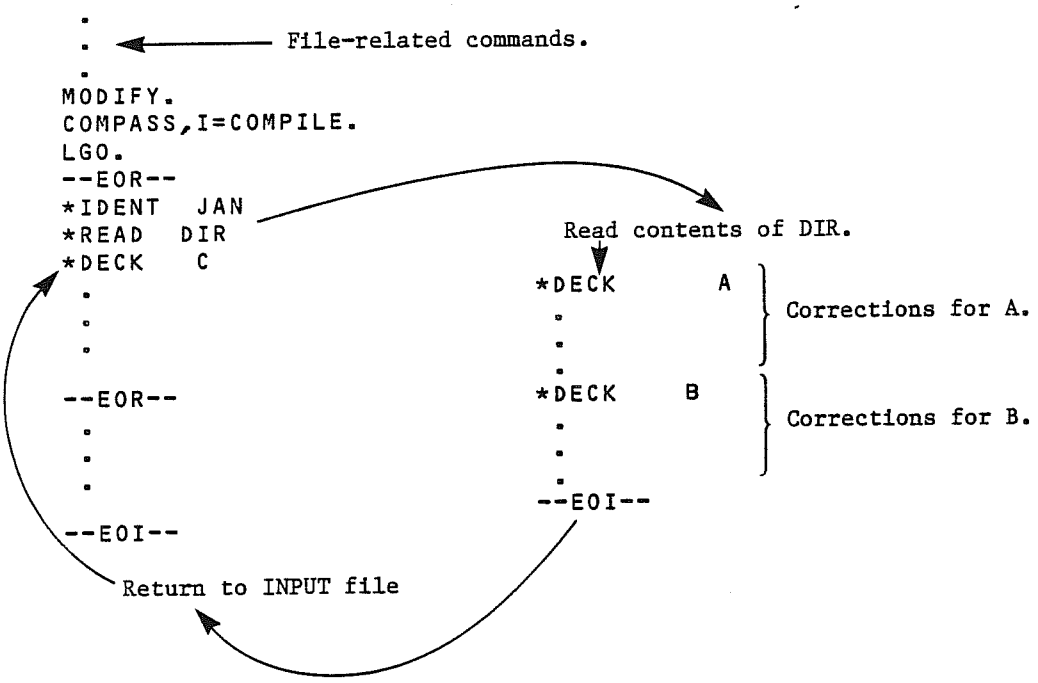
EXAMPLE 2

This job moves text lines from one deck to another. On the first call to Modify, lines 32 through 54 of deck KEN on file OPL are saved on source file FRANK. On the second call, the saved lines are inserted into deck WILL.

```
.
.
.
MODIFY,S=FRANK,C=0.          File-related commands.
MODIFY,N,C=MEL.
.
.
.
--EOR--
*IDENT   F1                  Modification set F1.
*DECK    KEN
*D       1,31                Delete lines KEN.1 through KEN.31.
*D       55,63               Save lines KEN.32 through KEN.54 on source
*EDIT    KEN                  file FRANK.
--EOR--
*REWIND  FRANK
*IDENT   F2
*DECK    WILL
*I       25                  Insert text after line WILL.25.
*READ    FRANK,KEN           Insertion text taken from deck KEN on file FRANK.
*EDIT    WILL                Deck WILL is written on NPL and compile file MEL.
--EOI--
```

READ DIRECTIVES FROM AN ALTERNATE FILE

This job illustrates how the READ directive can be used to change the source of directives and correction text from the primary input file (in this case INPUT) to some other file.



YANK AND UNYANK MODIFICATION SETS

This example illustrates a job that deactivates modification set JULY and all subsequent modification sets. The change is not incorporated into the library; it is for the purposes of this run only.

```
 .
 .  <-------------------- File-related commands.
 .
MODIFY,P=LIB,F.
COMPASS,I=COMPILE.
LGO.
--EOR--
*IDENT  NEGATE
*DECK   MASTER
*YANK   JULY,*
--EOI--
```

To incorporate the preceding change on a new program library, add the N parameter to the MODIFY command.

The effects of a YANK can be nullified in future runs and, consequently, the effects of the yanked modification sets can be restored through the UNYANK directive. Such a modification might appear as follows:

```
*IDENT  RESTORE
*DECK   MASTER
*UNYANK  JULY,*
```

PURGE DECKS

Decks BAD, WORSE, and WORST are no longer needed. The following job removes them from the library. They could also be removed through a selective edit using EDIT directives. In either case, the removal is permanent.

```
 .
 .
MODIFIY,N,C=0,F.
 .
 .  <-------------------- File-related commands.
 .
--EOR--
*PURDECK BAD,WORSE,WORST
--EOI--
```

