MAX IMS/UTIL

MAX IMS/UTIL Online V3.4.0

User Reference Manual

MAX SOFTWARE™
Denver, Colorado
MAXimizing your performance

CA, INC.

Contact Information

Corporate Headquarters

CA, Inc.
One CA Plaza
Islandia, NY 11749
USA

www.ca.com

Technical Support

For online technical assistance and a complete list of locations, primary service hours, and telephone numbers, contact Technical Support at http://ca.com/support

Web Site

http://ca.com/support

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Release 3.4.0 (November 2005)

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REVISIONS

Release 3.4.0: November 2005

Release 3.3.0: March 2004

- Ability to extract only segment concatenated keys.
- Ability to unload/load single segments identified by concatenated key.
- Ability to mass delete database segments.
- New code page enhancements for data transformation functions.
- Significant performance enhancements.

Release 3.2.0: March 2003

- Added Dynamic PSB generation for accessing a database with MAX IMS/UTIL using only information from the Database Descriptor (DBD) module.
- Added optimized Dynamic PSB definition for MAX IMS/UTIL Batch functions resulting in significant performance improvements.
- Added interactive prompting of Dynamic PSB segment contents for MAX IMS/UTIL Online and Batch functions resulting in significant performance opportunities.
- Added interactive display, selection, and dynamic PSB generation of Database Descriptor (DBD) defined secondary indexes for accessing a database in a defined alternate processing sequence.
- Export of IMS data mapped by COBOL/PL/I copybooks to XML, Comma separated (CSV), Tab delimited (TAB), and other user defined formats. Transformed data may be copied to sequential data sets or Unix System Services files.
- Added additional IMS database compare options (**SYNC**, **Read Ahead** 'nnnn' segments) to simplify analysis of compare results.

Release 3.1.0: June 2002

- Default mapping criteria.
- New **Update/Search/Count** feature to invoke MAX IMS/UTIL Batch for mass update of database using selection criteria.
- Formatted preview feature was added to **Mass Update**, **Unload**, and **Load** database options to display segments using mapping criteria copybook layouts.
- Permit entry of DBD name on main menu in place of PCB name.
- New **Compare** database feature to invoke MAX IMS/UTIL Batch with segment selection and field compare criteria.
- Enhanced **Load** database option to include Select/Change criteria.
- Enhanced Select/Change criteria for **Unload**, **Load**, and **Mass Update** database to permit additional MAX IMS/UTIL Batch actions to be performed: **Replace**, **Change**, **Edit**, **Translate**, **Scramble**, **Unscramble**, **Calcamt**, **Calcdate**.
- Permit '?' in all **Unload**, **Load**, **Mass Update**, and **Compare** database select/change fields for the interactive prompting and composition of MAX IMS/UTIL Batch parameters.
- Added new disposition to **Unload** database output file.

Release 2.5.0, Level R4: November 2001

- Permit overtyping segment key field in formatted browse and edit modes to locate a different twin segment.
- Added Tasklib/Reslib data sets to be used by IMSID.
- Added User Loadlib and User Reslib data sets to be allocated and received from DSNL.
- Allow AGN, DBDlib 1-2, and PSBlib 1-2 to be received from DSNL
- Allow up to 24 DLI data sets to be allocated and received from DSNL.
- Support log audit reporting to provide formatted segment layouts using custom map criteria and copybook layouts.

Release 2.5.0: July 2001

- Allow changing the Project DSN when DSNLs are stored/fetched with the **CREATE** and **PROFILE** commands.
- **L(OCATE)** segment by concatenated key command.
- Additional segment scrolling and positioning commands: **T(WIN)**, **R(OOT)**, **PA(RENT)**, **CH(ILD)**.
- **KEY** command displays concatenated key in improved format.

Initial Release 2.4.0: August 2000

- Initial release.
- Added interface to Data Set Name List (DSNL) functions.
- Added concatenated Copylibs, PSBlibs, DBDlibs.
- Supports logging to an IMS database when selected application databases are accessed or changed.

PREFACE

This book provides a guide and reference about the various functions of MAX IMS/UTIL Online. Use this book to learn and use the MAX IMS/UTIL Online product.

It describes:

- An introduction to the product.
- Guideline information on data functions.
- Command syntax and descriptions.
- Command operand syntax along with a description of the Operands.
- Numerous examples.
- Return code information.
- Who Should Read This Book

This book is for programmers, database administrators, system programmers, or other technical persons who perform data manipulation of IMS databases.

Database manipulation includes segment selection, modification, printing, mass update, unload, load, and compare. Users are expected to have knowledge of IMS, COBOL and/or PL/I.

Notational Conventions

- The following notational conventions are used in this manual:
- Uppercase commands and their operand(s) should be entered as shown but need not be in uppercase.
- Operand(s) shown in lowercase are variables and a value should be substituted for them.
- Operand(s) shown in brackets [ ] are optional, with choices indicated by a vertical bar |. One or none may be chosen; the defaults are underscored.
- Operand(s) shown in braces { } are alternatives; one must be chosen.
- An ellipsis (...) indicates that the parameter shown may be repeated to specify additional items of the same category.

How This Book is Organized

This book contains the following chapters:

Chapter 1: Introduction to MAX IMS/UTIL
describes the need for MAX IMS/UTIL Online and its overall uses.

Chapter 2: How to Use MAX IMS/UTIL
provides an overview of how the online product functions.

Chapter 3: Data Set Name List Functions
provides an overview of how to access IMS databases with MAX IMS/UTIL from DSNL entries.

Appendix A: Copybook Support

Appendix B: DFSRRC00 PROCESSING EXIT
describes a user maintained exit invoked before/after DFRSRRC00 is executed.

Appendix C: PSB Identification Exit
describes a user maintained exit invoked whenever a PSB name, IMSID on Run Mode is entered.

Any reference to MAX IMS/UTIL in the subsequent chapters of this book will generally refer to the MAX IMS/UTIL Online product.

CHAPTER 1: INTRODUCTION TO MAX IMS/UTIL

Database Maintainability

IMS has long held the respect of successful companies for its high performance and high availability hosting of mission critical database applications.

While providing many advantages over alternative database management systems in the area of data access, data integrity, and recoverability, IMS brings a certain complexity and challenge to using its Database architecture.

With IMS playing such a key role in many companies' computing environment, the presence of cost-effective tools that facilitate the edit and test of databases is essential. A set of easy-to-use application tools for the efficient support, change, and test lifecycles of IMS databases is exactly what MAX IMS/UTIL has been designed to provide.

Namely:

- Tools for the Online and Batch manipulation of IMS databases.
- ISPF-like commands that programmers of all skill levels can learn.
- Ability to navigate complex IMS hierarchical databases with ease.
- Export to XML, comma separated, tab delimited, and other formats.
- Capabilities for privatizing sensitive data.
- Powerful features to bring meaning to the analysis and manipulation of IMS database contents.
- Transparent access to all IMS database organizations and complexities.
- Special attention to IMS database integrity requirements.

Database Editor

MAX IMS/UTIL provides online **BROWSE** and **EDIT** facilities so that IMS databases can be browsed and edited with the same ease that programmers browse and edit text, VSAM, and large sequential type data files.

The MAX IMS/UTIL database **BROWSE** and **EDIT** facilities have the same look and feel as both ISPF text browse and edit facilities and MAX Data/Util.

IMS databases differ considerably from text and VSAM files in that:

- IMS databases have multiple segment types each with their own copybook layout.
- IMS database segments are hierarchically related to one another and organized into database records anchored from a root segment.
- IMS databases can contain a large number of segments with many physically embedded pointers to optimize access performance.
- IMS databases are managed through separate IMS subsystems with special physical storage organizations to enhance access performance.
- IMS databases have strict requirements for logging and recoverability.
- IMS databases have much meta-data used to describe the physical and logical hierarchical relationships.

Despite these differences, programmers still want to process IMS databases with the same ease as they process their text and VSAM files now. The MAX IMS/UTIL database **BROWSE** and **EDIT** facilities were specially designed to accommodate these differences and shield the user from their IMS complexities.

MAX IMS/UTIL has four options for browsing and editing IMS databases:

- A traditional looking Unformatted Editor.
- A Formatted Editor that uses a copybook to map the data next to its corresponding copybook field name.
- A Formatted Editor using copybook support with the fields presented in a Horizontal mode, with data from multiple segments displayed below the corresponding field names.
- In addition, a Dump Editor that displays one segment at a time in hexadecimal/character mode.

The MAX IMS/UTIL database file **BROWSE** and **EDIT** facilities include the following features that programmers are already familiar with having used ISPF text and MAX Data/Util products.

- PF (program function) key scrolling.
- **FIND** and **CHANGE** commands.
- Hex mode displays.
- Line commands for deleting, inserting, and repeating.
- **CUT** and **PASTE** commands.

These functions were added to accommodate the special needs of IMS databases.

- Dynamically generate PSBs for database access.
- Process any size IMS database.
- Display PSB and DBD contents.
- Display segment hierarchical relationships.
- Invoke **BROWSE** and **EDIT** interchangeably from any place in a database without losing position.
- Position directly or generically to an IMS segment by root or concatenated key.
- Scroll up and down the IMS segment hierarchy using the **T(WIN)**, **R(OOT)**, **PA(RENT)**, and **CH(ILD)** commands.
- Ability to intelligently **INSERT**, **REPEAT**, and **DELETE** parent and dependent segments.
- Limit, through a special command, only the segment types desired to be viewed.
- Logging for audit purposes or backing out changes of an **EDIT** session.

IMS databases often contain quite complex hierarchical segment structures. MAX IMS/UTIL has the ability to display or print segments using a copybook layout to map the data to fields. All that is needed is to specify the name of the copybook and library in which it is contained for each segment type to be formatted.

Copybook support is available for both COBOL and PL/I copybooks. Refer to *Appendix A: Copybook Support* on page 151 for details on copybook support.

The **DUMP**, **FORMATTED BROWSE** and **EDIT** facilities offer all the same commands and capabilities as the **UNFORMATTED** and **HORIZONTAL PANEL** facilities except that one segment is presented at a time. Segments can generally be scrolled in a forward or backward direction and positioned with the LEFT & RIGHT scroll keys.

FORMATTED and **HORIZONTAL** option features include:

- Data is edited with related picture clauses.
- Data that does not conform to its format is displayed in a hex format.
- A data field that does not fit on one row is wrapped to the next row (Formatted).
- The **COBOL OCCURS** statement as well as the **OCCURS DEPENDING ON** statement are supported (see *Appendix A: Copybook Support* on page 151 for details).
- Segments are displayed by matching specific segment names to associated copybooks.
- Selective Field Display is supported by using Mapping Criteria. This limits the data to be viewed to that of the selected fields only.

IMS Utilities

MAX IMS/UTIL users can accomplish most important IDCAMS tasks online. Users no longer have to type complicated and confusing control parameters. Instead, IDCAMS options are presented to the user based on the functions requested. The user "fills in the blanks" and the selections are processed. IDCAMS functions are performed faster, with greater accuracy, and virtually no chance for errors.

Eliminates the need to reference cumbersome and complex IDCAMS manuals to process IDCAMS commands. MAX IMS/UTIL contains a comprehensive system of online prompts and context-sensitive help panels that make MAX IMS/UTIL exceptionally easy to use and understand.

Supports the following IDCAMS functions: **DELETE**, **DEFINE**, **ALTER**, **RENAME**, **REPRO**, **BLDINDEX**, **VERIFY**, **LIST** entries, and Detailed Information display of a single entry.

The IDCAMS feature of MAX IMS/UTIL supports the following entry types: Clusters (KSDS, ESDS, RRDS, VRRDS, Linear), Generation Data Groups (GDG), ALIAS, Alternate-index (AIX), Path and User-catalogs (UCAT).

UPDATE/SEARCH/COUNT Function

MAX IMS/UTIL users can mass update all or part of an IMS database 'in place'.

Full Boolean selection criteria may be used to select, count, and/or update just certain segments.

Other segment selection options such as begin root segment key and update count may be specified.

A partial database update may be run and previewed in one of several different output formats to verify correct selection criteria. Submission to batch for background processing is an option.

UNLOAD Function

MAX IMS/UTIL users can copy all or part of an IMS database to a sequential data set or UNIX System Services file.

Full Boolean selection criteria may be used to select just the specific segments needed.

Entire database records may be copied based upon individual segment selection criteria.

Other segment selection options such as begin root segment key, count, and frequency may be used to optimize or randomize the copied data.

Segment data mapped by COBOL or PL/I copybooks may be transformed to XML, comma separated (CSV), tab delimited (TAB), or other user-defined formats.

Sensitive segment field data may be concealed and privatized before copying.

A partial database unload may be run and previewed online in one of several different output formats to verify correct selection criteria. Submission to batch for background processing is an option.

LOAD Function

MAX IMS/UTIL users can load IMS database record segments directly from a sequential file produced from a previously completed MAX IMS/UTIL unload run. Complete database records consisting of a root and dependent segments are inserted into the database.

Full Boolean selection criteria may be used to select and optionally change segment content prior to loading.

Begin root segment key may optionally be specified.

There is the ability to preview the segments to be loaded prior to actual update. Submission to batch for background processing is an option.

COMPARE Function

MAX IMS/UTIL users can compare all or part of an IMS database to a sequential file previously unloaded using MAX IMS/UTIL.

Full Boolean selection criteria may be used to select just the specific segments and/or fields to compare.

Other segment selection options such as begin root segment key, count, and report detail may be used to optimize the compare.

Several different output formats are available for viewing the compare results and verifying correct selection criteria. Submission to batch for background processing is an option.

IMS Specifications

MAX IMS/UTIL provides support for the following types of IMS databases and operating environments:

- HISAM, SHISAM, HDAM, HIDAM, HALDB.
- FASTPATH DEDB.
- Fixed or variable segment size.
- Maximum segment size of 32760.
- Uses DL/1 standard commands.
- Logical databases and relationships.
- Secondary indexes.
- Dynamic PSBs.
- Operates as a standard IMS Batch Message Processor (BMP) or DLI BATCH mode.
- Supports standard existing security packages.

