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File-AID *for IMS*/FLEX

Reference

Release 16.03

Please direct questions about File-AID *for IMS*
or comments on this document to:

Compuware Customer Support

http://go.compuware.com/

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Contents

Figures

Tables

Introduction

This is a detailed reference manual that provides the information necessary for users to fully use the features of File-AID *for IMS*/FLEX 16.3.

This manual is not intended as a learning tool for first time users of File-AID *for IMS*.

Document Format

This manual uses special type fonts to define commands, keywords, and user entries. Some of these formatting structures are described below.

Special Fonts

Commands, keywords, screen names, field names, and column names appear in upper case. For example:

The COUNT primary command ...

Only one LANGUAGE keyword can be ...

The PRINT AUDIT TRAIL screen has ...

... in the LEVEL NUMBER/DATA NAME field

... in the FORMAT column

Enter the END command.

Manual Organization

This manual contains the following chapters and appendixes:

- Chapter 1, “Overview”: Provides an overview of the File-AID *for IMS*/FLEX product.
- Chapter 2, “File-AID for IMS/FLEX Interface”: Describes the screens associated with File-AID *for IMS*/FLEX.
- Chapter 3, “Command Statements”: Describes the different commands and keywords used by File-AID *for IMS*/FLEX to update a database and to count and print segments in a database.
- Chapter 4, “Audit Trail” : Describes the File-AID *for IMS*/ISPF audit trail facility.
- Chapter 5, “Segment/Layout Cross-Reference” : Describes the File-AID *for IMS*/ISPF segment/layout XREF function.
- Appendix A, “FLEX JCL” : Provides the requirements for the JCL statements needed to execute File-AID *for IMS*/FLEX.
- Appendix B, “Examples” : Provides four examples that demonstrate the capabilities of File-AID *for IMS*/FLEX.

Although File-AID *for IMS* supports both the COBOL and PL/I programming languages, much of its processing is unaffected by the language you use; therefore, much of the text in this reference manual is presented in a language-independent manner. In those instances where processing is affected by the language you use, the COBOL perspective is

presented first under its own indented subheading, followed by the PL/I perspective. On many of the screens and reports in File-AID *for IMS*, occurrences of either the word COBOL or PL/I appear, depending on the language you use. However, most of the screen and report examples presented in this reference manual use COBOL as a default.

Notation Rules

This manual uses the following notation rules:

- Screen, field, and column names appear with initial caps. For example:
  - ...on the Extract specification screen
  - ...in the Region Type field
  - ...in the Line Cmd column
- Primary command names appear in all uppercase. For example, Enter the FIELD command to...

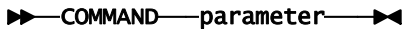
Reading the Syntax Diagrams

Syntax diagrams define primary command syntax.

A **parameter** is either a keyword or a variable.

- All KEYWORDs are shown in uppercase characters and must be spelled exactly as shown. You cannot substitute another value. If any part of a KEYWORD is shown in lowercase characters, that part is optional.
- Variables are user-specified values and are printed in lowercase italics. For example, *dataset-name* indicates you are to substitute a value.

The syntax for commands is described in diagrams that help you visualize parameter use. The following example shows a command and a parameter:



Read the diagrams from left to right and from top to bottom. These symbols help you follow the path of the syntax:

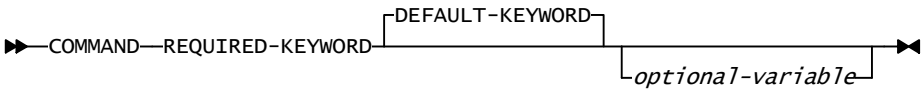
 indicates the beginning of a statement.

 indicates the statement is continued on the next line.

 indicates the statement is continued from the previous line.

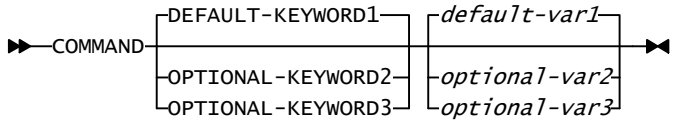
 indicates the end of a statement.

Required parameters appear on the horizontal line (the main path). Optional parameters appear below the main path. Default parameters appear above the main path and are optional. The command will execute the same whether the default parameter is included or not.



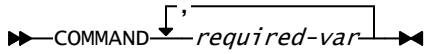
Vertically stacked parameters are mutually exclusive. If you must choose a parameter, one item of the stack appears on the main path. If the parameters are optional, the entire

stack appears below the main path. If a parameter in a stack is the default, it appears above the main path.



If the same parameters are used with several commands, their syntax may be documented in a separate diagram. In the command syntax, these common parameters are indicated with separators before and after the parameter name.

An arrow returning to the left indicates a repeatable item. If the arrow contains a comma, separate the repeated items with a comma.



Related Publications

The following File-AID *for IMS* documents are available from Compuware.

- *File-AID for IMS*/ISPF *Reference*: This manual details the information necessary to fully use the features of File-AID *for IMS*/ISPF.
- *File-AID Single Install Image Installation and Configuration Guide*: This manual provides a step-by-step description of how to install all File-AID products, including File-AID *for IMS*/ISPF, File-AID *for IMS*/CICS, and File-AID *for IMS*/DC, on your system. It is intended for database administrators and the systems group responsible for File-AID at your installation.
- *File-AID Quick Configuration Guide*: Provides an abbreviated set of steps to quickly configure File-AID products, including File-AID *for IMS*/FLEX.
- *File-AID for IMS*/CICS *and File-AID for IMS*/DC *Reference*: This manual details the information necessary to fully use the features of File-AID *for IMS*/CICS and File-AID *for IMS*/DC.
- *File-AID for IMS*/FLEX *Reference*: This manual details the information necessary to fully use the features of File-AID *for IMS*/FLEX.
- *File-AID for IMS Reference Summary*: This reference provides a summary of the File-AID *for IMS* options and commands. It is intended for any user of File-AID *for IMS*.
- *Compuware Installer Mainframe Products SMP/E Installation Guide:* Instructions on how to perform the SMP/E installation of Compuware mainframe products, including File-AID *for IMS*.

Online Documentation

The File-AID *for IMS*/FLEX product installation package does not include the product documentation. Access the File-AID *for IMS*/FLEX documentation from the Compuware Go customer support website at **http://go.compuware.com** in the following electronic formats:

- Release Notes in HTML format
- Product manuals in PDF format
- Adobe PDF index file (PDX file)
- Product manuals in HTML format.

The product documentation is available for viewing or downloading:

- View PDF files with the free Adobe Reader, available at **http://www.adobe.com**.
- View HTML files with any standard web browser.

Getting Help

At Compuware, we strive to make our products and documentation the best in the industry. Feedback from our customers helps us to maintain our quality standards.

If problems arise, consult your manual or the File-AID *for IMS* customer support representative at your site. If problems persist, please obtain the following information before contacting Compuware. This information helps us to efficiently determine the cause of the problem.

1. Obtain your client number and write it in the space below.

   Client No._____

2. If you are getting an error message from File-AID *for IMS*, press **PF1** for an extended explanation of the error.
3. If you are getting a batch error message from File-AID *for IMS*, keep the JCL and output.
4. Enter the VIEW command from any COMMAND line within the product and print the configuration report. Refer to the description of the "View" command in the primary commands chapter of the *File-AID for IMS/ISPF Reference* manual for more information.
5. Determine the product function being used and the sequence of events leading up to the problem.
6. If files are involved, determine the file characteristics.
7. Record any ISPF/PDF error messages or operating system messages. If an abend occurs, record the abend or screen information.
8. Determine the versions of current operating system components that may have an impact on the problem.

Compuware provides a variety of support resources to make it easy for you to find the information you need.

Compuware Go Customer Support Website

You can access online information for Compuware products via our Compuware Go customer support website at **http://go.compuware.com**.

Compuware Go provides access to critical information about your Compuware products. You can review frequently asked questions, read or download documentation, access product fixes, or e-mail your questions or comments. The first time you access Compuware Go, you are required to register and obtain a password. Registration is free.

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- USA and Canada: 1-800-538-7822 or 1-313-227-5444.
- All other countries: Contact your local Compuware office. Contact information is available at **http://go.compuware.com**.

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You can report issues via the Quick Link **Create & View Support Cases** on the Compuware Go home page.

Note: Please report all high-priority issues by telephone.

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To access Compuware's site on the Web, go to **http://www.compuware.com**.

The Compuware site provides a variety of product and support information.

Chapter 1. Overview

File-AID *for IMS*/FLEX is a general purpose IMS database manipulation tool for use by business professionals involved in modifying or reporting on the contents of IMS databases. File-AID *for IMS*/FLEX extends the capabilities of File-AID *for IMS* to the MVS batch environment.

File-AID *for IMS*/FLEX simplifies the maintenance of IMS databases by using existing Data Base Descriptions (DBDs); existing or dynamic Program Specification Blocks (PSBs); and COBOL, PL/I, or DL/I segment layouts, without modification, to manipulate databases. Because File-AID *for IMS*/FLEX is built upon File-AID *for IMS*, it provides industrial strength editing capabilities while maintaining the system integrity and providing the auditing capability that users have come to expect from the File-AID name.

File-AID *for IMS*/FLEX is controlled by an easy-to-use and extremely powerful command set. File-AID *for IMS*/FLEX allows users to quickly and accurately select the data they desire and then allows them to print or modify that data. Users may also output the concatenated keys of the desired segments for later use as input.

Key Features

File-AID *for IMS*/FLEX has the following key features:

- Includes a comprehensive command syntax checker that validates all command statements prior to execution. The validation of the commands can be performed as a separate function by the user.
- Includes validation of the command statements and their relationship to the DL/I definitions.
- Supports the use of both static (pre-existing) and dynamically built Program Specification Blocks (PSBs).
- Supports segment level sensitivity in static (pre-existing) PSBs.
- Fully supports the File-AID *for IMS* XREF facility, which allows users to define the COBOL or PL/I copybook member used to map the segment data.
- Provides the ability to act upon the existence or the absence of specified conditions; for example, delete this segment only if no children exist.
- Provides the capability to print a single segment, all segments, or all children of a selected parent.
- Provides the capability to change, delete, or insert multiple segments with a single command.
- EXTRACT provides the capability of extracting fields to an extract dataset.
- Provides full compatibility with the File-AID *for IMS* audit trail facility that logs all changes made during that execution.
- Supports both unique and non-unique, fixed or variable length segments.
- Supports HSAM, SHISAM, HISAM, HIDAM, HDAM, DEDB, INDEX, and logically related databases, including databases with secondary indexes.
- Interfaces with all standard security packages such as RACF, CA ACF2, and CA Top Secret.

- Supports both dynamic and batch back-out of database updates.
- Provides data security through database authorization and the use of existing File-AID *for IMS* security exits.

PSB Support

Users of File-AID *for IMS*/FLEX may use either static (pre-existing) PSBs or dynamically built PSBs. Command validation ensures that the requested segments are available and that the process options (PROCOPTS) support the requested commands. File-AID *for IMS*/FLEX supports segment-level sensitivity for static PSBs.

The P processing option must be specified if updates are performed.

The following IMS options are not supported:

- A PCB where the processing sequence is a secondary index and the source and target segments are not the same segment type.
- A PCB that includes segments using field level sensitivity.

Supported IMS Environments

File-AID *for IMS*/FLEX supports both DL/I batch and IMS BMP (Batch Message Processing) environments. File-AID *for IMS*/FLEX is invoked using standard MVS JCL and procedures similar to those provided by IMS. The DL/I access methods of HSAM and SHSAM are not supported for the update function.

Segment Level Data Mapping

File-AID *for IMS*/FLEX users can specify the desired fields with COBOL, PL/I, or DL/I field names. This capability enables the application programmer to select and update database segments based on the fields that are familiar to them. It also allows the data supplied by the user to be validated against the target field definition, which reduces the amount of invalid data. The corresponding COBOL and PL/I copylib members are defined by the File-AID *for IMS* XREF facility. They:

- Can be a member of a partitioned dataset or a sequential dataset.
- Must have an RECFM of F or FB.
- Must have an LRECL of 80.

File-AID *for IMS*/FLEX Reports

File-AID *for IMS*/FLEX provides several reports that detail and summarize the results of the users' command statements:

- Command Validation Report: A detailed listing of the command statement and any associated messages.
- Command Execution Report: A detailed listing of the command statement and the actual command results.

Segment Print	Provides formatted segment, formatted field, or unformatted segment output.
Segment Change	Provides field-level, formatted output of changed fields.

Segment Delete	Provides segment-level, formatted output of the deleted segment.
Segment Insert	Provides field-level, formatted output of fields with non-default values.
Segment Extract	Provides the function of writing specified fields from selected segments to an output dataset.

- Command Summary Report: The overall results of the command statement. The results include the number of segments retrieved, selected, counted, printed, changed, deleted, inserted, or extracted.
- Execution Summary Report: The overall results of the total execution. Results are provided per segment per database PCB. This report is written to both SYSOUT and IXPSTATS.
- The Command Validation report is suppressed when there are no validation errors detected for TYPE RUN. If the SYSOUT DD statement is changed from a dataset to an output class, then the Command Validation report is not suppressed. For TYPE VALIDATE, the Command Validation report is not suppressed.

  Users with large volumes of output can dummy the SYSOUT DD statement and still receive the Execution Summary report and any error messages written to the IXPSTATS DD statement. The DL/I call information and PCB information follow any error message.

Primary Commands

Each of the following File-AID *for IMS*/FLEX primary commands, as well as object keywords, optional keywords, and values are fully described in Chapter 3, "Command Statements".

COUNT	Counts segments, extracts concatenated keys of segments, or both.
INSERT	Inserts an occurrence of the specified segment into a database.
PRINT	Prints segments in formatted or unformatted mode or prints fields in formatted mode.
PSB	Specifies the target database name or the PCB of the target database to be processed.
SELECT	Applies segment selection criteria. SELECT is always used with one or more of the following sub-commands: CHANGE, COUNT, DELETE, INSERT and PRINT.
SET	Overrides the system processing options.
SETEXTRACT	Overrides the system processing options of the EXTRACT sub-command.
TITLE	Defines the title of a report.
TYPE	Specifies whether the command statements are to be validated only or validated and immediately processed.

Database Security

File-AID *for IMS* is compatible with any data security software your installation might have (e.g., CA ACF2, RACF, or CA Top Secret). File-AID *for IMS*/FLEX processing does not circumvent your security software in any way.

File-AID *for IMS*/FLEX supports the File-AID *for IMS* security exits. These exits are called during File-AID *for IMS*/FLEX processing.

Following are examples of uses of the optional security exit routines:

- To limit access to certain databases.
- To override File-AID *for IMS*/FLEX's default database allocation status from DISP=OLD to DISP=SHR during database editing if your installation uses IMS data sharing.

- To force the creation of an audit trail during any user's File-AID *for IMS*/FLEX execution through a security exit routine.
- To enable you to enter a shorthand version of a database dataset name that is then translated to a full dataset name.
- To override or customize the parameters passed to IMS based on the database you are processing.
- To validate your specification for the automatic creation and deletion of the IMS log dataset during database editing.

If you require information about your installation's security exit routine, contact the person responsible for File-AID *for IMS* at your installation.

File-AID *for IMS*/FLEX Audit Trail Feature

File-AID *for IMS*/FLEX uses the existing File-AID *for IMS* audit trail facility, which is described in Chapter 4, "Audit Trail". All update activity during a given execution can be captured in an audit trail dataset. The audit trail facility is invoked by the presence of an IXPAT DD statement in the execution JCL. Every change, delete, or insert performed causes the before and/or after image of the updated segments to be written to the audit trail dataset.

File-AID *for IMS*/FLEX provides your installation with the ability to force the creation of an audit trail during any user's execution through a security exit routine. The process is especially useful if your installation wants to ensure that an audit trail is created whenever File-AID *for IMS* is used to edit certain sensitive databases.

Chapter 2.
File-AID *for IMS*/FLEX Interface

The purpose of the FLEX Option is to support editing and validation of FLEX command statements and to create JCL to run a FLEX job. The FLEX option is chosen by selecting OPTION F from the File-AID *for IMS* Primary Option Menu (Figure 2-1). When this option is selected, the FLEX Option Menu is displayed (see Figure 2-2). This screen offers two options. OPTION 1, Command Statements, is used to create, edit or validate FLEX command statements. OPTION 2, Build FLEX JCL, is used to create and edit JCL used to run a FLEX job.

Figure 2-1. Primary Option Menu Screen

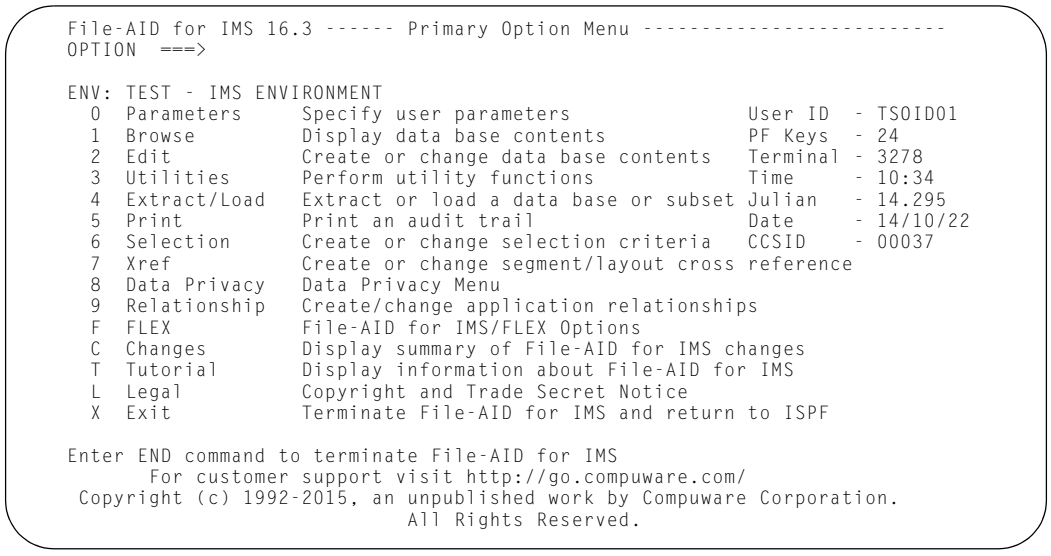
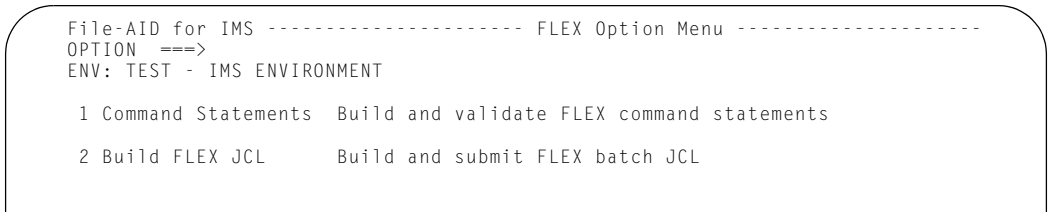


Figure 2-2. FLEX Option Menu Screen



Option 1, Creating, Editing, and Validating FLEX Statements

When Option 1 is selected from the FLEX Option Menu, the FLEX Command Dataset Specification screen is displayed (see Figure 2-3). This screen identifies the FLEX dataset and member to be edited. The FLEX dataset must be cataloged. The member name can be specified with the name of a new or existing member, a pattern ending in an asterisk, or the field may be left blank. If a pattern is used or no member name is supplied, the member list screen shown in Figure 2-4 is displayed. If no member was entered on the FLEX Command Dataset Specification screen, all members found in the dataset will be displayed. If a pattern was entered, only those members beginning with names matching the pattern will appear in the list.

Selecting a member from the member list screen, or providing a valid member name in the FLEX Command Dataset Specification screen, starts a FLEX edit session. The FLEX edit session behaves like a regular ISPF Edit session. If the member selected is new, the edit session will present a blank screen that will accept entry of new FLEX command statements. An existing member will be displayed in Edit mode.

Figure 2-3. FLEX Command Dataset Specification Screen

```
File-AID for IMS ------------  FLEX Command Dataset Specification  -----------
COMMAND ===>
ENV: TEST - IMS ENVIRONMENT

Enter dataset name of FLEX command statements to be edited:
     + FLEX Command dataset  . . 'userid.FISAMP.FLEX'
                      Member  . . flexmbr  (Blank or pattern for member list)
```

Figure 2-4. Member List Screen

```
FLEX Command Member List - userid.FISAMP.FLEX ---------------------------------
COMMAND ===>                                                 SCROLL ===> CSR
    NAME   CONCAT      VER.MOD  CREATED   LAST MODIFIED   SIZE   INIT    ID
  BATBMPD    1
  BATBMPS    1
  BATEXTD    1
  CHANGE     1
  COUNT      1          01.47   02/05/02  02/08/12 08:47     8      7  userid1
  DELETE     1
  EXTRACT    1          01.13   02/10/22  02/10/24 09:41    33     33  userid2
  INSERT     1
  JCLIPRMS   1          01.01   00/04/25  00/05/09 08:46   394    394  userid1
  ORDRKEY    1
  PRINT      1          01.00   02/07/11  02/07/11 12:54    11     11  userid1
  PUBLIC60   1          01.03   00/05/09  00/05/09 10:06    28     28  userid3
  SKELETON   1          01.00   00/07/31  00/07/31 02:50    56     56  userid3
  *END*
```

MODEL Primary Command

The MODEL primary command is a standard command available in ISPF. It allows models of command syntax to be copied into a member after a specified line. This is done using the MODEL primary command with the A (After) or B (Before) line commands. If the A (After) line command is used, the model is inserted after the line. If the B (Before) line

command is used, the model is inserted before the line. More information on the MODEL primary command can be found in the *ISPF/PDF Edit and Edit Macros Manual*.

When the MODEL command is entered on the command line of a FLEX edit session, the File-AID *for IMS*/FLEX Models screen shown in Figure 2-5 is displayed. This screen lists models of each of the major syntax elements used to construct a FLEX statement. In addition, four complete examples of FLEX statements are provided (options F1 through F4). These models may be selected by entering on the ISPF command line the two-character code that is shown before the model name.

Figure 2-5. FLEX Models screen

```
                          File-AID for IMS/FLEX Models
Option ===>

Enter number or service name.
Enter END command to cancel MODEL command.

FLEX Examples              Environment              Primary Action
F1 MULTXREF                E1 TYPE                  P1 COUNT
F2 UPDTXTR                 E2 PSB                   P2 INSERT
F3 UPDEXIST                E3 SET                   P3 PRINT
F4 DLETSEG                 E4 SETEXTRACT            P4 SELECT
                           E5 TITLE

SELECT Sub-commands        Object keywords          Optional Keywords
S1 CHANGE                  B1 SEGMENT               O1 MAXIMUM
S2 COUNT                   B2 CHILD                 O2 SET
S3 DELETE                                           O3 SKIP
S4 EXTRACT                                          O4 START
S5 INSERT                                           O5 WHERE
S6 PRINT

Note: New users are encouraged to use the "Example Sets".  These
      examples are taken from the File-AID for IMS/FLEX reference
      manual.
```

The text inserted into a member using the MODEL command consists of =NOTE= lines and regular data lines. The =NOTE= lines contain a diagram of the complete structure of the selected command element. This typically includes a listing of all optional keywords as well as the basic structure of the command element. Data lines inserted using the MODEL command provide a template in which to enter command operands such as segment or PSB names and keyword values. For example, the data lines for model P2, the INSERT primary command, appears as follows:

```
INSERT
    SEGMENT=<SEGNAME>
        MAXIMUM=<VALUE1>
        SET = (
                 <FLDNAME1> = <VALUE2>,
                 <FLDNAME2> = <VALUE3>,
                 <FLDNAME3> = <VALUE4>;
```

<SEGNAME>, <FLDNAME1>, <FLDNAME2>, and <VALUE> are fields that should replaced with actual data. See Table 2-1 on page 2-4 for examples of field values.

Only text lines inserted by a MODEL command will be saved as part of the edited member. =NOTE= lines may be converted into data lines by using the MD line command or the MDD block command.

Table 2-1. Sample MODEL Command Values

Field Name	Value
<FLDNAMEn>	Name of a field on a segment
<LENGTH>	An integer value indicating field length
<MBRNAMEn>	Name of a dataset member
<RO>	A relational operator
<SEGNAMEn>	Name of a database segment
<START>	An integer value indicating the start of a field
<TITLE_LINEn>	Text string to be used for a FLEX report title
<TYPE>	A character indicating field type
<VALUE>	An integer value
<VALUEn>	An integer value
<X|X'XX'>	A single character or a quoted hex value, i.e. X'F2'
<X>	A single character
<X'XX'>	A quoted hex value

Note: Strings enclosed in angle brackets with values separated by vertical bars indicate options that may be chosen. Only one of these values should be used. The first value that appears in the list is the default value.

For example, the string <PATH|ALWAYS|NOPATH> indicates that the valid values for this entry are the strings "PATH", "ALWAYS" and "NOPATH", and that "PATH" is the default value. When the model is displayed, replace <PATH|ALWAYS|NOPATH> with the value you wish to use. For example, to select ALWAYS, replace <PATH|ALWAYS|NOPATH> with ALWAYS.

Validating FLEX Statements

At any time during a FLEX edit session, FLEX statements appearing in the edited member may be validated. This is done by entering the VALIDATE primary command on the command line of the edited member and pressing Enter. VAL and VA may be used as synonyms of the longer VALIDATE command.

The VALIDATE command invokes the FLEX command parser as an online application. It reads all the FLEX command statements and returns messages as =NOTE= lines in the edited member. If no errors are detected, a single =NOTE= line is inserted at the top of the member with a message indicating that the statements were successfully validated. If errors are detected, a =NOTE= line is inserted at the top of the member containing a count of validation errors. Each error is also marked with a =NOTE= line after the statement in which it was detected. Again, none of the =NOTE= lines created by the VALIDATE command are saved as part of the edited member unless they are first converted to data lines.

Like any regular ISPF edit session, the FLEX edit session may be terminated by cancelling or saving the changes that have been made to the edited member. By default, exiting the edit session with the END command (typically PF3) will exit and save all changes. CANCEL will terminate the edit session without saving any changes made since the last SAVE command.

Option 2, Build FLEX JCL

The Build FLEX JCL function consists of an online conversation and a batch job stream. The online screens prompt you for the information needed to submit the batch job to process FLEX command statements.

The online conversation consists of a sequence of screens where you specify the following information that will be used by the FLEX job stream:

1. FLEX job type (DLI or BMP).
2. FLEX command dataset and member to be processed.
3. XREF dataset and COBOL or PLI layouts to be used.
4. PSB containing the PCB for the database to be accessed (for static PSB only).
5. DBD and database dataset names for the database to be accessed.
6. Names of Audit trail, EXTRACTn, LAYOUTn, INPUT or OUTPUT datasets and members if required by the FLEX statements you are processing.

At your option, you may edit the JCL generated to run the FLEX job.

The batch job consists of two steps that do the following:

1. Processes FLEX input statements
2. Copies the contents of the SYSOUT dataset created in the first step to the printer

FLEX Dataset Specification

The FLEX Dataset Specification screen is the first screen displayed upon entry to the Build FLEX JCL sub-option. There are two variations of this screen depending on whether you intend to use dynamic or static PSBs. For initial use, at least in a DLI region type, we suggest you use a dynamic PSB because it is more convenient. You can enter the XPSB command on either screen to switch to the alternate screen. Figure 2-6 is displayed if you entered D in the Dynamic or Static field on the System Parameters screen. Figure 2-7 on page 2-7 is displayed if you entered S.

FLEX Dataset Specification (Dynamic PSB)

Figure 2-6. FLEX Dataset Specification (Dynamic PSB) Screen

```
File-AID for IMS ---------  FLEX Dataset Specification  (Dynamic PSB)  --------
COMMAND ===>
ENV: TEST - IMS ENVIRONMENT

              FLEX job type  . . DLI        (DLI or BMP)

Enter dataset name of FLEX command statements to be edited:
    + FLEX Statement dataset . . 'IX.PUBLIC.FISAMP.FLEX'
                     Member . .          (Blank or pattern for member list)

Enter XREF dataset name to be used in FLEX commands:
+ Segment/Layout XREF dataset  . 'TSONAME.FISAMP.XREFC'

Enter DBD dataset name to which FLEX commands apply:
          + DBDLIB Dataset 1 . . 'TSONAME.FISAMP.DBDLIB'
                   Dataset 2 . .
                     Member . . PORDR      (Blank or pattern for member list)

+ COBOL layout Dataset 1 . . . . 'TSONAME.FISAMP.COBOLLIB'
               Dataset 2 . . . .

Create an Audit Trail Dataset .  N   (Y = Yes; N = No)
```

FLEX Job Type : Enter one of the following:

DLI	The FLEX job is submitted to run as an IMS batch DLI application. The database to be accessed by FLEX must be offline from IMS DC and CICS regions or available under IMS data sharing.
BMP	The FLEX job is submitted to run as an IMS BMP application. This database must be online to the IMS DC region.

FLEX jobs using FAST PATH databases must run as BMP FLEX jobs using FAST PATH databases must run as BMP jobs. If a DEDB database has multiple areas and some are down, the down areas are skipped and processing continues.

FLEX Command Statement dataset : Enter the name of the FLEX command statement dataset.

Member : Enter the member containing the FLEX statements you wish to process. Leave member blank to select the FLEX member from the FLEX statement member list.

Segment/Layout XREF dataset : Enter the name of the XREF dataset to be used. If left blank, FLEX will use the default specified in the environment. FLEX JCL (see also "IXPFD" on page A-3) requires an XREF dataset, even when XREF=NONE (see also "XREF" on page 3-4) is specified.

DBDLIB Dataset 1 and Dataset 2 : Enter one or two DBD load library dataset names.

Member : Enter the member that describes the database you wish to process using FLEX. The DBD member entered must describe a physical database. Logical and index DBDs are not supported in the FLEX option. Leave member blank to select the DBD from the list of DBDs.

COBOL (or PL/I) layout Dataset 1 and Dataset 2 : Enter one or two dataset names containing the COBOL or PLI layouts to be used.

Create an Audit Trail Dataset : Enter a Y to allocate an audit trail data dataset for use during the FLEX job. Enter an N if you do not want to process the FLEX job with an audit trail dataset.

Terminating the Screen

Do one of the following to terminate the FLEX Dataset Specification screen:

- Press Enter to advance to the next screen in the conversation.

  If you left the DBD Member field blank, the next screen displayed is a DBD Member List. If you entered two DBD library dataset names, the member list is a merged and sorted list of members in both datasets. Select a member from the member list and press Enter or enter the END command to return to the FLEX Dataset Specification screen.

  If you specified a member in the DBD Member field or selected a member from the DBD Member List, the extract conversation continues as follows:

  – If you specified DLI for the FLEX job type, the FLEX Data Base Dataset screen (Figure 2-7 on page 2-7) is displayed.

  – If you specified BMP for the FLEX job type, the FLEX – JCL Specification screen shown in Figure 2-10 on page 2-13.

- Enter the XPSB command to switch to the FLEX Dataset specification (static PSB) screen.
- Enter the END command to return to the FLEX Option Menu or the Primary Option Menu. The screen you return to is determined by where you started the conversation.
- Enter the RETURN command to return to the Primary Option Menu.

FLEX Dataset Specification (Static PSB)

Figure 2-7. FLEX Dataset Specification (Static PSB) Screen

```
File-AID for IMS ----------  FLEX Dataset Specification (Static PSB) ----------
 COMMAND ===>
               FLEX job type  . . BMP        (DLI or BMP)

 Enter dataset name of FLEX command statements to be edited:
 FLEX Command Statement dataset . FISAMP.FLEX
                      Member  . . EXTRACT    (Blank or pattern for member list)

 Enter XREF dataset name to be used in FLEX commands:
 Segment/Layout XREF dataset  . . FISAMP.XREFC

             PSBLIB Dataset 1  . . 'IX.IMSTEST.PSBLIB'
                    Dataset 2  . .
                      Member  . . PSB001     (Blank or pattern for member list)

 Enter DBD dataset name to which FLEX commands apply:
             DBDLIB Dataset 1  . . FISAMP.DBDLIB
                    Dataset 2  . . 'IX.IMSTEST.DBDLIB'
                      Member  . . PCUST      (Blank or pattern for member list)

 COBOL layout Dataset 1 . . . . . FISAMP.COBOLLIB
               Dataset 2 . . . . . 'IX.IMSTEST.COBOLLIB'

 Create an Audit Trail Dataset .  N   (Y = Yes; N = No)
```

FLEX Job Type : Enter one of the following:

DLI The FLEX job is submitted to run as an IMS batch DLI application. The database to be accessed by FLEX must be offline from IMS DC and CICS regions or available under IMS data sharing.

BMP The FLEX job is submitted to run as an IMS BMP application. This database must be online to the IMS DC region.

FLEX jobs using FAST PATH databases must run as BMP FLEX jobs using FAST PATH databases must run as BMP jobs. If a DEDB database has multiple areas and some are down, the down areas are skipped and processing continues.

FLEX Command Statement dataset : Enter the name of the FLEX command statement dataset.

Member : Enter the member containing the FLEX statements you wish to process. Leave member blank to select the FLEX member from the FLEX statement member list.

Segment/Layout XREF dataset : Enter the name of the XREF dataset to be used.

DBDLIB Dataset 1 and Dataset 2 : Enter one or two DBD load library dataset names.

Member : Enter the member that describes the database you wish to process using FLEX. The DBD member entered must describe a physical database. Logical and index DBDs are not supported in the FLEX option. Leave member blank to select the DBD from the list of DBDs.

PSBLIB layout Dataset 1 and Dataset 2 : Enter one or two dataset names containing the PSB layouts to be used.

Member : Enter the name of the PSB to be used by the FLEX job. See "PCBs Used for FLEX" on page 2-8 for more information about selecting a PCB for a FLEX job Leave the member blank to select the PSB from the list of PSBs.

COBOL (or PL/I) layout Dataset 1 and Dataset 2 : Enter one or two dataset names containing the COBOL or PLI layouts to be used.

Create an Audit Trail Dataset : Enter a Y to allocate an audit trail data dataset for use during the FLEX job. Enter an N if you do not want to process the FLEX job with an audit trail dataset.

Terminating the Screen

Do one of the following to terminate the FLEX Dataset Specification screen:

- Press Enter to advance to the next screen in the conversation.

  If you left the DBD Member field blank, the next screen displayed is a DBD Member List. If you entered two DBD library dataset names, the member list is a merged and sorted list of members in both datasets. Select a member from the member list and press Enter or enter the END command to return to the FLEX Dataset Specification screen.

  If you specified a member in the DBD Member field or selected a member from the DBD Member List, the extract conversation continues as follows:

  – If you specified DLI for the FLEX job type, the FLEX Data Base Dataset screen (Figure 2-7 on page 2-7) is displayed.

  – If you specified BMP for the FLEX job type, the FLEX – JCL Specification screen shown in Figure 2-10 on page 2-13.

- Enter the XPSB command to switch the FLEX Dataset Specification (Dynamic PSB) screen.
- Enter the END command to return to the FLEX Option Menu or the Primary Option Menu. The screen you return to is determined by where you started the conversation.
- Enter the RETURN command to return to the Primary Option Menu.

PCBs Used for FLEX

For FLEX, each PCB used (and root segments in the PCB) must have at least GET processing option. There are two methods that can be used to limit processing to certain segment types in the database:

1. **Segment sensitivity** — If the PSBGEN does not include a SENSEG for the segment type, then the PCB is not sensitive to the segment and neither the segment nor any dependents of the segment will be returned by IMS. Segment sensitivity can be used to include or exclude segments in the database and related databases from being extracted.
2. **Segment Processing Option** — If a Key processing option is specified in PSBGEN, segments of this type are not returned by IMS. Dependent segments of the segments are returned by IMS. Key processing option can be used to include or exclude segments in the database and related databases from being extracted.

Suggested PSB to be Used for FLEX

The PSB must contain a PCB with at least get processing option for the database to be used with FLEX. In order to not drop any segment types, the PCBs should be sensitive to all segments in the database. If running in an online environment, lock over head and contention can be reduced by using a processing option of GOT.