CHANGE THE DIRECTIVES PREFIX CHARACTER

EXAMPLE 1

This example illustrates how to maintain directives input on a library. Because * is the prefix used on the library, a different prefix is required when modifying the library. In this case, / becomes the prefix character.

```
ATTACH,OPL.
GET,FIX.
MODIFY,P=FIX,C=Z,N=FIX2.
REWIND,Z.
COPYSBF,Z,OUTPUT.
REWIND,Z.
MODIFY,I=Z.
COMPASS,I,S,B=LT01.
 .
 .
 .
--EOR--
*PREFIX   /
/WIDTH    58
/IDENT    F1
/DECK     CORR
/I        873
*I        1007
           LDC     7777B
           STM     STMA+1
/D        880
/EDIT     CORR
--EOI--
```

The contents of deck CORR on compile file Z are as follows:

```
*IDENT    NIX                    CORR     1
*DECK     GRM1TD                 CORR     2
*I        MHD2.19                CORR     3
 .
 .
 .
*D        997,1000               CORR   873
*I        1007                   F1       1   }
           LDC       7777B       F1       2   } Inserted lines.
           STM       STMA+1      F1       3   }
            .
            .
            .
           LJM       STM         CORR   879 <-- Instruction CORR.880
*D        980,984                CORR   881      has been deleted.
```

After file Z is produced, the deck GRM1TD is modified by the contents of Z. The resulting compile file (COMPILE) contains COMPASS language PP code and is assembled using COMPASS.

The job produces a new program library (FIX2) incorporating the changes made to deck CORR. The resulting COMPASS listing appears as follows:

```
                                    Corrections      Contents of
                                     on File Z         COMPILE
                                  (Correction IDs)   (Deck IDs)
  .
  .
  .
STD   SM                                            GRM1TD      1007
LDC   7777B                       F1          2     NIX           11
STM   STMA+1                      F1          3     NIX           12
  .
  .
  .
```

Since the comments go through the correction identification, the INWIDTH directive must be deleted if a new program library is generated. However, for maintenance purposes, there is an advantage of seeing the correction identifiers with the deck identifiers.

EXAMPLE 2

This example illustrates changing the compile file prefix character so that when Modify produces the compile file, it recognizes only directives using the specified prefix. The directives prefix, in this case, is unaltered.

```
  .
  .
  .
ATTACH,OPL.
MODIFY.
COMPASS,I,S,B.
--EOR--
*IDENT  TEST1
*DECK   TEST
*PREFIXC  /
*EDIT   TEST
--EOI--
```

Deck TEST contains the following:

```
          .
          .
          .
        LDM     TCLT
        STD     CM
          .
          .
          .
*CALL PCC
/CALL PPCA
```

Modify ignores the common deck call to PPC. COMPASS interprets it as a comment. Modify acts on the common deck call to PPCA and replaces the /CALL directive with a copy of common deck PPCA.

USE OF THE Z PARAMETER

EXAMPLE 1

The following MODIFY command creates a compile file from an alternate OPL:

```
MODIFY,Z./*OPLFILE,OPLZ/*EDIT,DECK1
```

EXAMPLE 2

This MODIFY command write two decks to the compile file:

```
MODIFY,Z./*EDIT,DECK1,DECK2
```

SAMPLE FORTRAN 5 PROGRAM

This set of Modify examples illustrates how you can use Modify to maintain a FORTRAN 5 program in program library format. The FORTRAN 5 program calculates the area of a triangle from the base and height read from the data record.

EXAMPLE 1

The following job places the FORTRAN 5 program and subroutine as a single deck (ONE) on the new program library (NPL) and on the compile file (COMPILE). Following Modify execution, FORTRAN 5 is called to compile the program. The LGO command calls for execution of the compiled program. This program does not execute because of an error in the SUBOUTINE statement. The name of the subroutine should be MSG, not MSA.

```
.
.
.
COPYBF,INPUT,S.
MODIFY,P=0,N,F.
FTN5,I=COMPILE.
LGO.
.
.
.
--EOR--
ONE
      PROGRAM ONE (TAPE1)
      PRINT 5
5     FORMAT (1H1)
10    READ 100,BASE,HEIGHT,I
100   FORMAT(2F10.2, I1)
      IF (I.GT.0) GO TO 120
      IF (BASE.LE.0) GO TO 105
      IF (HEIGHT.LE.0) GO TO 105
      GO TO 106
105   CALL MSG
106   AREA= .5*BASE*HEIGHT
      PRINT 110,BASE,HEIGHT,AREA
110   FORMAT(///,' BASE=',F20.5,' HEIGHT=',
     +F18.5,/,' AREA=',F20.5)
      WRITE(1)   AREA
      GO TO 10
120   STOP
      END
      SUBROUTINE MSA
      PRINT 400
400   FORMAT (///,'FOLLOWING INPUT DATA NEGATIVE OR ZERO')
      RETURN
      END
--EOF--
*REWIND S
*CREATE S
--EOR--
   200.24       500.76
   300.24       600.76
   400.00       700.00
   326.32       425.36
   500.00       600.00
   000.00       150.00
   700.43       800.00
   100.00       300.00
   050.00       100.00
   150.00       200.00
                1
--EOI--
```

File-related commands.