Launching MAX IMS/UTIL

There are several ways to execute MAX IMS/UTIL after logging on to the ISPF.

1. Option **I**
   If your ISPF Primary Option Menu has been modified, enter '`I`' at the option prompt to display the MAX IMS/UTIL main menu.

2. **TSO %MAX IMS**
   Enter the MAX IMS command from any command line to display the MAX IMS/UTIL main menu.

3. **TSO %MAX DSNL**
   Enter the MAX DSNL command from any command line to display the currently established DSNL.

   "*Chapter 3:Data Set Name List Functions*" on page 119 describes the construction and use of Data Set Name Lists (DSNL) to invoke MAX IMS/UTIL with stored parameters on specific IMS databases.

Upon initial startup the MAX IMS/UTIL profile screen will be displayed to permit entry of required or invalid profile variables. See "*0. Profile Parameters*" on page 21 for information on specifying profile variations.

CHAPTER 2: HOW TO USE MAX IMS/UTIL

MAX IMS/UTIL operates like ISPF, using the same PF keys, online tutorials, split panel capabilities, and panel navigation procedures.

The conventions used in MAX IMS/UTIL are similar to ISPF conventions.

In addition, MAX IMS/UTIL is supported by extensive online tutorial panels that may be accessed at any time by pressing the HELP PF (program function) key.

The main point of entry to MAX IMS/UTIL is the Specify A Database Name panel. The following is a sample of this panel.

```
MAX IMS/UTIL ------------ SPECIFY A DATABASE NAME ----------- MAX IMS/UTIL V320
COMMAND ===>

Select one of the following. Then press Enter.
___  0. Profile parameters            4. update/search/Count database
     1. Browse database               5. Unload database
     2. Edit database                 6. Load database
     3. IMS utilities                 7. Build Mapping criteria
                                      8. compAre database
Specify an IMS Database:
 IMSID           ===> IVP1
 PSB NAME        ===> DYNAM             (DYNAM/DYNAMSEG to build dynamic PSB)
 PCB/DBD NAME    ===> DI21PART          (#n=rel DB PCB num,*= DB selection)
 IMS RUN MODE    ===> BMP               (BMP, DLI)

 INITIAL DISPLAY ===> UNFORMATTED       (Dump,Formatted,Unformatted,Horizontal)
 SEGMENT SELECT  ===> NO                (NO, YES)

Specify copybook, or mapping criteria library and member (formatted mode)
 DATA SET NAME   ===> 'MXS.IMS.COPYLIB(DI21PARC)'
 COPYBOOK TYPE   ===> COBOL             (Cobol, P11)

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```

Figure 1: Specify A Database Name panel

From this panel, option entry in either the COMMAND area or the OPTION entry field will cause that selection to be performed. **EDIT**, **BROWSE**, **MASS UPDATE**, **UNLOAD**, **LOAD** or **COMPARE** can be performed on an identified IMS database.

Generally, accessing IMS databases with MAX IMS/UTIL requires entry of an IMS Subsystem ID, PSB name, PCB/DBD name, and IMS run type to identify the IMS database to be processed, and whether to run in BMP or DLI batch mode.

An existing Static PSB name may be used, or a Dynamic PSB can be generated from an entered DBD name by specifying DYNAM or DYNAMSEG in the PSB name field. using Dynamic PSBs can offer significant performance benefits, particularly in batch functions where only necessary segments are included in the generated PSB. Dynamic PSBs require parameters to be set up in the MAXIOPTS installation options module before they can be used. See the MAX Product Installation Guide for information about setting the installation options for Dynamic PSB.

In preparation for using MAX IMS/UTIL, the following presents some general usage information.

Primary Commands

Enter primary commands at the `COMMAND ===>` prompt located in the upper left corner of a panel. Primary command abbreviations will be indicated within parentheses in this manual.

Utilize the following guidelines when entering primary commands:

- Enter a blank to separate operands, **do not use the cursor keys**.
- Insert or expand operands using the system insert mode.
- Enter multiple commands in the `COMMAND` field by entering a semicolon between each command. This process is known as “command stacking”.

Entering Strings

Various commands require a string of data to be supplied.

In most cases, the string may either be a character string, quoted string or hexadecimal string. For example, `FIND "test"` is a command that searches for the character string “`test`”.

The conventions to enter quoted strings and HEX strings are explained below.

Quoted Strings

A quoted string begins and ends with single quotes (') or double quotes ("). The use of quotes is not always required but is always valid.

Quotes are required when a string:

1. contains a command, space, comma, single quote, or double quote;
2. is all numeric;
3. has to maintain case sensitivity.

Normal ISPF syntax rules for quoted strings must be followed:

1. Strings that contain single quotes must begin and end with double quotes.
2. Strings that contain double quotes must begin and end with single quotes.
3. Otherwise, strings may start and end with either single or double quotes.

HEX Strings

HEX strings are quoted strings of hexadecimal digits preceded by or ending with an 'X', see the examples below.

Rules for HEX strings are:

1. Valid hexadecimal digits allowed are (0-9, A-F).
2. There must be an even number of digits.

Examples:

FIND	`"it's back"`	Will search for "`it's back`"
FIND	`"it's back'`	Invalid - missing ending double quote
FIND	`'it's back'`	Invalid - must begin and end with double quotes
FIND	`X'F0F0'`	Will search for the hexadecimal string `F0F0`
FIND	`'F0F0'X`	Will search for the hexadecimal string `F0F0`
FIND	`X'F0F'`	Invalid - uneven number of hexadecimal digits
FIND	`'FG10'X`	Invalid - not valid hexadecimal digits
FIND	`'F0F1F2F3F4F5F6F7F8'X`	Invalid - hexadecimal string too long (8 is the maximum)

Line Commands

Enter executable line commands in the command area to the left of the line under the `LV` column. Single-character line commands operate on individual lines.

Double-character line commands are considered block commands and are processed in pairs.

Using an Existing Static PSB

The **BROWSE**, **EDIT**, **MASS UPDATE**, **UNLOAD**, **LOAD**, and **COMPARE** database functions all require specification of a PSB and PCB/DBD name to process.

The PSB name must correspond to a valid IMS PSB in the connected IMS Subsystem. Additionally, the load module output from the PSBGEN and DBDGEN must be available in the PSB and DBD libraries named in the session Profile Parameters (see option 0. Profile Parameters).

A valid database PCB name, DBD name, or relative DB PCB number (`#n`) from the PSB must be entered to identify the actual database to be processed. The following names DBD=DBDSHP in PSB=MAXPSB to run as a BMP in the IMS3 region.

Specify an IMS database:

```
IMSID          ===> IMS3
PSB NAME       ===> MAXPSB  (DYNAM/DYNAMSEG to build dynamic PSB)
PCB/DBD NAME   ===> DBDSHP  (#n=rel DB PCB num, *=DB PCB selection)
IMS RUN MODE   ===> BMP     (BMP, DLI)
```

If the PCB/DBD name is not known, a pattern may be entered to return a list of PCBs in the PSB whose PCB/DBD names meet the entered pattern criteria. Pattern characters consist of '`?`' and '`*`'. Use the asterisk (`*`) when any number of characters can be substituted. Use one or more question marks (`?`) when a specific number of characters can be substituted into the pattern.

The following examples illustrate different ways of entering patterns:

`*`	Display all PCB/DBD names for selection
`DB*`	Display all PCB/DBD names beginning with DB for selection
`??CUST*`	Display all PCB/DBD names with CUST in pos 3-6 for selection

After entry, the list of database PCBs that match the entered name criteria in the specified PSB is displayed for selection. PCBs that have not been defined by name are labeled #n, where n is the relative database PCB number.

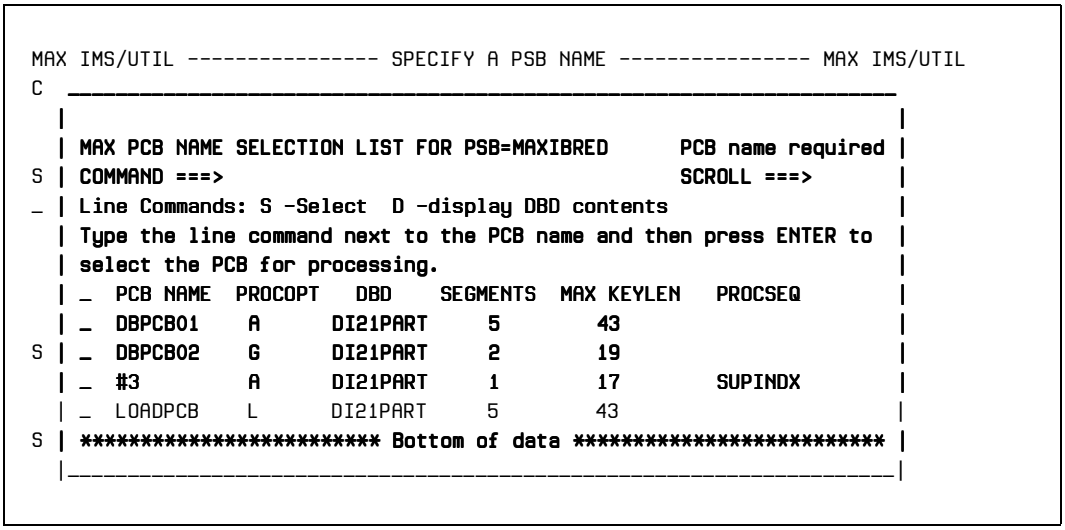


Figure 2: PCB Name Selection List panel

Entry of an 'S' will select that database PCB for processing, while a 'D' will display the contents of the associated database DBD. Upon selection, the database PCB name (or #n) replaces the entered PCB/DBD name in the panel.

Using a Dynamic PSB

When DYNAM or DYNAMSEG are specified as the PSB name, a PSB is dynamically built and generated from the segment names contained in the entered DBD name. The generated PSB exists only for duration of the function requested.

DYNAM specifies that all segment names in the DBD are to be included in the dynamically generated PSB for **BROWSE** and **EDIT** functions. **MASS UPDATE**, **UNLOAD**, **LOAD**, and **COMPARE** functions include only those segments in the PSB that are necessary to perform the operation as specified by the select/change criteria.

DYNAMSEG displays all segment names in the DBD and prompts for which ones to include in the dynamically generated PSB. Requested segments and all higher level segments along the concatenated key will automatically be included in the PSB definition. All functions will operate on only the chosen segments.

In addition to a PSB name of DYNAM or DYNAMSEG, the IMS subsystem id, DBD name, Index name (optional), and IMS run type must be entered to identify an IMS database to be processed and whether to run in BMP or DLI batch mode. DBD name must correspond to a valid IMS DBD in the connected IMS Subsystem. Additionally, the load module output from the DBDGEN must be available in the DBD library named in option 0. Profile Parameters.

BROWSE, **UNLOAD**, **COMPARE**, and **MASS UPDATE** (**VERIFY**) generate a PROCOPT=GOT, while **EDIT**, **LOAD**, and **MASS UPDATE** (**UPDATE**) generate a PROCOPT=A (or R if accessing with an alternate index).

Dynamic PSB requires parameters to be setup in the MAXIOPTS installation options module before it can be used. See the MAX Product Installation Guide for information about setting the installations options for Dynamic PSB.

DYNAM Example

The following names DBD=DBDSHP to run as a BMP in the IMS3 region. A dynamic PSB will be generated containing all segments from DBD=DBDSHP.

Specify an IMS Database:

```
IMSID          ===> IMS3
PSB NAME       ===> DYNAM   (DYNAM/DYNAMSEG to build dynamic PSB)
PCB/DBD NAME   ===> DBDSHP  (#n=rel DB PCB num, *=DB selection)
IMS RUN MODE   ===> BMP     (BMP, DLI)
```

If the DBD name is not known, a pattern may be entered to return a list of DBD names from the DBD library that meet the entered pattern criteria. Pattern characters consist of '?' and '*'. Use the asterisk (*) when any number of characters can be substituted. Use one or more question marks (?) when a specific number of characters can be substituted into the pattern.

The following examples illustrate different ways of entering patterns:

*	Display all DBD names for selection
DB*	Display all DBD names beginning with DB for selection
??CUST*	Display all DBD names with CUST in pos 3-6 for selection

The list of DBD module names that match the entered name criteria in the DBD library is displayed for selection.

```
MAX IMS/UTIL -------------- SPECIFY A DATABASE NAME ------------- MAX IMS/UTIL
C .-------------------------------------------------------------------.
  | MAX DBD NAME SELECTION FOR DBD=*              Please select member |
S |  'IMS710.DBDLIB'                                                   |
_ | COMMAND ===>                                    SCROLL ===> CSR    |
  | Line Commands: S -Select  D -Display DBD contents  X -Indexes      |
  | Type the line command next to the DBD name and then press ENTER to |
  | select the DBD for processing.                                     |
  |                                                      SECONDARY     |
S |    DBD NAME   DESCRIPTION                  SEGMENTS   INDEXES      |
  |  _ DBFSAMD3   FASTPATH DEDB                    9         0         |
  |  _ DBFSAMD4   HDAM VSAM                        2         0         |
  |  _ DBDSHP     HIDAM VSAM                       7         2         |
  |  _ DI21PART   HISAM VSAM - Single DSG          5         0         |
  |  _ IVPDB1     HIDAM OSAM                       1         0         |
  |  _ IVPDB1I    INDEX VSAM - Single Dataset      1         0         |
S '-------------------------------------------------------------------'
 DATA SET NAME   ===> 'MXS.IMS.COPYLIB(DI21PART)'
 COPYBOOK TYPE   ===> COBOL             (Cobol, P11)
```

Figure 3: DBD Name Selection panel

Upon entering the 'S' line command to select a database from the displayed list, the database DBD name replaces the entered PCB/DBD name in the panel. Entry of a 'D' line command will display the contents of the associated database DBD, while 'X' will display all secondary index names defined for this DBD (if any) for selection.

Using Secondary Index Names with Dynamic PSB

An IMS database may also be accessed with a valid secondary index by appending the PROCSEQ index name to the DBD name separated by a '.' in the PCB/DBD NAME field.

The following names DBD=DBDSHP and INDEX=INDXZIP to run as a BMP in the IMS3 region. A dynamic PSB will be generated containing the inverted hierarchy of segments for INDEX=INDXZIP in DBD=DBDSHP.

Specify an IMS database:

```
IMSID          ===> IMS3
PSB NAME       ===> DYNAM   (DYNAM/DYNAMSEG to build dynamic PSB)
PCB/DBD NAME   ===> DBDSHP.INDXZIP
                           (#n=rel DB PCB num, *=DB selection)
IMS RUN MODE   ===> BMP     (BMP, DLI)
```

Alternatively, specifying the 'X' line command from the DBD selection screen will display all secondary index names available in the database DBD.