File-AID *for IMS*/FLEX can be used with a static PSB to access a database through a secondary index.

For a DEDB, HSSP is not supported. Therefore, a PCB with a processing option of H cannot be used.

Data Base Dataset Specification

The Data Base Dataset Specification screen is displayed after the FLEX Dataset Specification DLI FLEX job types only. This screen is used to specify the dataset names for the database that you access using FLEX.

Figure 2-8. Data Base Dataset Specification Screen

```
------ FLEX   ------ Data Base Dataset Specification (DBD-PCUST )--- LINE 00001
COMMAND ===>                                                SCROLL ===> CSR

Obtain DB Dataset Names from ===>  P  (P = Previously used with 'P' here,     S
                                       I = IMS dynamic allocation source)     H
                                                                              R
DBRC not active                                                            D
                                                                           I  L
                                                                           S  E
DBD      DDNAME   DATASET NAME                                PASSWORD  P  V
-------- -------- ------------------------------------------------ -------- --- -
PCUST    PCUST    FISAMP.CUSTOMER                                       SHR N
PORDR    PORDR    FISAMP.ORDER                                          SHR N
              *** END OF DATA BASE DATASET NAMES   ***









Press ENTER when data base datasets have been fully specified
Use END command to terminate  Data Base Dataset Specification
```

Obtain DB Dataset Names from : If your installation uses dynamic allocation for databases, enter I. The database dataset names are retrieved from the datasets allocated to the DFSRESLB DD. If File-AID *for IMS* cannot retrieve the dataset name, the message "UNABLE_TO_DETERMINE" is displayed in the Dataset Name field. If you enter P, the Dataset Name fields are formatted from your user profile dataset.

DBD : Displays the name of the primary DBD entered on the FLEX Dataset Specification screen.

DDNAME : Displays the DD name of the first dataset group in the primary DBD.

Dataset Name : Enter the database dataset name to be allocated to the DD name.

There are two conventions for entering a database dataset name. If you enter every node in the dataset name, the name must be enclosed in apostrophes. If the first node of the dataset matches your TSO-ID, you can omit the first node and the apostrophes.

When a dataset name has a node identical to the DD name of the dataset, you can substitute an asterisk for that node. If a dataset name has more than one node equal to the DD name, you can substitute an asterisk for only one of the nodes.

A separate line is displayed for each additional dataset group in the primary DBD. The DBD NAME column is blank and the DDNAME column displays the DD name for the dataset group. Each line also has the database Dataset Name and Password fields.

Any external DBDs that are directly referenced by the primary DBD (such as a secondary index DBD, a logically related DBD, or an application related DBD) are shown sequentially under the primary DBD with their DD names, Data Base Dataset Names, and Password fields. There can also be DBDs and DD names listed that are not directly referenced by the primary DBD. These are from DBDs that are indirectly related to the primary DBD through the primary's external references. You must enter database dataset names for all listed DD names.

Once you enter a database dataset name on the Data Base Dataset Specification screen, that dataset name is retained from session to session (refer to the *File-AID for IMS/ISPF Reference Manual*). If you specify Y in the Use DB Dataset Names from Dynamic Allocation field, the dataset names are retained only if no dataset names exist in the user profile dataset for the associated database DD names. In subsequent sessions, File-AID *for IMS*/ISPF pre-formats those dataset name fields where it has saved names.

Password : Enter the password if the database dataset is OS password protected. The password for an OS password protected dataset is not saved across sessions.

DISP : This is the disposition, which will be used to allocate the datasets. It is either SHR if the dataset will be allocated shared or OLD if the dataset will be allocated old. For File-AID *for IMS* functions, which do not update the dataset such as browse and extract, the datasets are allocated SHR. Functions which update, such as edit and load, will cause the dataset to be allocated OLD unless the dataset name is the name registered in DBRC. If the dataset is the name registered in DBRC, the dataset is allocated SHR.

SHR LEV : This is N if the dataset is not registered in DBRC. If registered in DBRC it is the DBRC share level of 0 through 3.

Terminating the Screen

Do one of the following to terminate the Data Base Dataset Specification screen:

- Press Enter to advance to the next screen in the Build FLEX JCL function. If your FLEX commands require optional DD statements, the next screen displayed will be the FLEX – Optional Dataset Screen shown in Figure 2-9 on page 2-11. If not, the next screen displayed will be the FLEX – JCL Specification screen shown in Figure 2-10 on page 2-13.
- Enter the END command to return to the FLEX Dataset Specification screen.
- Enter the RETURN command to return to the Primary Option Menu.

In all cases, any dataset names that you entered are saved.

FLEX - Optional Dataset

The FLEX – Optional Dataset screen is displayed when the FLEX command statements to be executed require that additional DD statements be coded in the JCL. Additional DD statements are required for FLEX commands that perform database extracts, request that file layouts be created, or use an input or output dataset. You may use this screen to code existing datasets for use with these DD statements, or you may use the screen to provide information required to create the datasets when the job is executed. It is possible to reference existing datasets and create new datasets within the same job.

Right before this screen is displayed, the system validates the FLEX command statements that are to be executed during the job stream. If validation errors are found, the short message:

VALIDATION ERRORS FOUND will be displayed on the screen. This is an informational message and does not stop processing. You have the option of continuing to generate JCL, or using the END command and then selecting the FLEX Command Statements option.

Figure 2-9. FLEX - Optional Dataset Screen

```
File-AID for IMS  ---------- FLEX - Optional Dataset Specification ----------
COMMAND ===>

Specify batch JCL information for the following DD Names:          D   U
                                                                   I   N
                                                                   S   I  PRIME
DDNAME    DATASET NAME                                  MEMBER     P   T  QNTY
--------- --------------------------------------------- -------- --- --- -----
EXTRACT1  EXTRACT1.DATASET.NAME                                    SHR
EXTRACT2  EXTRACT1.DATASET.NAME                                    SHR
EXTRACT3  EXTRACT1.DATASET.NAME                                    SHR
EXTRACT4  EXTRACT1.DATASET.NAME                                    SHR
EXTRACT5  EXTRACT1.DATASET.NAME                                    SHR
LAYOUT1   LAYOUT1.DATASET.NAME                                     SHR
LAYOUT2   LAYOUT1.DATASET.NAME                                     SHR
LAYOUT3   LAYOUT1.DATASET.NAME                                     SHR
LAYOUT4   LAYOUT1.DATASET.NAME                                     SHR
LAYOUT5   LAYOUT1.DATASET.NAME                                     SHR
IXPIN     IXPIN.DATASET.NAME                                       SHR
IXPOUT    IXPOUT.DATASET.NAME                           TEST       NEW CYL 10


Press ENTER when data base datasets have been fully specified
Use END command to terminate FLEX optional Dataset Specification
```

DDNAME : The names of all required DD statements are displayed under this column heading. The names are protected and appear as they will in the generated JCL. EXTRACTn DD statements are required for each EXTRACTn statement coded in the FLEX command member. LAYOUTn DD statements are required for each requested layout. Up to five EXTRACTn and LAYOUTn DD statements may be required. An IXPIN DD statement is required if the FLEX command statements include an INPUT command. An IXPOUT DD statement is required if the FLEX command statements include an OUTPUT or CKEY command.

DATASET NAME : Enter the names of the datasets to be used for each DD statement. The same partitioned dataset may be used for multiple EXTRACTn DD statements. A different partitioned dataset may used for multiple LAYOUTn DD statements. If sequential datasets are allocated for EXTRACTn or LAYOUTn DD statements, each dataset must be unique for every DD statement coded. If any EXTRACTn DD statement references a sequential dataset all of the LAYOUTn DD statements must reference sequential datasets.

MEMBER : If a SETEXTRACT command sets the name of an EXTRACTn member the MEMBER field will be protected for the corresponding EXTRACTn DD statement. If the SETEXTRACT command provides names for any LAYOUTn member, the MEMBER

field for all LAYOUTn DD statements will be protected. If the SETEXTRACT command does not establish member names for either EXTRACTn or LAYOUTn datasets, and the files associated with these DD statements are partitioned datasets, then member names must be provided for each of these DD statements.

DISP : Specify disposition for each dataset in this column. Valid values include NEW, OLD and SHR. A disposition of NEW will allow you to create a new dataset. However, when using the SETEXTRACT command to set the Extract member names, disposition of NEW is only allowed for a sequential dataset, but not for a partitioned dataset. OLD and SHR are dispositions for existing datasets. A disposition of OLD prevents other jobs or online users from using the datasets that you are processing. SHR will allow others to view or retrieve the content of the datasets while your job runs. The following fields may be used only if you have specified a disposition of NEW:

UNIT	The UNIT column allows you to indicate whether you want to allocate space for a new dataset in blocks, tracks or cylinders. Valid values are BLK for blocks, TRK for tracks and CYL for cylinders.
PRIME QNTY	Use this field to specify the number of space units to allocate as the primary allocation for the dataset.

Note: The generated JCL makes some assumptions about values used to allocate new datasets. A secondary extent equal to the larger of 1 or 20 percent of the units coded is used on the SPACE parameter for new datasets, and a default of 20 directory blocks is used on for new partitioned datasets. If either of these values is unacceptable, they may be changed by editing the generated JCL.

Terminating the Screen

Do one of the following to terminate the FLEX Optional Dataset screen:

- Press Enter to advance to the FLEX - JCL Specification screen shown in Figure 2-10.
- Enter the END command to return to the FLEX Dataset Specification screen.
- Enter the RETURN command to return to the Primary Option Menu.

In all cases, any dataset names that you entered are saved.

FLEX - JCL Specification

The FLEX - JCL Specification screen is used to specify the SYSOUT class and job cards to be used to create the FLEX job stream. If you specified a DLI FLEX job type on the Flex Dataset Specification screen, the DLI Log Dataset usage indicator is required. If no additional FLEX DD cards are required, this screen is displayed after the BMP Region Selection screen for DLI extract job types and after the Data Base Extract Option Specification screen for BMP job types. If the FLEX command statements to be used in the FLEX job stream contain statements that require optional DD cards, the FLEX – JCL Specification screen is displayed after the FLEX – Optional Dataset screen.

If your FLEX command statements did not require optional DD statements, but did contain syntax errors the short message "VALIDATION ERRORS FOUND" will be displayed on the screen. This is an informational message and does not stop processing. You have the option of continuing to generate JCL, or using the END command and then selecting the FLEX Command Statements option.

Figure 2-10. FLEX - JCL Specification Screen

```
File-AID for IMS  -------------- FLEX - JCL Specification ----------------------
COMMAND ===>

Specify batch JCL information:

               Sysout class  . . X

  IMS DLI Log Dataset usage  . . N          (AK = Allocate; Keep
                                             AD = Allocate; Delete
                                             N  = Do not use log dataset)

 JOB statement information:
 ===> //JOBNAME JOB ('ACCOUNT'),'USER NAME',CLASS=A,REGION=4M,
 ===> //  MSGCLASS=X,NOTIFY=USERID,MSGLEVEL=(1,1)
 ===> //*
 ===> //*



Press ENTER to submit batch job        Enter JCL command to edit generated JCL
```

Sysout Class : Enter the output class for the FLEX reports.

JOB statement information : Enter the JOB statement and other related JCL statements. For both /*JobParm and /*Route statements.

IMS DLI Log Dataset usage :

AK	Allocate and keep the IMS Log Dataset that is cataloged after the FLEX job ends.
AD	Allocate the IMS Log Dataset, but delete it after the successful completion of the FLEX job.
N	Does not allocate or use a Log Dataset.

Terminating the Screen

Do one of the following to terminate the FLEX - JCL Specification screen:

- Press Enter to submit the newly created FLEX JCL. Once the job has been submitted, you will be returned to the FLEX Dataset Specification screen.
- Enter the JCL command to edit the newly created FLEX JCL. The next screen displayed will be an ISPF EDIT session of the temporary dataset containing the FLEX JCL that has been created. An example of this screen is shown in Figure 2-11.
- Enter the END command to return to the FLEX Dataset Specification screen.
- Enter the RETURN command to return to the Primary Option Menu.

In all cases, any changes you have made on the screen will be saved.

Editing the Generated JCL

If you enter the JCL command on the Delete FLEX - JCL Specification screen, an ISPF/PDF Edit screen similar to the one shown in Figure 2-12 is displayed.

At this point in the conversation, the ISPF/PDF editor has been invoked on the temporary dataset that contains the JCL generated to run the job. All ISPF edit commands are available for use. For example, to insert additional JCL statements use the I (Insert) line command. To change the JCL, type over the data. To delete a line, use the D (Delete) line command. You can use the CREATE and REPLACE primary commands to save the generated JCL into a partitioned (PDS) or sequential dataset, which enables you to submit the JCL in the future without using the online conversation screens.

Do the following after you view or edit the JCL:

- Enter the SUBMIT command to submit the FLEX job for execution.
- Enter the END or CANCEL command to return to the FLEX Dataset Specification screen.

Figure 2-11. Editing the Generated JCL Screen

```
 File  Edit  Confirm  Menu  Utilities  Compilers  Test  Help
_____________________________________________________________________________
EDIT       SYS00265.T074039.RA000.TSONAME.R0108984         Columns 00001 00072
Command ===>                                                 Scroll ===> CSR
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //JOBNAME JOB ('ACCOUNT'),'USER NAME',CLASS=A,REGION=4M,
000002 //   MSGCLASS=X,NOTIFY=USERID,MSGLEVEL=(1,1)
000003 //*
000004 //*
=NOTE= YOU ARE NOW EDITING THE JCL THAT FILE-AID HAS GENERATED TO PERFORM
=NOTE= THE REQUIRED FUNCTION.  YOU CAN CHANGE THIS JCL IF DESIRED, AND USE
=NOTE= THE SUBMIT PRIMARY COMMAND TO SUBMIT THE JOB.  TO KEEP THIS JCL FOR
=NOTE= FUTURE USE, USE THE CREATE OR REPLACE PRIMARY COMMAND.  ENTER THE
=NOTE= END COMMAND TO EXIT THE FUNCTION WITHOUT SUBMITTING THE JOB.
000005 //*-------------------------------------------------------------------*
000006 //*                                                                   *
000007 //*            FILE AID FOR IMS/FLEX JCL                              *
000008 //*                                                                   *
000009 //*-------------------------------------------------------------------*
000010 //*
000011 //BATDV10  EXEC PGM=XIXBATDV,REGION=4096K,
000012 //  PARM=('/NBMP,DDEV1,IXPCUST',
```

Chapter 3.
Command Statements

This chapter describes the command statements that enable you to use File-AID *for IMS*/FLEX to update a database and to count and print segments in a database.

The following considerations relate to the command statements:

- Command statements are supplied as 80 byte records of a fixed or fixed block sequential dataset or as a member of a partitioned dataset. Refer to Appendix A, "FLEX JCL" for a description of the JCL needed to execute the statements in File-AID *for IMS*/FLEX.
- A command statement starts with a primary command and ends with a semicolon.
- Each command statement is independent of the preceding statement.
- The implicit database position at the start of each statement is at the beginning of the database.

Some commands and keywords can be abbreviated. Refer to "Abbreviations" on page 3-48.

Refer to "Related Publications" on page xiii for an explanation of how to read the "railroad logic" diagrams used to notate the syntax of commands and keywords.

Commands fall into two categories: environment and action.

Environment primary commands are as follows:

PSB	Identifies the target database name or the PCB of the target database to be processed.
SET	Overrides the system processing defaults.
TITLE	Defines the title of a report.
TYPE	Specifies whether the command statements are to be validated only or validated and immediately executed.
SETEXTRACT	Overrides system defaults for the EXTRACT sub-command.

These commands must be followed by at least one keyword. For example:

```
TYPE RUN;
```

TYPE is the primary command; RUN is the keyword.

Refer to "Environment Primary Commands" on page 3-2 for a complete description of these primary commands and their use.

Action primary commands are as follows:

COUNT	Counts segments, extracts concatenated keys of segments, or both.
INSERT	Inserts an occurrence of the specified segment into a database.
PRINT	Prints a single segment, all segments for a record, or all children for a parent in formatted or unformatted mode or prints fields in formatted mode.
SELECT	Applies segment selection criteria to select specific segments for processing. Sub-commands are then used to change, count, delete, insert, print, and/or extract the selected segments.

Action commands must be followed by at least one SEGMENT object keyword. Optional keywords are entered, as needed, to attain the desired results. For example:

```
PRINT SEGMENT=CUST010 MAX=ALL;
```

PRINT is the primary command; SEGMENT is the object keyword; MAX is an optional keyword.

Refer to "Action Primary Commands" on page 3-11 for a complete description of these primary commands and their use. There are two object keywords, SEGMENT and CHILD, that are described in "Object Keywords" on page 3-31. Refer to "Optional Keywords" on page 3-32 for a description of all the optional keywords.

All command statements are validated prior to execution. The validation process first checks each command statement for correct syntax, command and keyword consistency, completeness, and IMS validity.

A syntactically correct command is then cross-checked with the database for validity. For example: Are the field names valid in the SET or WHERE statements; does a request for a root segment in an HDAM database use partial keys or Boolean calls? The validity check does not guarantee that a specific data segment exists. If no errors are detected, the process proceeds based on the TYPE command keyword. The default is RUN.

Environment Primary Commands

Primary commands described in this section are:

- TYPE
- PSB
- SET
- TITLE
- SETEXTRACT

Although environment commands are optional, you might find it beneficial to always include the TYPE and PSB command statements.

TYPE

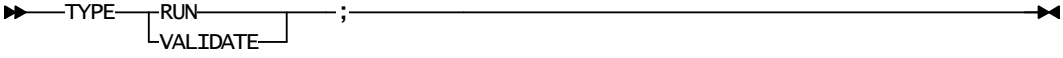
The TYPE primary command enables you to change the system default, so that the command statements are validated but not executed. To perform only the validation process, enter the following:

```
TYPE VALIDATE;
```

When you are ready to invoke the process, change the keyword to RUN.

```
TYPE RUN;
```

Again, the TYPE command is optional, but you might find it best to always include it as the first command statement. Only one TYPE command statement can be specified per execution.



RUN	Validates the command statements and, if validation is successful, executes the command statements.
VALIDATE	Validates the command statements, but does not execute the statements.

PSB

The PSB primary command is used to identify the target database name or the PCB of the target database to be processed. Multiple PSB command statements can be specified in a single execution. Keywords that are not specified are reset to their default values.

1. A static PSB executes using an existing PSB in the PSBLIB.

The following considerations relate to the PSB command:

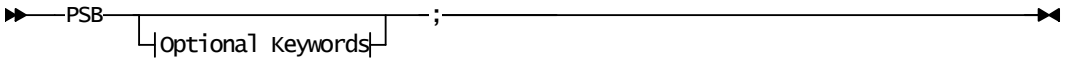
- Any or all of the databases defined within the PSB can be used for each execution.
- Authorization is granted only for processing options specified on each existing PCB.
- If included, the PSB command statement applies to all the following command statements until another PSB command statement is supplied.
- Only one DBNAME or PCB can be specified per command statement.
  - The DBNAME keyword identifies the database to be used within the PSB. For example:

    ```
    PSB DBNAME=CUSTPDBD;
    ```

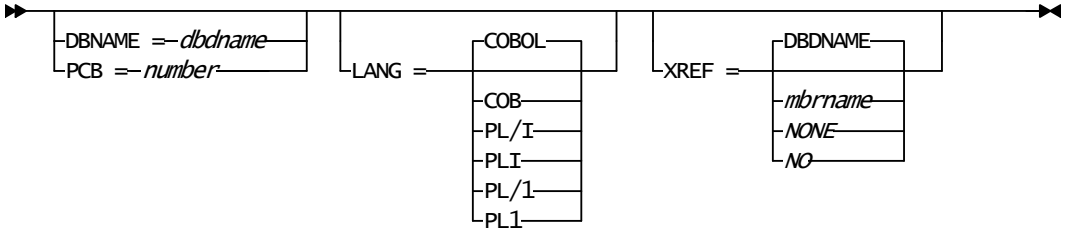
    The first PCB with the name of CUSTPDBD is used.
  - The PCB keyword identifies the database PCB number to be used within the PSB. The valid values are 1 - 500. For example:

    ```
    PSB PCB=4;
    ```

    The fourth database PCB within the PSB is used.
- The PSB command can be used to identify the cross-reference member and language of the segment layouts.



Optional Keywords:

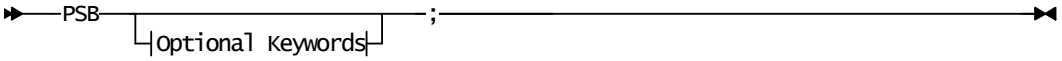


2. A dynamic PSB is a non-existing PSB that is generated behind the scene to access the requested database.

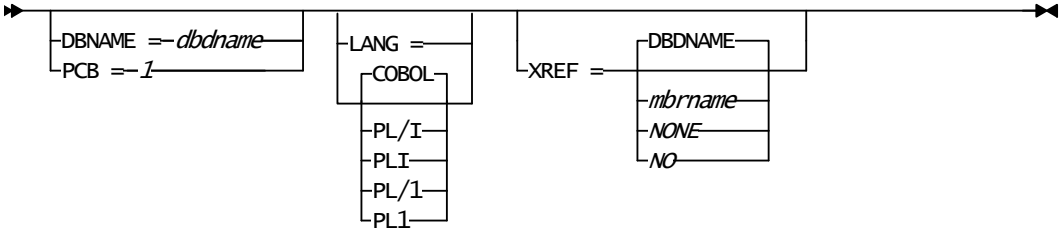
The following considerations relate to a dynamic PSB:

- Only one database can be accessed in a given execution when a dynamic PSB is used.
- Authorization is granted for all processing options for each segment of the database.
- The PCB must be 1 if specified and the DBNAME, if supplied, must match the name in the JCL. The database name is supplied in the PARM field in the JCL execute card (refer to “PARM Field” on page A-2).

- The PSB primary command can be used to identify the cross-reference member and language of the segment layout.



Optional Keywords:



DBNAME	Defines the database to be used within the PSB. The first PCB with the requested database name is used. Must match the name specified in the JCL if used with a dynamic PSB.
PCB	Defines the database PCB number to be used within a static PSB. Must be 1 if used with a dynamic PSB
LANGUAGE	Defines the application language of the segment layout cross-reference. The following considerations relate to the LANGUAGE keyword: • Language is ignored when XREF=NONE. • Only one LANGUAGE keyword can be specified per PSB command.
XREF	Defines the name of the cross reference member that contains a list of the segment layout names for each segment in the database. Only one XREF keyword can be specified per PSB command. • **mbrname** Defines the PDS member that contains a list of segment layout copylib members. • **NO/NONE** Indicates that no cross reference is to be used. Sets the default print format to SPRINT. **XREF=NONE** must be specified when using the **DBDNAME** parameter.

Examples

The following PSB command statement uses a static PSB that references the customer database and a PL/I segment layout.

```
TYPE RUN;
PSB  PCB=2 XREF=CUSTXRF1 LANG=PLI;
```

The following PSB statement uses a static PSB. The first PCB in the PSB that references the CUSTPDBD database will be used to process the command statements. Because the XREF and LANGUAGE keywords are not included, the cross-reference defaults to the database name and the language defaults to COBOL.

```
TYPE RUN;
PSB  DBNAME=CUSTPDBD;
```

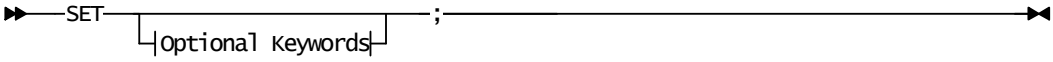
The following PSB statement uses a dynamic PSB. Because there is only one database, the PSB statement is not necessary to select the database but it can be used to specify the XREF member and the language of the XREF member.

```
TYPE RUN;
PSB  XREF=NONE;
```

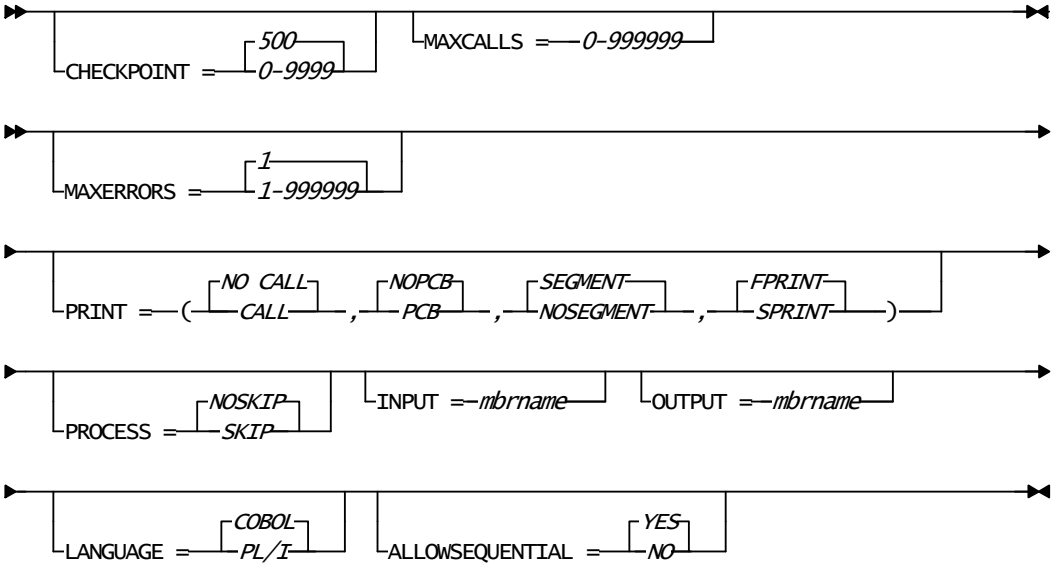
SET

The SET primary command enables you to override the system processing defaults. A value set by a keyword of the SET command is effective until it is replaced by another SET primary command using that keyword. Multiple SET primary commands can be specified in a single execution. Some system processing defaults can be overridden by an individual command statement.

When used, the SET primary command requires at least one keyword. Each keyword can be used only once. Optional keywords can be entered in any order



Optional Keywords:



CHECKPOINT Sets the checkpoint threshold.

The CHECKPOINT keyword controls how frequently checkpoints are issued. Checkpoints are issued in a BMP environment and a DL/I environment if a disk log is used and the IMS parameter specifies BKO=Y.

The checkpoint threshold is compared to the update weight value to determine when to take a checkpoint. The update weight is managed as follows:

- When a checkpoint is taken, it is set = 0
- When insert, change or delete is done, +20
- If deleted dependents are to be written to audit trail, +5 for each
- If update weight is not = 0, +5 for each root read

At the start of processing a statement, if the update weight is greater than half the checkpoint threshold, File-AID *for IMS*/FLEX takes a checkpoint. While processing a statement, if the update weight is greater than the checkpoint threshold, File-AID *for IMS*/FLEX takes one checkpoint before reading the next root with a unique key.

The default checkpoint threshold is 500.

MAXCALLS Sets the maximum number of DL/I calls allowed per command statement during execution. The number includes all calls to IMS needed to satisfy a command request including, segment retrieval for specific segment processing and skip processing.

The value specified should be somewhat higher than the total number anticipated.

If the number of DL/I calls for any command exceeds the MAXCALLS number, the step is terminated.

MAXERRORS Sets the maximum number of non-critical execution errors allowed per command statement before terminating the command statement. The number of current errors is reset to 0 prior to each primary command statement.

Non-critical errors are counted and compared against the specified MAXERROR number. If the error count is less than the specified number, command processing continues. If the count is equal to or greater than the specified number, processing stops for this command statement.

The following conditions are included in the error count:

- IMS status code 'V1' on an insert or replace call. V1 is returned if the length of a variable length segment is invalid. This error should not occur because this condition is checked for during the validation phase. Error message B913 is issued for INSERT and B916 is issued for REPLACE.
- IMS status code 'RX' on a replace call. RX is returned if the replace call is not valid based on the logical relationship replace rules. This error should not occur because this condition is checked for during the validation phase. Error message B918 is generated.
- IMS status code 'DA' on a replace call. DA is returned if the replace call attempts to change a key field. This error should not occur because this condition is checked for during the validation phase. Error message B912 is generated.
- IMS status code 'IX' on an insert call. IX is returned if the insert call is not valid based on the logical relationship insert rules. This error is based on the insert rules and the absence of a logical parent in the database. Error message B908 is generated.
- IMS status code 'NI' on a replace or an insert call. NI is returned if the update will result in a duplicate key in a secondary index that does not allow duplicate keys. Error message B919 is generated on a replace call. Error message B909 is generated on an insert call.
- IMS status code 'II' on an insert call. II is returned if the insert will result in a segment with a duplicate key. Error message B907 is generated.
- IMS status code 'DX' on a delete call. DX is returned if the delete call was not valid based on the logical relationship delete rules. This error is based on the delete rules and the delete status of segments in the database. Error message B920 is generated.
- IMS status code 'GE' on an insert call. GE can occur on an insert of a logical child when the logical parent or a parent of the logical parent to be inserted does not exist. Error message B910 is generated.

Some error conditions, most of which should never occur, will result in an abnormal termination. Error messages in the range of B600 through B9xx fall into this category.

Processing terminates or continues to the next command statement depending on the SKIP/NOSKIP value of the PROCESS keyword.

The default maximum number of errors is 1.

PRINT Modifies the system default print values for all commands.

- **CALL/NOCALL** Print/do not print DL/I call information for each DL/I call.
- **PCB/NOPCB** Print/do not print the PCB information for each DL/I call.
- **SGM/NOSGM** Print/do not print segment.
- **FPRINT/SPRINT** Formatted mode/unformatted mode.

SGM/NOSGM and FPRINT/SPRINT can be temporarily overridden by the PRINT primary command or sub-command. These values are applicable to the PRINT function only, they do not control the printing of segments that are inserted, deleted, or replaced.

Multiple values must be enclosed in parentheses and separated by a comma. For example:

```
SET PRINT=(CALL,PCB,SPRINT)
```

The defaults are NOCALL, NOPCB, SGM, and FPRINT

PROCESS Modifies the system processing default when a non-critical error is encountered.

The default is NOSKP.

- **SKIP** Skip to next command statement if a non-critical error occurs.
- **NOSKIP** Terminate processing if a non-critical error occurs.

INPUT Specifies the name of the PDS member to be used by the input processing function. Refer to step b "Input file variables:" on page 3-34 for a description of the relationship between the PDS member on the INPUT keyword and the value given with SET=INPUT(*start,length,type*).

The following considerations relate to the INPUT keyword:

- Different members for different commands can be used within a single invocation of the product.
- If a member is not given and the input function is used, the input file must be sequential or partitioned with the member name from the DD statement. If the member name is specified on the DD statement, it cannot be specified by SET INPUT=member.
- Only one member per command statement is allowed.
- The member is opened at the beginning and closed at the end of the command statement.
- Member name must follow standard naming conventions.

OUTPUT Specifies the name of the PDS member to use as output of the concatenated keys when CKEY is specified on the OPTION keyword of the COUNT primary command.

The following considerations relate to the OUTPUT keyword:

- Different members for different commands can be used within a single invocation of the product.
- If a member is not given, the process assumes that the output file is sequential.
- Only one member per command statement is allowed.
- The member is opened at the beginning and closed at the end of the command statement.

Member name must follow standard naming conventions.

LANGUAGE Defines the application language used in field names and segment layout cross references.

The following considerations relate to the LANGUAGE keyword:

- Only one LANGUAGE keyword can be specified per SET command statement.
- Language is ignored when XREF=NONE on the PSB command statement.
- Language applies to the next PSB statement.

ALLOW-SEQUENTIAL Defines whether a statement that results in a database scan is to be allowed or considered as an error.

- **YES** Allow the scan.
- **NO** Consider scan as an error.

Examples

The following SET command statement changes the checkpoint threshold to 250. The input member is CHNGDATA. If the input member is not provided, the input file is assumed to be a non-partitioned sequential dataset.

```
TYPE RUN;
PSB  PCB=2;
SET  CHECKPOINT=250 INPUT=CHNGDATA;
```

The first SET command statement in the following example sets the print values to print call information for each DL/I call, print the PCB information for each DL/I call, and print the data in unformatted mode. In addition, the system defaults are changed so that the process skips to the next command if a non-critical error occurs. A maximum of 500 DL/I calls is made. The output is named CUSTKEYS.

The second SET statement sets the maximum calls to 500, sets the maximum errors to 10, and names the output PARTKEYS.

```
TYPE RUN;
PSB  DBDNAME=CUSTPDBD;
SET  PRINT=(CALL,PCB,SPRINT) PROCESS=SKIP MAXCALLS=500 OUTPUT=CUSTKEYS;
:
PSB  DBDNAME=PARTDBD;
SET  MAXCALLS=500 MAXERRORS=10 OUTPUT=PARTKEYS;
```

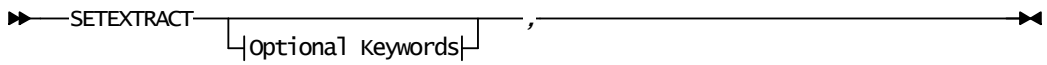
In the following example, the checkpoint threshold is set to 200. The input member name is ORDRCHNG.

```
TYPE RUN;
PSB  PCB=2;
SET  CHECKPOINT=200 INPUT=ORDRCHNG;
```

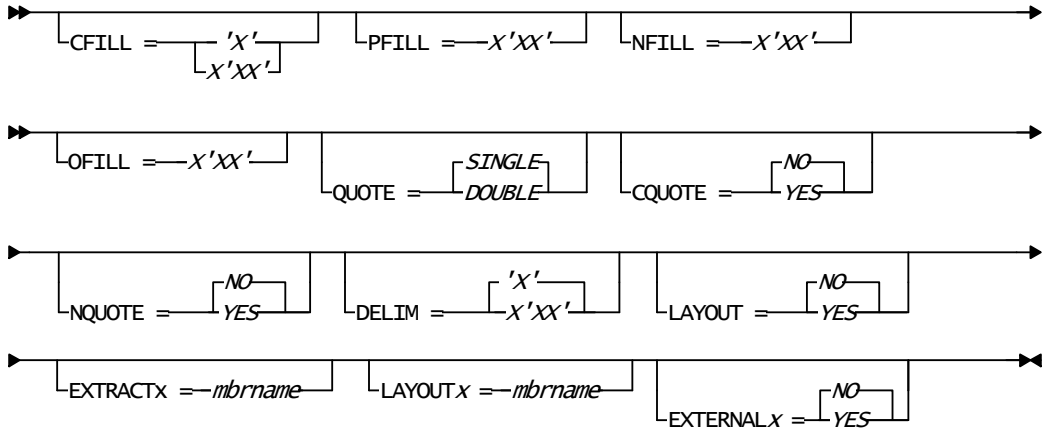
SETEXTRACT

The SETEXTRACT primary command allows you to override system defaults for the EXTRACT sub-command. A value set by this command remains until it is replaced by another SETEXTRACT command (and keyword). Multiple SETEXTRACT commands can be specified in a single execution. The options controlled by the SETEXTRACT command apply to all EXTRACTs used in the execution.

When used, the SETEXTRACT command requires at least one keyword. Each keyword can be used only once. Keywords can be entered in any order.



Optional Keywords



CFILL Specifies default fill value for character fields.

Valid values are one-byte case sensitive character (surrounded by single quotes) or one-byte character in hexadecimal form. This character is propagated through all bytes of the field.

PFILL Specifies default fill value for packed decimal fields.

Valid value is a one-byte character in hexadecimal form. The first nibble of the hexadecimal value is the digit value and the second nibble is the sign value.

NFILL Specifies default fill value for other numeric fields.

Valid value is a one-byte character in hexadecimal form. This character is propagated through all bytes of the field.

OFILL Specifies default fill value for all other data types. This includes index, pointer, hexadecimal, and bit.

Valid value is a one-byte character in hexadecimal form. This character is propagated through all bytes of the field.

QUOTE For fields enclosed in quotes, this specifies single or double quotes. Valid values are S (single) and D (double).

CQUOTE Specifies whether or not to use quotes on character data. Valid values are Y (yes) and N (no).