Deck name.

Should be SUBROUTINE MSG.

End of source deck.

Directives input.

Data record.

EXAMPLE 2

Examination of Modify output from the creation job reveals that the erroneous SUBROUTINE statement has line identifier ONE.20. The following job corrects the error and generates a new program library.

```
 .
 .
 .
MODIFY,N,F.
FTN5,I=COMPILE.
LGO.
--EOR--
*IDENT    MOD1
*DECK     ONE
*DELETE   20
      SUBROUTINE MSG  <-------- Identified as MOD1.1 on NPL.
--EOR--
   200.24       500.76
   300.24       600.76
   400.00       700.00
   326.32       425.36
   500.00       600.00      } Data record.
   000.00       150.00
   700.43       800.00
   100.00       300.00
   050.00       100.00
   150.00       200.00
                     1
--EOI--
```

EXAMPLE 3

This job uses the same input as the first job but divides the program into two decks: ONE and MSG. DECK MSG is a common deck. A CALL MSG directive is inserted into deck ONE to ensure that MSG is written on the compile file whenever deck ONE is edited.

```
COPYBF,INPUT,S.
MODIFY,P=0,N,F.
FTN5,I=COMPILE.
LGO.
 .
 .  <-------------------------- File-related commands.
 .
--EOR--
MSG
COMMON
      SUBROUTINE MSG
      PRINT 400
400   FORMAT (///,'FOLLOWING INPUT DATA NEGATIVE OR ZERO')
      RETURN
      END
--EOR--
ONE
      PROGRAM ONE (TAPE1)
      PRINT 5
5     FORMAT (1H1)
10    READ 100,BASE,HEIGHT,I
100   FORMAT(2F10.2, I1)
      IF (I.GT.0) GO TO 120
      IF (BASE.LE.0) GO TO 105
      IF (HEIGHT.LE.0) GO TO 105
      GO TO 106
105   CALL MSG
106   AREA=  .5*BASE*HEIGHT
      PRINT  110,BASE,HEIGHT,AREA
110   FORMAT (///,'  BASE=',F20.5,' HEIGHT=',
     +F18.5,/,'  AREA=',F20.5)
      WRITE(1)    AREA
      GO TO 10
120   STOP
      END
*CALL    MSG  <-------------- Replaced by common deck MSG on compile file.
--EOF--
*REWIND   S
*CREATE S
--EOR--
   200.24       500.76   |
   300.24       600.76   |
   400.00       700.00   |
   326.32       425.36   |
   500.00       600.00   }      Data record.
   000.00       150.00   |
   700.43       800.00   |
   100.00       300.00   |
   050.00       100.00   |
   150.00       200.00   |
                  1
--EOI--
```

EXAMPLE 4

This example adds a deck to the library created in the previous example. With no new program library generated (N is omitted from MODIFY command), the addition is temporary.

```
 .
 .
 .
COPYBF,INPUT,S.
MODIFY.
FTN5,I=COMPILE.
LGO.
 .
 .
 .
--EOR--
TWO
      PROGRAM TWO
        .
        .
        .
      END
*CALL MSG
--EOF--
*REWIND S
*CREATE S
*IDENT    MOD2
*DECK MSG
*DELETE MSG.3
400   FORMAT (///,'FOLLOWING INPUT DATA POSITIVE')
*EDIT  TWO
--EOR--
 .
 .
 .
data record
 .
 .
 .
--EOI--
```

File-related commands.

Replaced by common deck MSG on compile file.

OPLEDIT UTILITY A

OPLEDIT is a NOS utility used to manage modification set entries for decks in Modify-formatted old program libraries (OPLs). Using OPLEDIT, you can purge a modification set, reconstruct an earlier modification set, or consolidate a number of modification sets into a single set.

The OPLEDIT utility consists of the OPLEDIT command and the following directives:

- CSET — Specifies the code set (ASCII or DISPLAY) used to create one or more specified Modify decks.
- EDIT — Defines the decks to be edited and written to the new program library.
- PULLALL — Consolidates two or more modification sets into a single modification set.
- PULLMOD — Reconstructs the effects of one or more modification sets incorporated prior to the most recent modification set.
- PURGE — Eliminates one or more modification sets from the OPL.

OPLEDIT COMMAND

The OPLEDIT command initiates execution of the OPLEDIT utility.

Format:

OPLEDIT,p_1,p2,...,Pn

Parameter (p_1)	Description
I	Specifies the directive input file for the OPLEDIT run.

Option	Description
I or omitted	Directives are taken from file INPUT.
I=filename	Directives are on file filename.
I=0	There is no directive input for this run.