```
MAX IMS/UTIL -------------- SPECIFY A DATABASE NAME ------------- MAX IMS/UTIL
 C .-------------------------------------------------------------------.
   | MAX DBD NAME SELECTION FOR DBD=DBDSHP                  Row 9 of 18 |
.-------------------------------------------------------------------------.
| MAX SECONDARY INDEX SELECTION FOR DBD=DBDSHP          Please select index |
| COMMAND ===>                                            SCROLL ===> CSR   |
| Line Commands: S -Select                                                  |
| Type the line command next to the Index name and then press ENTER to      |
| select for processing.                                                    |
|    INDEX     TARGET   SOURCE                                              |
|    PROCSEQ   SEGMENT  SEGMENT  SEARCH FIELDS                              |
|  _ INDXZIP   VET      VET      ZIP      VETKEY                             |
|  _ INDXGRP   BREED    BREED    INFO     BREEDKEY                           |
| ****************************** Bottom of data ****************************** |
'-------------------------------------------------------------------------'
```

Figure 4: Secondary Index Name Selection panel

Upon entering the 'S' line command to select an index from the displayed list, the index name is appended to the DBD name separated by a '.' and placed in the PCB/DBD NAME field.

Choosing Dynamic PSB Segments with DYNAMSEG

When DYNAMSEG is specified as the PSB name, all segment names in the DBD are displayed for selection and possible inclusion in the dynamic PSB to be generated.

```
MAX UPDATE SELECTION USING PSB=DYNAMSEG/MAXDBD1
.-------------------------------------------------------------------------------.
| MAX CHOOSE SEGMENTS FOR PSB=DYNAMSEG/MAXDBD1                    Row 1 of 5 |
| COMMAND ===>                                                SCROLL ===> CSR   |
| Enter GO to process segment selection. Enter END to return without          |
| selection.  NOTE: All higher level segments along the concatenated key      |
| for each chosen segment will automatically be included in the PSB.          |
|         HIER                                                                |
| SELECT  LVL     SEGMENT NAME FROM DBD=MAXDBD1                               |
|   Y     01      PARTROOT.........................                           |
|   N     02      ..STANINFO.......................                           |
|   N     02      ..STOKSTAT.......................                           |
|   N     03      ....CYCCOUNT.....................                           |
|   N     03      ....BACKORDR.....................                           |
| ****************************** Bottom of data ******************************* |
'-------------------------------------------------------------------------------'
```

Figure 5: Dynamic PSB Segment Selection panel

Requested segments and all higher level segments along the concatenated key will automatically be included in the PSB definition. All functions will operate on only the chosen segments.

DYNAMSEG Example

The following names DBD=DBDSHP to run as a BMP in the IMS3 region. A dynamic PSB will be generated containing only the segments chosen from DBD=DBDSHP.

Specify an IMS Database:

```
IMSID          ===> IMS3
PSB NAME       ===> DYNAMSEG (DYNAM/DYNAMSEG to build dynamic PSB)
PCB/DBD NAME   ===> DBDSHP   (#n=rel DB PCB num, *=DB selection)
IMS RUN MODE   ===> BMP      (BMP, DLI)
```

Upon entry, all segments contained in DBD=DBDSHP will be displayed for selection. Only the chosen segments (and their hierarchical parents) will be included in the dynamically generated PSB.

Display DBD Contents

Specifying the 'D' line command will display the contents of the associated database DBD.

```
MAX IMS/UTIL ---------------- SPECIFY A PSB NAME ---------------- MAX IMS/UTIL
C  ____________________________________________________________________
  | MAX PCB NAME SELECTION LIST FOR PSB=MAXIBRED            Row 1 of 7 |
 ____________________________________________________________________________
|                                                                            |
| MAX CONTENTS OF DBD=DI21PART for PCB=DBPCB01                 Row 1 of 10 |
| COMMAND ===>                                              SCROLL ===>      |
| Access Method is HISAM VSAM - Single DSG                                   |
| Press END when complete.                                                   |
|     SEG          HIER              PARENT   FIELD    FLD  FLD   FLD   MAX |
| PCB NUM SEGMENT  LVL TYPE          SEGMENT  NAME     FMT  POS  SIZE  SIZE |
|  Y    1 PARTROOT 01  SEGMENT,ROOT  -        -        -      -    50    50 |
|                      FIELD,SEQ             PARTKEY  CH     1    17     - |
|  Y    2 STANINFO 02  SEGMENT,CHILD PARTROOT -        -      -    85    85 |
|                      FIELD,SEQ             STANKEY  CH     1     2     - |
|  Y    3 STOKSTAT 02  SEGMENT,CHILD PARTROOT -        -      -   160   160 |
|                      FIELD,SEQ             STOCKEY  CH     1    16     - |
|  Y    4 CYCCOUNT 03  SEGMENT,CHILD STOKSTAT -        -      -    25    25 |
|                      FIELD,SEQ             CYCLKEY  CH     1     2     - |
|  Y    5 BACKORDR 03  SEGMENT,CHILD STOKSTAT -        -      -    75   100 |
|                      FIELD                 BACKFLD  CH     1    10     - |
|____________________________________________________________________________|
```

Figure 6: Display DBD Contents panel

Segment Selection

EDIT and **BROWSE** functions can optionally request that only a subset of the database segments in the PSB be displayed.

When `SEGMENT SELECTION` is set to '`YES`' in the Specify A Database Name panel, a panel is displayed containing all segment names to which the PSB is sensitive.

For example:

```
MAX UNFORMATTED BROWSE PSB=MAXIBRED/DBPCB01                  COL 00001 00068
C  ____________________________________________________________________________
   |                                                                           |
D  | MAX SEGMENT SELECTION CRITERIA PSB=MAXIBRED/DBPCB01          Row 1 of 5   |
   | COMMAND ===>                                              SCROLL ===> PAGE |
E  | Enter GO to process segment selection. Enter END to return without        |
T  | selection. NOTE: Use single segment selection for optimum performance.    |
T  |         HIER                                            MIN     MAX       |
T  | SELECT  LVL  SEGMENT NAME FROM DBD=DI21PART            SIZE    SIZE  KEYLEN|
T  |   Y     01   PARTROOT.............................      50      50    17   |
A  |   N     02   ..STANINFO...........................      85      85     2   |
T  |   Y     02   ..STOKSTAT...........................     160     160    16   |
T  |   Y     03   ....CYCCOUNT.........................      25      25     2   |
T  |   Y     03   ....BACKORDR.........................      75     100    10   |
T  | ***************************** Bottom of data ****************************** |
T  |___________________________________________________________________________|
 TOKSTAT 02 00 AK2877F          M000100000     EACH000000000000270000
PARTROOT 01 02AN960C99                 WASHER6
STANINFO 02 02                742                          1201  15       A6C
STOKSTAT 02 00 AA16511           000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16512           000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16513           000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16514           000000000     EACH  0000000110000000
Press ENTER to continue or END to exit.
```

Figure 7: Segment Selection Criteria panel

The `SEL ON` command can be used during the **EDIT/BROWSE** session to change the selected segment names. The `SEL OFF` command can be used to turn off selection and include all segment names in the PSB for processing.

Mapping Criteria

A mapping criteria (or copybook) data set and member name may be specified to associate copybook layouts with each segment in the database. This is used with the formatted and horizontal display modes of **EDIT/BROWSE** (Options 1/2).

If the mapping criteria data set name is blank, default criteria is used where each segment's copybook is assumed to be in a member with the same name as the segment and located in a data set defined by the current `COPYLIBS` command concatenation list.

Example to use the default mapping criteria where each segment copybook member name is the segment name and is located in the current COPYLIBS concatenation:

Specify copybook, or mapping criteria library and member (formatted mode)

```
DATA SET NAME ===>
COPYBOOK TYPE ===> COBOL   (Cobol, Pl/I)
```

Custom mapping criteria may also be built using option 7 and specified for use with formatted and horizontal display modes of **EDIT/BROWSE**. When building or maintaining mapping criteria using option 7, the library data set (PO type) and member name in parentheses must be specified.

A specific member may be entered, or a pattern requesting a list of all members meeting the pattern criteria can be specified. The pattern characters consist of '`?`' and '`*`'. Use the asterisk (`*`) when any number of characters can be substituted. Use one or more question marks (`?`) when a specific number of characters can be substituted for a match.

Example to choose from a list of copybook/mapping criteria member names that start with '`CB`':

Specify copybook, or mapping criteria library and member (formatted mode)

```
DATA SET NAME ===>   'MXS.IMS.COPYLIB(CB*)'
COPYBOOK TYPE ===>   COBOL (Cobol, Pl1)
```

Menu Options

The following sections are detailed descriptions for each option displayed in the Specify A Database Name panel:

```
0. Profile parameters                4. update/search/Count database
1. Browse database                   5. Unload database
2. Edit database                     6. Load database
3. IMS utilities                     7. Build Mapping criteria
                                     8. compAre database
```

0. Profile Parameters

Profile parameters may be entered into the IMS/UTIL Profile Options panel to configure various features of a MAX IMS/UTIL session. You will be prompted for all required parameters upon initial entry into MAX IMS/UTIL. Parameters entered into this panel will remain in effect from session to session. Panel MILPROF may be modified to automatically default these profile variables.

```
MAX- ---------------------- IMS/UTIL PROFILE OPTIONS ---------------------- MAX
 COMMAND ===>
 Press ENTER to update profile, or END to exit profile processing
 Press DOWN  to scroll forward, or UP  to scroll backward
                                                                More:     +
 Edit log dataset work unit name: SYSALLDA          (Exam: SYSALLDA)
   Primary number cylinders . . : 0____             (0 = No logging)
   Secondary number cylinders . : 0____
   Log data set disposition . . : __                (P,PD,D,K,KN)

 Search limit (run away search) : 10000___          (0 = No limit)

 "COPYBOOK" special processing
   TSO procedure name . . . . . : ________          (Exam: MAXEXIT1)

 Subsystem for copybook process : ______________________________

 Specify character set to use . : DEFAULT           (Default, CP870)

 PSB identification exit
   TSO procedure name . . . . . : ________          (Exam: MAXIY001)

 DFSRRC00 processing exit
   TSO procedure name . . . . . : ________          (Exam: MAXIX001)

 BMP parameter values to be used
   PARM=(BMP,<MBR>,<PSB>,,,C00000,,,,1,,15,15,<IMSID>,<AGN>,,,,,0)
   Application Group Name <AGN> : IVP_____          (from DSNL)

 DLI BATCH parameter values to be used
   PARM=(DLI,<MBR>,<PSB>,7,0000,,0,,N,,T,<IMSID>,Y,N,N,,N,,,,0,,)
   DFSVSAMP dataset name. . . . : 'MXS.MXRXV310.JCL(DFSVSMDB)'_________________

 Miscellaneous parameter values
   COPE environment active. . . : NO_               (NO, YES)

 Unload database relationships
   Data Set Name. . . . . . . . : 'MXS.IMS.RELATE'_____________________________

 DBD Library datasets (specify at least one)
   DBDLIB 1 (from DSNL) . . . . : 'IMS.DBDLIB'_________________________________
   DBDLIB 2 (from DSNL) . . . . : _____________________________________________

 PSB Library datasets (specify at least one)
   PSBLIB 1 (from DSNL) . . . . : 'IMS.PSBLIB'_________________________________
   PSBLIB 2 (from DSNL) . . . . : _____________________________________________

 TASKLIB datasets
   IMS/UTIL LOADLIB . . . . . : 'MXS.MXRXV310.LOADLIB'
   User LOADLIB (from DSNL) . . : _____________________________________________

   Authorized RESLIB datasets
   User RESLIB (from DSNL). . . : _____________________________________________