NQUOTE Specifies whether or not to use quotes on numeric data. Valid values are Y (yes) and N (no).

DELIM Specifies the delimiter character. If specified, the delimiter character appears between fields or between quotes if the field is contained within quotes. If not specified, no delimiter character is placed between fields. If DELIM has been set and needs to be reset, set it to X'ED'.

LAYOUT Specifies whether or not to create a layout of the EXTRACT record. Valid values are Y (yes) and N (no).

EXTRACT*x* If the EXTRACT*x* dataset is partitioned, specifies the name for the member in the EXTRACTx dataset.

The member is opened at the beginning and closed at the end of the command statement. Member name must follow standard naming conventions.

LAYOUT*x* If the LAYOUT*x* dataset is partitioned, specifies the name for the member in the LAYOUT*x* dataset.

The member is opened at the beginning and closed at the end of the command statement. Member name must follow standard naming conventions.

EXTERNAL*x* EXTERNAL*x* specifies whether or not to convert packed decimal fields to an external character format. Valid values are Y (yes) and N (no). *x* identifies the specific EXTRACT*x* to be converted (see also "EXTRACTx"). If EXTERNAL*x* is not specified, no conversion will be performed.

Example

The following SETEXTRACT statement sets the fill character for fields whose data type is character to the slash character.

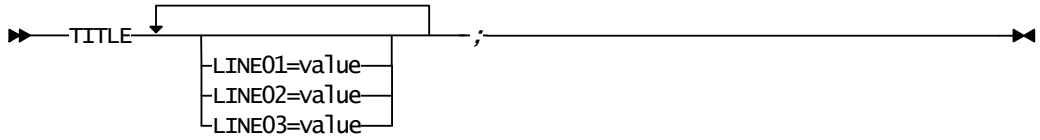
```
SETEXTRACT CFILL='/' CQUOTE=Y QUOTE=D DELIM=',' EXTERNAL1=YES;
```

Note: CQUOTE=Y specifies that fields whose data type is character should be enclosed in quotes. QUOTE=D specifies that the quote character to use for any field enclosed in quotes is the double-quote character. DELIM=',' indicates that fields in the extract dataset should be separated by a delimiter character, and it should be a comma. EXTERNAL1=YES indicates that packed decimal fields associated with EXTRACT1 will be converted to an external character format.

TITLE

The TITLE primary command enables you to title reports. When using this command, you can specify 1 to 3 title lines. The title line can be up to 60 characters in length and must be enclosed in single quotes. Once a line is changed, it remains in effect until it is changed again. Multiple TITLE primary commands can be specified in a single execution.

Note: If a TITLE command is specified, at least one LINE keyword is required; any or all of the three lines can be used. The "FLEX Execution Report - Example 1" on page B-8 displays the default title. Notice that LINE02 is blank.



LINE Identifies the line number of the title.

Examples

The following TITLE statement puts the title on the first line of the report.

```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD;
TITLE LINE01='CHANGE CUSTOMER STATUS FOR CUSTOMER NUMBER 10357';
```

Following is an example of a report with multiple title lines, with the second title line centered under the first line.

```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD;
TITLE LINE01='THE CUSTOMER AND PRIMARY SALES REPRESENTATIVE'
      LINE02='    CUSTOMERS IN REGION 10 SALES ZONE 18';
```

Action Primary Commands

The following action primary commands are described in this section:

- COUNT
- INSERT
- PRINT
- SELECT

General Usage Notes

The following notes apply to all action primary commands.

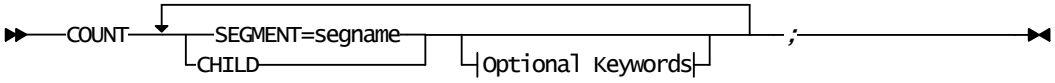
1. Action primary commands must be followed by at least one SEGMENT=*segname* object keyword, which provides the capability to process specific database segments. Up to 15 SEGMENT object keywords (segment level-1 to segment level-15) in the same hierarchical path can be specified.

   SEGMENT=$ROOT can be used at any time to signify the root segment in a database.

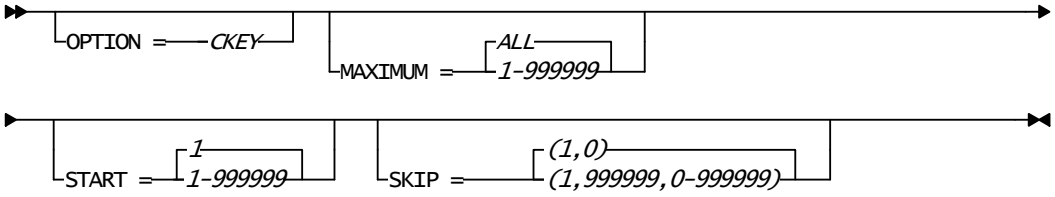
   Refer to "Object Keywords" on page 3-31 for a complete description of the two object keywords: SEGMENT and CHILD.
2. Additional optional keywords can be specified with each object keyword.
3. OPTION keyword values override the system processing defaults and the keywords of the SET primary command statement.

COUNT

The COUNT primary command enables you to count segments, extract concatenated keys of segments, or both. Multiple COUNT primary commands can be specified in a single execution.



Optional Keywords:



OPTION Identifies special processing.

- **CKEY** Writes the segment concatenated key to an output dataset. File-AID *for IMS* can only create members into an existing PDS.

When specified with the SEGMENT object keyword, the concatenated key for only the specified segment name is provided. When specified with the CHILD object keyword, the concatenated key for all the segments under the current parent is provided.

MAXIMUM Defines the number of selected database segments to process, not counting segments that are skipped. Refer to "MAXIMUM Keyword" on page 3-33 for a complete description of this keyword.

- **number** Number of segments to be processed.
- **ALL** Process all segments at that level or within parent.

START Defines the occurrence number of the selected segment where processing is to begin. Refer to "START Keyword" on page 3-38 for a complete description of this keyword.

- **number** Occurrence number of the selected segment where processing is to begin.

SKIP Alters the processing sequence. Refer to "SKIP Keyword" on page 3-37 for a complete description of this keyword.

- **number1** Number of selected segments to process.
- **number2** Number of selected segments to skip.

Examples

The following COUNT command statement causes all segments in the customer database to be counted:

```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD;
TITLE LINE01='COUNT ALL SEGMENTS';
COUNT SEGMENT=$ROOT MAX=ALL
              CHILD MAX=ALL;
```

The following COUNT command statement causes all customer segments to be scanned and the concatenated keys to be written to an output PDS dataset member CUSTKEYS. A count of the total customer and customer remarks segments is given.

```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD;
SET   OUTPUT=CUSTKEYS;
TITLE LINE01='COUNT ALL CUSTOMER AND REMARKS SEGMENTS';
COUNT SEGMENT=CUSTOMER MAX=ALL OPTION=CKEY
      SEGMENT=CUSTRMKS MAX=ALL;
```

Following is an example of the format of an output dataset.

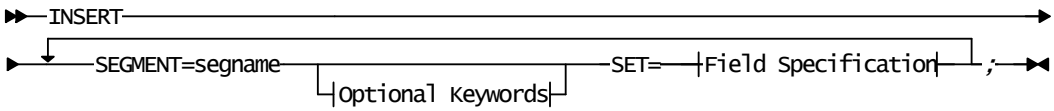
Column	Length	Description
1	8	segment name
9	1	unused
10	1-n	concatenated key

In this example, the COUNT command statement extracts the concatenated key of every hundredth customer segment and all the concatenated keys of the segment's children. The data is written to an output dataset member (CUSTKEYS).

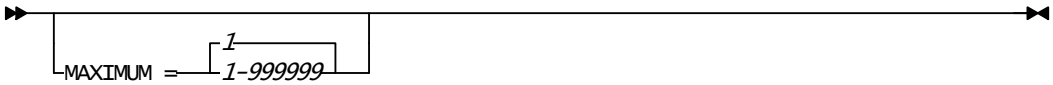
```
TYPE  RUN;
PSB   PCB=2;
SET   OUTPUT=CUSTKEYS;
TITLE LINE01='CONCATENATED KEY OF EVERY 100TH CUSTOMER';
COUNT SEGMENT=CUSTOMER MAX=ALL OPTION=CKEY START=100 SKIP=(1,99)
      CHILD            MAX=ALL OPTION=CKEY;
```

INSERT

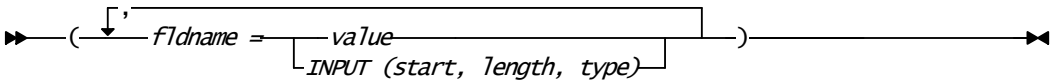
The INSERT primary command provides the capability to insert an occurrence of the specified segment into a database. CHILD is not a valid object keyword with INSERT. Multiple INSERT primary commands can be specified in a single execution.



Optional Keywords:



Field Specification:



MAXIMUM Defines the number of segments to insert. Refer to "MAXIMUM Keyword" on page 3-33 for a complete description of this keyword.

number Number of segments to insert. Valid only with segments that have non-unique keys or are unkeyed.

If specified on non-unique segments:

- MAX can specify a number greater than 1.
- The segments with the same data values are inserted the specified number of times.

If specified on keyed unique segments, MAX cannot specify a number greater than 1.

SET Defines the initial values for specific segment fields to be inserted through the specification of COBOL, PL/I, or DBD field names. Refer to "SET Keyword" on page 3-33 for a complete description and examples of how to use the SET keyword.

Refer to "Variable Length Segments" on page 3-44 for information about the processing of variable length segments.

Examples

The following INSERT statement inserts a customer segment into the customer database. Fields not supplied in the SET keyword are initialized to the default value for the field type.

```
TYPE   RUN;
PSB    PCB=4 XREF=CUSTXREF;
TITLE  LINE01='INSERT NEW CUSTOMER WITH CUSTOMER NUMBER 11573';
INSERT SEGMENT=CUSTOMER
         SET=(CUST-NUMBER=11573,
              CUST-NAME='PARADISE VALLEY CONSTRUCTION, INC.',
              CUST-STATUS=A,
              CUST-SALES-ZONE=8,
              CUST-SALES-REGION=22,
              CUST-TOTAL-SALES=1234500,
              CUST-PRODUC-IND=X'B3');
```

The following statement inserts one customer segment and a customer address segment using the input PDS member ISRTCUST.

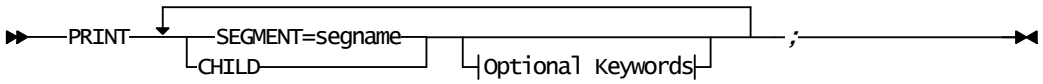
```
TYPE   RUN;
PSB    PCB=2 XREF=CUSTXRF2 LANG=PLI;
TITLE  LINE01='INSERT NEW CUSTOMER AND CUSTOMER ADDRESS';
SET    INPUT=ISRTCUST;
INSERT SEGMENT=CUSTOMER MAX=1
         SET=(CUST_NUMBER=INPUT(10,6,C),
              CUST_NAME=INPUT(16,32,C),
              CUST_SALES_INFO=INPUT(48,52,C))
       SEGMENT=CUSTADDR
         SET=(CUST_ADDR_KEY=INPUT(100,4,C),
              CUST_ADDR_ADDRESS=INPUT(104,40,C));
```

The following statements delete customer 10529 and all its children and then inserts the customer segment.

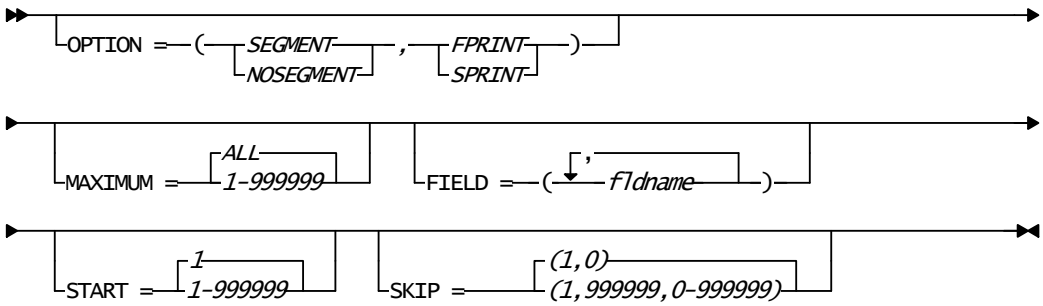
```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
TITLE  LINE01='DELETE CUSTOMER 10529 AND THEN REINSERT CUSTOMER 10529';
SELECT SEGMENT=CUSTOMER
         WHERE CUST-NUMBER=10529
  DELETE SEGMENT=CUSTOMER
INSERT SEGMENT=CUSTOMER OPTION=PATH
         SET=(CUST-NUMBER =10529,
              CUST-NAME='ALL-STAR CARPET CLEANING');
```

PRINT

The PRINT primary command enables you to print a single segment, all segments for a record, or all children for a parent. Multiple PRINT primary commands can be specified in a single execution.



Optional Keywords:



OPTION Identifies special processing. Overrides the print system defaults and the PRINT keyword of the SET primary command.

- **SGM/NOSGM** Print/do not print segment.
- **FPRT/SPRT** Formatted mode/unformatted mode.

When specified with the SEGMENT object keyword, special processing is performed only for the specified segment name. When specified with the CHILD object keyword, special processing is performed for all segments under the current parent.

Multiple values must be enclosed in parentheses and separated by a comma. For example:

```
PRINT OPTION=(NOSGM,SPRT);
```

MAXIMUM Defines the number of selected database segments to process, not counting objects that are skipped. Refer to "MAXIMUM Keyword" on page 3-33 for a complete description of this keyword.

- **number** Number of segments to print.
- **ALL** Process and print all specified segments.

FIELD Defines the COBOL or PL/I field names within the specified segment layout to be printed. The FLDNAME can contain a reference for the field occurrence, for example, FLDNAME(n). Refer to step 5 on page 3-34 for more information.

START Defines the occurrence number of the selected segment where processing is to begin. Refer to "START Keyword" on page 3-38 for a complete description of this keyword.

number Number of initial selected segments to skip prior to beginning the process.

SKIP Alters the processing sequence. Refer to "SKIP Keyword" on page 3-37 for a complete description of this keyword.

- **number1** Number of selected segments to process.
- **number2** Number of selected segments to skip.

Examples

The following PRINT statement prints every one hundredth segment starting at the 100th segment, for a maximum of 10 segments. The specified fields are printed for the root segment and all the child segments in a segment unformatted mode.

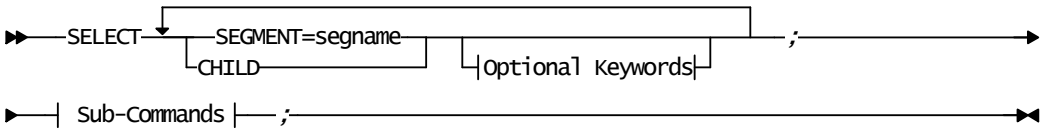
```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD XREF=CUSTXRF1;
TITLE LINE01='PRINT CUSTOMER INFORMATION IN DIFFERENT FORMATS';
PRINT SEGMENT=$ROOT MAX=10 START=100 SKIP=(1,99)
                    FIELD=(CUST-NUMBER,CUST-NAME,CUST-BALANCE)
      CHILD         MAX=ALL OPT=SPRINT;
```

In the following example, the first PRINT statement prints the specified fields starting with the 200th root segment and then prints the customer orders. The second PRINT statement prints all the customer remark segments for 10 customers without printing the customer segment.

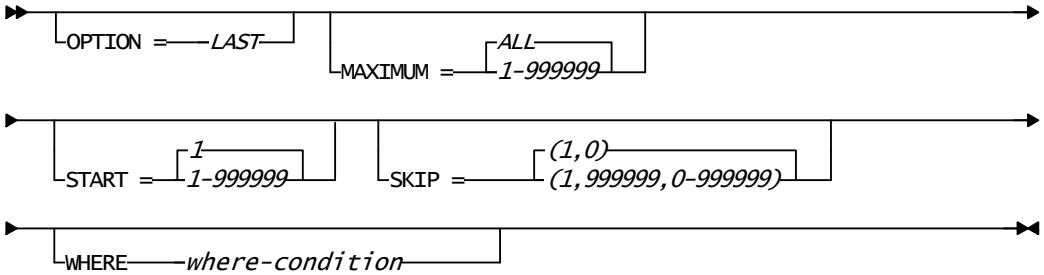
```
TYPE  RUN;
PSB   PCB=4;
TITLE LINE01='PRINT ALL ORDERS FOR THE 200TH CUSTOMER';
PRINT SEGMENT=$ROOT    OPT=FPRINT START=200 MAX=ALL
                       FIELD=(CUST-NUMBER,CUST-NAME,CUST-BALANCE)
      SEGMENT=CUSTORDR MAX=ALL;
TITLE LINE01='PRINT REMARKS ONLY';
PRINT SEGMENT=CUSTOMER MAX=10 OPT=(NOSGM)
      SEGMENT=CUSTRMKS MAX=ALL;
```

SELECT

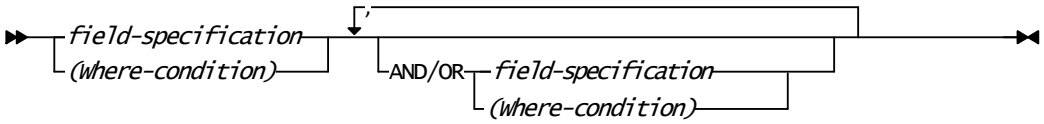
The SELECT primary command provides the capability to select specific segments for processing. Sub-commands are then used to change, count, delete, insert, and/or print the segments that match the criteria. Refer to "SELECT Sub-Commands" on page 3-19 for a complete description of the SELECT sub-commands. Multiple SELECT primary commands can be specified in a single execution.



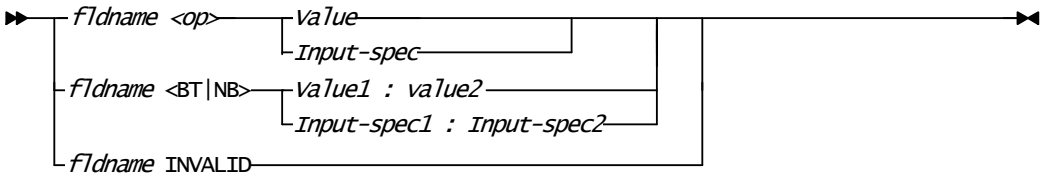
Optional Keywords:



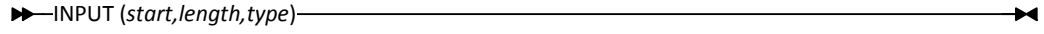
Where-Condition:



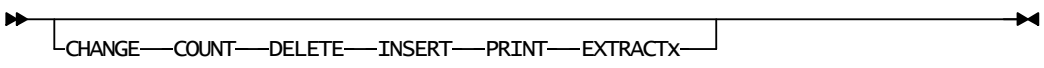
Field Specification:



Input-spec:



Sub-Commands:



OPTION Defines special processing. Not valid at the root level, with the CHILD object keyword, or with the WHERE optional keyword.

LAST Selects the last segment under the parent.

MAXIMUM Defines the number of selected database segments to process, not counting objects that are skipped. Refer to "MAXIMUM Keyword" on page 3-33 for a complete description of this keyword.

- **number** Number of segments to process.
- **ALL** Process all segments (no limit).

START Defines the occurrence number of the selected segment where processing is to begin. Refer to "START Keyword" on page 3-38 for a complete description of this keyword.

number Number of initial selected segments to skip prior to beginning the process.

SKIP Alters the processing sequence. Refer to "SKIP Keyword" on page 3-37 for a complete description of this keyword.

- **number1** Number of selected segments to process.
- **number2** Number of selected segments to skip.

WHERE Specifies the conditional expressions to be used to select segments before continuing the process. Refer to "WHERE Keyword" on page 3-39 for a complete description of the values used with this keyword.

The SELECT command acts as a driver to select the segments a specified number of times upon which a process is to be performed. A single SELECT command statement can contain multiple segments and processing requests. The command is interpreted and converted into one or more IMS calls to retrieve the segments.

The execution of the SELECT primary command is a two step process:

Step 1

Step 1 determines whether the conditions specified by the user are satisfied. This determination is made for all levels specified in the SELECT primary command.

Step 1 executes in the following way:

- Processing starts with the object keyword closest to the top of the hierarchical sequence and proceeds down the hierarchy to the lowest object keyword specified.
- The data from each eligible segment is evaluated against the specified conditions for that segment. If all specified conditions are met, the segment is said to be selected. When a segment is selected, the next lower object keyword in the hierarchical sequence is evaluated.
- Processing for Step 1 is suspended when one of the following events occur:
  - A selected segment exists for each specified object keyword (a PATH condition).
  - The object keyword conditions at the next lower object keyword cannot be satisfied (a NOPATH condition).

Step 2

Step 2 executes the CHANGE, COUNT, DELETE, INSERT, PRINT, and EXTRACTx sub-commands based on the results of Step 1, as follows:

- Only one of each sub-command can be specified under a given SELECT primary command.
- When a PATH condition exists, which is the **existence** of a selected segment for each specified object keyword, all sub-commands that explicitly or implicitly specify PATH are executed. Refer to "Processing Paths" on page 3-42 for a complete description of the processing sequence.
- When a NOPATH condition exists, which is the **absence** of a selected segment for each specified object keyword, all sub-commands that explicitly or implicitly specify NOPATH are executed. Refer to "Processing Paths" on page 3-42 for a complete description of the processing sequence.

Segments with Multiple Layouts

The COBOL or PL/I language layouts for segments are specified using the File-AID *for IMS*/ISPF XREF facility. This facility, which is fully described in Chapter 5, "Segment/Layout Cross-Reference", enables you to identify that a segment has multiple language layouts. The applicable layout is determined by the values in a TYPE1, and possibly TYPE2, field of the segment. When the XREF facility is used to specify these fields, the column number and length of each field, rather than the field name, are used to specify that field. File-AID *for IMS*/FLEX uses $RTV1 and $RTV2 as the field names for the TYPE1 and TYPE2 values.

If a segment has multiple layouts and the INSERT, CHANGE, or DELETE sub-command is specified for the segment, the WHERE keyword on the SELECT primary command must be used to explicitly specify the layout or set of applicable layouts.

Field names $RTV1 and $RTV2 must be used with the WHERE keyword to supply the values of the fields that determine the layout. You can use multiple field names with logical connectors to allow a set of layouts to be applicable.

If you want to indicate that any of the multiple layouts for the segment are acceptable, use $RTV1=$ALL. $ALL is not valid with $RTV2. Because multiple values determine the OTHER (or default) layout, $RTVn=$OTHER can be used to indicate that the OTHER layout is acceptable.

When the CHANGE or PRINT sub-command is specified, all the fields specified with the SET or FIELD keyword must be present in each of the layouts included in the applicable set of layouts. A check for this condition is made during the validation process. The same field name can be present at different offsets in different layouts. When the segment to be changed is read, the layout for that segment is determined. If the layout is not in the set of layouts specified, the segment does not satisfy the WHERE clause. If the segment does satisfy the WHERE clause, the appropriate layout is used to make the change.

File-AID *for IMS*/FLEX allows the change function to change the value of the field that determines the layout. The resultant value must be a valid layout value. All SET keyword values of the CHANGE sub-command are processed using the layout determined when the segment was read.

When the INSERT sub-command is specified, the segment to be inserted can use a different layout than that defined by the WHERE keyword. To insert a segment, use field names $RTV1 and, if applicable, $RTV2 as the field names on the SET keyword to supply the values of the fields that are used to determine the applicable layout. File-AID *for IMS*/FLEX verifies that the values supplied are valid and ensures that all other field names specified by other SET keywords of the INSERT are valid for the layout. If the columns covered by the $RTV1 and $RTV2 fields are also supplied by other SET fields within this INSERT, the values cannot be different than those supplied by the $RTVn names.

If no INSERT, CHANGE, or DELETE sub-command function applies to the multiple layout type segment, then it is not necessary to specify the applicable layouts with the WHERE clause. Any segment that satisfies the WHERE clause is acceptable, and the appropriate layout is then determined when the segment is read. During the validation phase a check is made to ensure that all the field names used in the WHERE clause are present in at least one layout.

SELECT Sub-Commands

The SELECT primary command has the following sub-commands that provide the capability to count, print, and update a specific or non-specific segment or set of segments:

- CHANGE
- COUNT
- DELETE
- EXTRACT
- INSERT
- PRINT

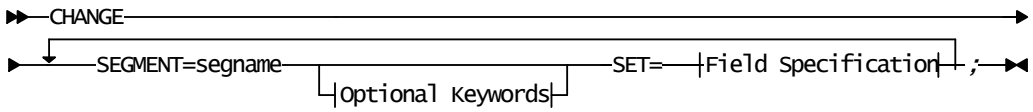
The segment area is mapped using COBOL or PL/I copylib definitions, which provide segment field-level referencing and updating. The command is interpreted and converted into one or more IMS calls with or without an SSA. The IMS calls then perform the required tasks.

General Usage Notes

1. Sub-commands are processed in the following order:
    a. Non-update sub-commands:
        1. COUNT
        2. PRINT
        3. EXTRACT
    b. Update sub-commands:
        1. CHANGE
        2. DELETE
        3. INSERT
2. Multiple sub-commands can be specified within each SELECT command statement. However, each sub-command can be specified only once.
3. Each sub-command must be followed by at least one object keyword.
4. The CHILD object keyword is invalid with the update sub-commands.
5. The path values (ALWAYS, PATH, NOPATH) of the OPTION keyword enable you to indicate the processing behavior. Refer to “Processing Paths” on page 3-42 for a complete description of these values.

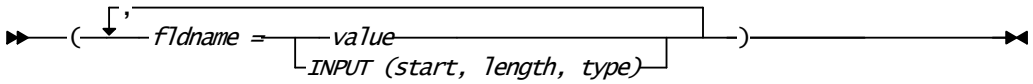
CHANGE Sub-Command

Defines special process options and field value definitions for the purpose of replacing all or part of the selected segment.



Optional Keywords:

Field Specification:



OPTION Identifies the processing behavior. Refer to "Processing Paths" on page 3-42.

- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process on y if the specified path exists.
- **NOPATH** Process only if the specified path does not exist.

SET Defines the specific segment fields and their values to be changed through the specification of COBOL, PL/I, or DBD field names. Cannot be used to change segment keys or the concatenated key of a logical parent.

Refer to "SET Keyword" on page 3-33 for a complete description and examples of this keyword.

Refer to "Variable Length Segments" on page 3-44 for information about the processing of variable length segments.

Examples

The following CHANGE sub-command statement changes the customer name to Howard Industries, the customer status field in the customer segment to A, and sets the first occurrence of the customer order amount to 125,000.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
TITLE  LINE01='CHANGE CUSTOMER STATUS FOR CUSTOMER NUMBER 10357';
SELECT SEGMENT=CUSTOMER
         WHERE CUST-NUMBER=10357
  CHANGE SEGMENT=CUSTOMER
           SET=(CUST-NAME=C'HOWARD INDUSTRIES',
                CUST-STATUS=A,
                CUST-QTR-ORDER-AMOUNT(1)=125000);
```

The CHANGE sub-command in the following example changes all customer sales zones 17 in region 10 to 18 if the customer sales representative number 1421 exists for a customer. The SALESREP segment is then changed to reflect the new number of 1539, and sales rep name.

```
TYPE   RUN;
PSB    PCB=2;
TITLE  LINE01='CHANGE SALES REPS FOR CUSTOMERS IN REGION 10, ZONE 17';
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUST-SALES-REGION=10 AND CUST-SALES-ZONE=17
       SEGMENT=SALESREP MAX=ALL
         WHERE CUST-SALES-REP-NBR=1421
  CHANGE SEGMENT=CUSTOMER
           SET=(CUST-SALES-ZONE=18)
         SEGMENT=SALESREP
           SET=(CUST-SALES-REP-NBR=1539,
                CUST-SALES-REP-LNAME=BENINGTON,
                CUST-SALES-REP-FNAME=ALICE);
```

In the following statements, customers in region 10 and zone 18 are changed if they haven't ordered anything since December 31, 1993.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
TITLE  LINE01='CHANGE CUSTOMER STATUS OF CUSTOMERS IN REGION 10, ZONE
18';
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUST-SALES-REGION=10 AND CUST-SALES-ZONE=18
       SEGMENT=CUSTORDR MAX=ALL
         WHERE CUST-ORDR-DATE<19940101
  CHANGE SEGMENT=CUSTOMER OPTION=NOPATH SET=(CUST-STATUS=I);
```

The following CHANGE sub-command statement changes the customer segment using an input PDS member. The customer number starting in column 10 of the input is used to select the customer and the data starting in column 20 is used to update the sales code.

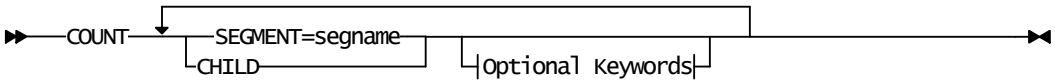
```
TYPE   RUN;
PSB    PCB=2;
TITLE  LINE01 ='CHANGE ALL CUSTOMERS USING INPUT MEMBER CHNGDATA';
SET    INPUT  =CHNGDATA;
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUST-NUMBER=INPUT(10,6,C)
  CHANGE SEGMENT=CUSTOMER
           SET=(CUST-SALES-CODE=INPUT(20,2,C));
```

The following statements change a customer order segment using an input PDS member. If the customer order segment is not found, the customer order is inserted. The OPTION defaults have been entered to demonstrate how this is done.

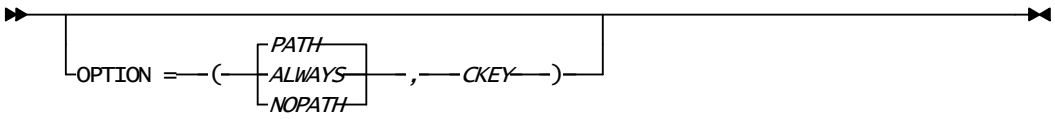
```
TYPE   RUN;
PSB    PCB=2;
TITLE  LINE01='   CHANGE CUSTOMER ORDER IF IT EXISTS';
TITLE  LINE02='INSERT CUSTOMER ORDER IF IT DOES NOT EXIST';
SET    INPUT=CHNGDATA;
SELECT SEGMENT=CUSTOMER MAX=1
         WHERE CUST-NUMBER=INPUT(10,6,C)
       SEGMENT=CUSTORDR MAX=1
         WHERE CUST-ORDR-NUMBER=INPUT(16,8,C)
  CHANGE SEGMENT=CUSTORDR OPTION=PATH
           SET=(CUST-ORDR-ITEMS=INPUT(24,6,C),
                CUST-ORDR-AMOUNT=INPUT(30,9,C))
  INSERT SEGMENT=CUSTORDR OPTION=NOPATH
           SET=(CUST-ORDR-NUMBER=INPUT(16,8,C),
                CUST-ORDR-ITEMS=INPUT(24,6,C),
                CUST-ORDR-AMOUNT=INPUT(30,9,C));
```

COUNT Sub-Command

Defines the segment and special processing options for the purpose of counting selected segments, extracting the concatenated keys of selected segments, or both.



Optional Keywords:



OPTION Defines special processing.

- **CKEY** Writes the segment concatenated key to an output dataset. File-AID *for IMS* can only create members into an existing PDS.

When specified with the SEGMENT object keyword, the concatenated key for the specified segment is provided. When specified with the CHILD object keyword, the concatenated key for all the segments under the current parent is provided.

- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process only if the specified path exists.
- **NOPATH** Process only if the specified path does not exist.

Refer to "Processing Paths" on page 3-42 for a complete description of these values.

Examples

The following COUNT sub-command statement counts all customer and customer remarks segments and writes out the concatenated key for the customer segment.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
SET    OUTPUT=CUSTKEYS;
TITLE  LINE01='COUNT ALL CUSTOMER AND REMARKS SEGMENTS';
SELECT SEGMENT=CUSTOMER MAX=ALL
       SEGMENT=CUSTRMKS MAX=ALL
  COUNT  SEGMENT=CUSTOMER OPT=CKEY
         SEGMENT=CUSTRMKS;
```

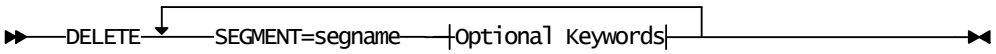
In the following example, the COUNT sub-command statement counts and writes the concatenated key of every 100th customer segment to an output dataset PDS member.

```
TYPE   RUN;
PSB    PCB=2;
SET    OUTPUT=CUSTKEYS;
SELECT SEGMENT=CUSTOMER MAX=ALL START=100 SKIP=(1,99)
  COUNT  SEGMENT=CUSTOMER OPT=CKEY;
```

DELETE Sub-Command

Defines the segment and processing options for the purpose of deleting the selected segment from the database. Any dependent children of the deleted segment are also

deleted. All logical relationship rules are adhered to and are dependent upon the definitions of the logically related databases.



Optional Keywords:

OPTION Identifies the processing behavior. Refer to "Processing Paths" on page 3-42.

- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process only if the specified path exists.
- **NOPATH** Process only if the specified path does not exist.

Examples

The following DELETE sub-command statement deletes part number A20113974 from the PARTPDBD database.

```
TYPE   RUN;
PSB    DBNAME=PARTPDBD;
TITLE  LINE01='DELETE PARTROOT WHERE PART-NUMBER = A20113974';
SELECT SEGMENT=PARTROOT MAX=1
         WHERE PART-NUMBER=A20113974
  DELETE SEGMENT=PARTROOT;
```

The following statements delete all customer order segments that are prior to January 1, 1994, and have no order item child segments.

```
TYPE   RUN;
PSB    PCB=2 XREF=CUSTPLI LANG=PLI;
TITLE  LINE01='DELETE ALL CUSTOMER ORDER SEGMENTS THAT ARE PRIOR TO';
TITLE  LINE02='    JANUARY 1, 1994 AND HAVE NO ORDER ITEMS';
SELECT SEGMEMT=CUSTOMER MAX=ALL
       SEGMENT=CUSTORDR MAX=ALL
         WHERE CUST_ORDR_DATE <940101
       SEGMENT=CUSTITEM MAX=ALL
  DELETE SEGMENT=CUSTORDR OPT=NOPATH;
```

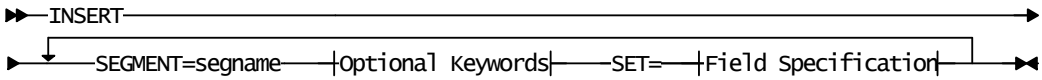
The following DELETE sub-command deletes the customer segment using an input PDS member as a list. The XREF=NO keyword allows the request to use the database field name in the request.