Parameter (p_i)	Description
P	Specifies the input old program library file.

Option	Description
P or omitted	Use default file name OPL as the old program library file.
P=filename	The old program library is on file filename.
P=0	There is no old program library for this run.

N — Defines the name of the new program library to be created.

Option	Description
N	Use default file name NPL as the new program library file.
N=filename	Write the new program library on file filename.
N=0 or omitted	No new program library is created.

L — Specifies the list output file.

Option	Description
L or omitted	List output of file OUTPUT.
L=filename	List output on file filename.
L=0	List no output.

M — Specify file to receive output directive file from PULLALL or PULLMOD directive.

Option	Description
M or omitted	Write output to default file MODSETS.
M=filename	Write output to file filename.

Parameter (p_i)	Description

LO — Select list options.

Option	Description
LO or omitted	List option E is selected if the list output file is assigned to an interactive terminal. Otherwise, options C, D, E, M, and S are selected.

List Option	Description
C	List input directives
D	List deck status
E	List errors
M	List modifications
S	List directory

LO=$c_1c_2...c_5$ — c_i selects one of the above options. Up to five options can be listed. Options must not be separated.

F — Specifies that all decks on the OPL are to be written to the selected output files.

D — Specifies debug mode; errors are listed on the output file but do not abort the OPLEDIT run.

U — Instructs OPLEDIT to automatically insert a Modify EDIT directive into all decks included in a consolidated modification set generated by PULLALL or a reconstructed modification set generated by PULLMOD. This parameter ensures that all decks associated with a PULLALL- or PULLMOD-generated modification set an edited during a subsequent Modify run (that is, if the OPLEDIT new program libary is used as input to Modify).

Option	Description
U	Generate EDIT directives for all decks.
omitted	Generate EDIT directives for common decks only.
U=0	Generate no EDIT directives.

Z — Specifies that OPLEDIT directives are included on the OPLEDIT command following the command terminator. If Z is specified, the I parameter is invalid.

Use of the Z parameter eliminates the need to use a separate input file when only a few directives are needed. The first character following the command terminator is the separator character for all directives on the command. Any display code character (including the space) not used in any of the directives can be used as the separator character.

CSET DIRECTIVE

The CSET directive determines the code set bit setting (bit 2**6 of word 0+16B) in the modification table of all subsequently edited decks. (Refer to section 9 for more information on the modification table format.) CSET works in conjunction with the EDIT directive; only decks specified on EDIT directives following the CSET directive are affected.

The purpose of CSET is to facilitate conversion of program library decks created prior to the addition of the ASCII-DISPLAY code option of Modify. The code set bit of the modification table was not used by previous versions of Modify. The only recommended use of CSET is to set or clear this bit to reflect the code set actually used in the specified deck(s).

Format:

```
CSET,codeset
```

Where:

codeset — Specifies the code set used to create the decks to be converted. Options that can be specified for codeset are as follows:

Option	Description
ASCII	Specifies 6/12-bit DISPLAY code. This option sets bit 2**6 of word 0+16B of the modification table for affected decks.
DISPLAY	Specifies 6-bit DISPLAY code. This option clears bit 2**6 of word 0+16B of the modification table for affected decks.

EDIT DIRECTIVE

The EDIT directive instructs OPLEDIT to edit a program library deck and transfer it to the new program library. The deck names specified normally are the decks that contain the modification identifiers.

Format:

*EDIT $p_1,p_2,\ldots,p_n$

Where:

p_i — Specifies a deck or range of decks to be edited. If a range of decks is specified, p_i must be in the following format:

$deckname_a.deckname_b$

$deckname_a$ and $deckname_b$ are the first and last decks, respectively, of the range of decks specified.

PULLALL DIRECTIVE

The PULLALL directive consolidates two or more modification sets into a single modification set. PULLALL has two formats, as shown below. Format 1 consolidates all active modification sets into a single set. Format 2 creates a consolidated modification set from all modification sets subsequent to, and including, a specified set.

PULLALL produces two types of output files, a new program library and a directives file. Both of these files include only edited decks; that is, decks selected for editing by an EDIT directive or by the OPLEDIT command F parameter. All decks associated with the consolidated modification set are written to the new program library specified by the OPLEDIT command N parameter. You can use this file as the OPL for a subsequent Modify run.

The directives file is written to the file defined by the OPLEDIT M parameter. This file contains all the directives and insertion lines necessary to produce the net effect of the consolidated modification set. The IDENT directives that defined the original modification sets are deleted from this file and are replaced by a single IDENT ******* directive at the beginning of the file.

The directives file is written in a format (that is, with the name of the record appearing as the first line of the file) suitable to be read by the Modify READ directive in either of the following formats:

```
*READ,file,*
     or
*READ,file,deckname
```

Format 1:

```
*PULLALL
```

Format 2:

```
*PULLALL modname
```

Where:

modname	Specifies the first (earliest) modification set to be included in the consolidated modification set.