   RESLIB datasets allocated when accessing specified IMSID (Blank matches ALL)
   1. IMSID: IMS1________ RESLIB: 'IMS.RESLIB'_________________________________
   2. IMSID: IMS1________ RESLIB: 'IMS.RESLIB2'________________________________
   3. IMSID: ____________ RESLIB: _____________________________________________
   4. IMSID: IMS2________ RESLIB: 'MXS.P390.LOADLIB'___________________________
   5. IMSID: IMS2________ RESLIB: 'IMS.RESLIB'_________________________________
      ETC.
  32. IMSID: ____________ RESLIB: _____________________________________________
```

Figure 8: IMS/UTIL Profile Options panel

Field Definitions for selected functions:

Edit log data set work unit name: Enter a work unit for the data set on which you wish to log additions, changes and deletions.

Primary number cylinders: Enter the amount of prime DASD (in cylinders) you wish to allocate to the log data set. A value of 0 (zero) will disable edit logging.

Secondary number cylinders: Enter the amount of secondary DASD (in cylinders) you wish to allocate to the log data set.

Log data set disposition: Enter the disposition of the log data set at the conclusion of the edit session as follows:

P: Print data set without deleting.

PD: Print data set and delete.

D: Delete data set without printing.

K: Keep data set (allocate same data set in next session).

KN: Keep data set (allocate new data set in next session).

If none is specified, the user will be prompted for a log disposition at the end of the edit session.

Search Limit: Enter the number of segments to which you wish to limit searches. The number may be 0 - 99999. A value of 0 (zero) will disable any search limits.

COPYBOOK special processing TSO procedure name: Enter the name of the routine assigned to pre-process copybooks prior to MAX accessing them. This can be used if copybooks do not reside in a standard PDS type file.

Subsystem for copybook process: If copybooks are stored in a non-standard database maintained by a library support system (such as Librarian), the product may supply a subsystem that allows such files to be accessed with the standard PDS access method. If this situation exists, provide the subsystem name in this field. All copybook access will be done using this subsystem.

Specify character set to use: Use this profile option to control character translation of data during edit and browse operations. The default character translation is the U.S. English character set. The CP870 option will allow for characters to be translated using code page 870, the Latin 2 character set.

PSB identification exit TSO procedure name: Enter the name of the routine assigned to perform exit processing whenever a PSB name, IMSID, or RUN MODE is entered to edit / browse, load, or unload database segments. See Appendix C: PSB Identification Exit for more information on coding this exit. Panel MILPROF may be modified to automatically default this profile variable.

DFSRRC00 processing exit TSO procedure name: Enter the name of the routine assigned to perform exit processing before/after DFSRRC00 is executed online to edit/browse a database. The exit is also given control before a batch job is submitted to Unload/Load database segments using DFSRRC00. See Appendix B: DFSRRC00 PROCESSING EXIT for more information on coding this exit. Panel MILPROF may be modified to automatically default this profile variable.

BMP parameter values to be used: The parameter values that will be passed to the IMS DFSRRC00 program when initiated to edit, unload, or load segments in a database are displayed here. These positional parameters are described in detail in the IMS Install Manual Volume 2. See the IMSBATCH procedure parameter discussion about the following values:

PARM=(BMP,#MBR,#PSB,#IN,#OUT,#OPT#SPIE#TEST#DIRCA,#PRLD,#STIMER, #CKPTID,#PARDLI,#CPUTIME,#NBA,#OBA,#IMSID,#AGN,#SSM,#PREINIT, #ALTID,#APARM,#LOCKMAX)

Example of the BMP parameter value display:

PARM=(BMP,<MBR>,<PSB>,,,C00000,,,,1,,15,15,<IMSID>,<AGN>,,,,,0)

Parameter tokens **<MBR>**, **<PSB>**, **<IMSID>** and **<AGN>** are replaced by entered values when passed to the IMS DFSRRC00 program. All other positional parameters may be changed to your installation requirements in panel MILPROF or modified in a DFSRRC00 processing exit (see above).

Application Group name (AGN): Specifies the one-to-eight character group name for inter-region communication security. The default is IVP. This value becomes the AGN parameter which is passed to the IMS DFSRRC00 program when initiated to edit, unload, or load database segments in BMP mode. The logged on user must be authorized to use the specified application group name. An AGN parameter passed from DSNL overrides the corresponding AGN parameter profile variable specified here. Panel MILPROF may be modified to automatically default this profile value.

DLI BATCH parameter values to be used: The parameter values that will be passed to the IMS DFSRRC00 program when initiated to edit, unload, or load database segments in DLI mode are displayed here. These positional parameters are described in detail in the IMS Install Manual Volume 2. See the DLIBATCH procedure parameter discussion about the following values:

PARM=(DLI,#MBR,#PSB,#BUF,#SPIE#TEST#EXCPVR#RST,#PRLD,#SRCH, #CHPTID,#MON,#LOGA,#FMTO,#IMSID,#SWAP,#DBRC,#IRLM,#IRLMNM,#BKO, #IOB,#SSM, #APARM, #LOCKMAX,#GSGNAME,#TMINAME)

Example of the DLI BATCH parameter value display:

PARM=(DLI,<MBR>,<PSB>,7,0000,,0,,N,,T,<IMSID>, Y,N,N,,N,,,,0,,)

Parameter tokens <MBR>,<PSB> AND <IMSID> are replaced by entered values when passed to the IMS DFSRRC00 program. All other positional parameters may be changed to your installation requirements in panel MILPROF or modified in a DFSRRC00 processing exit (see above).

DFSVSAMP data set name: Specifies the name of the DFSVSAMP data set member that contains options to be used when running DFSRRC00 in batch mode. These options pertain to buffering, performance and tracing while running in DLI BATCH mode. Member DFSVSMDB in the MAX IMS/UTIL JCL library may be specified to get started. For example: 'mxqual.MXRXV310.JCL(DFSVSMDB)' where mxqual is the assigned high-level qualifier.

COPE environment active: Use this profile option to set the COPE environment active if the COPE for IMS product is installed on your system. COPE is a product of Standardware, Inc. The RXDLC interface program must be installed on your system for this to function. See member COPEINTF in the MAX IMS/UTIL JCL library for more information on interfacing MAX IMS/UTIL to the COPE for IMS product. Panel MILPROF may be modified to automatically default this profile variable.

DBD Library data sets: Specifies the names of two partitioned data sets (DSORG=PO) containing standard DBD load modules defined for each IMS database to be accessed. At least one DBD Library data set must be specified. A library passed from DSNL overrides the corresponding DBD module library specified here. These load modules are produced from the standard output of the IMS DBDGEN process. Panel MILPROF may be modified to automatically default this profile value.

PSB Library data sets: Specifies the names of two partitioned data sets (DSORG=PO) containing standard PSB load modules defined for each IMS database to be accessed. At least one PSB Library data set must be specified if static PSBs are to be used. A library passed from DSNL overrides the corresponding PSB module library specified here. These load modules are produced from the standard output of the IMS PSBGEN process. Panel MILPROF may be modified to automatically default this profile value.

TASKLIB data sets: Whenever the IMS region controller program (DFSRRC00) is initiated, a TASKLIB environment is established consisting of the following concatenated partitioned data sets (DSORG=PO):

1. IMS/UTIL LOADLIB
2. User LOADLIB (from DSNL)
3. User RESLIB (from DSNL)
4. Each RESLIB data set whose specified IMSID matches the IMSID being accessed.

A maximum of 15 TASKLIB data sets can be allocated at any one time.

IMS/UTIL LOADLIB: The IMS/UTIL LOADLIB data set name to be used in the TASKLIB concatenation list is displayed on the profile panel for verification only. This data set name is defined in the MAX startup EXEC during installation.

The remaining TASKLIB data sets are optional and are discussed as separate profile variables.

User LOADLIB: The user LOADLIB profile parameter specifies the name of a partitioned data set (DSORG=PO) that is concatenated to the TASKLIB data set list. A user LOADLIB passed from DSNL overrides the corresponding profile variable specified here.

User RESLIB: The user RESLIB profile parameter specifies the name of an authorized IMS RESLIB partitioned data set that is concatenated to the TASKLIB data set list. The data set is also concatenated to the DFSRESLB ddname for DLI run mode. A user RESLIB passed from DSNL overrides the corresponding profile variable specified here.

RESLIB data sets for each IMSID: Each RESLIB data set (1-32) whose IMSID matches the one being accessed is concatenated to the TASKLIB data set list. The data set is also concatenated to the DFSRESLB ddname for DLI run mode. A RESLIB is always included when its IMSID is blank. A total of 15 TASKLIB data sets can be allocated at any one time. Panel MILPROF may be modified to automatically default these profile values.

Edit Logging Feature

After logging is activated in the **PROFILE** (see Primary number of cylinders on page 22), any changes made during the edit session will be logged.

Upon ending the edit session, a panel will be presented prompting for the disposition of the edit logging data set.

```
MAX UNFORMATTED EDIT PSB=MAXIBRED/DBPCB01                    COL 00001 00067
C  ____________________________________________________________________
   |                                                                   |
D  | MAX ------------------ LOG DATA SET DISPOSITION  ---------   Data saved |
   | Command ===>                                                      |
S  |                                                                   |
P  | Select one of the following.                                      |
S  |                                                                   |
S  |  __ P.  Print data set without deleting.                          |
S  |     PD. Print data set and delete                                 |
S  |     D.  Delete data set without printing                          |
S  |     K.  Keep data set (allocate same data set in next session)    |
P  |     KN. Keep data set (allocate new data set in next session)     |
S  |                                                                   |
S  |                                                                   |
S  | Log data set . . . .  MX11005.MAX.IMSUTIL.LOG005                  |
S  |                                                                   |
S  |                                                                   |
P  | Press ENTER key to process option.                                |
P  | Enter END to return.                                              |
S  |                                                                   |
S  |___________________________________________________________________|
STOKSTAT 02 00 AA16512          000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16513          000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16514          000000000     EACH  0000000110000000
STOKSTAT 02 00 AK2877F         M000100000     EACH000000000000270000
PARTROOT 01 02AN960C99                DRYERR6
Press ENTER to continue or END to exit.
```

Figure 9: Edit Log Data Set panel

Log Data Set Disposition

`Log data set (name)` is the internally generated data set name that contains the before and after image of the segments changed, inserted, or deleted in the edit session. The data set name is constructed using the `TSO PREFIX` as the high level qualifier. If a `PREFIX` has not been set, the userid is used for the high level qualifier.

If a print option is chosen, the following panel is displayed to choose a print destination.

Choose Print Destination

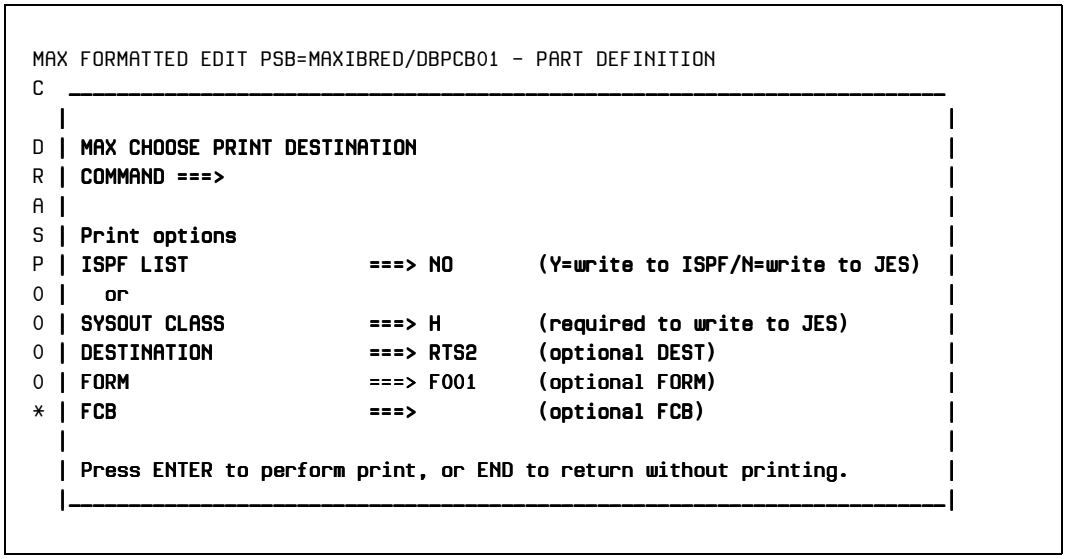


Figure 10: Edit LOG Choose Print Destination Panel

Field Definitions for selected function:

ISPF List: Specify YES to direct the log printout to the ISPF List data set or NO to write directly to the JES spool (see parameters below). The ISPF LIST command may be used to print the ISPF List data set.

SYSOUT Class: Is the SYSOUT class to be used for the printed log when ISPF LIST=NO is specified.

Destination: Is the JES DEST parameter to be used for the printed log when ISPF LIST=NO is specified.

Form: Is the JES FORM number to be used for the printed log when ISPF LIST=NO is specified.

FCB: Is the JES FCB parameter to be used for the printed log when ISPF LIST=NO is specified.

MAX IMS/UTIL Database Logging

In addition to the edit logging feature activated by the **PROFILE** parameters, MAX IMS/UTIL supports the automatic monitoring of selected databases whenever they are accessed or changed using MAX IMS/UTIL. Logging information is recorded in an IMS HDAM database whenever the MAXLOG logging database PCB is present in the PSB specified for use with MAX IMS/UTIL. A PCB name of MAXLOG identifies the logging database.

Sample jobs are available to provide an audit report of all MAX IMS/UTIL sessions and segment changes recorded in the MAXLOG database. A formatted compare of each changed segment is printed using the established database mapping criteria and segment copybook layouts. Selection by database, user, and session date/time range is also provided.

For more information concerning the MAXLOG database logging feature, see member MAXLREAD in the MAX IMS/UTIL JCL library.

1. Browse Database

The MAX IMS/UTIL Browse Facility allows you to view IMS database segments in four different options:

1. Unformatted Display
2. Dump Display
3. Formatted Display
4. Horizontal Display

The Browse Facility is controlled by primary commands that are used to:

- Find and display segments with specified character strings.
- Select a subset of segments to display.
- Locate a specific root segment by full or partial key.
- Locate any segment directly or generically by concatenated key.
- Locate a field within a segment copybook layout.
- Scroll through segment hierarchy.
- Scroll and position to twin, root, parent, and child segments.
- Display column numbers.
- Display data in hexadecimal format.
- Toggle between browse and edit.
- Toggle between display options.
- Print segments.
- **CUT** (copy) segments to a temporary area for a subsequent **PASTE** (insert) into the same or other **EDIT** session.
- Count all hierarchical segments by segment name in the database.
- Count all hierarchical segments that match the selection criteria.
- Display the names and hierarchical relationships of each segment in the PSB and DBD.
- Display the concatenated key for the current segment.
- Maintain copybook retrieval libraries.

Browse, Unformatted Display

The following is a sample panel showing the Browse, Unformatted Display:

```
 MAX UNFORMATTED BROWSE PSB=MAXIBRED/DBPCB01                    COL 00001 00068
 COMMAND ===>                                                   SCROLL ===> PAGE
 Display:  DD - Dump Style  DF - Formatted  DH - Horizontal  ED - EDit data
                                                              L  - Locate key
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
PARTROOT 01 02AN960C13                WASHER
STANINFO 02 02                742                          1201  15      A6C
STOKSTAT 02 00 AA16511          000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16512          000000000     EACH  0000000110000000
STOKSTAT 02 00 AK2877F         M000100000     EACH000000000000270000
STOKSTAT 02 0028009126          000000000     EACH             000000000000000000
PARTROOT 01 02AN960C17                WASHER
STANINFO 02 02                742                          1201  15      A6C
STOKSTAT 02 00 AA16511          000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16512          000000000     EACH  0000000110000000
STOKSTAT 02 00 AK2877F         M000100000     EACH000000000000270000
STOKSTAT 02 0028009126          000000000     EACH             000000000000000000
PARTROOT 01 02AN960C97                WASHER6
PARTROOT 01 02AN960C98                WASHER6
STANINFO 02 02                742                          1201  15      A6C
STOKSTAT 02 00 AA16511          000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16512          000000000     EACH  0000000110000000
PARTROOT 01 02AN960C99                WASHER6
STANINFO 02 02                742                          1201  15      A6C
STOKSTAT 02 00 AA16511          000000000     EACH  0000000110000000
 Press ENTER to continue or END to exit.
```

Figure 11: Unformatted Browse panel

Browse, Dump Display

The following is a sample panel showing the Browse, Dump Display:

```
MAX DUMP BROWSE PSB=MAXIBRED/DBPCB01                                  Row 1 of 3
 COMMAND ===>                                                  SCROLL ===> PAGE
 Display:  DF - Formatted    DU - Unformatted  DH - Horizontal  ED - EDit data
 Read:     N  - Next T/R/CH  P  - Prev T/R/PA                  L  - Locate key
 SEGMENT=PARTROOT SEL=NO SIZE=50 KEY=02AN960C13
 POS   *------4 *------8 *-----12 *-----16 *-----20 * ----+----1----+----2 *
 00001 F0F2C1D5 F9F6F0C3 F1F34040 40404040 40404040 * 02AN960C13           *
 00021 40404040 4040E6C1 E2C8C5D9 40404040 40404040 *       WASHER         *
 00041 40404040 40404040 4040                       *                      *
 ******************************** Bottom of data ********************************
```

Figure 12: Dump Browse panel

Browse, Formatted Display

The following is a sample panel showing the Browse, Formatted Display:

```
MAX FORMATTED BROWSE PSB=MAXIBRED/DBPCB01 - STOCK STATUS
COMMAND ===>                                                SCROLL ===> PAGE
Display:  DD - Dump Style   DU - Unformatted  DH - Horizontal  ED - EDit data
Read:     N  - Next T/R/CH  P  - Prev T/R/PA                   L  - Locate key
Actions:  Overtype key field and press ENTER to locate a different twin segment
SEGMENT=STOKSTAT SEL=NO SIZE=160 KEY=02AN960C13       00 AA16511
POS   *---------FIELD NAME---------* FORMAT *--------- FIELD CONTENTS --------*
00001 STOKSTAT-FORMAT
00001 REG                           C    2 00
00003 STOKSTATUS-KEY
00003 LOCATION                      C    8 AA16511
00021 ON-HAND-QTY                   Z  6.3 000000.000
00035 UNIT                          C    4 EACH
00051 ATTRITION
00051 ROP                           Z    3 000
00054 PLANNED                       Z    3 000
00057 MRP                           C    1
00058 /FILLER-5/                    C   32                  512    0000000{
00090 REQUIREMENTS
00090 CURRNT                        Z  7.1 +0000131.0
00098 UNPLANNED                     Z  7.1 +0000015.0
00106 ON-ORDER                      Z  7.1 +0000020.0
00114 TOTAL-STOCK                   Z  7.1 +0000126.0
00122 DISBURSEMENTS
00130 UNPLAN                        Z  7.1 0000000.0
00138 SPARES                        Z  7.1 +0000000.0
00146 DIVERS                        Z  7.1 +0000000.0
00154 /FILLER-7/                    C    7 0 Z512N
**********************************BOTTOM OF DATA***********************************
```

Figure 13: Formatted Browse panel

The Formatted display allows you to view an IMS database segment in Formatted Display Mode using a related COBOL or PL/I copybook.

When the `FIELD CONTENTS` area is not large enough to hold the field data, the data will be automatically wrapped to the next line.

Group fields can be identified by blanks under the column heading `FORMAT` and data cannot be entered in the group fields.

Overtyping the highlighted segment key field(s) and pressing ENTER will initiate an **L TWIN** command to display a different twin segment.

Browse, Horizontal Display

The Horizontal Display allows you to view the file in the formatted mode (using copybooks to format fields), while allowing data from multiple segments to be presented on one panel, as in unformatted mode.

The following is a sample panel showing the Browse, Horizontal Display:

```
MAX HORIZONTAL BROWSE PSB=MAXIBRED/DBPCB01                    FLD 00001 00021
COMMAND ===>                                                 SCROLL ===> PAGE
Display:  DD - Dump Style  DF - Formatted  DU - Unformatted  ED - EDit data
                                                             L  - Locate key
SEGMENT  LV SEL=NO SIZE=160 KEY=02AN960C13       00 AA16511
STOKSTAT 02  REG LOCATION   ON-HAND-QTY UNIT   ROP  PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511   000000.000  EACH   000      000
STOKSTAT 02  00   AA16512   000000.000  EACH   000      000
STOKSTAT 02  00   AK2877F   000100.000  EACH   270      000
STOKSTAT 02  00  28009126   000000.000  EACH   000      000  Y     000000000000
PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
PARTROOT 01  02  AN960C17         WASHER
STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
STANINFO 02  02  74              2                                        12
STOKSTAT 02  REG LOCATION   ON-HAND-QTY UNIT   ROP  PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511   000000.000  EACH   000      000
STOKSTAT 02  00   AA16512   000000.000  EACH   000      000
STOKSTAT 02  00   AK2877F   000100.000  EACH   270      000
STOKSTAT 02  00  28009126   000000.000  EACH   000      000  y     000000000000
PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
PARTROOT 01  02  AN960C97         WASHER6
PARTROOT 01  02  AN960C98         WASHER6
STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
STANINFO 02  02  74              2                                        12
STOKSTAT 02  REG LOCATION   ON-HAND-QTY UNIT   ROP  PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511   000000.000  EACH   000      000
STOKSTAT 02  00   AA16512   000000.000  EACH   000      000
STOKSTAT 02  00   AA16513   000000.000  EACH   000      000
STOKSTAT 02  00   AA16514   000000.000  EACH   000      000
STOKSTAT 02  00   AK2877F   000100.000  EACH   270      000

Press ENTER to continue or END to exit.
```

Figure 14: Horizontal Browse panel

Group field names are not presented.

Field names in the heading line are presented for elementary items with the data formatted below the field name.

Use the LEFT and RIGHT commands to view the entire segment.

Browse, Primary Commands

Command	Description	Dump	Formatted	Unformatted	Horizontal
CHILD	Position to child of segment.	YES	YES	YES	YES
COL	Specify columns.	NO	NO	YES	NO
COPYLIBS	Maintain copybook retrieval libraries.	YES	YES	YES	YES
COUNT	Count segments.	YES	YES	YES	YES
CUT	Copy segment(s).	YES	YES	YES	YES
DBD	Display DBD hierarchy.	YES	YES	YES	YES
DD	Display dump mode.	NO	YES	YES	YES
DF	Display formatted mode.	YES	NO	YES	YES
DH	Display horizontal mode.	YES	YES	YES	NO
DU	Display unformatted mode.	YES	YES	NO	YES
EDIT	Edit database.	YES	YES	YES	YES
FIND	Find segment(s).	YES	YES	YES	YES
HEX	Display hexadecimal.	NO	NO	YES	YES
KEY	Display concatenated key.	YES	YES	YES	YES
L (LOCATE)	Locate segment by key.	YES	YES	YES	YES
LF (LOCATEF)	Locate field.	NO	YES	NO	YES
PARENT	Position to parent of segment.	YES	YES	YES	YES
PRINT	Print segment(s).	YES	YES	YES	YES
ROOT	Scroll to root segment.	YES	YES	YES	YES
SELECT	Select segment(s).	YES	YES	YES	YES
TWIN	Scroll to twin segment.	YES	YES	YES	YES

CHILD

The **CHILD** command is used to position to a hierarchical child segment of the current segment. If more than one child segment is defined for the current segment, a panel is presented to prompt for the specific child segment desired. The first occurrence of that child segment (if any) is then displayed.

The **CHILD** command has the following format:

CH
CHILD

COL

The **COL** command either adds or deletes the column heading. The **COL OFF** command removes the column line. The **COL ON** command adds the column line.

The **COL** command has the following format:

COL [ON|OFF]

Example column line:

```
----+----1----+----2----+----3----+----4----+----5----+----6 etc.
```

A digit is displayed every ten positions such as 10, 20, 30 etc. Each digit on the column line corresponds to a multiplier equivalent of ten. For example: 1 = 10, 110 or 210; 2 = 20, 120 or 220.

The **COL** command is valid only in the Unformatted option.

COPYLIBS

Use the **COPYLIBS** command to specify up to 10 concatenated partitioned data sets (LRECL=80 and RECFM=F or FB) for retrieving copybook members defined in mapping criteria segment layout definitions. When a segment layout definition specifies a copybook member name in the `COPYLIBS MEMBER` field, the member is retrieved from the libraries maintained by the **COPYLIBS** command.

Alternatively, a single non-partitioned COPYLIBS data set may be specified for use with the Copybook SUBSYSTEM profile parameter. This is used when copybooks may be stored on another type of storage database (i.e. Panvalet, Librarian), but need to be processed as any other member from a partitioned data set.

Specify the **COPYLIBS** command from the main menu, building mapping criteria, or during browse or edit. The COPYLIBS libraries to be used for mapping segments to copybook members must be specified prior to building mapping criteria or requesting formatted segment displays or prints during browse or edit.

The **COPYLIBS** command has the following format:

COPYLIBS

COUNT

The **COUNT** command will provide a count of all segments by name in the database. It can be entered at any time during the browse or edit of a database. Database positioning remains the same.

The **COUNT** command has the following format:

COUNT

If selection criteria is in effect at the time of the **COUNT**, a count of all segments meeting the selection criteria will be presented. If no selection criteria is in effect, all segments are considered as selected.

Note: The **COUNT** command analyzes the entire database and can in turn cause significant delays in response time.

However, single segment selection will build IMS commands containing SSAs which will significantly improve response time.

CUT

The **CUT** command is used to copy selected segments to a temporary area. The segments may be subsequently pasted into the same or another database. The **CUT** command will replace any segments previously cut but not pasted. A panel is presented displaying the key of the segment to be cut. Optionally, all dependents of the **CUT** segment can also be included.

The **CUT** command has the following format:

CUT

DBD

The **DBD** command displays the hierarchy of all segment names defined in the current DBD and identifies which segments the current PSB/PCB is sensitive to.

The **DBD** command has the following format:

DBD

EDIT

The **EDIT** command is used to present the database for editing, thus, the edit commands are enabled allowing the database to be changed. The current position of the database is maintained as well as any selection criteria in effect. Edit modifications are only allowed if permitted by the specified PSB PROCOPTS.

Note: HSAM databases cannot be edited, only browsed.

The **EDIT** command has the following format and/or aliases:

EDIT
ED

FIND

The **FIND** command searches through the segments stopping at the first segment containing the specified string. The search begins with the first position of the current display. Repeating the command, without changing the parameters results in finding the next occurrence of the specified string. The search is in a forward direction. Segments will be searched inclusively from the beginning to ending columns. When no beginning or ending columns are specified, the entire segment will be searched.

The **FIND** command has the following format and/or aliases:

FIND	**string [begin-col] [end-col]**
FIND	**P'nnn' begin-col**
FIND	**NEP begin-col [end-col]**
F	**"**

The **FIND** command can be used to search for packed data. When searching for packed data, the beginning column is required. A search for valid packed data of any length beginning at that position is then performed.

The **FIND NEP** command can be used to search for non-packed data. When searching for non-packed data, the beginning column is required. An optional end column may also be entered. However, if not entered, a length of 10 bytes will be assumed.

Use the FIND PF key to find the next occurrence of the specified character string.

Operand definitions

string is a character string, quoted string, hexadecimal string, or packed string.
A non-quoted string is case insensitive.
A quoted string will remain case sensitive.
Packed strings are coded as: **P'nn'**
Any non-packed string is specified as **NEP**

begin-col is any number not greater than the segment length for which the search for the character string is to begin. In the case where there has been no **end-col** specified then the **begin-col** is the only column searched. Default is entire segment.

end-col is any number not greater than the segment length for which the search for the character string will end. The **end-col** cannot be less than the begin column.

HEX

The **HEX** command causes the segments to be displayed in combined character or hexadecimal format. The **HEX** command can be used to display otherwise non-displayable data in hexadecimal format. Typing `HEX OFF` displays data in character format; typing `HEX ON` displays data in hexadecimal format. The data is displayed vertically.

The **HEX** command has the following format:

HEX [ON|OFF]

The **HEX** command is valid in the Unformatted and Horizontal display options only.

Each byte of displayed data is in a hexadecimal format in an Unformatted mode as shown below.

```
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
-------- -- ----+----1----+----2----+----3----+----4----+----5----+----6----+---
PARTROOT 01 02AN960C13                DRYER12
            FFCDFFFCFF4444444444444444CDECDFF44444444444444444
            02159603130000000000000000498591200000000000000000
-------------------------------------------------------------------------------
```

Figure 15: **HEX** Format Display panel, 1 of 2

The data displays in a hexadecimal format for Horizontal mode as shown below.