```
TYPE  RUN;
PSB   DBNAME=CUSTPDBD XREF=NO;
SET   INPUT=DLTCUS08;
TITLE LINE01='DELETE ALL CUSTOMERS USING CUSTOMER DELETE FILE DLTCUS08';
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUSTNUMB=INPUT(10,6,C)
  DELETE SEGMENT=CUSTOMER;
```

INSERT Sub-Command

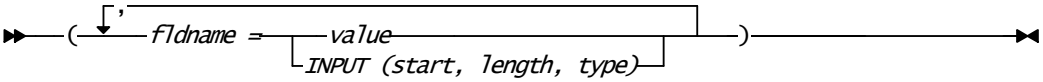
Defines the segment, special processing options, and the field value definition for the purpose of inserting the selected segment into the database.

If the segment has multiple layouts and the INSERT sub-command is specified, the segment to be inserted can use a different layout than that defined by the WHERE keyword. To insert a segment, use field names $RTV1 and, if applicable, $RTV2 as the field names on the SET keyword to supply the values of the fields that are used to determine the applicable layout. File-AID *for IMS*/FLEX verifies that the values supplied are valid and ensures that all other field names specified by other SET keywords of the INSERT are valid for the layout. If the columns covered by the $RTV1 and $RTV2 fields are also supplied by other SET fields within this INSERT, the values cannot be different than those supplied by the $RTVn names. Refer to "Segments with Multiple Layouts" on page 3-18 for a complete description of how to use multiple layouts.



Optional Keywords:

Field Specification:



OPTION Identifies the processing behavior. Refer to "Processing Paths" on page 3-42.

- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process only if the specified path exists.
- **NOPATH** Process only if the specified path does not exist.

SET Defines the initial values for the specific segment fields to be inserted through the specification of COBOL, PL/I, or DBD field names. Refer to "SET Keyword" on page 3-33 for a complete description and examples of this keyword.

Examples

The following INSERT sub-command statement inserts a customer order segment under customer 10529 if one does not currently exist. Note that the default processing path for INSERT is NOPATH.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
TITLE  LINE01='INSERT CUSTOMER ORDER FOR CUSTOMER 10529';
SELECT SEGMENT=CUSTOMER MAX=1
         WHERE CUST-NUMBER=10529
       SEGMENT=CUSTORDR
  INSERT SEGMENT=CUSTORDR
           SET=(CUST-ORDR-NUMBER=A8107377300,
                CUST-ORDR-DATE=19941002,
                CUST-ORDR-SALES REP='BILL ANDERSON',
                CUST-ORDR-CODES=X'3A',
                CUST-ORDR-CODE=AB);
```

The following statements insert a customer order segment if the segment does not exist. The segment is deleted if it does exist.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
TITLE  LINE01='INSERT CUSTOMER ORDER SEGMENT FOR CUSTOMER 10357';
SELECT SEGMENT=CUSTOMER MAX=1
         WHERE CUST-NUMBER=10357
       SEGMENT=CUSTORDR MAX=1
         WHERE CUST-ORDR-NUMBER=A3136692218
  DELETE SEGMENT=CUSTORDR
  INSERT SEGMENT=CUSTORDR OPTION=NOPATH
           SET=(CUST-ORDR-NUMBER=A3136692218,
                CUST-ORDR-DATE=19941002,
                CUST-ORDR-SALES-REPN=717,
                CUST-ORDR-CODES=BA);
```

The following INSERT sub-command statement inserts a customer order segment using an input PDS member. If the customer order segment is found, the customer order is changed. The OPTION defaults are included to demonstrate how this is done.

```
TYPE   RUN;
PSB    PCB=2;
TITLE  LINE01='   CHANGE CUSTOMER ORDER IF IT EXISTS';
TITLE  LINE02='INSERT CUSTOMER ORDER IF IT DOES NOT EXIST';
SET    INPUT=CHNGDATA;
SELECT SEGMENT=CUSTOMER MAX=1
         WHERE CUST-NUMBER=INPUT(10,6,C)
       SEGMENT=CUSTORDR MAX=1
         WHERE CUST-ORDR-NUMBER=INPUT(16,8,C)
  CHANGE SEGMENT=CUSTORDR OPTION=PATH
           SET=(CUST-ORDR-ITEMS=INPUT(24,6,C),
                CUST-ORDR-AMOUNT=INPUT(30,9,C))
  INSERT SEGMENT=CUSTORDR OPTION=NOPATH
           SET=(CUST-ORDR-NUMBER=INPUT(16,8,C),
                CUST-ORDR-ITEMS=INPUT(24,6,C),
                CUST-ORDR-AMOUNT=INPUT(30,9,C));
```

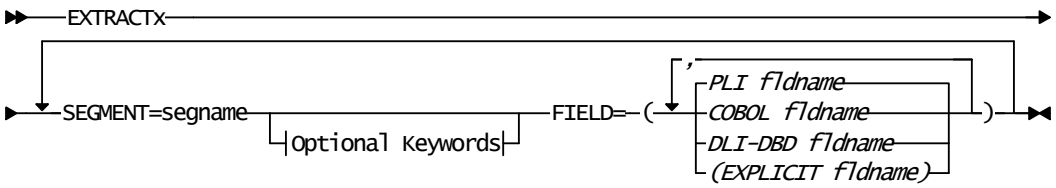
The following INSERT sub-command statement inserts one ORDR020 segment under all of the ORDR010 segments in the input PDS member ORDR010. The layout used is set from the $RTV1 value in the insert statement. This value corresponds to one of the Record Type 1 entries in the XREF.

```
TYPE   RUN;
PSB    DBNAME=PORDR XREF=PRODR LANG=COBOL;
SET    INPUT=ORDR010;
TITLE  LINE01='INSERT NEW ORDR020 SEGMENT';
SELECT SEGMENT=ORDR010 MAX=1
         WHERE ORDER-NUMBER-PREFIX=INPUT(1,2,C) AND
         ORDER-NUMBER=INPUT(3,4,C)
INSERT SEGMENT=ORDR020
         SET=($RTV1=PO,
         ORDER-TYPE=PO,
         DESCRIPTION=CABLE,
         PART-NO=C22222);
```

EXTRACT Sub-Command

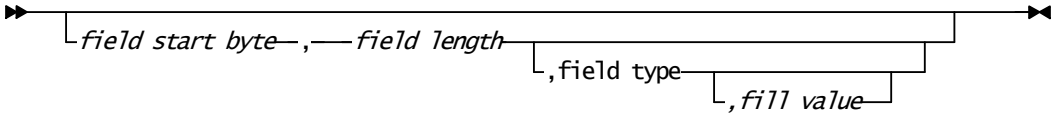
Defines the set of fields from the selected segments that are placed into a record and saved as a dataset (with the name EXTRACTx, where x is 1 through 5).

Refer to "Processing Paths" on page 3-42 for a complete description of these values.

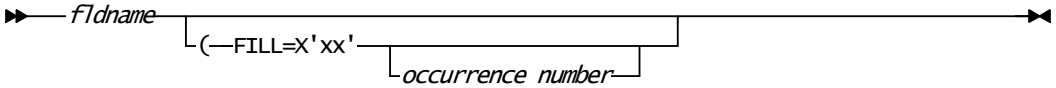


Optional Keywords:

EXPLICIT fldname:



PLI fldname, COBOL fldname, or DLI-DBD fldname



OPTION Defines special processing.

Refer to "Processing Paths" on page 3-42 for a complete description of these values.

- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process for either PATH or NOPATH condition.
- **NOPATH** Process only if the specified path does not exist.

FIELD Specifies the fields in the selected segment to be extracted. Must consist of a COBOL, PL/I, or DLI-DBD field name within the specified segment layout. FLDNAME can contain a reference for the field occurrence, and provide a fill value.

In order for a single File-AID *for IMS* statement to write extract records to multiple datasets, the five EXTRACT sub-commands are used. The sub-command names are EXTRACT1, EXTRACT2, EXTRACT3, EXTRACT4, and EXTRACT5. This allows up to five different extract sub-commands to be performed for a single SELECT, and also identifies the DD name of the output dataset to be used for that extract. The term EXTRACTx will be used to identify a sub-command of either EXTRACT1, 2, 3, 4, or 5.

The sub-command EXTRACTx must be followed by one or more SEGMENT=, which are also specified by SELECT.

Where multiple SEGMENT= keywords are specified under one EXTRACTx sub-command, all of the fields specified for that EXTRACTx are concatenated into a single extract record. This provides the capability of including the fields from a path of DL/I segments in a single extract record. See "Example 1" on page 3-28.

The order of the fields in the extract record is based on the order of the field names following the EXTRACTx sub-command. In order that there are no constraints on the order of the fields in the extract record, the SEGMENT= names need not be in the same order as the SEGMENT= names of the SELECT and the same name may be repeated. When the same SEGMENT=NAME occurs multiple times for an EXTRACTx sub-command, the OPTION keyword is only valid on the first use of that name. Consistent

with other batch sub-commands, field names can be COBOL/PLI layout names or DBD field names based on the XREF keyword of the PSB statement. For extracted fields which are part of an OCCURS structure, the user must specify which occurrence(s) is required. See "Example 2" on page 3-29 for an example.

Output Extract Datasets

The output extract dataset can be either a sequential dataset or a partitioned dataset. If it is a sequential dataset, there can be only one EXTRACT1, EXTRACT2, EXTRACT3, EXTRACT4 or EXTRACT5 sub-command per execution step. These sub-commands can be present in one SELECT or in different SELECTs.

If the dataset is partitioned, and the MBR name is not included in the DD statement, the SETEXTRACT primary command (with keyword of EXTRACTx matching the EXTRACTx sub-command) must precede the SELECT to provide the member name. Since the target of each EXTRACTx sub-command is directed to a different member of a partitioned dataset, there is no limit to the number of EXTRACTx sub-commands per execution step.

A single step can use a mixture of sequential and partitioned datasets.

All fields are placed into the extract record unaligned except for bit fields. This is true regardless of their alignment in the segment from which they are extracted. Each bit field is placed on a byte boundary.

Output Extract Record Format

The output record format is variable length; however, all records in any dataset have the same length.

Quotes and Delimiter Characters

Field names can also be enclosed in single or double quotes. This may be necessary to distinguish certain data names from numerical expressions. Special rules apply when qualified data names are enclosed in quotes. See "Using Qualified Field Names" on page 3-46 for more information.

A delimiter character can also be specified. If specified, the delimiter character is between fields or between quotes (if the field is contained within quotes). The SETEXTRACT command is used to specify quotes and delimiters.

Fill Characters

When a field is not present in the DL/I segment because it is a variable length segment, or the segment is not present in the path and NOPATH was specified, the fill value for the field is placed in the output record.

The system default fill value is based on the data type of the field. The default fill values are shown in Table 3-1.

Table 3-1. Default Fill Values

Data Type	Default Value	Field Value Override
Character (C)	blank	CFILL
Packed Decimal (P)	packed zero	PFILL
Numeric (N)	X'00'	NFILL
Other, including hex (O)	X'00'	OFILL

The default fill value can be overridden by explicitly specifying the fill value for each field type in the SETEXTRACT command. To specify the fill value for a specific field, follow the field name with `(FILL=fill_value)`. The fill value specified for each field is

interpreted based on the field data type and follows the rules for CFILL, PFILL, NFILL and OFILL. If the field needs an OCCURS subscript, include the subscript within the parenthesis also. See “Example 3” on page 3-29.

Explicit Field Definitions

In addition to using COBOL/PLI or DBD field names to designate the fields to be extracted, fields may be specified explicitly. A field is specified explicitly by designating its offset and length and, optionally, its data type and fill value. When the field is explicitly specified, any underlying COBOL/PLI layouts or DL/I field definitions are disregarded. Each explicit field is enclosed in parenthesis and is defined by two to four parameters. The first two are numeric and define the field start byte and length of the field. The third parameter is optional, and specifies the data type. The only effect data type has is that it determines the default fill value for the field. The valid data types are shown in Table 3-1 on page 3-27. The default data type is character. The fourth parameter is optional and specifies the fill value for the field. If not provided, the default fill value is based on the data type (i.e., the third parameter). See “Example 4” on page 3-29 for an example.

A start byte of 0 is a special case. Since a field with a start byte of 0 can never be present in the segment, this will in all cases cause the fill value for the field to be placed in the extract record. See “Example 5” on page 3-30 for more information.

Layout Dataset

For each EXTRACTx dataset, another dataset may be generated which provides a layout of the EXTRACT record. The names of the fields in the fields in the layout are based on the COBOL/PLI field names, the DBD field names, or generated names if field offset and length are used. The SETEXTRACT command is used to specify whether or not the output layout(s) should be generated. If Y is specified, a layout dataset must exist for each extract dataset. The layout DDNAME is LAYOUTx, where x corresponds to the x of EXTRACTx. The record format must be fixed or fixed blocked with a logical record length of 80.

If the EXTRACTx dataset is a partitioned dataset, the corresponding LAYOUTx dataset must also be a partitioned dataset. If the EXTRACTx dataset is a sequential dataset, the corresponding LAYOUTx dataset can be either sequential or partitioned. If the LAYOUTx dataset is a partitioned dataset, a SETEXTRACT primary command with LAYOUTx must precede the SELECT to provide the member name.

The field descriptions in the generated layout records are not identical to the field descriptions in the layouts of the segments where the fields are extracted from. Editing information, etc., is not present in the generated layout records.

The elementary names in the generated layouts are the names from the layouts used to do the extract. When the elementary item includes OCCURS, the higher level qualifying name is suffixed with the OCCURS number. Qualifying names from the layout used for the extract are not placed in the generated layout. The generated layout creates unique qualifying names.

Examples

This section contains examples of the EXTRACT sub-command.

Example 1

In one pass of the ORDER database: for ORDER segments ORDR010, ORDR020 and ORDR030, generate three extract datasets to be used as input to load three DB2 tables representing the three DL/I segments. Note that for dependent segments, the keys of the higher level segments are included in the extract record.

```
SELECT SEGMENT=ORDR010 WHERE ---
       SEGMENT=ORDR020
       SEGMENT=ORDR030
EXTRACT1 SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER,CUSTOMER-NUMBER,etc.)
EXTRACT2 SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER)
         SEGMENT=ORDR020
         FIELD=(LINE-NUMBER,ORDER-TYPE,LINE-STATUS,etc.)
EXTRACT3 SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER)
         SEGMENT=ORDR020
         FIELD=(LINE-NUMBER)
         SEGMENT=ORDR030
         FIELD=(PROCESS-IND,MATERIAL-TYPE-IND,etc.);
```

Example 2

```
SELECT SEGMENT=ORDR010 WHERE ---
       SEGMENT=ORDR020
       SEGMENT=ORDR030
EXTRACT4 SEGMENT=ORDR030
         FIELD=(PROCESS-IND)
         SEGMENT=ORDR010
         FIELD=(NUMBER-UNITS-STARTED(1))
         SEGMENT=ORDR030
         FIELD=(MATERIAL-TYPE-IND)
         SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER);
```

In this example, no fields from SEGMENT ORDR020 are present. The order of the fields in the extract record are:

1. PROCESS-IND — from ORDR030
2. NUMBER-UNITS-STARTED occurrence 1 — from ORDR010
3. MATERIAL-TYPE-IND — from ORDR030
4. ORDER-NUMBER — from ORDR010

Example 3

In this example, CUSTOMER-NAME, whose data type is character, has all bytes set to slash as the fill value. CUSTOMER-NUMBER, whose data type is packed, has the fill value of a packed +0. NUMBER-UNITS-STARTED whose data type is packed, has a fill value of packed +0 for occurrence 1.

```
FIELD=(CUSTOMER-NAME(FILL='/'),CUSTOMER-NUMBER(FILL=X'0C'),
NUMBER-UNITS-STARTED(FILL=X'0C',1))
```

Example 4

In this example, the first field comes from bytes 73 through 80 of the segment, has a data type of character and a fill value of character 0. The second field comes from byte 1 through 10 of the segment, has a data type of character (the default), and the default fill value for a character field. The third field comes from bytes 11 through 15 of the segment, has a data type of packed, and uses the default packed fill value. The fourth field comes from bytes 41 through 44 of the segment, has a data type of "other" and uses the default fill value set by OFILL or X'00' if OFILL is not specified. The fifth field comes from bytes 50 through 53 of the segment. The data type of N causes the default fill value to be X'00' or NFILL (if specified). However, the explicit fill value of X'FF' is provided.

```
FIELD=((73,8,C,FILL='0'),(1,10),(11,5,P),(41,4,O),(50,4,N,FILL=X'FF'))
```

Example 5

In this example, the field start byte of 0 is used to place 5 blanks between each of the fields extracted from the DL/I segment.

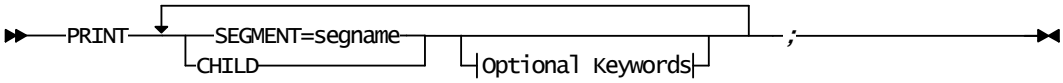
```
SELECT SEGMENT=ORDR010 WHERE ---
       SEGMENT=ORDR020
       SEGMENT=ORDR030
EXTRACT4 SEGMENT=ORDR030
         FIELD=(PROCESS-IND)
         SEGMENT=ORDR030
         FIELD=((0,5))
         SEGMENT=ORDR030
         FIELD=(MATERIAL-TYPE-IND)
         SEGMENT=ORDR030
         FIELD=((0,5))
         SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER);
```

EXTRACT4 could also be written as follows:

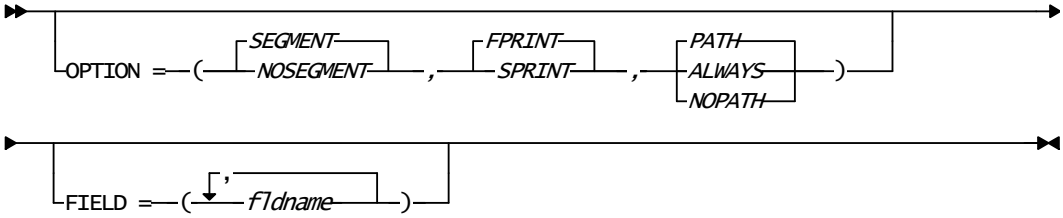
```
EXTRACT4 SEGMENT=ORDR030
         FIELD=(PROCESS-IND,(0,5),MATERIAL-TYPE-IND,(0,5))
         SEGMENT=ORDR010
         FIELD=(ORDER-NUMBER);
```

PRINT Sub-Command

Defines the segment special processing options, frequency, print fields, and print format processing for the purpose of printing the selected segments.



Optional Keywords:



OPTION Defines special processing.

Refer to "Processing Paths" on page 3-42 for a complete description of these values.

- **FPRT/SPRT** Formatted mode/unformatted mode.
- **ALWAYS** Process for either PATH or NOPATH condition.
- **PATH** Process only if the specified path exists.
- **NOPATH** Process only if the specified path does not exist.
- **SGM/NOSGM** Print/do not print segment option.

FIELD Specifies the fields in the selected segment to be printed. Must consist of a COBOL or PL/I field name within the specified segment layout. FLDNAME can contain a reference for the field occurrence.

Examples

The following PRINT sub-command statement prints every 100th segment starting at the 100th segment. A total of 10 segments are printed.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD XREF=CUSTXRF1;
TITLE  LINE01='PRINT CUSTOMER INFORMATION IN DIFFERENT FORMATS';
SELECT SEGMENT=$ROOT MAX=10 START=100 SKIP=(1,99)
       CHILD         MAX=ALL
  PRINT SEGMENT=$ROOT FIELD=(CUST-NUMBER,CUST-NAME,CUST-BALANCE)
        CHILD         OPTION=SPRINT;
```

The first statement in the following example prints the selected field from the 200th customer segment and then prints the customer orders. The second statement prints all remark segments for 10 customers without printing the customer segment.

```
TYPE   RUN;
PSB    PCB=4;
TITLE  LINE02='PRINT ALL ORDER FOR THE 200TH CUSTOMER';
SELECT SEGMENT=$ROOT    START=200 MAX=1
       SEGMENT=CUSTORDR MAX=ALL
  PRINT SEGMENT=$ROOT OPTION=FPRINT
                      FIELD=(CUST-NUMBER,CUST-NAME,CUST-BALANCE)
        SEGMENT=CUSTORDR;
TITLE  LINE03='PRINT REMARKS ONLY';
SELECT SEGMENT=CUSTOMER MAX=10
       SEGMENT=CUSTRMKS MAX=ALL
  PRINT SEGMENT=CUSTOMER OPTION=(NOSGM)
        SEGMENT=CUSTRMKS;
```

Object Keywords

There are two object keywords: SEGMENT and CHILD. Object keywords follow action primary commands and precede optional keywords. The end of an object keyword is determined by the next object keyword or a semi-colon. Each object keyword can be followed by any combination of optional keywords.

SEGMENT

Processes the specified database segments.

The following considerations relate to the SEGMENT object keyword:

- Segments are retrieved in the hierarchical order of the database specified in the PCB if using static PSBs or the DBD if using dynamic PSBs.
- SEGMENT=*segname* is used to process specific segments.
  - Up to 15 segment keywords in the same hierarchical path can be specified.
  - $ROOT is the generic name for the top segment or root of the hierarchical path that provides the capability to process root segments without regard to segment name. Only one is allowed in a command statement, and it must be the first object keyword.
- Each SEGMENT keyword can be followed by any combination of optional keywords.
- All specified segments must be in the same hierarchical path. Segment levels within a hierarchical path cannot be skipped.
- A command statement with only the SEGMENT object keyword can only process a single database segment.

CHILD

Processes all segments in the hierarchical path below the current parent specified in the PCB or DBD.

The following considerations relate to the CHILD object keyword:

- Only one CHILD object keyword is allowed in a command statement.
- Must follow a SEGMENT object keyword.
- Only 1 to 14 SEGMENT object keywords can precede a CHILD object keyword.
- Must be the last object keyword.
- Not valid with SELECT action sub-commands: CHANGE, DELETE, and INSERT.

Optional Keywords

The following keywords are described in this section:

- MAX
- SET
- SKIP
- START
- WHERE

Refer to step 5 on page 3-40 for a description of the values used with the FIELD keyword.

Refer to “Processing Paths” on page 3-42 for a description of the following keywords:

- ALLOWSEQUENTIAL
- CHECKPOINT
- INPUT
- LANGUAGE
- OUTPUT
- PRINT
- MAXCALLS
- MAXERRORS
- PROCESS

Refer to “Processing Paths” on page 3-42 for a description of the OPTION keyword values: ALWAYS, PATH, and NOPATH. Other OPTION values are described with their respective primary commands or sub-commands.

Refer to “PSB” on page 3-3 for a description of the PCB and DBNAME keywords:

Refer to “TITLE” on page 3-9 for a description of the LINE keyword.

General Usage Notes

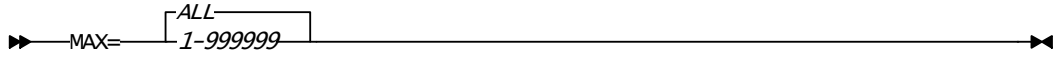
1. Optional keywords can be specified in any order. The end of an optional keyword is determined by the presence of another optional keyword, an object keyword, or a semi-colon.
2. Optional keywords override the system defaults and the SET primary command.

MAXIMUM Keyword

The MAXIMUM keyword identifies one of the following:

- The number of selected segments to be processed at the segment level or within the parent (CHILD object keyword), not counting segments that are skipped; or
- The number of times an INSERT command is to be repeated.

MAX can be specified with each primary command object keyword.



Usage Notes

1. Valid values are 1 to 999999 or ALL. The system default is MAX=ALL for all commands except the INSERT command. The default for the INSERT command is MAX=1. MAX=ALL indicates that all segments at that level or within a parent, if the CHILD object keyword is used, are to be processed.
2. Processing is complete when the MAX specification is satisfied at the highest segment level specified on the primary command.
3. If specified with the SEGMENT object keyword:

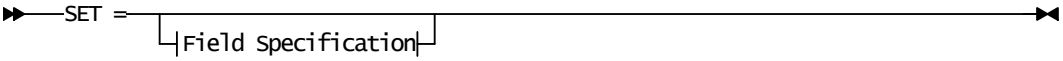
- Segment level-1:
  - Processes the specified number of selected root segments.
  - The number actually processed is the lesser of the number specified and the number of roots in the database.
- Segment level-2 to segment level-15:
  - Processes the number of specified segments within a parent.
  - The actual number processed is the lesser of the number specified and the number of segments within a parent.

4. If specified with the CHILD object keyword:

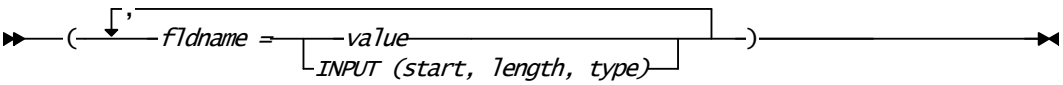
- Processes the specified number of segments under the current parent without regard to segment name.
- The actual number processed is the lesser of the number specified and the number of child segments under the current parent.

SET Keyword

The SET keyword provides the capability to define the values for specific segment fields through the specification of COBOL, PL/I, or DBD field names. SET can be specified with one or more SEGMENT object keywords.



Field Specification:



Usage Notes

1. At least one field name is required.

2. If the segment is keyed, all KEY fields must be specified for all INSERT primary commands and sub-commands. KEY fields can be a physical twin, logical twin (more than one), destination parent physical twin, and destination parent concatenated key.
3. Values that include spaces or the following special characters must be delimited by single quotation marks.

```
=    Equal            +    Plus
-    Minus            |    Vertical Bar
>    Greater than     <    Less than
(    Left paren       )    Right paren
.    Period           /    Slash
:    Colon            ;    Semi-Colon
&    Ampersand        *    Asterisk
!    Exclamation Mark
```

   If a value contains an embedded quotation mark, use three adjacent quotation marks for each embedded one. For example,

```
JOHN'S NAME
```

   would be entered as

```
JOHN'''S NAME
```

4. Unspecified fields are initialized based on data type during the execution of an INSERT primary command or sub-command statement.
5. A field value can be specified as a literal value or as an input file variable.
   a. Literal value:
      - Identifies a field value.
      - Must be preceded by either a COBOL or PL/I field name or a DBD field within the specified segment.
      - COBOL or PL/I field names must be in the segment layout description of the XREF, otherwise a specification error occurs. See "Using Qualified Field Names" on page 3-46 for information about using qualified field names.
      - COBOL and PL/I field names can contain an occurs reference, such as FLDNAME(n).
      - DBD field names are valid with XREF=NONE/NO.
      - Dependent upon the XREF and LANGUAGE specifications.
      - The value for a specified field requires the data of the field.
      - When the target field is defined by the COBOL/PLI layout or DBD field as numeric (packed, binary, or float), a numeric value must be supplied. The value is then converted to the proper internal form.
   b. Input file variables:
      - Sets data fields to the values from an input sequential file or partitioned dataset member named in the INPUT keyword of the SET command statement.
      - Multiple keyed segments can be inserted using input values.
      - Records are read from the input file until all the records are processed or the error count reaches the MAXERROR limit.
      - The data from each input record is substituted into the command. After the substitution, the command statement is validated again before execution. The substitution process behaves as if the data had been directly entered by the user.

- Format is INPUT(*start,length,type*).

  START Starting column of the input data.

  LENGTH Number of columns of input data.

  TYPE Format type of the data: C, X, P, or Z. This defines the format of the input data present in the input record. See Table 3-2 for definitions of these types.

Table 3-2. Valid Field Types

Field Type	Description
C **(character)**	• Value is the character representation of a character field. • Optional for card input. • Single quotes are optional for a character string that does not contain blanks, spaces, or semi-colons (;). • Single quotes are required for a string that contains spaces. For example: FLD1='How are you?' • The character field is padded with spaces.
X **(hexadecimal)**	• Value is the character representation of a hexadecimal field. • Requires two characters per byte. Valid characters are 0-9 and A-F. • Value must be preceded by X, contain an even number of characters, and be enclosed in single quotes. For example: X'F0AC'
P **(packed)**	• Value specified is the character representation of a packed field. • Requires each byte to be numeric (0-9) except the last byte, which is the sign (A-F). • Value must be preceded by P and enclosed in single quotes. The field must be the same size, it will not be padded. For example: P'123C' • This form enables you to use a specific packed sign value; for example, 'F' or 'C' for a positive sign or any of the valid negative signs. • When the data is being supplied for the SET keyword, the specified sign will be the sign of the packed field. When the data is supplied by the WHERE keyword and an equal operator, only fields with the specified sign will satisfy the WHERE clause. If the WHERE does not have an equal operator, an arithmetic compare will be performed; in which case the sign supplied by the WHERE has significance only in determining whether the field value must be plus or minus. • When the DL/I root key consists of concatenated packed fields, and the sign of the packed field is consistent (for example, always a C), providing the WHERE data in this form will provide improved performance.
Z **(zap)**	• Value specified is the data that will be moved to the specified field without any conversion. • Value should be the desired internal representation of the data: character, binary, or packed. • ZAP is valid only with the INPUT keyword.

Following are examples of literal and input file variable data specifications using the following input record.

```
                                          4      4    5
1        10       18                      2      8    2
+-------+--------+-----------------------+------+----+--+--
SEGNAME |08151994|COMPUWARE CORPORATION    |01250C|1A3F|..|
```

This example specifies the field names as literal values.

```
   INSERT  SEGMENT=ORDR010
     SET = (FLD1 = 08151994,
            FLD2 = 'Compuware Corporation'
            FLD3 = P'01250C'
            FLD4 = X'1A3F') ;
```

The following example uses the same input, but specifies the field names as input variables.

```
SET     INPUT = INDATA
INSERT  SEGMENT=ORDR010
  SET = (FLD1 = INPUT(10,8,C),
         FLD2 = INPUT(18,24,C),
         FLD3 = INPUT(42,6,P),
         FLD4 = INPUT(48,4,X) ;
```

6. If XREF=*mbrname* or *dbdname*, the segment fields are initialized depending on the cross reference segment layout description as follows:
   - Character fields are initialized to spaces.
   - Numeric display fields are initialized to zeros.
   - Packed fields are initialized to zeros with the appropriate sign.
   - Binary fields are initialized to binary zeros.
7. If XREF=NO/NONE:
   - Segments are initialized to binary zeros.
   - Specific values are assigned to DBD field names based on the data type specified in the DBD.
8. The following table provides the characteristics for the external data type targeted fields.

Table 3-3. Characteristics of External Data Types

Characteristic	CHAR	HEX	PACKED	ZAP
Valid internal data type	ANY	ANY	Note 5	ANY
Justify	Y	Note 1	Y	N
Truncate	N	N	N	N
Pad	Y	Note 1	Y	N
Convert external to internal	Y	Note 2	Y	N
Verify internal data is valid	Y	Note 3	Y	Note 4

Notes:

1. If the internal data type is character or the DL/I field type is hexadecimal, then the data is left justified and padded on the right with blanks.

   For all other data types, the length of the converted data must be equal to the size of the field. The external HEX data is limited to a maximum of 67 bytes.
2. One conversion is performed. This conversion consists of taking 2 bytes of external HEX data and converting it to 1 byte of internal character data. The resulting data may or may not be displayable. Although the internal data type has no influence on the conversion, the final internal data must be valid for the field.
3. Converted data is validated to ensure that it is valid internal data. No validation is done for a hexadecimal or character DL/I field type.
4. Input greater than 40 bytes is not validated.
5. Refer to Table 3-4 on page 3-36.

Table 3-4. Internal to External Cross Reference

Internal COBOL or PL/I Definitions	CHAR	HEX	PACKED	ZAP
Binary	Y	Y	Y	Y
Signed decimal, COMP-3	Y	Y	Y	Y
Zoned decimal	Y	Y	Y	Y
Floating point See Note 1, following	Y	Y	N	Y
Character	Y	Y	N	Y

Table 3-4. Internal to External Cross Reference (Continued)

Internal COBOL or PL/I Definitions	CHAR	HEX	PACKED	ZAP
Hexadecimal (DL/I)	Y	Y	N	Y

Note: Floating point consists of the following:

COMP-1	COBOL - fullword floating point
COMP-2	COBOL - doubleword floating point
FLOAT	PLI - fullword or doubleword floating point

9. Table 3-5 provides the characteristics for the targeted internal data types.

Table 3-5. Characteristics of Internal Data Types

Characteristic	Numeric	Non-numeric
Justify	On the decimal point	Left
Pad	Left with 0	Right with blanks

10. When using a PL/I layout with a data type of BIT, SET is limited to the first 16 bits of a bit string. Externally, each bit being set is represented by a character 0 or character 1.

SKIP Keyword

The SKIP keyword provides the capability to get a sample or subset of the segments. The SKIP keyword separates processing into two phases. In the first phase, segments are processed; in the second phase, segments are skipped. SKIP can be specified with each primary command object keyword.

Usage Notes

1. SKIP=(number1,number2) identifies the number of selected segments to be processed (number1) and then bypassed (number2).
2. Processing continues until either the end of the database is reached or the number of segments is equal to the MAX specification of the highest level object keyword.
3. The process phase starts at a position using either the START keyword or the default of the first selected segment of each segment type.
4. SKIP and START processes are refreshed for each set of segments under their parent.
5. When specified at the segment level-1:
   a. When in the process phase, processing continues down to the next lower level.
   b. When in the skip phase, processing continues to the next segment at the same level.
   c. Processing is complete when either the number to process or the number to skip reaches end of file or the number processed is equal to the MAX specification.
6. When specified at segment level-2 to segment level-15:
   a. Process phase:
      - Processing continues down to the next lower level until the lowest level segment is reached.
      - When skip processing is completed at the lowest level of a hierarchical path, processing continues at the next higher level.
      - The processing phase becomes deactivated at the level just left.

b. Skip phase:

- Processing continues to the next segment at the same level until either the process phase becomes active or the end of the twin chain is reached.
- If the end of the twin chain is reached, processing is deactivated at that level and continues with the next higher level segment.
- When processing goes to the next lower level, the starting position must be initialized using START or the default specification for the object keyword.

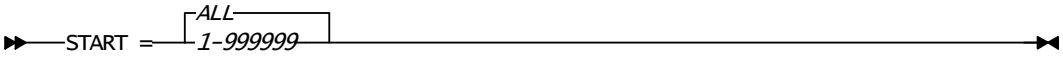
  For example: If START=4 on segment level-2, processing always starts with segment 4 on segment level-2 under segment level-1.

c. When specified with the CHILD object keyword:

- When in the process or skip phase, the number of children is processed regardless of their segment name.
- If specified at segment level-2 to segment level-15, the specified number of segments within a parent is processed. The actual number processed is the lesser of the number specified and the number of segments within a parent.

START Keyword

The START keyword provides the capability to begin processing at a selected segment other than the first selected segment of the object keyword. START can be specified with each primary command object keyword.



Usage Notes

1. Valid values are 1-999999. START=1 is the default.
2. When specified with SEGMENT=*segname*:
   a. Segment level-1:
      - Processing starts at the specified segment.
      - Processing is complete when the specified number is greater than the number of root segments.
      - START is only processed once at the root level.
   b. Segment level-2 to segment level-15:
      - Processing starts at the specified segment number under the current parent.
      - Processing is complete for that level when the specified number is greater than the number of segment occurrences under the parent. Processing continues at the next parent.
      - START positions to the specified segment number each time the object keyword is processed under its parent.

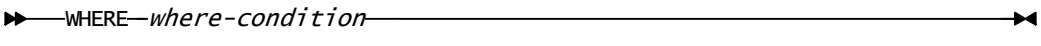
        For example: If START=4 is specified on segment level-2, processing always starts with segment 4 on segment level-2 under segment level-1.
3. When specified with the CHILD object keyword:
   a. Processing starts at the specified segment number within the child segments under the current parent without regard to segment name.
   b. Processing is complete for that level when the specified number is greater than the number of child segment occurrences under the parent. Processing continues at the next parent.

c. START positions to the specified child segment number each time the object keyword is processed for that set of children.

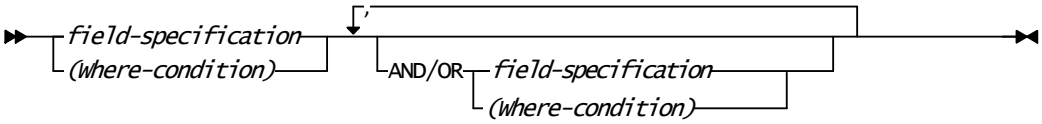
For example: If START=4 is specified for the CHILD object keyword, processing always starts with the fourth child segment under the current parent.

WHERE Keyword

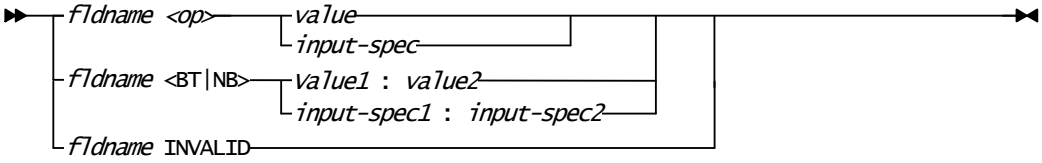
The WHERE keyword provides the capability to specify conditional expressions that determine which segments are selected for processing. WHERE can be specified with each SELECT primary command object keyword.