PULLMOD DIRECTIVE

The PULLMOD directive reconstructs one or more modification sets previously incorporated in a program library. Unlike the PULLALL directive, the structure of the original modification sets is not changed; the original IDENT directives are neither changed nor deleted.

PULLMOD produces two types of output files, a new program library and a directives file. Both of these files include only edited decks; that is, decks selected for editing by an EDIT directive or by the OPLEDIT command F parameter. All decks associated with the reconstructed modification set are written to the new program library specified by the OPLEDIT command N parameter. You can use this file as the OPL for a subsequent Modify run.

The directives file is written to the file defined by the OPLEDIT M parameter. This file contains all the directives and insertion lines necessary to produce the net effect of each reconstructed modification set. Each reconstructed set is written to a separate record on the file.

The directives file is written in a format (that is, with the name of the record appearing as the first line of each record) suitable to be read by the Modify READ directive in either of the following formats:

```
*READ,file,*
    or
READ,file,deckname
```

Format:

*PULLMOD $modname_1$,$modname_2$,...,$modname_n$

Where:

$modname_i$	Specifies the name of a modification set to be reconstructed.

PURGE DIRECTIVE

The PURGE directive removes the effects of one or more previously incorporated modification sets from edited decks in the program library. All information pertaining to purged modification sets is removed from the modification table of affected decks (refer to section 9 for a description of the modification table).

Format:

PURGE modname,

Where:

modname	Specifies the name of the modification set to be purged if the * parameter is not included. If * is included, modname specifies the first of a series of modification sets to be purged.
*	Specifies that modname and all modification sets subsequent to modname should be purged.

OPLEDIT EXAMPLES

Figure A-1 illustrates the use of the OPLEDIT directives.

```
/get,mainpl
/catalog,mainpl,r
          CATALOG OF MAINPL          FILE    1
    REC   NAME      TYPE            LENGTH   CKSUM     DATE

      1   DECK5     OPLC (64)           27    6354   85/08/14.
      2   DECK1     OPL  (64)           60    4621   85/08/14.
           MOD1      MOD4

      3   DECK2     OPL  (64)           61    7616   85/08/14.
           MOD1      MOD2       MOD3       MOD4

      4   DECK3     OPL  (64)           37    4355   85/06/18.
           MOD1      MOD4

      5   DECK4     OPL  (64)           54    3334   85/08/14.
           MOD4      MOD6

      6   OPL       OPLD                13    1535   85/08/15.

      7   * EOF *       SUM =          316

 CATALOG COMPLETE.
/opledit,p=mainpl,m=mods,n=newpl
? *purge mod4,*
? *pullmod mod2,mod3
? *pullall mod1
? *edit deck1.deck4
?
 OPLEDIT COMPLETE.
/catalog,newpl,r
          CATALOG OF NEWPL           FILE    1
    REC   NAME      TYPE            LENGTH   CKSUM     DATE

      1   DECK1     OPL  (64)           36    1221   85/08/14.
           MOD1

      2   DECK2     OPL  (64)           55    3330   85/08/14.
           MOD1      MOD2       MOD3

      3   DECK3     OPL  (64)           34    1075   85/06/18.
           MOD1

      4   DECK4     OPL  (64)           45    4105   85/08/14.
      5   OPL       OPLD                11    2101   85/08/16.

      6   * EOF *       SUM =          225

 CATALOG COMPLETE.
```

Figure A-1. OPLEDIT Examples (Sheet 1 of 2)