```
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
 PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
 PARTROOT 01  02  AN960C13         DRYER12
              FF  CDFFFCFF4444444  CDECDFF4444444444444
              02  159603130000000  49859120000000000000
 ------------------------------------------------------------------------------
 STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
 STANINFO 02  02  74              2                                        12
              FF  FF              F               44                       FF
              02  74              2               00                       12
 ------------------------------------------------------------------------------
 STOKSTAT 02  REG LOCATION  ON-HAND-QTY  UNIT  ROP   PLANNED  MRP   /FILLER-5/
 STOKSTAT 02  00   AA16511  000000000    EACH  000   000
              FF  4CCFFFFF  FFFFFFFFF    CCCC  FFF   FFF      4     444444444444
              00  01116511  000000000    5138  000   000      0     000000000000
 ------------------------------------------------------------------------------
 STOKSTAT 02  00   AA16512  000000000    EACH  000   000
              FF  4CCFFFFF  FFFFFFFFF    CCCC  FFF   FFF      4     444444444444
              00  01116512  000000000    5138  000   000      0     000000000000
 ------------------------------------------------------------------------------
```

Figure 16: **HEX** Format Display panel, 2 of 2

KEY

The **KEY** command displays the concatenated key for the segment at the top of the current panel. Segments defined without a sequence field are displayed with an eight digit sequence number as its key.

The **KEY** command has the following format:

KEY

L (LOCATE)

The **L** command may be used to directly position to any segment in the database by entering a root or concatenated key.

LOCATE root segment:

The **L** command can be used to position to a root segment by its root key value field (RID). The RID can be specified with the **L** command; or if a RID is not specified, a panel will be presented displaying the root key value of the segment currently displayed at the top of the panel. This value may then be overtyped to specify a new RID. The RID entered can be either a full or partial key. However, HDAM/DEDB databases not accessed through a secondary index require a full key to be specified.

Upon entry, the located root segment is displayed. The **L** command is useful for positioning backwards in the database to display root segments prior to the one currently displayed at the top of the panel.

The **LOCATE root segment** command has the following format:

L
LOCATE
LOCATE **[rid-string]**

Operand definitions

rid is a quoted, hexadecimal or character string.

LOCATE by concatenated key:

The **L** command can be used to position to a segment by its concatenated key. The segment to be located is identified by the **L** command operand.

The **LOCATE segment by concatenated key** has the following format:

L	*****	will display a menu of segment names for selection
L	**segname**	will locate using the entered segment name
L	**T(WIN)**	will locate a segment name the same as the current segment
L	**PA(RENT)**	will locate a segment name the same as the current segment's parent
L	**CH(ILD)**	will locate a segment name the same as the current segment's child

A concatenated key for the identified segment is then formatted for display and may be overtyped. Segment keys along the current segment's path are initialized from the current segment's concatenated key. Those not along the path are initialized to spaces. Upon pressing ENTER, the requested segment is then retrieved using the entered concatenated key and displayed if found. If not found, the following options are presented in progression:

LOCATE generic key in DB record:

If the segment is not found using the entered concatenated key, a panel is presented requesting acknowledgement to locate a segment of the same name that is >= the specified concatenated key in the current database record. If a segment is found, it is displayed and locate is complete.

LOCATE next segment in database:

If the segment is not found in the current database record, a panel is presented requesting acknowledgement to locate the next segment of the same name in the entire database. If a segment is found, it is displayed and locate is complete.

In the Formatted Browse mode, the highlighted segment key field(s) may be overtyped to locate a different twin segment. Upon pressing ENTER, an **L T(WIN)** command is initiated automatically for the overtyped segment key.

LF (LOCATEF)

The **LOCATEF** command is used to position a specific field in the current segment to the top or left of the display. This command is valid in both the Formatted and Horizontal Display options.

The **LOCATEF** command has the following format and/or aliases:

LOCATEF [**field-name**] or, [**field-name***] or, [***field-name**]
LF "

Operand definitions

field-name is any field name that exists for the current segment layout presented. The search for the field begins at the top of the current record.

***** An '*****' (asterisk) character immediately following the field name will locate the next field (search begins with field at top of display) that begins with the same characters specified. When an '*****' is not specified, the search begins with the first field in the layout and every character of the field name must be specified.

An '*****' (asterisk) character preceding the character string will locate the next field that contains the string anywhere within the field name.

PARENT

The **PARENT** command is used to position to a hierarchical parent of the current segment. The **PARENT** command may be used to position backward n parent segments in the database hierarchy. Specifying **MAX** will position to the current record root segment. Entering **PARENT** with no operands will position to the parent of the current segment.

The **PARENT** command has the following format:

PA {**n**|**MAX**}
PAR {**n**|**MAX**}
PARENT {**n**|**MAX**}

PRINT

The **PRT** command prints segments starting with the segment at the top of the panel. A panel is displayed prompting for the number of segments to be printed and confirming the starting segment concatenated key. The segment(s) may be printed to the ISPF list data set or to the JES spool. A panel is displayed providing a choice of destinations. If the JES spool is chosen, a SYSOUT class must be entered.

The **PRT** command has the following format:

PRT

In addition, destination, form, and FCB may be optionally entered. If the ISPF list data set is chosen, the ISPF **LIST** command may then be used to submit a JOB to print the records from the list data set. The format of the report depends on the current display mode in effect. When the segment display is currently in Formatted or Horizontal Mode, the report will be a formatted style listing of each segment. Otherwise, the report will resemble the Dump style display mode where both the hexadecimal and character representations of the data are listed.

ROOT

The **ROOT** command is used to position to the current, next, first, or last root segment in the database. The **ROOT** command may be used along with forward scrolling (DOWN,NEXT) to position forward n root segments or with backward scrolling (UP,PREV) to position to the current record root segment. Specifying **MAX** will position forward or backward to the start or end of the database accordingly. Entering **ROOT** with no operands will position to the current database record root segment

The **ROOT** command has the following format and/or aliases:

R	**{n|MAX}**
RO	"
ROOT	"

SELECT

The **SEL** command controls the use of segment selection criteria. Segment selection criteria is used to group a subset of segments by name for processing. The **SEL ON** command prompts for segment selection criteria. The **SEL OFF** command disables segment selection criteria and all segments are available for processing.

The **SELECT** command has the following format and/or aliases:

SELECT	**[ON|OFF]**
SEL	"

Segment selection criteria can be entered in either Unformatted mode (Unformatted and Dump display options) or Formatted mode (Formatted and Horizontal display options).

Note: Using segment selection criteria can cause an increased number of segments to be read between operations that can in turn cause significant delays in response time.

However, single segment selection will build IMS commands containing SSAs which will significantly improve response time.

If any unsequenced segments are selected, the root segment must also be selected.

TWIN

The **TWIN** command is used to position to the next or previous segment of the same name and same parent as the current segment. The **TWIN** command may be used along with forward scrolling (DOWN,NEXT) to position forward n twin segments or with backward scrolling (UP,PREV) to position backward 1 twin segment. Specifying **MAX** will position forward or backward to the start or end of the twin chain accordingly. Entering **TWIN** with no operands will scroll forward 1 twin segment.

The **TWIN** command has the following format and/or aliases:

T	**{n|MAX}**
TW	"
TWIN	"

2. Edit Database

The MAX IMS/UTIL Edit facility provides IMS database segment editing functions using four different display options:

1. Edit, Unformatted Display
2. Edit, Dump Display
3. Edit, Formatted Display
4. Edit, Horizontal Display

The Edit facility is controlled by primary commands that are used to:

- Insert, delete, repeat, and change segments.
- Find and display segments with specified character strings.
- Select a subset of segments to display.
- Locate a specific root segment by full or partial key.
- Locate any segment directly or generically by concatenated key.
- Locate a field within a segment layout.
- Scroll through segment hierarchy.
- Scroll and position to twin, root, parent, and child segments.
- Display column numbers.
- Display data in hexadecimal format.
- Toggle between browse and edit.
- Toggle between display options.
- Print segments.
- **CUT** (copy) segments to a temporary area for a subsequent **PASTE** (insert) into the same or other **EDIT** session.
- **PASTE** (insert) segments from a temporary area that were saved with a previous **CUT** (copy) command.
- Count all hierarchical segments by segment name in the database.
- Display the names and hierarchical relationships of each segment in the PSB and DBD.
- Display the concatenated key for the current segment.
- Maintain copybook retrieval libraries.

Edit, Unformatted Display

The following is a sample panel showing the Edit, Unformatted Display.

```
MAX UNFORMATTED EDIT PSB=MAXIBRED/DBPCB01                      COL 00001 00067
COMMAND ===>                                                   SCROLL ===> PAGE
Display:  DD - Dump style  DF - Formatted  DH - Horizontal   BR - BRowse data
                                                             L  - Locate key
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
PARTROOT 01 02AN960C13               WASHER
STANINFO 02 02               742                          1201  15      A6C
STOKSTAT 02 00 AA16511         000000000     EACH  0000000110000000
STOKSTAT 02 00 AA16512         000000000     EACH  0000000110000000
STOKSTAT 02 00 AK2877F         M000100000    EACH000000000000270000
STOKSTAT 02 0028009126         000000000     EACH            00000000000000000
PARTROOT 01 02AN960C97               WASHER6
PARTROOT 01 02AN960C98               WASHER6
STANINFO 02 02               742                          1201  15      A6C
STOKSTAT 02 00 AA16511         000000000     EACH  0000000110000000
PARTROOT 01 02AN960C99               WASHER6
Press ENTER to continue or END to exit.
```

Figure 17: Unformatted Edit panel

This option allows you to change data by typing over existing data.

Edit, Dump Display

The following is a sample panel showing the Edit, Dump Display.

```
MAX DUMP EDIT PSB=MAXIBRED/DBPCB01                                  Row 1 of 3
COMMAND ===>                                                  SCROLL ===> PAGE
Display:  DF - Formatted    DU - Unformatted  DH - Horizontal  BR - BRowse data
Read:     N  - Next T/R/CH  P  - T/R/PA                       L  - Locate key
Actions:  AS - Add Seg      DS - Delete Seg   US - Update Seg
SEGMENT=PARTROOT SEL=NO SIZE=50 KEY=02AN960C13
POS   *------4 *------8 *-----12 *-----16 *-----20 * ----+----1----+----2 *
00001 F0F2C1D5 F9F6F0C3 F1F34040 40404040 40404040 * 02AN960C13           *
00021 40404040 4040E6C1 E2C8C5D9 40404040 40404040 *       WASHER         *
00041 40404040 40404040 4040                       *                      *
******************************** Bottom of data ********************************
```

Figure 18: Dump Edit Display panel

Data can be modified by simply typing over either the character or hex data on the panel and entering an ‘AS’ (add segment) or ‘US’ (update segment) command.

Edit, Formatted Display

The following is a sample panel showing the Edit, Formatted Display:

```
MAX FORMATTED EDIT PSB=MAXIBRED/DBPCB01 - STOCK STATUS
 COMMAND ===>                                                SCROLL ===> PAGE
 Display:  DD - Dump style   DU - Unformatted  DH - Horizontal  BR - BRowse data
 Read:     N  - Next T/R/CH  P  - T/R/PA                       L  - Locate key
 Actions:  AS - Add Seg      DS - Delete Seg   US - Update Seg
 SEGMENT=STOKSTAT SEL=NO SIZE=160 KEY=02AN960C13       00 AA16511
 POS   *---------FIELD NAME---------* FORMAT *--------- FIELD CONTENTS --------*
 00001 STOKSTAT-FORMAT
 00001 REG                           C    2 00
 00003 STOKSTATUS-KEY
 00003 LOCATION                      C    8  AA16511
 00021 ON-HAND-QTY                   Z  6.3 000000.000
 00035 UNIT                          C    4 EACH
 00051 ATTRITION
 00051 ROP                           Z    3 000
 00054 PLANNED                       Z    3 000
 00057 MRP                           C    1
 00058 /FILLER-5/                    C   32                  512    0000000{
 00090 REQUIREMENTS
 00090 CURRNT                        Z  7.1 +0000131.0
 00098 UNPLANNED                     Z  7.1 +0000015.0
 00106 ON-ORDER                      Z  7.1 +0000020.0
 00114 TOTAL-STOCK                   Z  7.1 +0000126.0
 00122 DISBURSEMENTS
 00130 UNPLAN                        Z  7.1 0000000.0
 00138 SPARES                        Z  7.1 +0000000.0
 00146 DIVERS                        Z  7.1 +0000000.0
 00154 /FILLER-7/                    C    7 0 Z512N
 ********************************BOTTOM OF DATA***********************************
```

Figure 19: Formatted Edit panel

This facility allows you to edit a file in Formatted Display mode using related COBOL or PL/I Copybooks.

Editing in Formatted Edit Display mode, data can be modified by simply typing over data in the `FIELD CONTENTS` portion of the panel and entering an '`AS`'" (add segment) or '`US`' (update segment) command. Data entered to change the segment will be verified for proper field format.

Group fields can be identified by blanks under the column heading `FORMAT` and data cannot be entered in the group fields.

Edit, Horizontal Display

The following is a sample panel showing the Edit, Horizontal Display.