Where-Condition:



Field Specification:



Input-spec:

Usage Notes

1. Values that include spaces or the following special characters must be delimited by single quotation marks.

```
=    Equal            +    Plus
-    Minus            |    Vertical Bar
>    Greater than     <    Less than
(    Left paren       )    Right paren
.    Period           /    Slash
:    Colon            ;    Semi-Colon
&    Ampersand        *    Asterisk
!    Exclamation Mark
```

If a value contains an embedded quotation mark, use three adjacent quotation marks for each embedded one. For example,

```
JOHN'S NAME
```

would be entered as

```
JOHN'''S NAME
```

2. Segments that meet the WHERE selection criteria are bypassed until the start and skip frequencies are satisfied. The remaining segments are then processed until the maximum indicated is reached.
3. The conditional expression following the WHERE keyword must begin with a valid field name followed by a subscript when applicable, a relational operator, and a literal value or variable input assignment. The expression must also supply the record type value (RTV) for segments that use multiple layouts. Refer to "Segments with Multiple Layouts" on page 3-18 for the description of processing segments with multiple layouts. The field name is one of the following:
   - A COBOL or PL/I layout name or a DBD field name.
   - $RTVn where n=1 for the first record type value or 2 for the second.

   Following is an example of a simple expression:

```
SELECT SEGMENT A
WHERE FLDA-KEY=A10327 AND $RTV1=$ALL;
```

4. Conditional expressions can be combined using logical connectors to form complex expressions. Following is an example of a complex expression:

```
SELECT SEGMENT A
WHERE FLDA-01(2)>=1985 AND FLDA-01(2)<=1990 AND $RTV1=PO;
```

5. A field value can be specified with a literal or an input file variable. Refer to step 5 on page 3-34 for a description of these items.
6. The end of a conditional expression is determined by another optional keyword, an object keyword, or a sub-command.
7. Relational Operators:

Operator	Description
EQ or =	Equal to
NE or ¬ = or =¬	Not equal to
GT or >	Greater than
LT or <	Less than
GE or > = or =>	Greater than or equal to
LE or < = or =<	Less than or equal to
BT	Between; within a range of two values (endpoints inclusive)
NB	Not between; outside a range of two values (endpoints exclusive)
CO	Contains; scans for the presence of the data value.
NC	Not contains; scans for the absence of the data value.

8. Logical Connectors:

Connector	Description
AND or &	Logical AND
OR or |	Logical OR

9. When using a PL/I layout with a data type of BIT, WHERE is limited to the first 16 bits of a bit string. Externally, each bit of the field referenced by the WHERE is represented by a character 0 or a character 1.
10. Select segments with an invalid field value by entering the word INVALID. Use the word INVALID for alphanumeric, binary, packed decimal, and zoned decimal fields only. For numeric fields, any value that does not conform to the field's data type is invalid. For alphanumeric fields, any value that contains non-displayable data is invalid.

11. Search conditions **within parentheses** are evaluated first. If the order of evaluation is not specified by parentheses, AND is applied before OR.
12. The BT relational operator includes the endpoints of the range you specify. The NB relational operator does not include the endpoints. The BT and NB relational operators are not valid for Double-Byte Character Set (DBCS) support.
13. The CO and NC relational operators can be specified only for alphanumeric fields (PIC X or PIC 9 for COBOL, CHAR, PIC X, or PIC 9 for PL/I).

Examples

The following SELECT command statement defines the criteria for a specific customer using the WHERE keyword. If the customer is found, the customer record is printed in an unformatted mode.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
SET    PRINT=SPRINT;
TITLE  LINE01='RECORD OF CUSTOMER 10357';
SELECT SEGMENT=CUSTOMER
         WHERE CUST-NUMBER=10357
       CHILD MAX=ALL
  PRINT SEGMENT=CUSTOMER
        CHILD;
```

The following command statements define the criteria for all customers in sales zone 3 and region 18 with a sales representative of 539. Because OPTION=PATH is the default for PRINT, the CUSTOMER segment is printed only if both the customer and sales representative segments are satisfied. If OPTION=NOPATH is specified, only the customers without sales representative 539 are printed.

```
TYPE  RUN;
PSB   PCB=4;
TITLE LINE01='ALL CUSTOMERS IN ZONE 3 AND REGION 18 WITH SALES REP 539';
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUST-SALES-ZONE=3 AND CUST-SALES-REGION=18
       SEGMENT=SALESREP MAX=ALL
         WHERE CUST-SALES-REP-NUMBER=539
  PRINT SEGMENT=CUSTOMER;
```

The following command statements define the criteria using a WHERE keyword and an input file to select a list of specific customers for printing. All customer segments that satisfy the selection criteria are printed.

```
TYPE   RUN;
PSB    PCB=4;
SET    INPUT=DISCOUNT;
TITLE  LINE01='ALL CUSTOMERS FROM SPECIAL DISCOUNT INPUT DATASET';
SELECT SEGMENT=CUSTOMER MAX=ALL
         WHERE CUST-NUMBER=INPUT(10,6,C)
       SEGMENT=CUSTORDR MAX=ALL
  PRINT SEGMENT=CUSTOMER OPTION=ALWAYS
                         FIELD=(CUST-NUMBER,CUST-NAME,CUST-BALANCE)
        SEGMENT=CUSTORDR FIELD=(CUST-ORDR-NUMBER,CUST-ORDR-AMOUNT);
```

The following command statements define the criteria to find all CUSTOMER segments with CUST-STATUS fields that are INVALID and change them to CUST-STATUS=A.

```
TYPE   RUN;
PSB    DBNAME=CUSTPDBD;
SET    INPUT=DISCOUNT;
TITLE  LINE01='CHANGE INVALID CUST-STATUS';
SELECT SEGMENT=CUSTOMER
         WHERE CUST-STATUS INVALID
  CHANGE SEGMENT=CUSTOMER
  SET=(CUST-STATUS=A);
```

The following command statements define the criteria to find all CUSTOMER segments with CUST-NUMBER 10357 and CUST-STATUS A, B, or C.

```
TYPE RUN;
PSB DBNAME=CUSTPDBD;
SELECT SEGMENT=CUSTOMER
WHERE
CUST-NUMBER = 10357 AND
     (CUST-STATUS = A OR
      CUST-STATUS = B OR
      CUST-STATUS = C)
PRINT SEGMENT=CUSTOMER;
```

The following command statements define the criteria to find all CUSTOMER segments with CUST-NUMBER between 10000 and 20000, including endpoints 10000 and 20000.

```
TYPE RUN;
PSB DBNAME=CUSTPDBD;
SELECT SEGMENT=CUSTOMER
WHERE
CUST-NUMBER BT 10000 : 20000
PRINT SEGMENT=CUSTOMER;
```

Processing Paths

The existence (PATH) or absence (NOPATH) of a selected segment for each specified object keyword is determined prior to the execution of any sub-commands. Each object keyword of each sub-command specifies, explicitly or implicitly, whether PATH or NOPATH processing is desired. The following describes the execution steps for both PATH and NOPATH conditions.

When a PATH condition exists, the following three phases of processing occur:

1. During the first phase the COUNT, PRINT, and CHANGE sub-commands, if specified, are considered for processing. Processing starts with the object keyword closest to the top of the hierarchical sequence and proceeds down the hierarchy to the lowest object keyword specified. Object keywords that have specified PATH or ALWAYS for the COUNT, PRINT, or CHANGE sub-command are executed.
2. During the second phase the DELETE sub-command, if specified, is considered for processing. Processing starts with the object keyword closest to the top of the hierarchical sequence and proceeds down the hierarchy to the first object keyword that has specified PATH or ALWAYS for the DELETE sub-command. The DELETE sub-command is then executed.
3. During the third and final phase the INSERT sub-command, if specified, is considered for processing. Processing starts with the object keyword closest to the top of the hierarchy and proceeds down the hierarchy to the first object keyword that has specified PATH or ALWAYS for the INSERT sub-command. This segment is inserted. Segments for subsequent levels for which PATH or ALWAYS have been specified are also inserted.

   This form for the insert may be applicable when the segment being inserted does not have a unique sequence field. If the segment has a unique sequence field, the preferred method would be to SELECT the segment to be inserted and, if it is not present, insert it using the NOPATH option. When using the PATH option to insert a segment with a unique sequence field, it is possible that the insert will result in an II status code. An II status code is treated as an error with respect to the MAXERRORS option of the SET command. If using the default MAXERRORS count of 1 and the default PROCESS option of NOSKIP, the program will be terminated when the first II status code is received.

When a NOPATH condition exists, the following three phases of processing occur:

1. During the first phase the COUNT, PRINT, and CHANGE sub-commands, if specified, are considered for processing. Processing starts with the object keyword closest to the top of the hierarchical sequence and proceeds down the hierarchy to the last object keyword with a selected segment. Object keywords that have specified NOPATH or ALWAYS for the COUNT, PRINT, or CHANGE sub-command are executed.
2. During the second phase the DELETE sub-command, if specified, is considered for processing. Processing starts with the object keyword closest to the top of the hierarchical sequence and proceeds down the hierarchy to the last object keyword with a selected segment. When an object keyword that has specified NOPATH or ALWAYS for the DELETE sub-command is found, the DELETE sub-command is then executed.
3. During the third and final phase the INSERT sub-command, if specified, is considered for processing. If a DELETE was performed and the insert NOPATH or ALWAYS is specified at the delete level, the insert is performed at that level and continues down the lower levels where the insert NOPATH or ALWAYS was specified. If a DELETE was not performed, processing starts with the first object keyword that does not have a selected segment and proceeds down the hierarchy to the last object keyword that specified NOPATH or ALWAYS for the INSERT sub-command.

When performing either PATH or NOPATH processing, each sub-command is performed only once per selected segment. The following example illustrates this point.

```
Requirement - To print the customer segment and all customer order
segments.

SELECT SEGMENT=CUSTOMER
       SEGMENT=CUSTORDR MAX=ALL
PRINT  SEGMENT=CUSTOMER
       SEGMENT=CUSTORDR;
```

In this example the customer CU0001 has three customer order segments (CUOR01, CUOR02, and CUOR03). A PATH condition exists three times:

once for CU0001 and CUOR01,
once for CU0001 and CUOR02,
once for CU0001 and CUOR03.

When the first PATH condition (CU0001 and CUOR01) is encountered, the customer (CU0001) and the customer order (CUOR01) segments are printed. When the second and third PATH conditions are encountered, only the customer order (CUOR02 and CUOR03) segments are printed.

At the completion of the PATH or NOPATH process, Step 1 of the SELECT primary command resumes. Refer to page 3-16 for a description of the execution of SELECT. The current position is determined as follows:

- If a DELETE or an INSERT command was **not** executed, the current position in the hierarchy is at the bottom level of the select for a PATH condition. Processing is at the current position at the level above the NOPATH level for a NOPATH condition.
- If a DELETE sub-command was executed, the current position in the hierarchy is immediately following and at the same hierarchical level as the deleted segment.
- If an INSERT sub-command was executed, the current position in the hierarchy is immediately following the current segment on the next higher hierarchical level above the inserted segment.

If the INSERT sub-command fails during the insert process, no attempts are made to insert any dependent segments

The following values enable you to determine the processing to be performed based on the results of the SELECT primary command.

ALWAYS Process for either PATH or NOPATH condition.

NOPATH	Process only if the specified path does not exist.
PATH	Process only if the specified path exists.

A different value can be specified for each SEGMENT object keyword. The values are mutually exclusive and are invalid with the CHILD object keyword.

ALWAYS

Processing occurs when either a PATH or NOPATH condition exists. For example:

```
SELECT SEGMENT=A
       SEGMENT=B
       SEGMENT=C
PRINT  SEGMENT=A  OPTION=ALWAYS
       SEGMENT=B
       SEGMENT=C
```

If segment A is found, it is processed regardless of the outcome of segments B and C.

NOPATH

A NOPATH condition exists when a selected segment is not found for each object keyword. For example:

```
SELECT SEGMENT=A
       SEGMENT=B
       SEGMENT=C
PRINT  SEGMENT=A  OPTION=NOPATH
       SEGMENT=B  OPTION=NOPATH
       SEGMENT=C
```

If segments A and B are found and C is not, a NOPATH condition exists. Segments A and B are processed.

PATH

A PATH condition exists when a selected segment is found for each object keyword. For example:

```
SELECT SEGMENT=A
       SEGMENT=B
       SEGMENT=C
PRINT  SEGMENT=A  OPTION=PATH
       SEGMENT=B  OPTION=PATH
       SEGMENT=C
```

If segments A, B, and C are found, a PATH condition exists. Segments A, B, and C (default OPTION=PATH) are processed.

Variable Length Segments

COBOL/PLI Layouts

When a variable length segment is inserted using COBOL/PLI layouts, the default length of the segment is set to the length needed to hold all fields defined in the layout. Default values are supplied for all fields not provided in the insert. Although there is normally no need to explicitly set the length, it may be set and, if so, that value overrides the default. If the length specified is not large enough to include all required fields or is greater than the DBD maximum, an error is detected during validation.

When a variable length segment is changed, one of the changed fields may be beyond the length of the existing segment. If so, the length of the segment is adjusted to include all changed fields.

DL/I Field Names

When a variable length segment is inserted using DL/I field names and the length of the field is not explicitly set, the length is set to the minimum length required to include all the fields supplied on the insert. A validation error occurs if all required fields are not supplied on the insert.

The segment is initially set to binary zeros. The default values are then used for all fields in the order that the fields are defined in the DBD. The fields specified on the SET keyword of the INSERT command are then moved in the order that they were specified. The order specified may be relevant when there are overlapping fields. If the length is explicitly set on an insert or change, the length must be large enough to include all required fields but not greater than the DBD maximum to avoid an error during validation.

When a variable length segment is changed, one of the changed fields may be beyond the length of the existing segment. If so, the length of the segment is adjusted to include all changed fields.

Concatenated Segments

If the logical child of a concatenated segment is variable length, the concatenated segment cannot be formatted using COBOL or PL/I layouts. A validation error occurs for any statement that attempts to update a concatenated segment where the logical child is variable length and layouts are used. When layouts are in use and concatenated segments with a variable length logical child are printed, the segments are printed in unformatted mode.

Layouts can be used for a variable length logical child when the logical child is not concatenated with the destination parent or if using DL/I field names rather than layouts.

WHERE Clause

If a field specified by a WHERE operand is not fully contained in the current segment, then the WHERE clause is not satisfied.

Using Qualified Field Names

When you specify a COBOL or PL/I field name for the SET or WHERE keyword and the field name you choose is not unique, you can use qualifiers to make the field name unique. Qualifiers are names of items higher in the hierarchy than the field name you want to specify.

To qualify a field name, precede the field name with one or more qualifiers separated by periods. For example, assume you have the following COBOL layout:

```
01 DBD-SEG003-DATA.
   03 VERSION-11.
      05 MODLEVEL-11.
         09 ITEM-A             PICX(04).
         09 ITEM-B             PICX(04).
      05 MODLEVEL-12.
         09 ITEM-A             PICX(04).
         09 ITEM-C             PICX(04).
   03 VERSION-12                         OCCURS 3 TIMES.
      05 MODLEVEL-11.
         09 ITEM-A             PICX(04).
         09 ITEM-B             PICX(04).
         09 ITEM-D             PICX(04).
      05 MODLEVEL-99.
         09 ITEM-A             PICX(04).
         09 ITEM-F             PICX(04)  OCCURS 3 TIMES.
```

You can distinguish the second `ITEM-A` in the layout using the following:

```
VERSION-11.MODLEVEL-12.ITEM-A
```

Note: Individual field names and qualifiers can also be enclosed in quotes. This is particularly useful when the fully qualified name length exceeds 31 bytes and you wish to enclose some or all of the names or qualifiers in quotes.

Usage Notes

1. A field name can be qualified even though it does not need to be qualified to be unique.
2. The concatenated name can skip leading qualifiers that are not required to make the concatenated name unique or are not required to satisfy the OCCURS requirement.
3. The leading qualifier must be a name that is unique within the layout.
4. Successive names in the concatenated name must be parent/child names in the layout. Intermediate names cannot be skipped.
5. If the lowest level name in the layout has OCCURS specified, that name must be specified with a subscript. Any higher level name that has OCCURS must also be specified with a subscript.
6. If the lowest level name in the layout does not have OCCURS but a higher level name in the layout does, then the subscript can be specified with the lower level name or with the higher level name that has the OCCURS specified. If there is another higher level name in the path with OCCURS, this name must also be included with a subscript.

Examples

The following are examples of valid concatenated names taken from the COBOL layout above.

VERSION-11.MODLEVEL-11.ITEM-A	All levels specified.
'VERSION-11'.'MODLEVEL-11'.'ITEM-A'	All levels specified and enclosed in quotes.
'VERSION-11'.MODLEVEL-11.'ITEM-A'	All levels specified, some enclosed in quotes. **Note:** A single quote character (') is used in the example. If QUOTE=D, the double quote character (") must be specified.
MODLEVEL-12.ITEM-A	Leading level is skipped.
ITEM-C	Name is unique in the layout. Multiple higher levels skipped.
ITEM-D(2)	Unique name with subscript from higher level OCCURS.
VERSION-12.MODLEVEL-11.ITEM-B(2)	Only one level has OCCURS specified. Subscript is at elementary level.
VERSION-12(2).MODLEVEL-11.ITEM-B	Equivalent to last example above. Subscript with the name having OCCURS rather than at the elementary level.
VERSION12(2).MODLEVEL-99.ITEM-F(2)	Multiple levels have OCCURS specified.

Abbreviations

ALLOWSEQUENTIAL	ASEQ
ALWAYS	ALW
AND	&
CHANGE	CHG
CHECKPOINT	CHKP
CHILD	CHD
CKEY	CK
COUNT	CNT
DBNAME	DBN
DELETE	DEL
FIELD	FLD
FPRINT	FPRT
INPUT	INP
INSERT	INS
LANGUAGE	LANG
LINE01	L1
LINE02	L2
LINE03	L3
MAXCALLS	MAXC
MAXERRORS	MAXE
MAXIMUM	MAX
NO	N
NOCALL	NOCAL
NOPATH	NOPTH
NOSEGMENT	NOSGM
NOSKIP	NOSKP
OPTION	OPT
OR	ž
OUTPUT	OUT
PATH	PTH
PRINT	PRT
PROCESS	PROC
SEGMENT	SGM
SELECT	SEL
SKIP	SKP
SPRINT	SPRT
START	STR
TITLE	TTL
TYPE	TYP
VALIDATE	VAL
WHERE	WHR
XREF	XRF
YES	Y

Chapter 4.
Audit Trail

File-AID *for IMS*/FLEX uses the existing File-AID *for IMS* audit trail facility. All update activity during a given execution can be captured in an audit trail dataset or SMF log file. Every change, delete, or insert performed causes the before and/or after image of the updated segments to be written to the audit trail dataset or SMF log file.

The audit trail facility is invoked by the presence of an IXPAT DD statement in the execution JCL (refer to Appendix A, "FLEX JCL"). The audit trail dataset can be either dynamically allocated or named by the user.

File-AID *for IMS*/FLEX will dynamically allocate the audit trail dataset at the beginning of the execution of the batch process if the following line of JCL is included in the batch job stream.

```
//IXPAT DD DUMMY
```

If your TSO-PREFIX matches your TSO-ID, the audit trail dataset name is

```
tso-id.IXPAT.Dyymmdd.Thhmmss
```

where...	*equals...*
tso-id	Your TSO user ID, up to seven characters.
yymmdd	The Gregorian date on which the audit trail is created.
hhmmss	The hour, minute, and second the audit trail is created.

If your TSO-PREFIX does not match your TSO-ID, the audit trail dataset name is:

```
tso-prefix.tso-id.IXPAT.Dyymmdd.Thhmmss
```

where...	*equals...*
tso-prefix	Your TSO user PREFIX, up to seven characters.

If the audit trail dataset is specified in the JCL the dataset must have the following attributes:

- RECFM=V or VB
- LRECL=a number greater than the longest segment to be written maximum concatenated key
- DSORG=PS

If DSORG=PO, a member must be included in the specification of the dataset name.

Notes on the Audit Trail Feature

The audit trail dataset that File-AID *for IMS*/FLEX creates is a sequential, variable blocked file. Its LRECL and BLKSIZE are dependent on the sum of the lengths of the longest segment type and the maximum fully concatenated key contained in the primary database being edited. The sum of these lengths cannot exceed 32,724.

When you use File-AID *for IMS*/FLEX to delete a parent segment that has dependent segments under it, File-AID *for IMS* issues a DL/I DLET call for the parent segment only. IMS automatically deletes all the dependent segments, in addition to the parent.

Normally, File-AID *for IMS*/FLEX retrieves all the dependent segments and writes their images to the audit trail before the deletion of the parent actually occurs. This requires File-AID *for IMS*/FLEX to reestablish its current segment position in the database to the parent segment before deleting it.

When editing a database that contains nonkeyed and/or nonunique segment types, the capturing of deleted segment images by the audit trail feature can be affected. When the parent to be deleted is nonkeyed or nonunique, File-AID *for IMS*/FLEX is unable to reposition on the parent before deleting it. Therefore, File-AID *for IMS*/FLEX does not retrieve the dependents and write their images to the audit trail before deleting the parent. The dependent segments are deleted when the parent is deleted, but their images do not appear on the Audit Trail Report. A message appears on the report with the deleted parent's image to notify you that dependent segments were deleted but are not shown.

File-AID *for IMS*/FLEX provides your installation with the ability to force the creation of an audit trail during any user's execution through a security exit routing. The process is especially useful if your installation wants to ensure that an audit trail is created whenever File-AID *for IMS*/FLEX is used to edit certain sensitive databases.

The security exit routine also has the capability to force the use of the system SMF log file to record the audit trail information.

If you require information on how your installation may be using a security exit routine to force audit trail creation and/or printing, contact the person responsible for File-AID *for IMS*/FLEX at your installation.

Refer to the *File-AID for IMS/ISPF Reference Manual* for information on printing the Audit Trail.

Chapter 5.
Segment/Layout Cross-Reference

Option 7 enables you to create and maintain segment/layout cross-references (XREFs) for use in the File-AID *for IMS*/ISPF Browse, Edit, Extract, Print, and Selection Criteria functions and also for the File-AID *for IMS*/FLEX processing. The purpose of a segment/layout XREF is to associate a COBOL or PL/I segment layout with each segment type in a database. The XREF function uses your existing DBD load module members to determine the segment types in the database and then prompts you to enter the corresponding segment layout members for each segment type. You can specify segment layout information associated with logical child and concatenated segments defined in the DBD and for segment types with multiple formats (that is, those segment types that require more than one segment layout to define the segment data). You can also use the XREF function to isolate the appropriate layout if multiple segment layouts are contained within a single COBOL or PL/I member or if the segment layout is hard-coded in a COBOL or PL/I program.

Refer to the chapter entitled "Segment/Layout Cross-Reference" in the *File-AID for IMS/ISPF Reference Manual* for information on using this option.

Appendix A.
FLEX JCL

File-AID *for IMS*/FLEX is invoked through standard MVS JCL. The main program is passed a parameter that is similar to a standard IMS parameter string. The following JCL identifies the parameters and DD statements required to execute File-AID *for IMS*/FLEX.

Figure A-1. JCL - Execute File-AID *for IMS*/FLEX

```
//*-------------------------------------------------------------------*
//*FILE-AID FOR IMS/FLEX                                             *
//*-------------------------------------------------------------------*
//jobname  job (accounting)
//*
//BATDV10  EXEC PGM=XIXBATDV,REGION=4096K,
//         COND=(0,LT),
//         PARM='parameter information'
//STEPLIB  DD DSN=ims-reslib-dataset-name,DISP=SHR
//         DD DSN=File-AID-load-lib,DISP=SHR
//DFSRESLB DD DSN=ims-reslib-dataset-name,DISP=SHR
//IMS      DD DSN=dbdlib-dataset-name,DISP=SHR
//         DD DSN=psblib-dataset-name,DISP=SHR
//IEFRDER  DD DUMMY
//DFSVSAMP DD DSN=dfsvsamp-pds(member),DISP=SHR
//IXPMLIB  DD DSN=File-AID-message-lib,DISP=SHR
//SYSOUT   DD DSN=flex-reports-dataset,
//            DISP=(new,catlg,delete),
//            SPACE=(trk,(1,1)),
//            DCB=(recfm=fb,lrecl=133,blksize=1330),
//            UNIT=SYSDA
//IXPSTATS DD SYSOUT=output-class
//dbdd1    DD DSN=database-dataset-1,DISP=SHR
//dbdd2    DD DSN=database-dataset-2,DISP=SHR
//dbddn    DD DSN=database-dataset-n,DISP=SHR
//IXPFD    DD DSN=segment/layout-xref,DISP=SHR
//IXPC1    DD DSN=COBOL/PLIlayout-dataset-1,DISP=SHR
//IXPC2    DD DSN=COBOL/PLIlayout-dataset-2,DISP=SHR
//IXPED    DD DSN=input-commands-pds(member),DISP=SHR
//IXPIN    DD DSN=input-values,DISP=SHR
//IXPOUT   DD DSN=output-values,DISP=SHR
//EXTRACT1 DD DSN=extract-dataset-1,DISP=SHR
//EXTRACT2 DD DSN=extract-dataset-2,DISP=SHR
//EXTRACT3 DD DSN=extract-dataset-3,DISP=SHR
//EXTRACT4 DD DSN=extract-dataset-4,DISP=SHR
//EXTRACT5 DD DSN=extract-dataset-5,DISP=SHR
//LAYOUT1  DD DSN=layout-dataset-1,DISP=SHR
//LAYOUT2  DD DSN=layout-dataset-2,DISP=SHR
//LAYOUT3  DD DSN=layout-dataset-3,DISP=SHR
//LAYOUT4  DD DSN=layout-dataset-4,DISP=SHR
//LAYOUT5  DD DSN=layout-dataset-5,DISP=SHR
```

PARM Field

The execution parameters in the PARM field of the EXEC statement are similar to a standard IMS parameter string. The format of the execution parameters is determined by the execution environment of DLI or BMP.

DLI Environment

```
//          PARM='/NDLI,mode,&PSB,&BUF,
//               &SPIE&TEST&EXCPVR&RST,&PRLD,
//               &SRCH,&CKPTID,&MON,&LOGA,&FMTO,
//               &IMSID,&SWAP,&DBRC,&IRLM,&IRLMNM,
//               &BKO,&IOB,&SSM,&APARM'
```

All database datasets must be in the JCL or dynamically allocated; they cannot be intermixed.

BMP Environment

```
//          PARM='/NBMP,mode,
//               &PSBNAME,&IN,&OUT,
//               &OPT&SPIE&TEST&DIRCA,&PRLD,&STIMER,
//               &CKPTID,&PARDLI,&CPUTIME,&NBA,&OBA,
//               &IMSID,&AGN,&SSM,&PREINIT,&ALTID,&APARM'
```

In either environment, the *mode* operand determines the type of PSB processing that File-AID *for IMS*/FLEX will use. The mode operand has the format of *xyyyy*,

where...	***equals...***
x	S (staticl.) or D (dynamic) PSB usage. If a static PSB is used, then the &PSB operand specifies the name of the pre-existing PSB. If a dynamic PSB is used, then the &PSB operand specifies the name of the DBD to be processed.
yyyy	For a DLI region, this field must be present but is not used. For a BMP region, *yyyy* identifies the File-AID IPRMS BMP entry to use.

Refer to *IMS/ESA System Definition Reference* for the definitions of the other parameters.

The DD statements shown Table A-1 on page A-3 are required for the XIXBATDV program to execute.

Table A-1. DD Statements for XIXBATDV

DD Statement	Description
STEPLIB	The IMS system datasets that contain the IMS nucleus, required action modules, and the library where the File-AID *for IMS*/ISPF load modules are stored. Remember to concatenate the customized (`CXIXLOAD`) and target (`SXIXLOAD`) load libraries.
DFSRESLB	The IMS system datasets that contain the IMS nucleus and required action modules.
IMS	The PSB load library dataset (that contains the PSB member) and DBD load library dataset (that contains DBD members) that describe the databases.
IEFRDER	The IMS log dataset. This DD is not required for BMP jobs.
DFSVSAMP	The dataset that contains the control statements that describe the buffer pools used by IMS. This DD is not required for BMP jobs.
IXPMLIB	File-AID *for IMS* message dataset.
SYSOUT	All File-AID *for IMS*/FLEX reports are written to this DD statement.
IXPSTATS	The DD statement that contains the File-AID *for IMS*/FLEX Execution Summary report and any error messages.
DB datasets	(Optional) These DDs are not required for BMP or IRC extract job types. For DLI job types, the DD statements are either included as actual DD statements or they are included as comments. If all the database dataset names were obtained from the IMS dynamic allocation source, then a DD DUMMY statement with DD name IXPIMSDY is included to indicate this. The DD statements for the database datasets are included as comments only. When the JCL is submitted, the current datasets will be dynamically allocated by File-AID *for IMS* using the IMS dynamic allocation source to obtain the names. If all the dataset names were not obtained from the IMS dynamic allocation source, then the IXPIMSDY DD statement is included as a comment only and the database dataset DD statements are included as true DD statements.
IXPFD	The dataset that contains the File-AID *for IMS* segment to layout XREF members. Required, even when XREF=NONE is specified.
IXPC1	The first dataset that contains the COBOL or PL/I layout members.
IXPC2	The second dataset that contains the COBOL or PL/I layout members.
IXPED	The dataset that contains the command statements used by File-AID *for IMS*/FLEX. The dataset must have the following attributes: • RECFM=F or FB • LRECL=80 • DSORG=PS or PO If DSORG=PO, a member must be included in the specification of the dataset name.
IXPAT	(Optional) Specifies the desire to create an audit trail dataset. See Chapter 4, “Audit Trail”.
IXPIN	(Optional) The dataset that will supply the input values for the INPUT(start,length,type) parameter. This dataset must have a DSORG attribute of PS or PO.
IXPOUT	(Optional) The dataset that will contain the concatenated keys of those segments designated with the OPTION=CKEY keyword of the COUNT command. The dataset must have the following attributes: • LRECL=a number greater than the longest possible concatenated key plus the header information • DSORG=PS or PO

Table A-1. DD Statements for XIXBATDV (Continued)

DD Statement	Description
EXTRACT1 through EXTRACT 5	(Optional) The dataset(s) that will contain output from the field level extract corresponding to the EXTRACTn FLEX subcommand with the same name as the DDNAME. Each EXTRACTn dataset must have the following attributes: • RECFM=V or VB • LRECL=a number greater than the length of the record to be extracted • DSORG=PS or PO
LAYOUT 1 through LAYOUT 5	(Optional) The dataset(s) that will contain layouts generated for each field level extract for which a LAYOUTn FLEX subcommand is used. Each LAYOUTn dataset must have the following attributes: • RECFM=V or VB • LRECL=a number greater than the length of the record to be extracted • DSORG=PS or PO NOTE: If EXTRACTn has a DSORG=PO, the LAYOUTn dataset must also have a DSORG=PO. If the LAYOUT=Y option is used in the SETEXTRACT FLEX primary command, LAYOUTn DD statements must be coded for each EXTRACTn DD statement.

Note: Only one dataset name may be assigned to the following DD statements: IXPFD, IXPC1, IXPC2, and IXPOUT.

Appendix B.
Examples

This appendix contains four examples that demonstrate the capabilities of File-AID *for IMS*/FLEX. The cross reference segment layouts used in each example are displayed on page B-4. The inputs used are displayed on page B-5.

Example 1 - Using multiple XREF members and inputs

The following example demonstrates how to use one XREF (PPARTC2) to insert data and another (PPART) to print the data that was inserted. In addition, this example demonstrates the use of multiple input members: one for PART010 segment data (PARTIN01) and a second for PART020 (PARTIN02).

Note the following:

1. Multiple action primary commands with simple XREF segment layouts are used to insert the PART010 segment from input member PARTIN01 shown on page B-5 and the PART020 segment from input member PARTIN02 shown on page B-6.
2. XREF member PPARTC2 shown on page B-5 contains simple segment layout descriptions that are used for the insertion process.
3. Because the input members contain data in segment format with both character and packed decimal data, the input should be regarded as zap data for inserting.
4. After the insertion process is completed the processed PART010 segments and all its PART020 segments are selected using input member PARTIN01 for PART-NUMBER keys. The default XREF PPART shown on page B-4 is used for this command.
5. The concatenated keys are written to output member PARTOT01. Because OPTION=ALWAYS is specified with the PART010 segment, the concatenated keys are always written regardless whether PART020 exists.
6. If this option is not coded, the concatenated keys are not written for PART010 segments that do not have PART020 segments because OPTION=PATH is the default.
7. The PART010 segments and all its PART020 segments, which had concatenated keys written to the output member PARTOT01, are printed with a formatted print using the default XREF PPART segment layouts.

The batch execution report for this example is displayed on page B-1 through page B-25.

FLEX command statements:

```
TYPE     RUN;
PSB      DBNAME=PPART  XREF=PPARTC2;
SET      INPUT=PARTIN01;
SELECT   SEGMENT=PART010  MAX=ALL
           WHERE PART-ROOT-KEY  = INPUT(10,6,C)
  INSERT SEGMENT=PART010
           SET= (PART-ROOT-KEY  = INPUT(10,6,C),
                 PART-ROOT-DATA = INPUT(16,120,Z));
PSB      DBNAME=PPART  XREF=PPARTC2;
SET      INPUT=PARTIN02;
SELECT   SEGMENT=PART010  MAX=ALL
           WHERE PART-ROOT-KEY      = INPUT(10,6,C)
         SEGMENT=PART020
```

```
            WHERE PART-LOCATION-KEY  = INPUT(16,4,C)
    INSERT SEGMENT=PART020
            SET= (PART-LOCATION-KEY  = INPUT(16,4,C),
                  PART-LOCATION-DATA = INPUT(20,75,Z));
  PSB      DBNAME=PPART;
  SET      INPUT=PARTIN01  OUTPUT=PARTOT01;
  SELECT   SEGMENT=PART010  MAX=ALL
            WHERE PART-NUMBER=INPUT(10,6,C)
           SEGMENT=PART020  MAX=ALL
    COUNT  SEGMENT=PART010  OPT=(ALWAYS,CKEY)
           SEGMENT=PART020  OPT=CKEY
    PRINT  SEGMENT=PART010  OPT=ALWAYS
           SEGMENT=PART020;
```

Example 2 - Updating Segment From An Extracted Segment

This example demonstrates how the data that was extracted to get the inventory and restocking information can then be used to update the QUANTITY-ON-HAND with the REORDER-QUANTITY from the extracted segment.

Note the following:

- The default XREF for PPART shown on page B-4 is used for the commands. The PART010 and PART020 segments are selected using the PARTIN03 input member shown on page B-6 to qualify the selection criteria.
- If the QUANTITY-ON-HAND is less than the REORDER-QUANTITY, then the concatenated keys are written to output member PARTOT02 and the PART010 and PART020 segments in the PPART database are updated.
- Because the PARTIN03 input member is from edited extracted data, the REORDER-QUANTITY is already in a packed decimal format and should be regarded as zap data for testing and updating.

The batch execution report for this example is displayed in “FLEX Execution Report - Example 1” on page B-8.

FLEX command statements:

```
TYPE     RUN;
PSB      DBNAME=PPART;
TITLE    LINE01='***    PART RESTOCKING UPDATE    ***'
SET      INPUT=PARTIN03   OUTPUT=PARTOT02
SELECT   SEGMENT=PART010  MAX=ALL
           WHERE PART-NUMBER        = INPUT(10,6,C)
         SEGMENT=PART020  MAX=ALL
           WHERE  LOCATION-NUMBER   = INPUT(16,4,C)
             AND  QUANTITY-ON-HAND  = INPUT(73,5,Z)
  COUNT  SEGMENT=PART010  OPT=CKEY
         SEGMENT=PART020  OPT=CKEY
  CHANGE SEGMENT=PART010
           SET=(LAST-ACTIVITY-DATE  = INPUT(89,6,C),
         SEGMENT=PART020
           SET=(QUANTITY-ON-HAND    = INPUT(78,5,Z),
                LAST-ACTIVITY-DATE = INPUT(89,6,C));
```

Example 3 - Updating Segments Based On Existence of a Segment

This example demonstrates how the part location segments in PART020 are either inserted or changed depending upon the existence of the segment.

Note the following:

- The default XREF PPART shown on page B-4 is used for the commands. The PART010 and PART020 segments are selected using input member PARTIN03 shown on page B-6 to qualify the selection criteria.
- If the PART010 segment is found, the concatenated key is always written to output member PARTOT03 because ALWAYS was specified on the OPTION keyword. If ALWAYS was not specified, then the default OPTION of PATH controls the operation process, and the concatenated keys are not written for PART010 segments when the selection criteria for the PART020 segment is not satisfied.
- If the PART010 segment is found, the LAST-ACTIVITY-DATE is always updated because ALWAYS was specified on the OPTION keyword.
- If the PART020 segment is found, then the ALLOCATED-QUANTITY and LAST-ACTIVITY-DATE are updated because the default option for CHANGE is PATH, which means that if all segments of the selection path exist then the operation is processed.
- If the PART020 segment is not found, then the PART020 segment is inserted.
- Because the input member PARTIN03 contains segment data in packed decimal format, the input should be referenced as zap data for updating and inserting.

The batch execution report for this example is displayed on page B-27 through page B-42.

FLEX command statements:

```
TYPE     RUN;
PSB      DBNAME=PPART;
SET      INPUT=PARTIN03  OUTPUT=PARTOT03;
TITLE    LINE01='***     PART ALLOCATION UPDATE     ***';
SELECT   SEGMENT=PART010  MAX=ALL
           WHERE PART-NUMBER         = INPUT(10,6,C)
         SEGMENT=PART020  MAX=ALL
           WHERE LOCATION-NUMBER     = INPUT(16,4,C)
  COUNT  SEGMENT=PART010  OPT=(ALWAYS,CKEY)
         SEGMENT=PART020  OPT=CKEY
  CHANGE SEGMENT=PART010  OPT=ALWAYS
           SET=(LAST-ACTIVITY-DATE  = INPUT(89,6,C))
         SEGMENT=PART020
           SET=(ALLOCATED-QUANTITY  = INPUT(78,5,Z),
                LAST-ACTIVITY-DATE  = INPUT(89,6,C))
  INSERT SEGMENT=PART020
           SET=(LOCATION-NUMBER     = INPUT(16,4,C),
                LOCATION-NAME       = INPUT(20,30,C),
                FIRST-ISSUE-DATE    = INPUT(50,6,C),
                LAST-ISSUE-DATE     = INPUT(56,6,C),
                LAST-INVENTORY-DATE = INPUT(62,6,C),
                QUANTITY-ON-HAND    = INPUT(68,5,Z),
                REORDER-QUANTITY    = INPUT(73,5,Z),
                ALLOCATED-QUANTITY  = INPUT(78,5,Z),
                FIRST-ACTIVITY-DATE = INPUT(83,6,C),
                LAST-ACTIVITY-DATE  = INPUT(89,6,C));
```

Example 4 - Deleting a database segment

This example demonstrates how to delete a database segment depending on the satisfaction of a combination of criteria.

Note the following:

- The default XREF PPART shown on page B-4 is used for the commands. The PART010 segment is selected based on the following criteria:
  - The segment key is equal to some value from input member PARTIN01 (PART-NUMBER = INPUT(10,6,C)).
  - The part is not replaced by an equivalent part (EQUIVALENT-PART ¬= spaces).
  - The last activity date is prior to June 1, 1994 (LAST-ACTIVITY < 940601).
- For PART010 segments that match the selection criteria, a request is made for any PART020 segment within the parent.
- Because each of the sub-commands (COUNT, PRINT, and DELETE) contains an OPTION of NOPATH, they are only processed if the PART020 segment is not found for a PART010 segment that satisfied the selection criteria.
- The PART010 segment key is written to output member PARTOT04, a formatted print of the segment is printed, and the segment is deleted from the PPART database **only** if no PART020 segments are found for a PART010 segment that satisfied the selection criteria.

The batch execution report for this example is displayed on page B-43 through page B-48.

FLEX command statements:

```
TYPE     RUN;
PSB      DBNAME=PPART;
SET      INPUT=PARTIN01  OUTPUT=PARTOT04;
TITLE    LINE01='***  DELETE SUPERSEDED PARTS WITH NO STOCK  ***';
SELECT   SEGMENT=PART010  MAX=ALL
           WHERE  PART-NUMBER=INPUT(10,6,C)
             AND  EQUIVALENT-PART    ¬='      '
             AND  LAST-ACTIVITY-DATE < 940601
         SEGMENT=PART020  MAX=ALL
  COUNT  SEGMENT=PART010  OPT=(NOPATH,CKEY)
  PRINT  SEGMENT=PART010  OPT=NOPATH
  DELETE SEGMENT=PART010  OPT=NOPATH;
```

XREF members

XREF=PPART

Layout member: PART010

```
01   PART-ROOT-DATA.
  05   PART-ROOT-KEY.
    10   PART-NUMBER                PIC  X(06).
  05   PART-NAME                    PIC  X(30).
  05   EFFECTIVE-DATE               PIC  X(06).
  05   SUPERSEDED-PART              PIC  X(06).
  05   EQUIVALENT-PART              PIC  X(06).
  05   UNIT-OF-MEASURE              PIC  X(02).
  05   PURCHASED-PART-IND           PIC  X(01).
  05   FINISHED-PART-IND            PIC  X(01).
```

```
  05   ENGINEERING-DRAWING-NO       PIC  X(06).
  05   COST-DATA.
    10   STANDARD-COST              PIC  S9(7)V99 COMP-3.
    10   LAST-ACTUAL-COST           PIC  S9(7)V99 COMP-3.
    10   STANDARD-LABOR-COST        PIC  S9(7)V99 COMP-3.
    10   LAST-LABOR-COST            PIC  S9(7)V99 COMP-3.
    10   STANDARD-MATERIAL-COST     PIC  S9(7)V99 COMP-3.
    10   LAST-MATERIAL-COST         PIC  S9(7)V99 COMP-3.
    10   STANDARD-SETUP-COST        PIC  S9(7)V99 COMP-3.
    10   LAST-SETUP-COST            PIC  S9(7)V99 COMP-3.
    10   STANDARD-REWORK-COST       PIC  S9(7)V99 COMP-3.
    10   LAST-REWORK-COST           PIC  S9(7)V99 COMP-3
  05   FIRST-ACTIVITY-DATE          PIC  X(06).
  05   LAST-ACTIVITY-DATE           PIC  X(06).
```

Layout member: PART020

```
01   PART-LOCATION-DATA.
  05   PART-LOCATION-KEY.
    10   LOCATION-NUMBER            PIC  X(04).
  05   LOCATION-NAME                PIC  X(30).
  05   FIRST-ISSUE-DATE             PIC  X(06).
  05   LAST-ISSUE-DATE              PIC  X(06).
  05   LAST-INVENTORY-DATE          PIC  X(06).
  05   QUANTITY-DATA.
    10   QUANTITY-ON-HAND           PIC  S9(7)V99 COMP-3.
    10   REORDER-QUANTITY           PIC  S9(7)V99 COMP-3.
    10   ALLOCATED-QUANTITY         PIC  S9(7)V99 COMP-3.
  05   FIRST-ACTIVITY-DATE          PIC  X(06).
  05   LAST-ACTIVITY-DATE           PIC  X(06).
```

XREF=PPARTC2

Layout member: PART01X

```
01   PART-ROOT-SEGMENT.
  05   PART-ROOT-KEY           PIC  X(06).
  05   PART-ROOT-DATA          PIC  X(120).
```

Layout member: PART02X

```
01   PART-LOCATION-SEGMENT.
  05   PART-LOCATION-KEY           PIC  X(04).
  05   PART-LOCATION-DATA          PIC  X(75).
```

Inputs

PARTIN01

```
 ------------------------------------------------------------------------------
PART010  TA1111STANDARD OFFICE DESK          940603TA1234      EAYY941230..&....
DCDEFFF44ECFFFFEECDCCDC4DCCCCC4CCED4444444444FFFFFFECFFFF444444CCEEFFFFFF0050000
7193010003111112315419406669350452200000000009406033112340000005188941230000C00
 ------------------------------------------------------------------------------
PART010  TA1234STANDARD OFFICE DESK          931230      TA1111EAYY941230...&...
DCDEFFF44ECFFFFEECDCCDC4DCCCCC4CCED4444444444FFFFFF444444ECFFFFCCEEFFFFFF0045000
7193010003112342315419406669350452200000000009312300000003111115188941230060C00
 ------------------------------------------------------------------------------
```

```
PART01O  TA3333STANDARD OFFICE DESK CHAIR    940603TA3456      EAYY941230.......
DCDEFFF44ECFFFFEECDCCDC4DCCCCC4CCED4CCCCD4444FFFFFFECFFFF444444CCEEFFFFFF0020000
719301000313333231541940666935045220381990000940603313456000000518894123000 50C00
 ------------------------------------------------------------------------------
PART01O  TA3456STANDARD OFFICE DESK CHAIR    931230      TA3333EAYY941230...&...
DCDEFFF44ECFFFFEECDCCDC4DCCCCC4CCED4CCCCD4444FFFFFF444444ECFFFFCCEEFFFFFF0025000
719301000313456231541940666935045220381990000931230000000313333518894123000 30C00
 ------------------------------------------------------------------------------
PART01O  TA5555WASTE BASKET                  931230      TA5575EAYY941230.......
DCDEFFF44ECFFFFECEEC4CCEDCE4444444444444444444FFFFFF444444ECFFFFCCEEFFFFFF0000000
719301000315555612350212253000000000000000000931230000000315575518894123000 10C00
 ------------------------------------------------------------------------------
PART01O  TA5575WASTE BASKET                  941230      TA5555EAYY941230.......
DCDEFFF44ECFFFFECEEC4CCEDCE4444444444444444444FFFFFF444444ECFFFFCCEEFFFFFF0000000
719301000315575612350212253000000000000000000941230000000315555518894123000 10C00
 ------------------------------------------------------------------------------
PART01O  TA7777TWO DRAWER FILE CABINET       941230           EAYY941230.......
DCDEFFF44ECFFFFEED4CDCECD4CCDC4CCCCDCE4444444FFFFFF444444444444CCEEFFFFFF0000000
719301000317777366049165906935031295530000000941230000000000000518894123000 10C00
 ------------------------------------------------------------------------------
PART01O  TA9999FOUR DRAWER FILE CABINET      941230           EAYY941230.......
DCDEFFF44ECFFFFCDED4CDCECD4CCDC4CCCCDCE444444FFFFFF444444444444CCEEFFFFFF0000000
719301000319999664904916590693503129553000000941230000000000000518894123000 10C00
 ------------------------------------------------------------------------------
```

PARTIN02

```
 ------------------------------------------------------------------------------
PART02O  TA1111LO2OMIDWEST WAREHOUSE - CH        941230941230941230............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0000000100004
719302000311111302049465230619586425000380000000941230941230941230090C0000C000
 ------------------------------------------------------------------------------
PART02O  TA3333LO2OMIDWEST WAREHOUSE - CH        941230941230941230............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0000000100004
719302000313333302049465230619586425000380000000941230941230941230090C0000C000
 ------------------------------------------------------------------------------
PART02O  TA5555LO2OMIDWEST WAREHOUSE - CH        941230941230941230.. ..........
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0040000200008
719302000315555302049465230619586425000380000000941230941230941230000C0000C000
 ------------------------------------------------------------------------------
PART02O  TA7777LO2OMIDWEST WAREHOUSE - CH        941230941230941230...&........&
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0015000100005
719302000317777302049465230619586425000380000000941230941230941230030C0050C000
 ------------------------------------------------------------------------------
PART02O  TA9999LO2OMIDWEST WAREHOUSE - CH        941230941230941230............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0010000100002
719302000319999302049465230619586425000380000000941230941230941230080C0000C000
 ------------------------------------------------------------------------------
```

PARTIN03

```
 ------------------------------------------------------------------------------
PART02O  T11111LO1OEASTERN WAREHOUSE - HB        950112950112950112............
DCDEFFF44EFFFFFDFFFCCEECDD4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0020000100002
719302000311111301051235950619586425000820000000095011295011295011200 00C0000C005
 ------------------------------------------------------------------------------
PART02O  TA1111LO2OMIDWEST WAREHOUSE - CH        941230950112941230............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0000000100004
719302000311111302049465230619586425000380000000941230950112941230090C0000C005
 ------------------------------------------------------------------------------
PART02O  TA1111LO3OWESTERN WAREHOUSE - PH        950112950112950112............
DCDEFFF44ECFFFFDFFFECEECDD4ECDCCDEEC464DC44444444FFFFFFFFFFFFFFFFFF0020000100002
719302000311111303065235950619586425000780000000095011295011295011200 00C0000C005
 ------------------------------------------------------------------------------
PART02O  TA3333LO1OEASTERN WAREHOUSE - HB        950112950112950112............
DCDEFFF44ECFFFFDFFFCCEECDD4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0020000100002
719302000313333301051235950619586425000820000000095011295011295011200 00C0000C005
```

```
 ------------------------------------------------------------------------------
PART02O  TA3333LO2OMIDWEST WAREHOUSE - CH        941230950112941230.............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0000000100004
719302000313333302049465230619586425000380000000094123095011294123000900000C005
 ------------------------------------------------------------------------------
PART02O  TA3333LO3OWESTERN WAREHOUSE - PH        950112950112950112.............
DCDEFFF44ECFFFFDFFFECEECDD4ECDCCDEEC464DC44444444FFFFFFFFFFFFFFFFFF0020000100002
719302000313333303065235950619586425000780000000095011295011295011200000C0000C005
 ------------------------------------------------------------------------------
PART02O  TA5555LO1OEASTERN WAREHOUSE - HB        950112950112950112.. ..........
DCDEFFF44ECFFFFDFFFCCEECDD4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0040000200004
719302000315555301051235950619586425000820000000095011295011295011200000C0000C005
 ------------------------------------------------------------------------------
PART02O  TA5555LO2OMIDWEST WAREHOUSE - CH        941230950112941230.. .........e
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0040000200008
719302000315555302049465230619586425000380000000094123095011294123000000C0000C005
 ------------------------------------------------------------------------------
PART02O  TA5555LO3OWESTERN WAREHOUSE - PH        950112950112950112.. ..........
DCDEFFF44ECFFFFDFFFECEECDD4ECDCCDEEC464DC44444444FFFFFFFFFFFFFFFFFF0040000100004
719302000315555303065235950619586425000780000000095011295011295011200000C0000C005
 ------------------------------------------------------------------------------
```

PARTIN03 (Cont.)

```
 ------------------------------------------------------------------------------
PART02O  TA7777LO1OEASTERN WAREHOUSE - HB        950112950112950112.............
DCDEFFF44ECFFFFDFFFCCEECDD4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0010000000001
719302000317777301051235950619586425000820000000095011295011295011200000C0050C005
 ------------------------------------------------------------------------------
PART02O  TA7777LO2OMIDWEST WAREHOUSE - CH        941230950112941230...&.........
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0015000100005
719302000317777302049465230619586425000380000000094123095011294123000300C0050C005
 ------------------------------------------------------------------------------
PART02O  TA7777LO3OWESTERN WAREHOUSE - PH        950112950112950112.............
DCDEFFF44ECFFFFDFFFECEECDD4ECDCCDEEC464DC44444444FFFFFFFFFFFFFFFFFF0010000000001
719302000317777303065235950619586425000780000000095011295011295011200000C0050C005
 ------------------------------------------------------------------------------
PART02O  TA9999LO1OEASTERN WAREHOUSE - HB        950112950112950112.............
DCDEFFF44ECFFFFDFFFCCEECDD4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0010000000001
719302000319999301051235950619586425000820000000095011295011295011200000C0050C005
 ------------------------------------------------------------------------------
PART02O  TA9999LO2OMIDWEST WAREHOUSE - CH        941230950112941230.............
DCDEFFF44ECFFFFDFFFDCCECEE4ECDCCDEEC464CC44444444FFFFFFFFFFFFFFFFFF0010000100002
719302000319999302049465230619586425000380000000094123095011294123000800000C005
 ------------------------------------------------------------------------------
PART02O  TA9999LO3OWESTERN WAREHOUSE - PH        950112950112950112.............
DCDEFFF44ECFFFFDFFFECEECDD4ECDCCDEEC464DC44444444FFFFFFFFFFFFFFFFFF0010000000001
719302000319999303065235950619586425000780000000095011295011295011200000C0050C005
 ------------------------------------------------------------------------------
```

FLEX Execution Report - Example 1

Figure B-1. Example 1 - Validation Phase

```
FILE-AID FOR IMS/FLEX  16.3            FLEX EXECUTION REPORT                                    PAGE: 1
                                                                                              DATE: 01/30/07
                                     COMMAND VALIDATION PHASE                                 TIME: 08:56:46
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.T
MPCMDS.H01( )
_____________________________________________________________________________________________________

     B132 INPUT OPTION IS POSSIBLE, IXPIN IS USING DFHTRA0.BFAI.DATA200                  INFORMATIONAL

     B132 OUTPUT OPTION IS POSSIBLE, IXPOUT IS USING DFHTRA0.BFAI.DATA80                 INFORMATIONAL

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB  DBNAME=PPART    XREF=PPARTC2 ;

        3         1     SET  INPUT=PARTIN01 ;

        4         1     SELECT
        4         2         SEGMENT=PART010  MAX=ALL
        4         3             WHERE  PART-ROOT-KEY  = INPUT(10,6,C)
        4         4       INSERT SEGMENT=PART010
        4         5             SET=( PART-ROOT-KEY   = INPUT(10,6,C),
        4         6                   PART-ROOT-DATA  = INPUT(16,120,Z) ) ;

        5         1     PSB  DBNAME=PPART    XREF=PPARTC2 ;

        6         1     SET  INPUT=PARTIN02 ;

        7         1     SELECT
        7         2         SEGMENT=PART010  MAX=ALL
        7         3             WHERE  PART-ROOT-KEY      = INPUT(10,6,C)
        7         4         SEGMENT=PART020
        7         5             WHERE  PART-LOCATION-KEY  = INPUT(16,4,C)
        7         6       INSERT SEGMENT=PART020
        7         7             SET=( PART-LOCATION-KEY   = INPUT(16,4,C),
        7         8                   PART-LOCATION-DATA  = INPUT(20,75,Z) ) ;

        8         1     PSB  DBNAME=PPART ;

        9         1     SET  INPUT=PARTIN01  OUTPUT=PARTOT01 ;

       10         1     SELECT
       10         2         SEGMENT=PART010  MAX=ALL
       10         3             WHERE PART-NUMBER  = INPUT(10,6,C)
       10         4         SEGMENT=PART020  MAX=ALL
```

Figure B-2. Example 1 - Validation Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3          FLEX EXECUTION REPORT                                    PAGE: 2
                                                                                              DATE: 01/30/07
                                     COMMAND VALIDATION PHASE                                 TIME: 08:56:47
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.T
MPCMDS.H01()
_____________________________________________________________________________________________________
    10    8          SEGMENT=PART020 ;

       109 END OF VALIDATE PHASE DUE TO END OF FILE ON INPUT, RC=0                      INFORMATIONAL

       B111 VALIDATE PHASE SUCCESSFUL, PROCEEDING TO EXECUTE PHASE                       INFORMATIONAL

       B011 ALLOCATING AUDIT TRAIL: 'DFHTRA0.IXPAT.D950130.T085647'                      INFORMATIONAL
```

Figure B-3. Example 1 - Execution Phase

```
FILE-AID FOR IMS/FLEX  16.3     FLEX EXECUTION REPORT                                    PAGE: 3
                                                                                       DATE: 01/30/07
                                COMMAND EXECUTION PHASE                                TIME: 08:56:54
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB   COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.TM
PCMDS.H01(  )
_____________________________________________________________________________________________________
STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    _____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB  DBNAME=PPART    XREF=PPARTC2 ;

        3         1     SET  INPUT=PARTIN01 ;

        4         1     SELECT
        4         2         SEGMENT=PART010  MAX=ALL
        4         3             WHERE  PART-ROOT-KEY  = INPUT(10,6,C)
        4         4       INSERT SEGMENT=PART010
        4         5              SET=( PART-ROOT-KEY   = INPUT(10,6,C),
        4         6                    PART-ROOT-DATA  = INPUT(16,120,Z) ) ;

               B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                        SEGMENT INSERTED
--- -------- --------------- ----------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
   LEVEL NUMBER/DATA NAME    FORMAT    BEFORE FIELD VALUE       AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ---------------------------------- --------------------
  05  PART-ROOT-KEY                 C   6                                    TA1111
  05  PART-ROOT-DATA                C 120                          STANDARD OFFICE DESK
      (POS 31-60)                         940603TA1234      EAYY941230..  FIELD INVALID
                                                                FFFFFFECFFFF444444CCEEFFFFFF00
                                                                940603311234000000518894123000
      (POS 61-90)                            &.............              FIELD INVALID
                                                                5000000000000000000000000000000
                                                                00C0000C0000C0000C0000C0000C00
      (POS 91-120)                                ..................941230941230  FIELD INVALID
                                                                0000000000000000000FFFFFFFFFFF
                                                                00C0000C0000C0000C941230941230

          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS            INFORMATIONAL

LVL  SEGMENT   -----    S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED
___  ________  _________ _____________ _____________ _____________ _____________ ________ _____________
  1  PART010             0             0             0             0             1        0           0
         B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION                        INFORMATIONAL
```

Figure B-4. Example 1 - Execution Phase (Cont.)

```
FILE-
AID FOR IMS/FLEX  16.3        FLEX EXECUTION REPORT                                    PAGE: 4
                                                                                     DATE: 01/30/07
                                  COMMAND EXECUTION PHASE                            TIME: 08:56:54
RUN TYPE: DLI  PSB MODE: STATIC PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TM
PCMDS.H01(  )
_____________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION    CONCATENATED KEY                                    SEGMENT INSERTED
--- -------- -------------- ------------------------------------------------------------------
1   PART010  PART ROOT      TA1234
   LEVEL NUMBER/DATA NAME      FORMAT      BEFORE FIELD VALUE          AFTER FIELD VALUE       MESSAGE
----------------------------  --------    -------------------------  ----------------------- ---------
  05  PART-ROOT-KEY           C   6                                   TA1234
  05  PART-ROOT-DATA          C 120                                   STANDARD OFFICE DESK
      (POS 31-60)                                        931230   TA1111EAYY941230..  FIELD INVALID
                                                                     FFFFFF444444ECFFFFCCEEFFFFFF00
                                                                     93123000000031111115188941230 00
    (POS 61-90)                                                    .&..........................  FIELD INVALID
                                                                     45000000000000000000000000000000
                                                                     60C0000C0000C0000C0000C0000C00
    (POS 91-120)                                                   ................940103940531  FIELD INVALID
                                                                     00000000000000000FFFFFFFFFFF
                                                                     00C0000C0000C0000C940103940531

         B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS            INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T       -----
NBR  NAME    RETRIEVED  _QUALIFIED    CHANGED     DELETED     INSERTED    COUNTED     PRINTED EXTRACTED
___  _____ ___________ ___________ ___________ _________ ___________ ___________ _______ _______
  1  PART010          0           0           0           0           1           0       0         0


            B142 INPUT RECORD NUMBER (3) USED FOR DATA SUBSTITUTION                    INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                   SEGMENT INSERTED
--- -------- ------------- ------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
      LEVEL NUMBER/DATA NAME   FORMAT     BEFORE FIELD VALUE      AFTER FIELD VALUE         MESSAGE
----------------------------  --------   --------------------    -------------------    -------------
  05  PART-ROOT-KEY           C   6                               TA3333
  05  PART-ROOT-DATA          C 120                               SANDARD OFFICE DESK CHAIR
      (POS 31-                                     940603TA3456      EAYY941230..  FIELD INVALID
                                                                   FFFFFFECFFFF444444CCEEFFFFFF00
                                                                   94060331345600000518894123000
      (POS 61-                                  ..............................  FIELD INVALID
                                                                   20000000000000000000000000000000
                                                                   50C0000C0000C0000C0000C0000C00
      (POS 91-                                              ..................941230941230  FIELD INVALID
                                                                   00000000000000000FFFFFFFFFFF
                                                                   00C0000C0000C0000C941230941230

        B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS             INFORMATIONAL


LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T       -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED     DELETED     INSERTED    COUNTED     PRINTED
___  _____ ___________ ___________ ___________ _________ ___________ ___________ _______
  1  PART010          0           0           0           0           1           0       0
```

Figure B-5. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3         FLEX EXECUTION REPORT                                    PAGE: 5
                                                                                          DATE: 01/30/07
                                    COMMAND EXECUTION PHASE                               TIME: 08:56:54
RUN TYPE: DLI PSB MODE:STATIC PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.TMPC
MDS.H01(    )
_____________________________________________________________________________________________________
         B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                      INFORMATIONAL
 LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
1   PART010  PART ROOT       TA3456
    LEVEL NUMBER/DATA NAME          FORMAT     BEFORE FIELD VALUE       AFTER FIELD VALUE        MESSAGE
---------------------------------- --------    ------------------     -------------------     --------
--
  05  PART-ROOT-KEY                C   6                              TA3456
  05  PART-ROOT-DATA               C 120                              STANDARD OFFICE DESK CHAIR
      (POS 31-60)                                          931230   TA3333EAYY941230..    FIELD INVALID
                                                                     FFFFFF444444ECFFFFCCEEFFFFFF00
                                                                     93123000000031333518894123000
      (POS 61-90)                                                 .&.............................  FIELD INVALID
                                                                     25000000000000000000000000000
                                                                     30C0000C0000C0000C0000C0000C00
      (POS 91-120)                                                ...................940103940531  FIELD INVALID
                                                                     00000000000000000FFFFFFFFFFF
                                                                     00C0000C0000C0000C940103940531

          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS             INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T       -----
NBR  NAME    RETRIEVED  _QUALIFIED   CHANGED     DELETED     INSERTED     COUNTED     PRINTE   EXTRACTED
___ ______   __________   _________ _________   __________   _________   _________   ________________
  1  PART010          0           0         0          0            1           0            0      0

          B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                      INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
1   PART010  PART ROOT       TA5555
    LEVEL NUMBER/DATA NAME          FORMAT     BEFORE FIELD VALUE     AFTER FIELD VALUE        MESSAGE
---------------------------------- ----------   ----------------------   --------------------     --------
  05  PART-ROOT-KEY                C   6                              WA5555
  05  PART-ROOT-DATA               C 120                              WASTE BASKET
      (POS 31-60)                                            931230      TA5575EAYY941230..  FIELD INVALID
                                                                     FFFFFF444444ECFFFFCCEEFFFFFF00
                                                                     93123000000031557551 8894123000
      (POS 61-90)                                                 ..............................  FIELD INVALID
                                                                     00000000000000000000000000000
                                                                     10C0000C0000C0000C0000C0000C00
      (POS 91-120)                                                ...................940103940531  FIELD INVALID
                                                                     00000000000000000FFFFFFFFFFF
                                                                     00C0000C0000C0000C940103940531

         B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL
```

Figure B-6. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3       FLEX EXECUTION REPORT                                    PAGE: 6
                                                                                         DATE: 01/30/07
                                  COMMAND EXECUTION PHASE                                TIME: 08:56:54
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.TM
PCMDS.H01(  )
_____________________________________________________________________________________________________
LVL  SEGMENT   -----      S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             0           0           0            0            1            0           0

             B142 INPUT RECORD NUMBER (6) USED FOR DATA SUBSTITUTION                  INFORMATIONAL

LVL SEGMENT  DESCRIPTION   CONCATENATED KEY                                            SEGMENT INSERTED
--- -------- ------------ ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5575
      LEVEL NUMBER/DATA NAME       FORMAT     BEFORE FIELD VALUE      AFTER FIELD VALUE         MESSAGE
-----------------------------      --------  --------------------   ---------------------  -------------
  05  PART-ROOT-KEY                C   6                            TA5575
  05  PART-ROOT-DATA               C 120                            WASTE BASKET
      (POS 31-60)                                              941230      TA5555EAYY941230..  FIELD INVALID
                                                                           FFFFFF444444ECFFFFCCEEFFFFFF00
                                                                           941230000000315555518894123000
      (POS 61-90)                                              ..............................  FIELD INVALID
                                                                           00000000000000000000000000000000
                                                                           10C0000C0000C0000C0000C0000C000
      (POS 91-120)                                             ...................941230941230  FIELD INVALID
                                                                           00000000000000000FFFFFFFFFFF
                                                                           00C0000C0000C0000C941230941230

          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS          INFORMATIONAL

LVL  SEGMENT   -----       S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME    RETRIEVED _ QUALIFIED   CHANGED    DELETED    INSERTED    COUNTED     PRINTED     EXTRACTED
___  _____ _____________ _________  _________  _________  _________  _________   _________    _________
  1  PART010         0           0          0          0          1          0           0            0

         B142 INPUT RECORD NUMBER (7) USED FOR DATA SUBSTITUTION                   INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
  LEVEL NUMBER/DATA NAME         FORMAT    BEFORE FIELD VALUE       AFTER FIELD VALUE         MESSAGE
-------------------------------  --------  ------------------------------------------    ------------
  05  PART-ROOT-KEY                  C   6                          TA7777
  05  PART-ROOT-DATA                 C 120                          TWO DRAWER FILE CABINET
      (POS 31-60)                                            941230           EAYY941230..  FIELD INVALID
                                                                           FFFFFF444444444444CCEEFFFFFF00
                                                                           941230000000000000518894123000
      (POS 61-90)                                            ..............................  FIELD INVALID
                                                                           00000000000000000000000000000000
                                                                           10C0000C0000C0000C0000C0000C000
      (POS 91-120)                                           ...................941230941230  FIELD INVALID
                                                                           00000000000000000FFFFFFFFFFF
                                                                           00C0000C0000C0000C941230941230
```

Figure B-7. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3          FLEX EXECUTION REPORT                                    PAGE: 7
                                                                                           DATE: 01/30/07
                                  EXECUTION PHASE                                          TIME: 08:56:54
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.T
MPCMDS.H01(    )
_____________________________________________________________________________________________________

   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----       S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME    RETRIEVED  QUALIFIED  CHANGED    DELETED   INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _________ _________ _________ _________ _____________________ _________ _________
  1  PART010         0         0         0         0         1         0           0           0

   B142 INPUT RECORD NUMBER (8) USED FOR DATA SUBSTITUTION                              INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
1   PART010  PART ROOT       TA9999
      LEVEL NUMBER/DATA NAME       FORMAT     BEFORE FIELD VALUE    AFTER FIELD VALUE           MESSAGE
---------------------------------  --------   ------------------------------  ----------------------
  05  PART-ROOT-KEY                  C   6                                  TA9999
  05  PART-ROOT-DATA                 C 120                                  FOUR DRAWER FILE CABINET
      (POS 31-60)                                          941230             EAYY941230..  FIELD INVALID
                                                                        FFFFFF444444444444CCEEFFFFFF00
                                                                         941230000000000000518894123000
      (POS 61-90)                                                    .............................  FIELD INVALID
                                                                                                   00000000000000000000000000000000
                                                                                                   10C0000C0000C0000C0000C0000C000
      (POS 91-120)                                                    ..................941230941230  FIELD INVALID
                                                                                                   00000000000000000000FFFFFFFFFFFF
                                                                                                 00C0000C0000C0000C941230941230

   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          ----
-
NBR  NAME    RETRIEVED  _QUALIFIED   CHANGED     DELETED     INSERTED    COUNTED    PRINTED    EXTRACTED
___  ________  _____________________ _________ _____________ _________ _____________ _________ _________
  1  PART010           0         0           0           0         1           0         0           0

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        5         1     PSB  DBNAME=PPART    XREF=PPARTC2 ;

        6         1     SET  INPUT=PARTIN02 ;

        7         1     SELECT
        7         2         SEGMENT=PART010  MAX=ALL
        7         3             WHERE  PART-ROOT-KEY      = INPUT(10,6,C)
        7         4         SEGMENT=PART020
        7         5             WHERE  PART-LOCATION-KEY  = INPUT(16,4,C)
        7         6       INSERT SEGMENT=PART020
        7         7             SET=( PART-LOCATION-KEY   = INPUT(16,4,C),
        7         8                   PART-LOCATION-DATA  = INPUT(20,75,Z) ) ;

   B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                              INFORMATIONAL
```

Figure B-8. Example 1 - Execution Phase (Cont.)