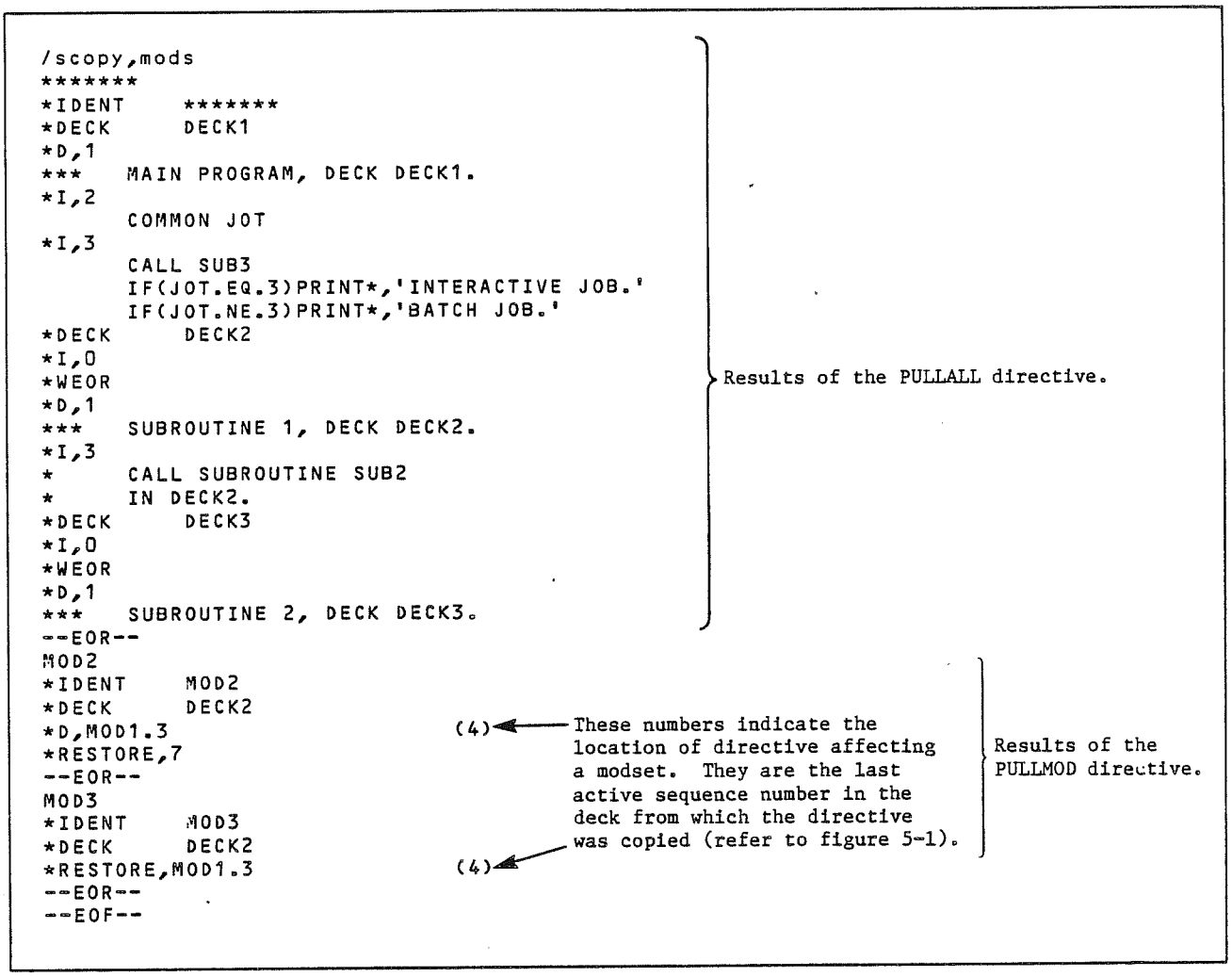


Figure A-1. OPLEDIT Examples (Sheet 2 of 2)

DIAGNOSTIC MESSAGES B

This appendix contains an alphabetical listing of the messages that may appear in your dayfile. Lowercase characters are used to identify variable names or fields. All messages are sorted according to the first nonvariable word or character. Messages beginning with special characters (such as hyphens or asterisks) are sorted as if the special characters were not present.

If you encounter a diagnostic or informative message that does not appear in this appendix, consult the NOS 2 Diagnostic Index. This publication catalogs all messages produced by NOS and its products and specifies the manual or manuals in which each message is fully documented.