```
FILE-
AID FOR IMS/FLEX  16.3           FLEX EXECUTION REPORT                                    PAGE: 8
                                                                                        DATE: 01/30/07
                                   COMMAND EXECUTION PHASE                              TIME: 08:56:55
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A
.TMPCMDS.H01(   )
_____________________________________________________________________________________________________

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
2   PART020  PART LOCATION   TA1111,L020
      LEVEL NUMBER/DATA NAME          FORMAT      BEFORE FIELD VALUE    AFTER FIELD VALUE       MESSAGE
---------------------------------  --------    ------------------------------------------------------------
  05  PART-LOCATION-KEY               C   4                                 L020
  05  PART-LOCATION-DATA              C  75                                 MIDWEST WAREHOUSE - CH
      (POS 31-60)                                        941230941230941230.............  FIELD INVALID
                                                                           FFFFFFFFFFFFFFFFFF000000010000
                                                                           941230941230941230090C0000C00
      (POS 61-75)                                         ..941230941230                   FIELD INVALID
                                                                           400FFFFFFFFFFF
                                                                           00C941230941230

   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----       S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME   RETRIEVED  _QUALIFIED   CHANGED    DELETED    INSERTED   COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0
  2  PART020           0           0           0           0           1           0           0

                  B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION
  INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------
2   PART020  PART LOCATION   TA3333,L020
      LEVEL NUMBER/DATA NAME          FORMAT     BEFORE FIELD VALUE     AFTER FIELD VALUE       MESSAGE
---------------------------------  --------    ------------------------------  ------------------------
  05  PART-LOCATION-KEY               C   4                                 L020
  05  PART-LOCATION-DATA              C  75                                 MIDWEST WAREHOUSE - CH
      (POS 31-60)                                       941230941230941230.............  FIELD INVALID
                                                                           FFFFFFFFFFFFFFFFFF000000010000
                                                                           941230941230941230090C0000C00
      (POS 61-75)                                        ..941230941230                   FIELD INVALID
                                                                           400FFFFFFFFFFF
                                                                           00C941230941230

  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                     INFORMATIONAL
```

Figure B-9. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                FLEX EXECUTION REPORT                                  PAGE: 9
                                                                                                  DATE: 01/30/07
                                      COMMAND EXECUTION PHASE                                     TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA5555,L020
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE       AFTER FIELD VALUE                 MESSAGE
-------------------------------  --------    ------------------------  ------------------------ --------------------
  05  PART-LOCATION-KEY           C   4                                  L020
  05  PART-LOCATION-DATA          C  75                                  MIDWEST WAREHOUSE - CH
      (POS 31-60)                                                        941230941230941230.. .........  FIELD INVALID
                                                                         FFFFFFFFFFFFFFFFFF004000020000
                                                                         941230941230941230000C0000C00
      (POS 61-75)                                                        ...940103940531                 FIELD INVALID
                                                                         800FFFFFFFFFFF
                                                                         00C940103940531

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL
LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1           1             0             0             0             0             0             0
  2  PART020             0           0             0             0             1             0             0             0

                    B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                              INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,L020
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE       AFTER FIELD VALUE                 MESSAGE
-------------------------------  --------    ------------------------  ------------------------ --------------------
  05  PART-LOCATION-KEY           C   4                                  L020
  05  PART-LOCATION-DATA          C  75                                  MIDWEST WAREHOUSE - CH
      (POS 31-60)                                                        941230941230941230...&.........  FIELD INVALID
                                                                         FFFFFFFFFFFFFFFFFF001500010000
                                                                         941230941230941230030C0050C00
      (POS 61-75)                                                        &..941230941230                 FIELD INVALID
                                                                         500FFFFFFFFFFF
                                                                         00C941230941230

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1           1             0             0             0             0             0             0
  2  PART020             0           0             0             0             1             0             0             0

                    B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                              INFORMATIONAL
```

Figure B-10. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                    FLEX EXECUTION REPORT                                    PAGE: 10
                                                                                                       DATE: 01/30/07
                                          COMMAND EXECUTION PHASE                                      TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRA0A.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION    CONCATENATED KEY                                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA9999,LO20
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE        AFTER FIELD VALUE                 MESSAGE
------------------------------  --------    ----------------------------  ----------------------------------------
  05  PART-LOCATION-KEY           C   4                                    LO20
  05  PART-LOCATION-DATA          C  75                                    MIDWEST WAREHOUSE - CH
      (POS 31-60)                                                          94123094123094123.............  FIELD INVALID
                                                                           FFFFFFFFFFFFFFFFF001000010000
                                                                           941230941230941230008OC0000C00
      (POS 61-75)                                                          ...941230941230                 FIELD INVALID
                                                                           200FFFFFFFFFFF
                                                                           00C941230941230

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010           1           1             0             0             0             0             0             0
  2  PART020           0           0             0             0             1             0             0             0

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        8         1     PSB  DBNAME=PPART ;

        9         1     SET  INPUT=PARTIN01  OUTPUT=PARTOT01 ;

       10         1     SELECT
       10         2         SEGMENT=PART010  MAX=ALL
       10         3             WHERE PART-NUMBER  = INPUT(10,6,C)
       10         4         SEGMENT=PART020  MAX=ALL
       10         5       COUNT  SEGMENT=PART010  OPT=(ALWAYS,CKEY)
       10         6              SEGMENT=PART020  OPT=CKEY
       10         7       PRINT  SEGMENT=PART010  OPT=ALWAYS
       10         8              SEGMENT=PART020 ;

                   B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                             INFORMATIONAL
```

Figure B-11. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                    FLEX EXECUTION REPORT                                    PAGE: 11
                                                                                                        DATE: 01/30/07
                                            COMMAND EXECUTION PHASE                                     TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
                    LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                 MESSAGE
                  ----------------------------------  --------  ------------------------------  --------------------
                  01  PART-ROOT-DATA
                    05  PART-ROOT-KEY
                      07  PART-NUMBER                C   6     TA1111
                    05  PART-NAME                    C  30     STANDARD OFFICE DESK
                    05  EFFECTIVITY-DATE             C   6     940603
                    05  SUPERSEDED-PART              C   6     TA1234
                    05  EQUIVALENT-PART              C   6
                    05  UNIT-OF-MEASURE              C   2     EA
                    05  PURCHASED-PART-IND           C   1     Y
                    05  FINISHED-PART-IND            C   1     Y
                    05  ENGINEERING-DRAWING-NO       C   6     941230
                    05  COST-DATA
                      10  STANDARD-COST              PS  7  2  500.00
                      10  LAST-ACTUAL-COST           PS  7  2  0.00
                      10  STANDARD-LABOR-COST        PS  7  2  0.00
                      10  LAST-LABOR-COST            PS  7  2  0.00
                      10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                      10  LAST-MATERIAL-COST         PS  7  2  0.00
                      10  STANDARD-SETUP-COST        PS  7  2  0.00
                      10  LAST-SETUP-COST            PS  7  2  0.00
                      10  STANDARD-REWORK-COST       PS  7  2  0.00
                      10  LAST-REWORK-COST           PS  7  2  0.00
                    05  FIRST-ACTIVITY-DATE          C   6     941230
                    05  LAST-ACTIVITY-DATE           C   6     941230
                  ** END OF LAYOUT. LENGTH =   126 **
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA1111,LO2O
                    LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                 MESSAGE
                  ----------------------------------  --------  ------------------------------  --------------------
                  01  PART-LOCATION-DATA
                    05  PART-LOCATION-KEY
                      07  LOCATION-NUMBER            C   4     LO2O
                    05  LOCATION-NAME                C  30     MIDWEST WAREHOUSE - CH
                    05  FIRST-ISSUE-DATE             C   6     941230
                    05  LAST-ISSUE-DATE              C   6     941230
                    05  LAST-INVENTORY-DATE          C   6     941230
                    05  QUANTITY-DATA
                      10  QUANTITY-ON-HAND           PS  7  2  90.00
                      10  REORDER-QUANTITY           PS  7  2  100.00
                      10  ALLOCATED-QUANTITY         PS  7  2  400.00
                    05  FIRST-ACTIVITY-DATE          C   6     941230
                    05  LAST-ACTIVITY-DATE           C   6     941230
                  ** END OF LAYOUT. LENGTH =    79 **
```

Figure B-12. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                FLEX EXECUTION REPORT                                          PAGE: 12
                                                                                                          DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                           TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             1           1           0           0           0           1           1           0

                    B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION                              INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                            SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1234
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
                ------------------------------------  --------  ------------------------------  --------------------
               01  PART-ROOT-DATA
                 05  PART-ROOT-KEY
                   07  PART-NUMBER                  C   6     TA1234
                 05  PART-NAME                    C  30     STANDARD OFFICE DESK
                 05  EFFECTIVITY-DATE             C   6     931230
                 05  SUPERSEDED-PART              C   6
                 05  EQUIVALENT-PART              C   6     TA1111
                 05  UNIT-OF-MEASURE              C   2     EA
                 05  PURCHASED-PART-IND           C   1     Y
                 05  FINISHED-PART-IND            C   1     Y
                 05  ENGINEERING-DRAWING-NO       C   6     941230
                 05  COST-DATA
                   10  STANDARD-COST              PS  7  2  465.00
                   10  LAST-ACTUAL-COST           PS  7  2  0.00
                   10  STANDARD-LABOR-COST        PS  7  2  0.00
                   10  LAST-LABOR-COST            PS  7  2  0.00
                   10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                   10  LAST-MATERIAL-COST         PS  7  2  0.00
                   10  STANDARD-SETUP-COST        PS  7  2  0.00
                   10  LAST-SETUP-COST            PS  7  2  0.00
                   10  STANDARD-REWORK-COST       PS  7  2  0.00
                   10  LAST-REWORK-COST           PS  7  2  0.00
                 05  FIRST-ACTIVITY-DATE          C   6     940103
                 05  LAST-ACTIVITY-DATE           C   6     940531
               ** END OF LAYOUT. LENGTH =   126 **

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             0           0           0           0           0           0           0           0

                    B142 INPUT RECORD NUMBER (3) USED FOR DATA SUBSTITUTION                              INFORMATIONAL
```

Figure B-13. Example 1 - Execution Phase (Cont.)

```
FILE-
AID FOR IMS/FLEX  16.3                          FLEX EXECUTION REPORT                                    PAGE: 13
                                                                                                         DATE: 01/30/07
                                              COMMAND EXECUTION PHASE                                    TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                            SEGMENT PRINTED
--- -------- --------------- ----------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
               ------------------------------------  --------  ------------------------------  --------------------
               01  PART-ROOT-DATA
                 05  PART-ROOT-KEY
                   07  PART-NUMBER                  C   6     TA3333
                 05  PART-NAME                    C  30     STANDARD OFFICE DESK CHAIR
                 05  EFFECTIVITY-DATE             C   6     940603
                 05  SUPERSEDED-PART              C   6     TA3456
                 05  EQUIVALENT-PART              C   6
                 05  UNIT-OF-MEASURE              C   2     EA
                 05  PURCHASED-PART-IND           C   1     Y
                 05  FINISHED-PART-IND            C   1     Y
                 05  ENGINEERING-DRAWING-NO       C   6     941230
                 05  COST-DATA
                   10  STANDARD-COST              PS  7  2  250.00
                   10  LAST-ACTUAL-COST           PS  7  2  0.00
                   10  STANDARD-LABOR-COST        PS  7  2  0.00
                   10  LAST-LABOR-COST            PS  7  2  0.00
                   10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                   10  LAST-MATERIAL-COST         PS  7  2  0.00
                   10  STANDARD-SETUP-COST        PS  7  2  0.00
                   10  LAST-SETUP-COST            PS  7  2  0.00
                   10  STANDARD-REWORK-COST       PS  7  2  0.00
                   10  LAST-REWORK-COST           PS  7  2  0.00
                 05  FIRST-ACTIVITY-DATE          C   6     941230
                 05  LAST-ACTIVITY-DATE           C   6     941230
               ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                            SEGMENT PRINTED
--- -------- --------------- ----------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA3333,L020
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
               ------------------------------------  --------  ------------------------------  --------------------
               01  PART-LOCATION-DATA
                 05  PART-LOCATION-KEY
                   07  LOCATION-NUMBER              C   4     L020
                 05  LOCATION-NAME                C  30     MIDWEST WAREHOUSE - CH
                 05  FIRST-ISSUE-DATE             C   6     941230
                 05  LAST-ISSUE-DATE              C   6     941230
                 05  LAST-INVENTORY-DATE          C   6     941230
                 05  QUANTITY-DATA
                   10  QUANTITY-ON-HAND           PS  7  2  90.00
                   10  REORDER-QUANTITY           PS  7  2  100.00
                   10  ALLOCATED-QUANTITY         PS  7  2  400.00
                 05  FIRST-ACTIVITY-DATE          C   6     941230
                 05  LAST-ACTIVITY-DATE           C   6     941230
               ** END OF LAYOUT. LENGTH =    79 **
```

Figure B-14. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                FLEX EXECUTION REPORT                                    PAGE: 14
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________

                B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             1           1           0           0           0           1           1           0

                B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                             INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT PRINTED
--- -------- --------------- ------------------------ ------------------------------------------------------------
1   PART010  PART ROOT       TA3456
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                    MESSAGE
               ------------------------------------  --------  ------------------------------   --------------------
               01  PART-ROOT-DATA
                 05  PART-ROOT-KEY
                   07  PART-NUMBER                  C   6     TA3456
                 05  PART-NAME                    C  30     STANDARD OFFICE DESK CHAIR
                 05  EFFECTIVITY-DATE             C   6     931230
                 05  SUPERSEDED-PART              C   6
                 05  EQUIVALENT-PART              C   6     TA3333
                 05  UNIT-OF-MEASURE              C   2     EA
                 05  PURCHASED-PART-IND           C   1     Y
                 05  FINISHED-PART-IND            C   1     Y
                 05  ENGINEERING-DRAWING-NO       C   6     941230
                 05  COST-DATA
                   10  STANDARD-COST              PS  7  2  235.00
                   10  LAST-ACTUAL-COST           PS  7  2  0.00
                   10  STANDARD-LABOR-COST        PS  7  2  0.00
                   10  LAST-LABOR-COST            PS  7  2  0.00
                   10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                   10  LAST-MATERIAL-COST         PS  7  2  0.00
                   10  STANDARD-SETUP-COST        PS  7  2  0.00
                   10  LAST-SETUP-COST            PS  7  2  0.00
                   10  STANDARD-REWORK-COST       PS  7  2  0.00
                   10  LAST-REWORK-COST           PS  7  2  0.00
                 05  FIRST-ACTIVITY-DATE          C   6     940103
                 05  LAST-ACTIVITY-DATE           C   6     940531
               ** END OF LAYOUT. LENGTH =   126 **

                B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             0           0           0           0           0           0           0           0

                B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                             INFORMATIONAL
```

Figure B-15. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                    FLEX EXECUTION REPORT                                    PAGE: 15
                                                                                                        DATE: 01/30/07
                                          COMMAND EXECUTION PHASE                                       TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5555
                    LEVEL NUMBER/DATA NAME          FORMAT           FIELD VALUE                  MESSAGE
                  ----------------------------------  --------  ------------------------------   --------------------
                  01  PART-ROOT-DATA
                    05  PART-ROOT-KEY
                      07  PART-NUMBER                C   6     TA5555
                    05  PART-NAME                    C  30     WASTE BASKET
                    05  EFFECTIVITY-DATE             C   6     931230
                    05  SUPERSEDED-PART              C   6
                    05  EQUIVALENT-PART              C   6     TA5575
                    05  UNIT-OF-MEASURE              C   2     EA
                    05  PURCHASED-PART-IND           C   1     Y
                    05  FINISHED-PART-IND            C   1     Y
                    05  ENGINEERING-DRAWING-NO       C   6     941230
                    05  COST-DATA
                      10  STANDARD-COST              PS  7  2  10.00
                      10  LAST-ACTUAL-COST           PS  7  2  0.00
                      10  STANDARD-LABOR-COST        PS  7  2  0.00
                      10  LAST-LABOR-COST            PS  7  2  0.00
                      10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                      10  LAST-MATERIAL-COST         PS  7  2  0.00
                      10  STANDARD-SETUP-COST        PS  7  2  0.00
                      10  LAST-SETUP-COST            PS  7  2  0.00
                      10  STANDARD-REWORK-COST       PS  7  2  0.00
                      10  LAST-REWORK-COST           PS  7  2  0.00
                    05  FIRST-ACTIVITY-DATE          C   6     940103
                    05  LAST-ACTIVITY-DATE           C   6     940531
                  ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA5555,LO20
                    LEVEL NUMBER/DATA NAME          FORMAT           FIELD VALUE                  MESSAGE
                  ----------------------------------  --------  ------------------------------   --------------------
                  01  PART-LOCATION-DATA
                    05  PART-LOCATION-KEY
                      07  LOCATION-NUMBER            C   4     LO20
                    05  LOCATION-NAME                C  30     MIDWEST WAREHOUSE - CH
                    05  FIRST-ISSUE-DATE             C   6     941230
                    05  LAST-ISSUE-DATE              C   6     941230
                    05  LAST-INVENTORY-DATE          C   6     941230
                    05  QUANTITY-DATA
                      10  QUANTITY-ON-HAND           PS  7  2  400.00
                      10  REORDER-QUANTITY           PS  7  2  200.00
                      10  ALLOCATED-QUANTITY         PS  7  2  800.00
                    05  FIRST-ACTIVITY-DATE          C   6     940103
                    05  LAST-ACTIVITY-DATE           C   6     940531
                  ** END OF LAYOUT. LENGTH =    79 **
```

Figure B-16. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                    FLEX EXECUTION REPORT                                    PAGE: 16
                                                                                                        DATE: 01/30/07
                                            MAND EXECUTION PHASE                                        TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             1           1           0           0           0           1           1           0

                    B142 INPUT RECORD NUMBER (6) USED FOR DATA SUBSTITUTION                        INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT PRINTED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5575
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
                ------------------------------------  --------  ------------------------------  --------------------
                01  PART-ROOT-DATA
                  05  PART-ROOT-KEY
                    07  PART-NUMBER                  C   6     TA5575
                  05  PART-NAME                    C  30     WASTE BASKET
                  05  EFFECTIVITY-DATE             C   6     941230
                  05  SUPERSEDED-PART              C   6
                  05  EQUIVALENT-PART              C   6     TA5555
                  05  UNIT-OF-MEASURE              C   2     EA
                  05  PURCHASED-PART-IND           C   1     Y
                  05  FINISHED-PART-IND            C   1     Y
                  05  ENGINEERING-DRAWING-NO       C   6     941230
                  05  COST-DATA
                    10  STANDARD-COST              PS  7  2  10.00
                    10  LAST-ACTUAL-COST           PS  7  2  0.00
                    10  STANDARD-LABOR-COST        PS  7  2  0.00
                    10  LAST-LABOR-COST            PS  7  2  0.00
                    10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                    10  LAST-MATERIAL-COST         PS  7  2  0.00
                    10  STANDARD-SETUP-COST        PS  7  2  0.00
                    10  LAST-SETUP-COST            PS  7  2  0.00
                    10  STANDARD-REWORK-COST       PS  7  2  0.00
                    10  LAST-REWORK-COST           PS  7  2  0.00
                  05  FIRST-ACTIVITY-DATE          C   6     941230
                  05  LAST-ACTIVITY-DATE           C   6     941230
                ** END OF LAYOUT. LENGTH =   126 **

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             0           0           0           0           0           0           0           0

                    B142 INPUT RECORD NUMBER (7) USED FOR DATA SUBSTITUTION                        INFORMATIONAL
```

Figure B-17. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                  FLEX EXECUTION REPORT                                    PAGE: 17
                                                                                                      DATE: 01/30/07
                                          COMMAND EXECUTION PHASE                                     TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT PRINTED
--- -------- --------------- ----------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
                    LEVEL NUMBER/DATA NAME          FORMAT           FIELD VALUE                  MESSAGE
                  ----------------------------------  --------  ------------------------------   --------------------
                  01  PART-ROOT-DATA
                    05  PART-ROOT-KEY
                      07  PART-NUMBER                C   6     TA7777
                    05  PART-NAME                    C  30     TWO DRAWER FILE CABINET
                    05  EFFECTIVITY-DATE             C   6     941230
                    05  SUPERSEDED-PART              C   6
                    05  EQUIVALENT-PART              C   6
                    05  UNIT-OF-MEASURE              C   2     EA
                    05  PURCHASED-PART-IND           C   1     Y
                    05  FINISHED-PART-IND            C   1     Y
                    05  ENGINEERING-DRAWING-NO       C   6     941230
                    05  COST-DATA
                      10  STANDARD-COST              PS  7  2  10.00
                      10  LAST-ACTUAL-COST           PS  7  2  0.00
                      10  STANDARD-LABOR-COST        PS  7  2  0.00
                      10  LAST-LABOR-COST            PS  7  2  0.00
                      10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                      10  LAST-MATERIAL-COST         PS  7  2  0.00
                      10  STANDARD-SETUP-COST        PS  7  2  0.00
                      10  LAST-SETUP-COST            PS  7  2  0.00
                      10  STANDARD-REWORK-COST       PS  7  2  0.00
                      10  LAST-REWORK-COST           PS  7  2  0.00
                    05  FIRST-ACTIVITY-DATE          C   6     941230
                    05  LAST-ACTIVITY-DATE           C   6     941230
                  ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT PRINTED
--- -------- --------------- ----------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,LO20
                    LEVEL NUMBER/DATA NAME          FORMAT           FIELD VALUE                  MESSAGE
                  ----------------------------------  --------  ------------------------------   --------------------
                  01  PART-LOCATION-DATA
                    05  PART-LOCATION-KEY
                      07  LOCATION-NUMBER            C   4     LO20
                    05  LOCATION-NAME                C  30     MIDWEST WAREHOUSE - CH
                    05  FIRST-ISSUE-DATE             C   6     941230
                    05  LAST-ISSUE-DATE              C   6     941230
                    05  LAST-INVENTORY-DATE          C   6     941230
                    05  QUANTITY-DATA
                      10  QUANTITY-ON-HAND           PS  7  2  135.00
                      10  REORDER-QUANTITY           PS  7  2  150.00
                      10  ALLOCATED-QUANTITY         PS  7  2  500.00
                    05  FIRST-ACTIVITY-DATE          C   6     941230
                    05  LAST-ACTIVITY-DATE           C   6     941230
                  ** END OF LAYOUT. LENGTH =    79 **
```

Figure B-18. Example 1 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3                FLEX EXECUTION REPORT                                        PAGE: 18
                                                                                                        DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                         TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _ _________ _ _________ _ _________ _ _________ _ _________ _ _________
  1  PART010             1           1           0           0           0           1           1           0
  2  PART020             1           1           0           0           0           1           1           0

                  B142 INPUT RECORD NUMBER (8) USED FOR DATA SUBSTITUTION                         INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT PRINTED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA9999
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
                ----------------------------------  --------  ------------------------------  --------------------
                01  PART-ROOT-DATA
                  05  PART-ROOT-KEY
                    07  PART-NUMBER                C   6     TA9999
                  05  PART-NAME                    C  30     FOUR DRAWER FILE CABINET
                  05  EFFECTIVITY-DATE             C   6     941230
                  05  SUPERSEDED-PART              C   6
                  05  EQUIVALENT-PART              C   6
                  05  UNIT-OF-MEASURE              C   2     EA
                  05  PURCHASED-PART-IND           C   1     Y
                  05  FINISHED-PART-IND            C   1     Y
                  05  ENGINEERING-DRAWING-NO       C   6     941230
                  05  COST-DATA
                    10  STANDARD-COST              PS  7  2  10.00
                    10  LAST-ACTUAL-COST           PS  7  2  0.00
                    10  STANDARD-LABOR-COST        PS  7  2  0.00
                    10  LAST-LABOR-COST            PS  7  2  0.00
                    10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                    10  LAST-MATERIAL-COST         PS  7  2  0.00
                    10  STANDARD-SETUP-COST        PS  7  2  0.00
                    10  LAST-SETUP-COST            PS  7  2  0.00
                    10  STANDARD-REWORK-COST       PS  7  2  0.00
                    10  LAST-REWORK-COST           PS  7  2  0.00
                  05  FIRST-ACTIVITY-DATE          C   6     941230
                  05  LAST-ACTIVITY-DATE           C   6     941230
                ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT PRINTED
--- -------- --------------- ---------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA9999,L020
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
                ----------------------------------  --------  ------------------------------  --------------------
                01  PART-LOCATION-DATA
                  05  PART-LOCATION-KEY
                    07  LOCATION-NUMBER            C   4     L020
                  05  LOCATION-NAME                C  30     MIDWEST WAREHOUSE - CH
```

Figure B-19. Example 1 - Execution Phase (Cont.)

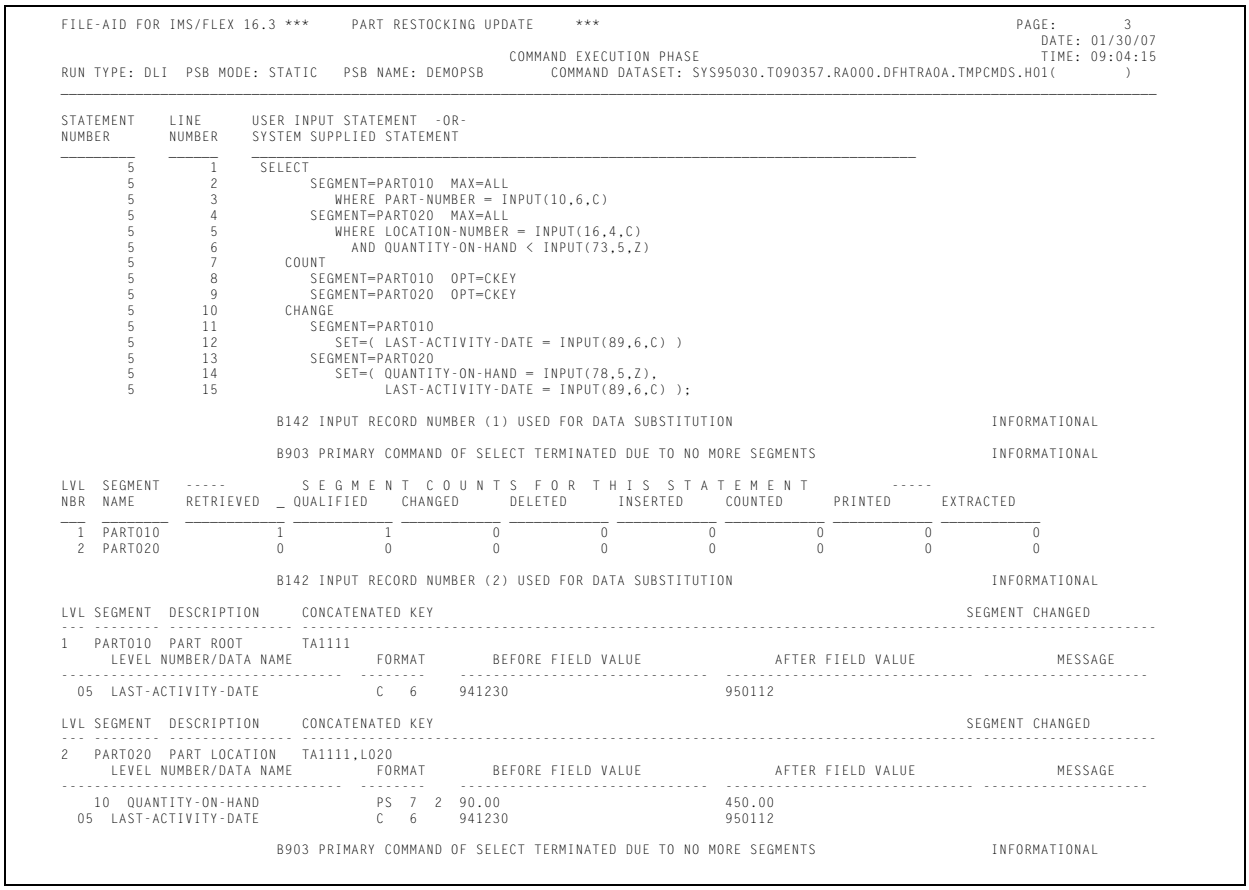
```
FILE-AID FOR IMS/FLEX  16.3                FLEX EXECUTION REPORT                                    PAGE: 19
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 08:56:55
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T085639.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________
                  LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                  MESSAGE
                ----------------------------------  --------  ------------------------------  --------------------
                  05  FIRST-ISSUE-DATE             C   6     941230
                  05  LAST-ISSUE-DATE              C   6     941230
                  05  LAST-INVENTORY-DATE          C   6     941230
                  05  QUANTITY-DATA
                    10  QUANTITY-ON-HAND           PS  7  2  180.00
                    10  REORDER-QUANTITY           PS  7  2  100.00
                    10  ALLOCATED-QUANTITY         PS  7  2  200.00
                  05  FIRST-ACTIVITY-DATE          C   6     941230
                  05  LAST-ACTIVITY-DATE           C   6     941230
                ** END OF LAYOUT. LENGTH =    79 **

                     B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS               INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           1           1           0
  2  PART020           1           1           0           0           0           1           1           0

                     B113 END OF EXECUTE PHASE DUE TO END OF FILE ON INPUT, RC=0                     INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  D A T A B A S E         PPART     -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010          13          13           0           0           8           8           8           0
  2  PART020           5           5           0           0           5           5           5           0
```

FLEX Execution Report - Example 2

Figure B-20. Example 2 - Validation Phase

```
FILE-AID FOR IMS/FLEX  16.3                      FLEX EXECUTION REPORT                                    PAGE:        1
                                                                                                          DATE: 01/30/07
                                        COMMAND VALIDATION PHASE                                          TIME: 09:04:06
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T090357.RA000.DFHTRAOA.TMPCMDS.H01(   )
_____________________________________________________________________________________________________________________

                    B132 INPUT OPTION IS POSSIBLE, IXPIN IS USING DFHTRA0.BFAI.DATA200                    INFORMATIONAL

                    B132 OUTPUT OPTION IS POSSIBLE, IXPOUT IS USING DFHTRA0.BFAI.DATA80                   INFORMATIONAL

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN03  OUTPUT=PARTOT02;

        4         1     TITLE LINE01='***     PART RESTOCKING UPDATE     ***';

        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE PART-NUMBER = INPUT(10,6,C)
        5         4           SEGMENT=PART020  MAX=ALL
        5         5              WHERE LOCATION-NUMBER = INPUT(16,4,C)
        5         6                AND QUANTITY-ON-HAND < INPUT(73,5,Z)
        5         7        COUNT
        5         8           SEGMENT=PART010  OPT=CKEY
        5         9           SEGMENT=PART020  OPT=CKEY
        5        10        CHANGE
        5        11           SEGMENT=PART010
        5        12              SET=( LAST-ACTIVITY-DATE = INPUT(89,6,C) )
        5        13           SEGMENT=PART020
        5        14              SET=( QUANTITY-ON-HAND = INPUT(78,5,Z),
        5        15                    LAST-ACTIVITY-DATE = INPUT(89,6,C) );

                    B109 END OF VALIDATE PHASE DUE TO END OF FILE ON INPUT, RC=0                          INFORMATIONAL

                    B111 VALIDATE PHASE SUCCESSFUL, PROCEEDING TO EXECUTE PHASE                           INFORMATIONAL

                      B011 ALLOCATING AUDIT TRAIL: 'DFHTRA0.IXPAT.D950130.T090408'                          INFORMATIONAL
FILE-
AID FOR IMS/FLEX  16.3               BATCH EXECUTION REPORT                                          PAGE:        2
                                                                                                          DATE: 01/30/97
                                        COMMAND EXECUTION PHASE                                           TIME: 09:04:15
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T090357.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN03  OUTPUT=PARTOT02;

        4         1     TITLE LINE01='***     PART RESTOCKING UPDATE     ***';
```

Figure B-21. Resulting Output Report



```
FILE-AID FOR IMS/FLEX 16.3 ***     PART RESTOCKING UPDATE     ***                                                    PAGE:        3
                                                                                                                     DATE: 01/30/07
                                                  COMMAND EXECUTION PHASE                                            TIME: 09:04:15
RUN TYPE: DLI  PSB MODE: STATIC   PSB NAME: DEMOPSB        COMMAND DATASET: SYS95030.T090357.RA000.DFHTRA0A.TMPCMDS.H01(         )
_____________________________________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE PART-NUMBER = INPUT(10,6,C)
        5         4           SEGMENT=PART020  MAX=ALL
        5         5              WHERE LOCATION-NUMBER = INPUT(16,4,C)
        5         6                AND QUANTITY-ON-HAND < INPUT(73,5,Z)
        5         7         COUNT
        5         8           SEGMENT=PART010  OPT=CKEY
        5         9           SEGMENT=PART020  OPT=CKEY
        5        10         CHANGE
        5        11           SEGMENT=PART010
        5        12              SET=( LAST-ACTIVITY-DATE = INPUT(89,6,C) )
        5        13           SEGMENT=PART020
        5        14              SET=( QUANTITY-ON-HAND = INPUT(78,5,Z),
        5        15                    LAST-ACTIVITY-DATE = INPUT(89,6,C) );

                          B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

                          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                 INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________  ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           0           0           0           0           0           0
  2  PART020             0           0           0           0           0           0           0           0

                          B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                                SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
      LEVEL NUMBER/DATA NAME          FORMAT        BEFORE FIELD VALUE              AFTER FIELD VALUE               MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ --------------------
  05  LAST-ACTIVITY-DATE             C   6     941230                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                                SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA1111,L020
      LEVEL NUMBER/DATA NAME          FORMAT        BEFORE FIELD VALUE              AFTER FIELD VALUE               MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ --------------------
    10  QUANTITY-ON-HAND             PS  7  2  90.00                          450.00
  05  LAST-ACTIVITY-DATE             C   6     941230                          950112

                          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                 INFORMATIONAL
```

Figure B-22. Example 2 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***     PART RESTOCKING UPDATE     ***                                    PAGE:        4
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:04:16
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.TO90357.RA000.DFHTRAOA.TMPCMDS.H01(   )
_____________________________________________________________________________________________________________________
LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             1             0             0             1             0             0
  2  PART020             1             1             1             0             0             1             0             0

                   B142 INPUT RECORD NUMBER (3) USED FOR DATA SUBSTITUTION                                INFORMATIONAL

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                       INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             0             0             0             0             0             0
  2  PART020             0             0             0             0             0             0             0             0

                   B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                                INFORMATIONAL

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                       INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             0             0             0             0             0             0
  2  PART020             0             0             0             0             0             0             0             0

                   B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                                INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                            SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE             C   6     941230                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                            SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA3333,L020
      LEVEL NUMBER/DATA NAME          FORMAT        BEFORE FIELD VALUE           AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    10  QUANTITY-ON-HAND            PS  7  2  90.00                           450.00
  05  LAST-ACTIVITY-DATE            C   6     941230                          950112

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                       INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             1             0             0             1             0             0
  2  PART020             1             1             1             0             0             1             0             0
```

Figure B-23. Example 2 - Execution Phase (Cont.)