MESSAGE	SIGNIFICANCE	ACTION	ROUTINE
COLUMN OUT OF RANGE.	Requested width exceeds maximum allowed (150).	Change width to 150 or less.	MODIFY
COPY FILE EMPTY.	No information on program library being copied.	Verify that copy file exists and is properly positioned at BOI.	MODIFY
CREATION FILE EMPTY.	No source decks on file being used for creation.	Verify that creation file contains proper source decks.	MODIFY
CSET - UNKNOWN CHARACTER SET.	The character code set on the CSET directive is missing or an unknown code set was specified.	Specify either ASCII or DISPLAY code.	MODIFY
CV OPTION INVALID.	A CV option other than 63 or 64 was specified.	Specify 63 or 64 for conversion option.	MODIFY
DIRECTIVE ERRORS.	Dayfile message indicating that one or more input directives were in error.	Examine output file to determine reason for error.	MODIFY OPLEDIT LIBTASK MODVAL PROFILE SYSEDIT
DIRECTIVE NOT REACHED.	Sequence number exceeds deck range.	Use correct sequence number.	MODIFY
DUPLICATE MODIFIER NAME.	Modifier on IDENT has been used previously for the deck.	Choose unique name for deck.	MODIFY
ERROR IN ARGUMENTS.	An invalid parameter has been encountered on the OPLEDIT command.	Correct command and retry.	OPLEDIT
ERROR IN DIRECTORY.	The program library contains an error.	Use COPY or COPYPL to create new program library.	MODIFY OPLEDIT
ERROR IN MODIFY ARGUMENTS.	Invalid parameter on MODIFY command.	Consult manual for correct command syntax.	MODIFY
FILE NAME CONFLICT.	The same file cannot be used for both applications without conflict.	Use different file name for one of the applications.	MODIFY OPLEDIT
FILE NAME CONFLICT.	The same file cannot be used for both applications without conflict.	Use different file name for one of the applications.	MODIFY OPLEDIT
FIRST SOURCE LINE IS AFTER SECOND SOURCE LINE.	Either an error in parameters or lines are out of order.	Verify that correct line sequence is used.	MODIFY
FORMAT ERROR IN DIRECTIVE.	This message is returned as a result of a directive format error, a format error in a source input file, or the inclusion of an ignored deck in an EDIT directive specifying a series of deck names.	Consult manual for correct format.	MODIFY OPLEDIT
IDENT NAME PREVIOUSLY REFERENCED.	A modification directive or a different IDENT directive refer to the current modname.	Choose a different modification name for the IDENT directive.	MODIFY
INCORRECT ATTRIBUTE.	Attribute specified on IF directive is other than EQ, NE, DEF, or UNDEF.	Use correct attribute.	MODIFY
INCORRECT CS ON INPUT.	The input data uses the 64-character set, but the PL uses the 63-character set.	Convert either the input data or the PL so both use the same character set.	MODIFY
deckname - INCORRECT CS, 63 ASSUMED.	The lower byte of word 16B of the prefix table for the named deck on the program library does not contain 0000 or 0064.	If 64-character set is desired, the deck must be recreated.	MODIFY OPLEDIT
INCORRECT DIRECTIVE.	Directive is out of sequence. An example would be a CREATE directive after a modification directive for Modify.	Use correct sequence.	MODIFY OPLEDIT
INCORRECT NUMERIC FIELD.	Incorrect parameter on MODIFY or OPLEDIT command.	Verify parameters and retry.	MODIFY OPLEDIT
deckname - INCORRECTLY NESTED CALL OR COMMON DECK.	A redundant nested call was found. A CALL, NIFCALL, or IFCALL calls a common deck which has already been called in the current nesting sequence.	Remove the redundant call.	MODIFY
INITIALIZATION DIRECTIVE OUT OF ORDER.	A non-initialization directive was encountered before the initialization directive.	Consult manual for correct directive order.	MODIFY

MESSAGE	SIGNIFICANCE	ACTION	ROUTINE
LINE NOT FOUND.	An EOR was reached in the program library before finding the specified command.	Verify the command exists and remove the extra EORs from the source file.	MODIFY
-LO-ERROR, MUST BE in -ECTMWDSIA-.	Incorrect list option requested. Fatal error.	Specify E, C, T, M, W, D, S, I, or A or a combination of these characters for list option. The characters must not be separated.	MODIFY
MEMORY OVERFLOW.	Insufficient field length has been specified for OPLEDIT to execute.	Increase field length with RFL command and retry.	MODIFY
deckname - MIXED CHARACTER SET DETECTED.	Upon editing the named deck on the program library, the character set (63- or 64-character) was different from the character set of previously edited decks.	Recreate the deck under the desired character set.	MODIFY
MIXED CHARACTER SET OPL.	OPLEDIT detected decks on the program library that are in different character sets (63- and 64-characters).	Use MODIFY to recreate erroneous decks under one character set and retry.	MODIFY
MODIFICATION COMPLETE.	Modify has completed execution of the directives.	None.	MODIFY
MODIFICATION/DIRECTIVE ERRORS.	Modification and/or directive errors are encountered when debug mode is selected.	Consult listing and correct specified errors.	MODIFY
MODIFICATION ERRORS.	Modify has detected errors during the modification phase; fatal if D option is not selected.	Consult listing and correct specified errors.	MODIFY
NAMES SEPARATED BY *.* IN WRONG ORDER.	Requested decks not in correct sequence.	Determine correct sequence and retry.	MODIFY OPLEDIT
NO DIRECTIVES.	Directives file empty.	Verify that directives file exists and is correctly positioned at BOI.	MODIFY OPLEDIT
NO *IF IN PROGRESS.	An ELSE or ENDIF directive was encountered without a previous IF directive.	Check for omitted IF directive or unnecessary ELSE or ENDIF directive.	MODIFY
OPERATION INVALID FROM ALTERNATE INPUT.	File manipulation attempted from other than original directives file.	Move file manipulation directives to original directives file.	MODIFY
OPLEDIT COMPLETE.	Informative message indicating that OPLEDIT has completed processing.	None.	MODIFY
OPLEDIT ERRORS.	Errors were encountered during OPLEDIT execution.	Consult output listing for description of errors.	OPLEDIT
OVERLAPPING MODIFICATION.	More than one modification was attempted for a single line.	Remove redundant line modification.	MODIFY
PL ERROR IN DECK deckname.	An error was detected in the program library format during processing of deck deckname.	Replace or re-create erroneous deck.	MODIFY OPLEDIT
PROGRAM LIBRARY EMPTY.	No information on file specified as program library.	Verify that program library file exists and is positioned at BOI.	MODIFY OPLEDIT
RECORD NOT FOUND.	Modify was unable to locate requested record on file specified.	Verify that record exists on specified file.	MODIFY
RECURSIVE *IF,S ILLEGAL.	An IF directive was encountered while a previous IF range was still active (no ELSE or ENDIF encountered).	Check for missing ENDIF or ELSE directive or unnecessary IF directive.	MODIFY
REDUNDANT CONVERSION IGNORED.	An attempt was made to convert the program library file to a like character set (63 to 63 or 64 to 64). Conversion option set to zero.	Verify conversion mode desired.	MODIFY
RESERVED FILE NAME.	A reserved filename was incorrectly used.	Choose a non-reserved file name.	OPLEDIT EDIT DATADEF IAFEX