```
 FILE-AID FOR IMS/FLEX  16.3***     PART RESTOCKING UPDATE     ***                                    PAGE:        5
                                                                                                   DATE: 01/30/07
                                          COMMAND EXECUTION PHASE                                  TIME: 09:04:16
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T090357.RA000.DFHTRA0A.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

                  B142 INPUT RECORD NUMBER (6) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0           0
  2  PART020           0           0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (7) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0           0
  2  PART020           0           0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (8) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0           0
  2  PART020           1           0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (9) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0           0
  2  PART020           0           0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (10) USED FOR DATA SUBSTITUTION                         INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           0           0           0           0           0           0
  2  PART020           0           0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (11) USED FOR DATA SUBSTITUTION                         INFORMATIONAL
```

Figure B-24. Example 2 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***     PART RESTOCKING UPDATE     ***                                    PAGE:        6
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:04:17
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.TO90357.RA000.DFHTRAOA.TMPCMDS.H01(   )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     941230                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,L020
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    10  QUANTITY-ON-HAND              PS  7  2  135.00                         550.00
  05  LAST-ACTIVITY-DATE              C   6     941230                          950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010             1             1            1            0            0            1            0            0
  2  PART020             1             1            1            0            0            1            0            0

                  B142 INPUT RECORD NUMBER (12) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                   INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010             1             1            0            0            0            0            0            0
  2  PART020             0             0            0            0            0            0            0            0

                  B142 INPUT RECORD NUMBER (13) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010             1             1            0            0            0            0            0            0
  2  PART020             0             0            0            0            0            0            0            0

                  B142 INPUT RECORD NUMBER (14) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

                   B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL
```

Figure B-25. Example 2 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***     PART RESTOCKING UPDATE     ***                                    PAGE:        7
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:04:17
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.TO90357.RA000.DFHTRAOA.TMPCMDS.H01(   )
_____________________________________________________________________________________________________________________
LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010             1             1            0            0            0            0            0            0
  2  PART020             1             0            0            0            0            0            0            0

                  B142 INPUT RECORD NUMBER (15) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010             1             1            0            0            0            0            0            0
  2  PART020             0             0            0            0            0            0            0            0

                  B113 END OF EXECUTE PHASE DUE TO END OF FILE ON INPUT, RC=0                         INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R   D A T A B A S E         PPART     -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _____________ ____________ ____________ ____________ ____________ ____________ ____________
  1  PART010            15            15            3            0            0            3            0            0
  2  PART020             5             3            3            0            0            3            0            0
```

FLEX Execution Report - Example 3

Figure B-26. Example 3 - Validation Phase

```
FILE-
AID FOR IMS/FLEX  16.3                          FLEX EXECUTION REPORT                                          PAGE: 1
                                                                                                              DATE: 01/30/07
                                          COMMAND VALIDATION PHASE                                            TIME: 09:13:59
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

                  B132 INPUT OPTION IS POSSIBLE, IXPIN IS USING DFHTRAO.BFAI.DATA200                    INFORMATIONAL

                  B132 OUTPUT OPTION IS POSSIBLE, IXPOUT IS USING DFHTRAO.BFAI.DATA80                   INFORMATIONAL

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN03  OUTPUT=PARTOT03 ;

        4         1     TITLE LINE01='***     PART ALLOCATION UPDATE     ***';

        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE PART-NUMBER         = INPUT(10,6,C)
        5         4           SEGMENT=PART020  MAX=ALL
        5         5              WHERE LOCATION-NUMBER     = INPUT(16,4,C)
        5         6        COUNT
        5         7           SEGMENT=PART010  OPT=(ALWAYS,CKEY)
        5         8           SEGMENT=PART020  OPT=CKEY
        5         9        CHANGE
        5        10           SEGMENT=PART010  OPT=ALWAYS
        5        11              SET=( LAST-ACTIVITY-DATE  = INPUT(89,6,C) )
        5        12           SEGMENT=PART020
        5        13              SET=( ALLOCATED-QUANTITY  = INPUT(78,5,Z),
        5        14                    LAST-ACTIVITY-DATE  = INPUT(89,6,C) )
        5        15        INSERT
        5        16           SEGMENT=PART020
        5        17              SET=( LOCATION-NUMBER     = INPUT(16,4,C),
        5        18                    LOCATION-NAME       = INPUT(20,30,C),
        5        19                    FIRST-ISSUE-DATE    = INPUT(50,6,C),
        5        20                    LAST-ISSUE-DATE     = INPUT(56,6,C),
        5        21                    LAST-INVENTORY-DATE = INPUT(62,6,C),
        5        22                    QUANTITY-ON-HAND    = INPUT(68,5,Z),
        5        23                    REORDER-QUANTITY    = INPUT(73,5,Z),
        5        24                    ALLOCATED-QUANTITY  = INPUT(78,5,Z),
        5        25                    FIRST-ACTIVITY-DATE = INPUT(83,6,C),
        5        26                    LAST-ACTIVITY-DATE  = INPUT(89,6,C) ) ;

                  B109 END OF VALIDATE PHASE DUE TO END OF FILE ON INPUT, RC=0                          INFORMATIONAL

                  B111 VALIDATE PHASE SUCCESSFUL, PROCEEDING TO EXECUTE PHASE                           INFORMATIONAL

                  B011 ALLOCATING AUDIT TRAIL: 'DFHTRAO.IXPAT.D950130.T091401'                         INFORMATIONAL
```

Figure B-27. Example 3 - Execution Phase

```
FILE-
AID FOR IMS/FLEX  16.3                          FLEX EXECUTION REPORT                                          PAGE: 2
                                                                                                              DATE: 01/30/07
                                          COMMAND EXECUTION PHASE                                             TIME: 09:14:08
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T091353.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN03  OUTPUT=PARTOT03 ;

        4         1     TITLE LINE01='***     PART ALLOCATION UPDATE     ***';
```

Figure B-28. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                                PAGE: 3
                                                                                                                DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                                 TIME: 09:14:09
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE PART-NUMBER         = INPUT(10,6,C)
        5         4           SEGMENT=PART020  MAX=ALL
        5         5              WHERE LOCATION-NUMBER     = INPUT(16,4,C)
        5         6        COUNT
        5         7           SEGMENT=PART010  OPT=(ALWAYS,CKEY)
        5         8           SEGMENT=PART020  OPT=CKEY
        5         9        CHANGE
        5        10           SEGMENT=PART010  OPT=ALWAYS
        5        11              SET=( LAST-ACTIVITY-DATE  = INPUT(89,6,C) )
        5        12           SEGMENT=PART020
        5        13              SET=( ALLOCATED-QUANTITY  = INPUT(78,5,Z),
        5        14                    LAST-ACTIVITY-DATE  = INPUT(89,6,C) )
        5        15        INSERT
        5        16           SEGMENT=PART020
        5        17              SET=( LOCATION-NUMBER     = INPUT(16,4,C),
        5        18                    LOCATION-NAME       = INPUT(20,30,C),
        5        19                    FIRST-ISSUE-DATE    = INPUT(50,6,C),
        5        20                    LAST-ISSUE-DATE     = INPUT(56,6,C),
        5        21                    LAST-INVENTORY-DATE = INPUT(62,6,C),
        5        22                    QUANTITY-ON-HAND    = INPUT(68,5,Z),
        5        23                    REORDER-QUANTITY    = INPUT(73,5,Z),
        5        24                    ALLOCATED-QUANTITY  = INPUT(78,5,Z),
        5        25                    FIRST-ACTIVITY-DATE = INPUT(83,6,C),
        5        26                    LAST-ACTIVITY-DATE  = INPUT(89,6,C) ) ;

                    B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA1111,L010
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                     L010
  05  LOCATION-NAME                  C  30                                     EASTERN WAREHOUSE - HB
  05  FIRST-ISSUE-DATE               C   6                                     950112
  05  LAST-ISSUE-DATE                C   6                                     950112
  05  LAST-INVENTORY-DATE            C   6                                     950112
```

Figure B-29. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 4
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                      TIME: 09:14:09
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB      OMMAND DATASET: SYS95030.T091353.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
      LEVEL NUMBER/DATA NAME       FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE            MESSAGE
-------------------------------  --------    ------------------------------  --------------------------  ------------
    10  QUANTITY-ON-HAND             PS  7  2                                 200.00
    10  REORDER-QUANTITY             PS  7  2                                 100.00
    10  ALLOCATED-QUANTITY           PS  7  2                                 250.00
  05  FIRST-ACTIVITY-DATE            C   6                                   950112
  05  LAST-ACTIVITY-DATE             C   6                                   950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           1           0           0           1           0           0
  2  PART020           0           0           0           0           1           0           0           0

                  B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION                           INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE            MESSAGE
---------------------------------  --------    ------------------------------  --------------------------  ------------
  05  LAST-ACTIVITY-DATE             C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
-----------
2   PART020  PART LOCATION   TA1111,L020
      LEVEL NUMBER/DATA NAME          FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE          MESSAGE
-----------------------------------  --------    ------------------------------  --------------------------  ----------
    10  ALLOCATED-QUANTITY           PS  7  2  400.00                           450.00
  05  LAST-ACTIVITY-DATE             C   6     950112                          950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010           1           1           1           0           0           1           0           0
  2  PART020           1           1           1           0           0           1           0           0

                  B142 INPUT RECORD NUMBER (3) USED FOR DATA SUBSTITUTION                           INFORMATIONAL
```

Figure B-30. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 5
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:14:11
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                  SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1111
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE           MESSAGEa--
------------------------------  --------    ------------------------------  ------------------------------ ------------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                  SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA1111,L030
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
----------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                       L030
  05  LOCATION-NAME                 C  30                                       WESTERN WAREHOUSE - PH
  05  FIRST-ISSUE-DATE              C   6                                       950112
  05  LAST-ISSUE-DATE               C   6                                       950112
  05  LAST-INVENTORY-DATE           C   6                                       950112
    10  QUANTITY-ON-HAND            PS  7  2                                    200.00
    10  REORDER-QUANTITY            PS  7  2                                    100.00
    10  ALLOCATED-QUANTITY          PS  7  2                                    250.00
  05  FIRST-ACTIVITY-DATE           C   6                                       950112
  05  LAST-ACTIVITY-DATE            C   6                                       950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  ___________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1           1           1           0           0           1           0           0
  2  PART020             0           0           0           0           1           0           0           0

                  B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                  SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE             MESSAGE
----------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112
```

Figure B-31. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR /IMSFLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 6
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:14:11
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA3333,L010
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                     L010
  05  LOCATION-NAME                  C  30                                     EASTERN WAREHOUSE - HB
  05  FIRST-ISSUE-DATE               C   6                                     950112
  05  LAST-ISSUE-DATE                C   6                                     950112
  05  LAST-INVENTORY-DATE            C   6                                     950112
    10  QUANTITY-ON-HAND             PS  7  2                                 200.00
    10  REORDER-QUANTITY             PS  7  2                                 100.00
    10  ALLOCATED-QUANTITY           PS  7  2                                 250.00
  05  FIRST-ACTIVITY-DATE            C   6                                     950112
  05  LAST-ACTIVITY-DATE             C   6                                     950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             1             0             0             1             0             0
  2  PART020             0             0             0             0             1             0             0             0

                  B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                             INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                        SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA3333,L020
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    10  ALLOCATED-QUANTITY           PS  7  2  400.00                          450.00
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _____________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010             1             1             1             0             0             1             0             0
  2  PART020             1             1             1             0             0             1             0             0
```

Figure B-32. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 7
                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                     TIME: 09:14:11
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________

                  B142 INPUT RECORD NUMBER (6) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3333
      LEVEL NUMBER/DATA NAME        FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE               MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

LVL SEGMENT  DESCRIPTION    CONCATENATED KEY                                                        SEGMENT INSERTED
--- -------- --------------- ---------------------------------------------------------------------------------------
-----------
2   PART020  PART LOCATION   TA3333,L030
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE             AFTER FIELD VALUE               MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                   L030
  05  LOCATION-NAME                 C  30                                   WESTERN WAREHOUSE - PH
  05  FIRST-ISSUE-DATE              C   6                                   950112
  05  LAST-ISSUE-DATE               C   6                                   950112
  05  LAST-INVENTORY-DATE           C   6                                   950112
    10  QUANTITY-ON-HAND            PS  7  2                                200.00
    10  REORDER-QUANTITY            PS  7  2                                100.00
    10  ALLOCATED-QUANTITY          PS  7  2                                250.00
  05  FIRST-ACTIVITY-DATE           C   6                                   950112
  05  LAST-ACTIVITY-DATE            C   6                                   950112

                B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                   INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _ _________ _ _________ _ _________ _ _________ _ _________ _ _________
  1  PART010             1           1           1           0           0           1           0           0
  2  PART020             0           0           0           0           1           0           0           0

                  B142 INPUT RECORD NUMBER (7) USED FOR DATA SUBSTITUTION                           INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                       SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5555
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE             AFTER FIELD VALUE               MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE              C   6     940531                          950112
```

Figure B-33. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 8
                                                                                                    DATE: 01/30/07
                                    COMMAND EXECUTION PHASE                                         TIME: 09:14:11
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA5555,L010
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE              AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                     L010
  05  LOCATION-NAME                  C  30                                     EASTERN WAREHOUSE - HB
  05  FIRST-ISSUE-DATE               C   6                                     950112
  05  LAST-ISSUE-DATE                C   6                                     950112
  05  LAST-INVENTORY-DATE            C   6                                     950112
    10  QUANTITY-ON-HAND             PS  7  2                                 400.00
    10  REORDER-QUANTITY             PS  7  2                                 200.00
    10  ALLOCATED-QUANTITY           PS  7  2                                 450.00
  05  FIRST-ACTIVITY-DATE            C   6                                     950112
  05  LAST-ACTIVITY-DATE             C   6                                     950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1            0            0            1            0            0
  2  PART020             0            0          0            0            1            0            0            0

                  B142 INPUT RECORD NUMBER (8) USED FOR DATA SUBSTITUTION                             INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5555
      LEVEL NUMBER/DATA NAME        FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE             C  6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA5555,L020
      LEVEL NUMBER/DATA NAME        FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    10  ALLOCATED-QUANTITY           PS  7  2  800.00                          850.00
  05  LAST-ACTIVITY-DATE              C   6     940531                          950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1            0            0            1            0
  2  PART020             1            1          1            0            0            1            0
```

Figure B-34. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                          PAGE: 9
                                                                                                          DATE: 01/30/07
                                       COMMAND EXECUTION PHASE                                            TIME: 09:14:11
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRAOA.TMPCMDS.H01(     )
_____________________________________________________________________________________________________________________

                  B142 INPUT RECORD NUMBER (9) USED FOR DATA SUBSTITUTION                              INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA5555
      LEVEL NUMBER/DATA NAME        FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE             C   6            950112                         950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA5555,L030
      LEVEL NUMBER/DATA NAME        FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                      L030
  05  LOCATION-NAME                  C  30                                      WESTERN WAREHOUSE - PH
  05  FIRST-ISSUE-DATE               C   6                                      950112
  05  LAST-ISSUE-DATE                C   6                                      950112
  05  LAST-INVENTORY-DATE            C   6                                      950112
    10  QUANTITY-ON-HAND             PS  7  2                                   400.00
    10  REORDER-QUANTITY             PS  7  2                                   100.00
    10  ALLOCATED-QUANTITY           PS  7  2                                   450.00
  05  FIRST-ACTIVITY-DATE            C   6                                      950112
  05  LAST-ACTIVITY-DATE             C   6                                      950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                     INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010           1           1             1             0             0             1             0             0
  2  PART020           0           0             0             0             1             0             0             0

                  B142 INPUT RECORD NUMBER (10) USED FOR DATA SUBSTITUTION                             INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                          SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
      LEVEL NUMBER/DATA NAME        FORMAT        BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------  --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE             C   6     950112                         950112
```

Figure B-35. Example 3 - Execution Phase (Cont.)

```
FILE-
D FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 10
                                                                                               DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                TIME: 09:14:12
RUN TYPE: DLI PSB MODE: STATIC   PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091353.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT INSERTED
--- -------- --------------- ---------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,L010
      LEVEL NUMBER/DATA NAME       FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------- --------    ------------------------------  ------------------------------ ----------
    07  LOCATION-NUMBER              C   4                                    L010
  05  LOCATION-NAME                  C  30                                    EASTERN WAREHOUSE - HB
  05  FIRST-ISSUE-DATE               C   6                                    950112
  05  LAST-ISSUE-DATE                C   6                                    950112
  05  LAST-INVENTORY-DATE            C   6                                    950112
    10  QUANTITY-ON-HAND             PS  7  2                                 100.00
    10  REORDER-QUANTITY             PS  7  2                                 50.00
    10  ALLOCATED-QUANTITY           PS  7  2                                 150.00
  05  FIRST-ACTIVITY-DATE            C   6                                    950112
  05  LAST-ACTIVITY-DATE             C   6                                    950112

                B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1          0          0          1          0          0
  2  PART020             0            0          0          0          1          0          0          0

                  B142 INPUT RECORD NUMBER (11) USED FOR DATA SUBSTITUTION                         INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
      LEVEL NUMBER/DATA NAME       FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------- --------    ------------------------------  ------------------------------ ----------
  05  LAST-ACTIVITY-DATE            C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ---------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,L020
      LEVEL NUMBER/DATA NAME       FORMAT       BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
---------------------------------- --------    ------------------------------  ------------------------------ ----------
    10  ALLOCATED-QUANTITY           PS  7  2  500.00                          550.00
  05  LAST-ACTIVITY-DATE             C   6     950112                          950112

                B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1          0          0          1          0          0
  2  PART020             1            1          1          0          0          1          0          0
```

Figure B-36. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                                    PAGE: 11
                                                                                                                    DATE: 01/30/07
                                        COMMAND EXECUTION PHASE                                                     TIME: 09:14:12
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB    COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(      )
_____________________________________________________________________________________________________________________________

                  B142 INPUT RECORD NUMBER (12) USED FOR DATA SUBSTITUTION                                  INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                                SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA7777
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
--------------------------------  --------    ----------------------------  ---------------------------- ----------------
  05  LAST-ACTIVITY-DATE           C   6     950112                         950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                              SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA7777,L030
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
--------------------------------  --------    ----------------------------  ---------------------------- ----------
    07  LOCATION-NUMBER              C   4                                  L030
  05  LOCATION-NAME                 C  30                                  WESTERN WAREHOUSE - PH
  05  FIRST-ISSUE-DATE              C   6                                  950112
  05  LAST-ISSUE-DATE               C   6                                  950112
  05  LAST-INVENTORY-DATE           C   6                                  950112
    10  QUANTITY-ON-HAND            PS  7  2                               100.00
    10  REORDER-QUANTITY            PS  7  2                               50.00
    10  ALLOCATED-QUANTITY          PS  7  2                               150.00
  05  FIRST-ACTIVITY-DATE           C   6                                  950112
  05  LAST-ACTIVITY-DATE            C   6                                  950112

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                          INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ _________ _____________ _____________ _____________ _____________ _____________ _____________
  1  PART010           1             1             1             0             0             1             0             0
  2  PART020           0             0             0             0             1             0             0             0

                  B142 INPUT RECORD NUMBER (13) USED FOR DATA SUBSTITUTION                                  INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                              SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA9999
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE             AFTER FIELD VALUE              MESSAGE
--------------------------------  --------    ----------------------------  ---------------------------- -------------
  05  LAST-ACTIVITY-DATE           C   6     941230                         950112
```

Figure B-37. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                                    PAGE: 12
                                                                                                    DATE: 01/30/07
                                     COMMAND EXECUTION PHASE                                        TIME: 09:14:12
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________________
LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT INSERTED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA9999,L010
      LEVEL NUMBER/DATA NAME          FORMAT        BEFORE FIELD VALUE            AFTER FIELD VALUE            MESSAGE
--------------------------------    -----------    ----------------------      --------------------------      ----------
    07  LOCATION-NUMBER              C   4                                     L010
  05  LOCATION-NAME                 C  30                                     EASTERN WAREHOUSE - HB
  05  FIRST-ISSUE-DATE              C   6                                     950112
  05  LAST-ISSUE-DATE               C   6                                     950112
  05  LAST-INVENTORY-DATE           C   6                                     950112
    10  QUANTITY-ON-HAND            PS  7  2                                  100.00
    10  REORDER-QUANTITY            PS  7  2                                  50.00
    10  ALLOCATED-QUANTITY          PS  7  2                                  150.00
  05  FIRST-ACTIVITY-DATE           C   6                                     950112
  05  LAST-ACTIVITY-DATE            C   6                                     950112

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1            0            0            1            0            0
  2  PART020             0            0          0            0            1            0            0            0

                    B142 INPUT RECORD NUMBER (14) USED FOR DATA SUBSTITUTION                            INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                  SEGMENT CHANGED
--- -------- --------------- ----------------------------------------------------------------------------------------
1   PART010  PART ROOT       TA9999
      LEVEL NUMBER/DATA NAME        FORMAT     BEFORE FIELD VALUE          AFTER FIELD VALUE            MESSAGE
-------------------------------    --------    ---------------------    ---------------------------    ------------------
  05  LAST-ACTIVITY-DATE            C   6     950112                     950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                    SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA9999,L020
      LEVEL NUMBER/DATA NAME         FORMAT      BEFORE FIELD VALUE           AFTER FIELD VALUE            MESSAGE
--------------------------------    -------    ---------------------------  --------------------------- ------------------
    10  ALLOCATED-QUANTITY           PS  7  2  200.00                       250.00
  05  LAST-ACTIVITY-DATE             C   6     941230                       950112

                    B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T          -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  __________ _ __________ __________ __________ __________ __________ __________ __________
  1  PART010             1            1          1            0            0            1            0            0
  2  PART020             1            1          1            0            0            1            0            0
```

Figure B-38. Example 3 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3   ***     PART ALLOCATION UPDATE     ***                          PAGE: 13
                                                                                          DATE: 01/30/07
                                       COMMAND EXECUTION PHASE                            TIME: 09:14:12
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB  COMMAND DATASET: SYS95030.T091353.RA000.DFHTRA0A.TMPCMDS.H0()
_____________________________________________________________________________________________________________

          B142 INPUT RECORD NUMBER (15) USED FOR DATA SUBSTITUTION                        INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                SEGMENT CHANGED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA9999
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE      AFTER FIELD VALUE              MESSAGE
--------------------------------  ---------    ---------------------------------------- ----------------
  05  LAST-ACTIVITY-DATE              C   6     950112                          950112

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                 SEGMENT INSERTED
--- -------- --------------- -------------------------------------------------------------------------------
2   PART020  PART LOCATION   TA9999,L030
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE       AFTER FIELD VALUE            MESSAGE
--------------------------------  ----------    ---------------------------------------- --------------
    07  LOCATION-NUMBER             C   4                                    L030
  05  LOCATION-NAME                 C  30                                    WESTERN WAREHOUSE - PH
  05  FIRST-ISSUE-DATE              C   6                                    950112
  05  LAST-ISSUE-DATE               C   6                                    950112
  05  LAST-INVENTORY-DATE           C   6                                    950112
    10  QUANTITY-ON-HAND            PS  7  2                                 100.00
    10  REORDER-QUANTITY            PS  7  2                                 50.00
    10  ALLOCATED-QUANTITY          PS  7  2                                 150.00
  05  FIRST-ACTIVITY-DATE           C   6                                    950112
  05  LAST-ACTIVITY-DATE            C   6                                    950112

          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                INFORMATIONAL

LVL  SEGMENT   -----      S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T       -----
NBR  NAME    RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________ ________ _ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010          1             1           1           0           0           1           0           0
  2  PART020          0             0           0           0           1           0           0           0

          B113 END OF EXECUTE PHASE DUE TO END OF FILE ON INPUT, RC=0                      INFORMATIONAL

LVL  SEGMENT   -----          S E G M E N T  C O U N T S  F O R  D A T A B A S E          PPART     -----
NBR  NAME    RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________ ________ _ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010         15            15          15           0           0          15           0           0
  2  PART020          5             5           5           0          10           5           0           0
```

FLEX Execution Report - Example 4

Figure B-39. Example 4 - Validation Phase

```
FILE-
AID FOR IMS/FLEX  16.3          FLEX EXECUTION REPORT                                                PAGE:        1
                                                                                                     DATE: 01/30/07
                              COMMAND VALIDATION PHASE                                               TIME: 09:16:38
RUN TYPE: DLI PSB MODE: STATIC PSB NAME: DEMOPSB  COMMAND DATASET: SYS95030.T091632.RA000.DFHTRA0A.TMPCMDS.H01()
_____________________________________________________________________________________________________________

         B132 INPUT OPTION IS POSSIBLE, IXPIN IS USING DFHTRA0.BFAI.DATA200                    INFORMATIONAL

         B132 OUTPUT OPTION IS POSSIBLE, IXPOUT IS USING DFHTRA0.BFAI.DATA80                   INFORMATIONAL

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN01  OUTPUT=PARTOT04 ;

        4         1     TITLE LINE01='***  DELETE SUPERSEDED PARTS WITH NO STOCK  ***';

        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE  PART-NUMBER = INPUT(10,6,C)
        5         4                AND  EQUIVALENT-PART ¬= '      '
        5         5                AND  LAST-ACTIVITY-DATE < 940601
        5         6           SEGMENT=PART020  MAX=ALL
        5         7        COUNT
        5         8           SEGMENT=PART010  OPT=(NOPATH,CKEY)
        5         9        PRINT
        5        10           SEGMENT=PART010  OPT=NOPATH
        5        11        DELETE
        5        12           SEGMENT=PART010  OPT=NOPATH ;

          B109 END OF VALIDATE PHASE DUE TO END OF FILE ON INPUT, RC=0                        INFORMATIONAL

          B111 VALIDATE PHASE SUCCESSFUL, PROCEEDING TO EXECUTE PHASE                         INFORMATIONAL

          B011 ALLOCATING AUDIT TRAIL: 'DFHTRA0.IXPAT.D950130.T091639'                        INFORMATIONAL
```

Figure B-40. Example 4 - Execution Phase

```
FILE-AID FOR IMS/FLEX  16.3      FLEX EXECUTION REPORT                                          PAGE:        2
                                                                                               DATE: 01/30/07
                               COMMAND EXECUTION PHASE                                         TIME: 09:16:46
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB COMMAND DATASET: SYS95030.T091632.RA000.DFHTRA0A.TMPCMDS.H01()
_____________________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        1         1    TYPE  RUN       ;

        2         1     PSB DBN=PPART ;

        3         1     SET INPUT=PARTIN01  OUTPUT=PARTOT04 ;

        4         1     TITLE LINE01='***  DELETE SUPERSEDED PARTS WITH NO STOCK  ***';
```

Figure B-41. Example 4 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***  DELETE SUPERSEDED PARTS WITH NO STOCK ***                    PAGE:        3
                                                                                          DATE: 01/30/07
                                COMMAND EXECUTION PHASE                                   TIME: 09:16:46
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB  OMMAND DATASET: SYS95030.TO91632.RA000.DFHTRAOA.TMPCMDS.H01()
_____________________________________________________________________________________________________

STATEMENT    LINE      USER INPUT STATEMENT  -OR-
NUMBER       NUMBER    SYSTEM SUPPLIED STATEMENT
_________    ______    ____________________________________________________________________________
        5         1     SELECT
        5         2           SEGMENT=PART010  MAX=ALL
        5         3              WHERE  PART-NUMBER = INPUT(10,6,C)
        5         4                AND  EQUIVALENT-PART ¬= '      '
        5         5                AND  LAST-ACTIVITY-DATE < 940601
        5         6           SEGMENT=PART020  MAX=ALL
        5         7         COUNT
        5         8           SEGMENT=PART010  OPT=(NOPATH,CKEY)
        5         9         PRINT
        5        10           SEGMENT=PART010  OPT=NOPATH
        5        11         DELETE
        5        12           SEGMENT=PART010  OPT=NOPATH ;

          B142 INPUT RECORD NUMBER (1) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

          B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                 INFORMATIONAL

LVL  SEGMENT   -----         S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T         -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRAC
TED
_____ _________ _____________ _____________ _____________ _____________ _____________ _____________ _____________
1  PART010             1             0             0             0             0             0             0        0
2  PART020             0             0             0             0             0             0             0        0

            B142 INPUT RECORD NUMBER (2) USED FOR DATA SUBSTITUTION                        INFORMATONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA1234
                 LEVEL NUMBER/DATA NAME          FORMAT           FIELD VALUE                    MESSAGE
               ------------------------------------  ------------------------------------------------------
               01  PART-ROOT-DATA
                 05  PART-ROOT-KEY
                   07  PART-NUMBER                  C   6     TA1234
                 05  PART-NAME                    C  30     STANDARD OFFICE DESK
                 05  EFFECTIVITY-DATE             C   6     931230
                 05  SUPERSEDED-PART              C   6
                 05  EQUIVALENT-PART              C   6     TA1111
                 05  UNIT-OF-MEASURE              C   2     EA
                 05  PURCHASED-PART-IND           C   1     Y
                 05  FINISHED-PART-IND            C   1     Y
                 05  ENGINEERING-DRAWING-NO       C   6     941230
                 05  COST-DATA
                   10  STANDARD-COST              PS  7  2  465.00
                   10  LAST-ACTUAL-COST           PS  7  2  0.00
                   10  STANDARD-LABOR-COST        PS  7  2  0.00
                   10  LAST-LABOR-COST            PS  7  2  0.00
                   10  STANDARD-MATERIAL-COST     PS  7  2  0.00
                   10  LAST-MATERIAL-COST         PS  7  2  0.00
```

Figure B-42. Example 4 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***  DELETE SUPERSEDED PARTS WITH NO STOCK ***                    PAGE:        4
                                                                                           DATE: 01/30/07
                                      COMMAND EXECUTION PHASE                              TIME: 09:16:47
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB      COMMAND DATASET: SYS95030.T091632.RA000.DFHTRAOA.TMPCMDS.
H01(    )
_____________________________________________________________________________________________________________
                      LEVEL NUMBER/DATA NAME          FORMAT          FIELD VALUE                    MESSAGE
         ------------------------------------  --------  ------------------------------  --------------------
                  10  STANDARD-SETUP-COST           PS  7  2  0.00
                  10  LAST-SETUP-COST               PS  7  2  0.00
                  10  STANDARD-REWORK-COST          PS  7  2  0.00
                  10  LAST-REWORK-COST              PS  7  2  0.00
                05  FIRST-ACTIVITY-DATE            C   6     940103
                05  LAST-ACTIVITY-DATE             C   6     940531
              ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                  SEGMENT DELETED
--- -------- -------------- ------------------------------------------------------------------------------------
1   PART010  PART ROOT      TA1234
      LEVEL NUMBER/DATA NAME          FORMAT       BEFORE FIELD VALUE          AFTER FIELD VALUE         MESSAGE
-----------------------------------  --------    ------------------------------------------------------------------
01  PART-ROOT-DATA
  05  PART-ROOT-KEY
    07  PART-NUMBER                   C   6     TA1234
  05  PART-NAME                      C  30     STANDARD OFFICE DESK
  05  EFFECTIVITY-DATE               C   6     931230
  05  SUPERSEDED-PART                C   6
  05  EQUIVALENT-PART                C   6     TA1111
  05  UNIT-OF-MEASURE                C   2     EA
  05  PURCHASED-PART-IND             C   1     Y
  05  FINISHED-PART-IND              C   1     Y
  05  ENGINEERING-DRAWING-NO         C   6     941230
  05  COST-DATA
    10  STANDARD-COST                PS  7  2  465.00
    10  LAST-ACTUAL-COST             PS  7  2  0.00
    10  STANDARD-LABOR-COST          PS  7  2  0.00
    10  LAST-LABOR-COST              PS  7  2  0.00
    10  STANDARD-MATERIAL-COST       PS  7  2  0.00
    10  LAST-MATERIAL-COST           PS  7  2  0.00
    10  STANDARD-SETUP-COST          PS  7  2  0.00
    10  LAST-SETUP-COST              PS  7  2  0.00
    10  STANDARD-REWORK-COST         PS  7  2  0.00
    10  LAST-REWORK-COST             PS  7  2  0.00
  05  FIRST-ACTIVITY-DATE            C   6     940103
  05  LAST-ACTIVITY-DATE             C   6     940531
** END OF LAYOUT. LENGTH =   126 **

       B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME   RETRIEVED  _ QUALIFIED    CHANGED     DELETED     INSERTED     COUNTED     PRINTED     EXTRACTED
___  _____ __________ ___________ __________ ___________ ___________ ___________ ___________ ___________
  1  PART010          1           1          0           1           0           1           1           0
  2  PART020          0           0          0           0           0           0           0           0

            B142 INPUT RECORD NUMBER (3) USED FOR DATA SUBSTITUTION                        INFORMATIONAL
```

Figure B-43. Example 4 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***  DELETE SUPERSEDED PARTS WITH NO STOCK ***                    PAGE:        5
                                                                                           DATE: 01/30/07
                                      MMAND EXECUTION PHASE                                TIME: 09:16:47
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB COMMAND DATASET: SYS95030.T091632.RA000.DFHTRAOA.TMPCMDS.H01()
_____________________________________________________________________________________________________________
            B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                 INFORMATIONAL

LVL  SEGMENT   -----       S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME   RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  _____________ ___________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010       1           0           0           0           0           0           0           0
  2  PART020         0           0           0           0           0           0           0           0


          B142 INPUT RECORD NUMBER (4) USED FOR DATA SUBSTITUTION                          INFORMATIONAL

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                SEGMENT PRINTED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3456
               LEVEL NUMBER/DATA NAME                FORMAT    FIELD VALUE                  MESSAGE
               ------------------------------------  --------  ---------------------------  -------------------
               01  PART-ROOT-DATA
                 05  PART-ROOT-KEY
                   07  PART-NUMBER                  C   6     TA3456
                 05  PART-NAME                      C  30     STANDARD OFFICE DESK CHAIR
                 05  EFFECTIVITY-DATE               C   6     931230
                 05  SUPERSEDED-PART                C   6
                 05  EQUIVALENT-PART                C   6     TA3333
                 05  UNIT-OF-MEASURE                C   2     EA
                 05  PURCHASED-PART-IND             C   1     Y
                 05  FINISHED-PART-IND              C   1     Y
                 05  ENGINEERING-DRAWING-NO         C   6     941230
                 05  COST-DATA
                   10  STANDARD-COST                PS  7  2  235.00
                   10  LAST-ACTUAL-COST             PS  7  2  0.00
                   10  STANDARD-LABOR-COST          PS  7  2  0.00
                   10  LAST-LABOR-COST              PS  7  2  0.00
                   10  STANDARD-MATERIAL-COST       PS  7  2  0.00
                   10  LAST-MATERIAL-COST           PS  7  2  0.00
                   10  STANDARD-SETUP-COST          PS  7  2  0.00
                   10  LAST-SETUP-COST              PS  7  2  0.00
                   10  STANDARD-REWORK-COST         PS  7  2  0.00
                   10  LAST-REWORK-COST             PS  7  2  0.00
                 05  FIRST-ACTIVITY-DATE            C   6     940103
                 05  LAST-ACTIVITY-DATE             C   6     940531
               ** END OF LAYOUT. LENGTH =   126 **

LVL SEGMENT  DESCRIPTION     CONCATENATED KEY                                                SEGMENT DELETED
--- -------- --------------- ------------------------------------------------------------------------------
1   PART010  PART ROOT       TA3456
      LEVEL NUMBER/DATA NAME        FORMAT      BEFORE FIELD VALUE         TER FIELD VALUE              MESSAGE
------------------------------  --------    ---------------------------  ---------------------------------------
01  PART-ROOT-DATA
  05  PART-ROOT-KEY
    07  PART-NUMBER                  C   6     TA3456
  05  PART-NAME                     C  30     STANDARD OFFICE DESK CHAIR
  05  EFFECTIVITY-DATE              C   6     931230
```

Figure B-44. Example 4 - Execution Phase (Cont.)

```
FILE-AID FOR IMS/FLEX  16.3***  DELETE SUPERSEDED PARTS WITH NO STOCK ***                    PAGE:        6
                                                                                           DATE: 01/30/07
                                  COMMAND EXECUTION PHASE                                  TIME: 09:16:47
RUN TYPE: DLI  PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091632.RA000.DFHTRAOA.TMPCMDS.H01(    )
_____________________________________________________________________________________________________________
      LEVEL NUMBER/DATA NAME       FORMAT        BEFORE FIELD VALUE          AFTER FIELD VALUE          MESSAGE
-------------------------------  ----------  ------------------------------------------------------------------
  05  SUPERSEDED-PART               C   6
  05  EQUIVALENT-PART               C   6     TA3333
  05  UNIT-OF-MEASURE               C   2     EA
  05  PURCHASED-PART-IND            C   1     Y
  05  FINISHED-PART-IND             C   1     Y
  05  ENGINEERING-DRAWING-NO        C   6     941230
  05  COST-DATA
    10  STANDARD-COST               PS  7  2  235.00
    10  LAST-ACTUAL-COST            PS  7  2  0.00
    10  STANDARD-LABOR-COST         PS  7  2  0.00
    10  LAST-LABOR-COST             PS  7  2  0.00
    10  STANDARD-MATERIAL-COST      PS  7  2  0.00
    10  LAST-MATERIAL-COST          PS  7  2  0.00
    10  STANDARD-SETUP-COST         PS  7  2  0.00
    10  LAST-SETUP-COST             PS  7  2  0.00
    10  STANDARD-REWORK-COST        PS  7  2  0.00
    10  LAST-REWORK-COST            PS  7  2  0.00
  05  FIRST-ACTIVITY-DATE           C   6     940103
  05  LAST-ACTIVITY-DATE            C   6     940531
** END OF LAYOUT. LENGTH =   126 **

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ __________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1            1           0           1           0           1           1           0
  2  PART020             0            0           0           0           0           0           0           0

           B142 INPUT RECORD NUMBER (5) USED FOR DATA SUBSTITUTION                              INFORMATIONAL

           B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                    INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ __________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1            0           0           0           0           0           0           0
  2  PART020             0            0           0           0           0           0           0           0

          B142 INPUT RECORD NUMBER (6) USED FOR DATA SUBSTITUTION                               INFORMATIONAL

                  B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS                  INFORMATIONAL

LVL  SEGMENT   -----        S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T        -----
NBR  NAME      RETRIEVED  _ QUALIFIED    CHANGED      DELETED      INSERTED     COUNTED      PRINTED      EXTRACTED
___  ________  _________ _ __________ ___________ ___________ ___________ ___________ ___________ ___________
  1  PART010             1            0           0           0           0           0           0           0
  2  PART020             0            0           0           0           0           0           0           0

                  B142 INPUT RECORD NUMBER (7) USED FOR DATA SUBSTITUTION                           INFORMATIONAL
```

Figure B-45. Example 4 - Execution Phase (Cont.)

```
FILE-
AID FOR IMS/FLEX  16.3***  DELETE SUPERSEDED PARTS WITH NO STOCK ***                    PAGE:        7
                                                                                        DATE: 01/30/07
                                COMMAND EXECUTION PHASE                                 TIME: 09:16:47
RUN TYPE: DLI PSB MODE: STATIC  PSB NAME: DEMOPSB     COMMAND DATASET: SYS95030.T091632.RA000.DFHTRAOA.TMPCMDS.H
01( )
_____________________________________________________________________________________________________________

           B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL

LVL  SEGMENT   -----      S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T      -----
NBR  NAME     RETRIEVED  _ QUALIFIED    CHANGED     DELETED     INSERTED     COUNTED      PRINTED    EXTRACTED
___  _______  _________  ___________ __________ _________   _________  _________  _________  __________
  1  PART010         1           0          0          0           0          0          0           0
  2  PART020         0           0          0          0           0          0          0           0

           B142 INPUT RECORD NUMBER (8) USED FOR DATA SUBSTITUTION                        INFORMATIONAL

           B903 PRIMARY COMMAND OF SELECT TERMINATED DUE TO NO MORE SEGMENTS              INFORMATIONAL

LVL  SEGMENT   -----      S E G M E N T  C O U N T S  F O R  T H I S  S T A T E M E N T      -----
NBR  NAME     RETRIEVED  _ QUALIFIED    CHANGED     DELETED     INSERTED     COUNTED      PRINTED    EXTRACTED
___  _______  _________  ___________ __________ _________   _________  _________  _________  __________
  1  PART010         1           0          0          0           0          0          0           0
  2  PART020         0           0          0          0           0          0          0           0

           B113 END OF EXECUTE PHASE DUE TO END OF FILE ON INPUT, RC=0                    INFORMATIONAL

LVL  SEGMENT   -----       S E G M E N T  C O U N T S  F O R  D A T A B A S E      PPART     -----
NBR  NAME    RETRIEVED  _ QUALIFIED  CHANGED     DELETED     INSERTED     COUNTED      PRINTED      EXTRACTED
___  _____ _________   _________  _______   _________  _________  _________ _________ __________
  1  PART010         8           2          0          2           0          2          2           0
  2  PART020         0           0          0          0           0          0          0           0
```

Index

A

B

C

D

E

F

H

I

J

L

M

N

O

P

Q

R

S

T

V

W

X

Z