MESSAGE	SIGNIFICANCE	ACTION	ROUTINE
S OPTION ILLEGAL WITH A, X, OR Q.	Source option not legal when A, X, or Q option is selected.	Remove S option from MODIFY command and specify on separate Modify run.	MODIFY
TOO MANY OPL FILES.:	More than 50 program library files declared.	Specify excess program libraries on subsequent Modify runs.	MODIFY
UNKNOWN DECK.	Unable to locate requested deck on program library.	Verify that deck name is correct.	MODIFY
UNKNOWN MODIFIER	Modifier not in modification table for deck.	Determine correct modifier.	MODIFY
VALUE ERROR.	Value specified on IF or DEFINE directive is greater than 177777B.	Select value less than or equal to 177777B.	MODIFY
X OR Q INCORRECT WITHOUT COMPILE.	Selection of X or Q option requires that a compile file name be selected.	Specify C option on Modify command (not C=0).	MODIFY

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MODIFY COMMAND PARAMETERS

MODIFY (P_1,P1,...,pn)

A Presence of A causes compressed compile file.

C Compile file output; COMPILE if C or omitted. No compile file if C=0. Otherwise, output on file name (C=lfn).

CB COMPASS binary output file; used with Q and X options only. Output on LGO if CB. No binary if CB=0. Otherwise, output on the file named (CB=lfn).

CG COMPASS get text option; used with Q and X options only. Systems text on SYSTEXT if CG. No system text if CG=0. Defined by CS option if CG is omitted. Otherwise, systems text on file named (CG=lfn).

CL COMPASS list output; used with Q and X options only. Short list if CL=0 or omitted. Output on file OUTPUT if CL. Otherwise, list output on file named (CL=lfn).

CS COMPASS system text; used with Q and X options only. Systems text on SYSTEXT overlay if omitted or CS. No systems text if CS=0; otherwise, systems text on file named (CS=lfn).

CV Program library character set conversion. None if CV is omitted; 63 to 64 if CV=64; 64 to 63 if CV=63.

D Debug option. Directive error or fatal error causes job step abort if D is omitted. No job step abort for directive errors if D is used.

F Full edit. If omitted, deck editing determined by U option or by EDIT directives. If F is specified, all decks are edited and written on compile file, new program library, and source file.

I Directives input. If omitted, directives and corrections on INPUT. If I=0 there is no input file. Otherwise, on named file (I=lfn).

L List output. Omitted or L, listings on OUTPUT. L=lfn, output to named file. L=0, no list output.

LO List options. Omitted or LO, option E if list output file is assigned to a terminal; options E, C, T, M, W, D, and S if not assigned to a terminal. Otherwise, LO=$c_1c2...cn$ to a maximum of seven options (ACDEIMST or W).

N New program library. Omitted or N=0, no new library. N, output on NPL. N=lfn, output to named file.

NR No rewind on compile file. Omitted, compile file rewound before and after Modify run.

P Program library input. Omitted or P, library on OPL. P=lfn, library on named file. P=0, no program library input file.

Q Execute assembler or compiler; no rewind of directives file or list output file. Omitted or Q=0, assembler or compiler not automatically called. Q, Modify sets A parameter and LO=E and calls COMPASS. This option enables CB, CG, CL, and CS options. If Q=lfn, Modify calls assembler on lfn.

S Source output (invalid if A, Q, or X selected). Omitted or S=0, no source output. S, output on SOURCE. S=lfn, output on named file.

U Update edit. Omitted, editing set by F or by EDIT directives. F takes precedence over U. If U, only decks changed (named on DECK directives) are edited and written on compile file, new program library, and source file.

X Execute assembler or compiler; same as Q except directives file and list output are rewound.

Z Directives on MODIFY command. Omitted, directives are next record on INPUT or identified by I option. Z, directives follow the MODIFY command terminator. Each directive must be preceded by a separator character.

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