```
MAX HORIZONTAL EDIT PSB=MAXIBRED/DBPCB01                        FLD 00001 00021
COMMAND ===>                                                   SCROLL ===> PAGE
Display:  DD - Dump style  DF - Formatted  DU - Unformatted  BR - BRowse data
                                                             L  - Locate key
SEGMENT  LV SEL=NO SIZE=160 KEY=02AN960C13       00 AA16511
STOKSTAT 02  REG LOCATION  ON-HAND-QTY  UNIT  ROP   PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AA16512  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AK2877F  +000100.000  EACH  +270     +000
STOKSTAT 02  00  28009126  +000000.000  EACH  +000     +000  Y     000000000000
PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
PARTROOT 01  02  AN960C17         WASHER
STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
STANINFO 02  02  74              2                                         12
STOKSTAT 02  REG LOCATION  ON-HAND-QTY  UNIT  ROP   PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AA16512  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AK2877F  +000100.000  EACH  +270     +000
STOKSTAT 02  00  28009126  +000000.000  EACH  +000     +000  Y     000000000000
PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
PARTROOT 01  02  AN960C97         WASHER6
PARTROOT 01  02  AN960C98         WASHER6
STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
STANINFO 02  02  74              2                                         12
STOKSTAT 02  REG LOCATION  ON-HAND-QTY  UNIT  ROP   PLANNED  MRP   /FILLER-5/
STOKSTAT 02  00   AA16511  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AA16512  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AA16513  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AA16514  +000000.000  EACH  +000     +000
STOKSTAT 02  00   AK2877F  +000100.000  EACH  +270     +000

Press ENTER to continue or END to exit.
```

Figure 20: Horizontal Edit panel

This facility allows you to edit a file in Horizontal Display using related copybooks.

This option allows you to type over existing data. Data entered to change the segment will be verified for proper field format.

Edit, Primary Commands

Command	Description	Dump	Formatted	Unformatted	Horizontal
AS	Add segment.	YES	YES	NO	NO
BROWSE	Browse segments.	YES	YES	YES	YES
CANCEL	Cancel action.	YES	YES	YES	YES
CHANGE	Change segment.	YES	YES	YES	YES
CHILD	Position to child of segment.	YES	YES	YES	YES
COL	Specify columns.	NO	NO	YES	NO
COPYLIBS	Maintain copybook retrieval libraries.	YES	YES	YES	YES
COUNT	Count segments.	YES	YES	YES	YES
CUT	Copy segment(s).	YES	YES	YES	YES
DBD	Display DBD hierarchy.	YES	YES	YES	YES
DS	Delete segment.	YES	YES	NO	NO
DD	Display dump mode.	NO	YES	YES	YES
DF	Display formatted.	YES	NO	YES	YES
DH	Display horizontal.	YES	YES	YES	NO
DU	Display unformatted.	YES	YES	NO	YES
FIND	Find segment(s).	YES	YES	YES	YES
HEX	Display hexadecimal.	NO	NO	YES	YES
KEY	Display concatenated key.	YES	YES	YES	YES
L (LOCATE)	Locate segment by key.	YES	YES	YES	YES
LF (LOCATE)	Locate field name.	NO	YES	NO	YES
PARENT	Position to parent of segment.	YES	YES	YES	YES
PASTE	Insert **CUT** segment(s).	YES	YES	YES	YES
PRT	Print segment.	YES	YES	YES	YES
RESET	Reset error condition.	YES	YES	YES	YES
ROOT	Scroll to root segment.	YES	YES	YES	YES

Command	Description	Dump	Formatted	Unformatted	Horizontal
SELECT	Select segment(s).	YES	YES	YES	YES
TWIN	Scroll to twin segment.	YES	YES	YES	YES
US	Update segment.	YES	YES	NO	NO

AS (add segment)

The **AS** command allows a segment to be added to the database.

The **AS** command has the following format:

AS

A panel will be presented prompting for a RID field (segment key).

The **AS** command is only available in Dump and Formatted display options.

BROWSE

The **BROWSE** command presents the database for viewing.

The **BROWSE** command has the following format and/or aliases:

BROWSE
BR

The edit commands are disabled and the database segments cannot be changed. Any uncommitted changes are committed and can no longer be removed with the **CANCEL** command. The current position of the database is maintained as well as any selection criteria in effect.

All changes are committed and may no longer be backed out.

CANCEL

The **CANCEL** command terminates editing and removes all uncommitted changes that have been made to the database.

The **CANCEL** command has the following format and/or aliases:

CANCEL
CAN

Enter **END** to terminate editing and commit all changes that have been made to the database.

Note: Segments cannot be backed out with the **CANCEL** command if any segment in its hierarchical path has been defined without a sequence field.

CHANGE

The **CHANGE** command searches through the segments for the next occurrence of a specified **from-string** and replaces it with a specified **to-string**. The search begins with the first position of the current display.

The **CHANGE** command has the following format and/or aliases:

```
CHANGE    from-string   to-string   [begin-col] [end-col]
CHANGE    P'nnn'  P'nnn'  begin-column
C         "
```

Repeating the command, without changing the parameters, results in finding and changing the next occurrence of the specified string. The search is in a forward direction. The segments will be searched inclusively from the beginning to ending columns. When no beginning or ending columns are specified, the entire segment will be searched.

Packed data can be changed by specifying packed data strings. The search for packed data requires a begin column that is the first column of the packed field. Leading zeros need not be entered into the packed strings. If the replacement value is shorter than the value it is to replace, it will be right justified and zero filled. If the size of the replacement value exceeds the size of the found value, the data will not be replaced.

Use the FIND PF key to find the next occurrence of the specified **from-string**.

Use the CHANGE PF key to find and change the next occurrence of the specified character strings.

Operand definitions

from-string	must be a character string, quoted string, hexadecimal string or packed string.
to-string	must be a character string, quoted string, hexadecimal string or packed string. When the **from-string** is shorter than the **to-string**, data may be overlaid.
string	is a character string, quoted string, hexadecimal string or packed string. A non-quoted string will be folded to uppercase. A quoted string will remain case sensitive. Packed strings are coded as: **P'nn'**.
begin-col	is any number that cannot be greater than the segment length for which the search for the character string is to begin. In the case where there has been no end column specified then the beginning column is the only column searched.
end-col	is any number that cannot be greater than the segment length for which the search for the character string will end. The end column must not be less than the begin column.

Note: The entire segment will be searched when no beginning or end columns are specified.

CHILD

The **CHILD** command is used to position to a hierarchical child segment of the current segment. If more than one child segment is defined for the current segment, a panel is presented to prompt for the specific child segment desired. The first occurrence of that child segment (if any) is then displayed.

The **CHILD** command has the following format:

CH
CHILD

COL

The **COL** command either adds or deletes the column heading. The **COL OFF** command removes the column line. The **COL ON** command adds the column line.

The **COL** command has the following format:

COL [ON/OFF]

Example column line:

```
----+----1----+----2----+----3----+----4----+----5----+----6 etc.
```

A digit is displayed every ten positions such as 10, 20, 30 etc. Each digit on the column line corresponds to a multiplier equivalent of ten. For example: 1 = 10, 110 or 210; 2 = 20, 120 or 220.

The **COL** command is valid only in the Unformatted Edit option.

COPYLIBS

Use the **COPYLIBS** command to specify up to 10 concatenated partitioned data sets (LRECL=80 and RECFM=F or FB) for retrieving copybook members defined in mapping criteria segment layout definitions. When a segment layout definition specifies a copybook member name in the `COPYLIBS MEMBER` field, the member is retrieved from the libraries maintained by the **COPYLIBS** command.

Alternatively, a single non-partitioned COPYLIBS data set may be specified for use with the copybook SUBSYSTEM profile parameter. This is used when copybooks may be stored on another type of storage database (i.e. Panvalet, Librarian), but need to be processed as any other member from a partitioned data set.

Specify the **COPYLIBS** command from the main menu, building mapping criteria, or during browse or edit. The COPYLIBS libraries to be used for mapping segments to "copybook" members must be specified prior to building mapping criteria or requesting formatted segment displays or prints during browse or edit.

The **COPYLIBS** command has the following format:

COPYLIBS

COUNT

The **COUNT** command will provide a count of all segments by name in the database. It can be entered at any time during the browse or edit of a database. Database positioning remains the same.

The **COUNT** command has the following format:

COUNT

If selection criteria is in effect at the time of the **COUNT**, a count of all segments meeting the selection criteria will be presented. If no selection criteria is in effect, all segments are considered as selected.

Note: The **COUNT** command analyzes the entire database and can in turn cause significant delays in response time.

However, single segment selection will build IMS commands containing SSAs which will significantly improve response time.

CUT

The **CUT** command is used to copy selected segments to a temporary area. The segments may be subsequently pasted into the same or another database. The **CUT** command will replace any segments previously cut but not pasted. A panel is presented displaying the key of the segment to be **CUT**. Optionally, all dependents of the **CUT** segment can also be included.

The **CUT** command has the following format:

CUT

DBD

The **DBD** command displays the hierarchy of all segment names defined in the current DBD and identifies which segments the current PSB/PCB is sensitive to.

The **DBD** command has the following format:

DBD

DS (delete segment)

The **DS** command causes a segment and all of its child segments to be deleted from the database. A panel is displayed requesting confirmation to delete the segment and any dependents.

The **DS** command is only available in Dump and Formatted display options.

The **DS** command has the following format:

DS

FIND

The **FIND** command searches through the segments stopping at the first segment containing the specified string. The search begins with the first position of the current display. Repeating the command, without changing the parameters, results in finding the next occurrence of the specified string. The search is in a forward direction. Segments will be searched inclusively from the beginning to ending columns. When no beginning or ending columns are specified, the entire segment will be searched.

The **FIND** command has the following format and/or aliases:

FIND	**string [begin-col] [end-col]**
FIND	**P'nnn' begin-col**
FIND	**NEP begin-col [end-col]**
F	**"**

The **FIND** command can be used to search for packed data. When searching for packed data, the beginning column is required. A search for valid packed data of any length beginning at that position is then performed.

The **FIND NEP** command can be used to search for non-packed data. When searching for non-packed data, the beginning column is required. An optional end column may also be entered. However, if not entered, a length of 10 bytes will be assumed.

Use the FIND PF key to find the next occurrence of the specified character string.

Operand definitions

string is a character string, quoted string, hexadecimal string, or packed string.
A non-quoted string is case insensitive.
A quoted string will remain case sensitive.
Packed strings are coded as: **P'nn'**
Any non-packed string is specified as **NEP**

begin-col is any number not greater than the segment length for which the search for the character string is to begin. In the case where there has been no **end-col** specified, then the **begin-col** is the only column searched. Default is entire segment.

end-col is any number not greater than the segment length for which the search for the character string will end. The **end-col** cannot be less than the begin column.

HEX

The **HEX** command causes the segments to be displayed in combined character or hexadecimal format.

The **HEX** command has the following format:

HEX [ON|OFF]

The **HEX** command can be used to display otherwise non-displayable data in hexadecimal format. Typing `HEX OFF` displays data in character format; typing `HEX ON` displays data in hexadecimal format and each character of data displays horizontally.

The data displays as shown below in Unformatted mode.

```
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
-------- -- ----+----1----+----2----+----3----+----4----+----5----+----6----+---
PARTROOT 01 02AN960C13               DRYER12
            FFCDFFFCFF4444444444444444CDECDFF4444444444444444
            02159603130000000000000000498591200000000000000000
-------------------------------------------------------------------------------
```

Figure 21: Hexadecimal Data Display in Unformatted Mode panel

The data displays as shown in hexadecimal format for Horizontal mode as shown below.

```
SEGMENT  LV SEL=NO SIZE=50 KEY=02AN960C13
 PARTROOT 01  DIV ITEM-NO          ITEM-DESCRIPTION
 PARTROOT 01  02  AN960C13         DRYER12
              FF  CDFFFCFF4444444  CDECDFF4444444444444
              02  159603130000000  4985912000000000000
 ------------------------------------------------------------------------------
 STANINFO 02  DIV COMMODITY-CODE  INVENTORY-CODE  PLANNING-REVISION-NUMBER  MAKE
 STANINFO 02  02  74              2                                        12
              FF  FF              F               44                       FF
              02  74              2               00                       12
 ------------------------------------------------------------------------------
 STOKSTAT 02  REG LOCATION  ON-HAND-QTY  UNIT  ROP   PLANNED  MRP   /FILLER-5/
 STOKSTAT 02  00   AA16511  000000000    EACH  000   000
              FF  4CCFFFFF  FFFFFFFFF    CCCC  FFF   FFF      4     444444444444
              00  01116511  000000000    5138  000   000      0     000000000000
 ------------------------------------------------------------------------------
 STOKSTAT 02  00   AA16512  000000000    EACH  000   000
              FF  4CCFFFFF  FFFFFFFFF    CCCC  FFF   FFF      4     444444444444
              00  01116512  000000000    5138  000   000      0     000000000000
 ------------------------------------------------------------------------------
```

Figure 22: Hexadecimal Data Display in Horizontal Mode panel

The **HEX** command is valid in the Unformatted and Horizontal display options only.

KEY

The **KEY** command displays the concatenated key for the segment at the top of the current panel. Segments defined without a sequence field are displayed with an eight digit sequence number as its key.

The **KEY** command has the following format:

KEY

L (LOCATE)

The **L** command may be used to directly position to any segment in the database by entering a root or concatenated key.

LOCATE root segment:

The **L** command can be used to position to a root segment by its root key value field (RID). The RID can be specified with the **L** command; or if a RID is not specified, a panel will be presented displaying the root key value of the segment currently displayed at the top of the panel. This value may then be overtyped to specify a new RID. The RID entered can be either a full or partial key. However, HDAM/DEDB databases not accessed through a secondary index require a full key to be specified.

Upon entry, the located root segment is displayed. The **L** command is useful for positioning backwards in the database to display root segments prior to the one currently displayed at the top of the panel.

The **LOCATE root segment** command has the following format:

L
LOCATE
LOCATE [rid-string]

Operand definitions

rid is a quoted, hexadecimal or character string.

LOCATE by concatenated key:

The **L** command can be used to position to a segment by its concatenated key. The segment to be located is identified by the **L** command operand.

The **LOCATE segment by concatenated key** has the following format:

L	*****	will display a menu of segment names for selection
L	**segname**	will locate using the entered segment name
L	**T(WIN)**	will locate a segment name the same as the current segment
L	**PA(RENT)**	will locate a segment name the same as the current segment's parent
L	**CH(ILD)**	will locate a segment name the same as the current segment's child

A concatenated key for the identified segment is then formatted for display and may be overtyped. Segment keys along the current segment's path are initialized from the current segment's concatenated key. Those not along the path are initialized to spaces. Upon pressing ENTER, the requested segment is then retrieved using the entered concatenated key and displayed if found. If not found, the following options are presented in progression:

LOCATE generic key in DB record:

If the segment is not found using the entered concatenated key, a panel is presented requesting acknowledgement to locate a segment of the same name that is >= the specified concatenated key in the current database record. If a segment is found, it is displayed and locate is complete.

LOCATE next segment in database:

If the segment is not found in the current database record, a panel is presented requesting acknowledgement to locate the next segment of the same name in the entire database. If a segment is found, it is displayed and locate is complete.

LF (LOCATE)

The **LOCATEF** command is used to position a specific field, in the current segment, to the top, or left of the display. This command is valid in both the Formatted and Horizontal display options.

The **LOCATEF** command has the following format and/or aliases:

LOCATEF **[field-name]** or, **[field-name*]** or, **[*field-name]**
LF **"**

Operand definitions

field-name — is any field name that exists for the current segment layout presented.

'*****' — asterisk character immediately following the field name will locate the next field (search begins with field on top of display) that begins with the same characters specified. When an '*****' (asterisk) is not specified, the search begins with the first field in the layout and every character of the field name must be specified.
An '*****' (asterisk) character preceding the character string will locate the next field that contains the string anywhere within the field name.

PARENT

The **PARENT** command is used to position to a hierarchical parent of the current segment. The **PARENT** command may be used to position backward **n** parent segments in the database hierarchy. Specifying **MAX** will position to the current record root segment. Entering **PARENT** with no operands will position to the parent of the current segment.

The **PARENT** command has the following format:

```
PA        {n|MAX}
PAR       {n|MAX}
PARENT    {n|MAX}
```

PASTE

The **PASTE** command is used to insert segments that were previously captured with the **CUT** command. A panel will be presented prompting for the segment key to be used to insert the segments.

The **PASTE** command has the following format:

```
PASTE     [K]
```

Optionally a '**K**' (keep) parameter may be specified to keep the segment in the temporary area so that a subsequent **PASTE** command may be used on the same segments.

Operand definitions

K parameter indicates to keep the segments in the **CUT** area following the **PASTE** command to be available for a subsequent **PASTE** command.

PRT

The **PRT** command prints segments starting with the segment at the top of the panel.

The **PRT** command has the following format:

```
PRT
```

A panel is displayed prompting for the number of segments to be printed and confirming the starting segment concatenated key. The segment(s) may be printed to the ISPF list data set or to the JES spool. A panel is displayed providing a choice of destinations. If the JES spool is chosen, a SYSOUT class must be entered. In addition, destination, form, and FCB may be optionally entered. If the ISPF list data set is chosen, the ISPF **LIST** command may then be used to submit a JOB to print the records from the list data set.

The format of the report depends on the current display mode in effect. When the segment display is currently in Formatted or Horizontal mode, the report will be a formatted style listing of each segment. Otherwise, the report will resemble the Dump style display mode where both the hexadecimal and character representations of the data are listed.

RESET

The **RESET** command resets the display. When invalid data or an invalid line command is entered other commands may become disabled until the error situation is corrected. The **RESET** command can be used to reset the Panel thus removing the error condition.

The **RESET** command has the following format and/or aliases:

RESET
RES

ROOT

The **ROOT** command is used to position to the current, next, first, or last root segment in the database. The **ROOT** command may be used along with forward scrolling (DOWN,NEXT) to position forward n root segments or with backward scrolling (UP,PREV) to position to the current record root segment. Specifying **MAX** will position forward or backward to the start or end of the database accordingly. Entering **ROOT** with no operands will position to the current database record root segment

The **ROOT** command has the following format and/or aliases:

R	**{n|MAX}**
RO	**"**
ROOT	**"**

SELECT

The **SELECT** command controls the use of segment selection criteria. Segment selection criteria is used to group a subset of segments by name for processing. The **SEL ON** command prompts for segment selection criteria. The **SEL OFF** command disables segment selection criteria and all segments are available for processing.

The **SELECT** command has the following format and/or aliases:

SELECT	**[ON|OFF]**
SEL	**"**

Segment selection criteria can be entered in either Unformatted Mode (Unformatted and Dump display options) or Formatted Mode (Formatted and Horizontal display options).

Note: Using segment selection criteria can cause an increased number of segments to be read between operations that can in turn cause significant delays in response time.

However, single segment selection will build IMS commands containing SSAs which will significantly improve response time.

If any unsequenced segments are selected, the root segment must also be selected.

TWIN

The **TWIN** command is used to position to the next or previous segment of the same name and same parent as the current segment. The **TWIN** command may be used along with forward scrolling (DOWN,NEXT) to position forward **n** twin segments or with backward scrolling (UP,PREV) to position backward 1 twin segment. Specifying **MAX** will position forward or backward to the start or end of the twin chain accordingly. Entering **TWIN** with no operands will scroll forward 1 twin segment.

The **TWIN** command has the following format and/or aliases:

T	**{n|MAX}**
TW	"
TWIN	"

US (update segment)

The **US** command replaces a segment in the database and is only available in Dump and Formatted display options.

The **US** command has the following format:

US

Edit, Line Commands

The following line commands discussed in this section are available in Unformatted and Horizontal modes.

D	DELETE Segment and Dependents
I	INSERT Segment
R	REPEAT Segment and Dependents

D(elete)

To delete a segment, type '`D`' in the line command area of the segment to be deleted.

If the segment has NO dependents, it is deleted with no confirmation.

If the segment HAS dependents, a panel is displayed requesting confirmation to delete the segment and all dependents.

I(nsert)

To insert a segment, type '`I`' in the line command area.

This line command inserts a segment into the database. A panel is presented requesting the segment SIZE, KEY and a PAD character for the segment to be inserted. The location of the inserted segments is determined by the sequence of the key within the database and the DBD definition.

The segment name to be inserted is determined by the segment into which the I line command was entered.

If the segment has NO dependents defined in its hierarchy, a twin insert is assumed. A panel is presented requesting a twin segment key and pad character.

If the segment HAS dependents defined in its hierarchy, a panel is presented requesting whether a twin or one of its dependent segments is to be inserted. Upon selection, a panel is presented requesting a segment size, key and pad character.

R(epeat)

To repeat a segment, type 'R' in the line command area.

This line command repeats a segment in the database. A panel is presented requesting the segment SIZE, KEY and a PAD character for the segment to be inserted, and whether DEPENDENT segments are to be repeated. The location of the inserted segments is determined by the sequence of the key within the database and the DBD definition.

If dependent segments are NOT to be repeated, only the segment into which the R line command was entered is inserted with the new key.

If dependent segments ARE to be repeated, the entire database structure beginning with the segment at the R line command is inserted with the new key.

3. IMS Utilities

The IMS Utilities panel allows the execution of Data Set and IMS Utility functions. The Select IMS Utility panel is presented as a "pop-up" when the IMS Utilities option is selected on the Specify A Database Name panel.

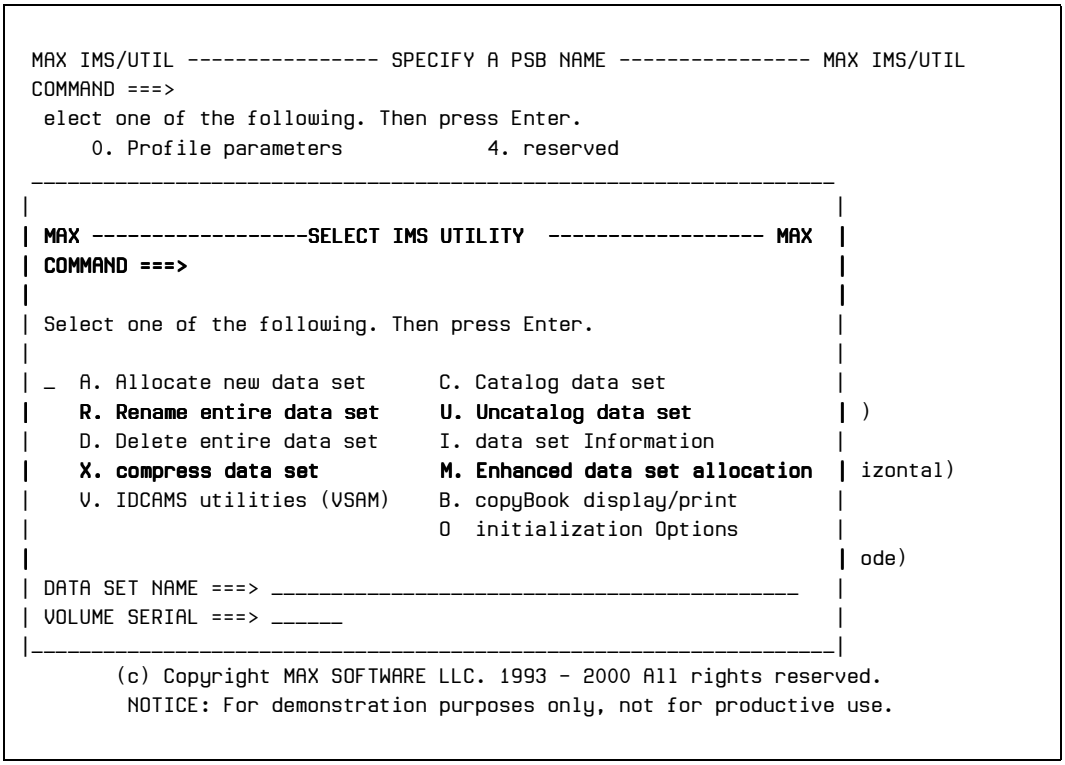


Figure 23: Select IMS Utility panel

Field Descriptions for selected functions:

A. Allocate a new data set. Use this option to allocate a new data set. A panel will be displayed requesting the attributes for the new data set. The display data set information may be invoked prior to allocate in order to set the default attributes for the new data set. Only NON-VSAM data sets may be allocated with this function.

R. Rename entire data set. Use this to rename an entire data set. A panel will be displayed requesting the new name for the data set. Only NON-VSAM data sets may be renamed.

D. Delete an entire data set. A confirmation panel will be displayed before the data set is deleted. Once deleted there is no way to undelete the data set. Only data sets that are NON-VSAM or password protected may be deleted.

X. Compress data set. The compress utility recovers wasted (unused) space within a partitioned data set and makes it available for use.

V. IDCAMS Utilities (VSAM). Use this option to transfer to the IDCAMS Utility for VSAM panel to invoke the IDCAMS Utility for VSAM data set processing. See "*IDCAMS Utilities*" on page 64 for details on this option.

C. Catalog data set. A VOLSER must be specified to catalog a data set. Only NON-VSAM data sets may be cataloged.

U. Uncatalog data set. Only NON-VSAM data sets may be uncataloged.

I. data set Information. A panel will be displayed showing the attributes of the new data set. The display data set information may be invoked prior to allocate to set the default attributes for the data set to be allocated. Only NON-VSAM data sets have data set information displayed.

M. Enhanced data set allocation of SMS controlled data sets.

B. CopyBook display/print. This provides the following information about a copybook:

- the position of the field
- the length of the field
- the level number
- the field name
- the field format

0. installation Options. The MAX IMS/UTIL installation options as contained in the MAXIOPTS load module are displayed for review. The source (MAXIOPTS) and the JCL (MAXIOPTJ) are found in the MAX products JCL library, and can be used to generate the installation options contained in the MAXIOPTS. See the MAX Product Installation Guide for more information on setting the IMS/UTIL installation options.

IMS/UTIL Version	IMS/UTIL Vnnn of MAXIOPTS installation options module
IMSID Validation	Y = Only IMSID values specified in the MAXIOPTS installation options module are allowed to be used
	N = No IMSID validation is performed
Dynamic PSB Prefix	Default Dynamic PSB assigned prefix name
Dynamic PSB Maximum	Default Dynamic PSB maximum allowed (0-2040) Specify 0 to disable dynamic PSBs
Dynamic PSB ACBLIB	Default Dynamic PSB ACBLIB data set name (BMP mode only) Specify NONE to disable dynamic PSBs in BMP mode
Dynamic PSB MACLIB	Default Dynamic PSB IMS Maclib data set name

Parameters specified for a given IMS subsystem IMSID take precedence over a corresponding default. Those parameters not specified will use the default.

IMS Subsystems:	Parameters specified for each IMSID (1-32)
IMSID	IMS Subsystem ID for which parameters are specified
Dynamic PSB Prefix	Dynamic PSB assigned prefix name
Dynamic PSB Maximum	Dynamic PSB maximum allowed (0-2040) Specify 0 to disable dynamic PSBs
Dynamic PSB ACBLIB	Dynamic PSB ACBLIB data set name (BMP mode only) Specify NONE to disable dynamic PSBs in BMP mode
Dynamic PSB MACLIB	Dynamic PSB IMS Maclib data set name

IDCAMS Utilities

When the IDCAMS Utilities option is invoked, the Specify Entry Name panel is displayed:

```
MAX --------------------------- IDCAMS UTILITY --------------------------- MAX
COMMAND ===>

Select one of the following. Then press Enter.
   A. Alter data set                    R. Repro data set
   B. Build alternate indexes           V. Verify data set
   D. Define data set                   I. data set Information
   E. dElete data set                   L. List data sets
   N  reName data set

Specify entry name:
       Entry name ===> 'MXS.TEST.KSDS'
       Entry type ===>             (KSDS, ESDS, RRDS, LINEAR, VRRDS,
                                    AIX, ALIAS, GDG, NONVSAM, PATH, UCAT)
     Catalog name ===>

Specify MODEL entry name (valid for DEFINE option only):
       Entry name ===>
     Catalog name ===>

Parameter display ===> SHORT       (Full, Short)

        (c) Copyright MAX SOFTWARE, INC. 1993-2000. All rights reserved
```

Figure 24: Enter Entry Name panel

Field Descriptions for selected functions:

Command ====>: Select and enter desired function in this field. There are nine functions to select from:

```
A. Alter data set                    R. Repro data set
B. Build alternate indexes           V. Verify data set
D. Define data set                   I. data set Information
E. dElete data set                   L. List data sets
N  reName data set
```

See "*Major Functions*" on page 66 for further information.

Specify Entry Name: All MAX IMS/UTIL services require an entry name to be supplied. The LIST data sets function allows a generic entry name to be entered.

Entry Type: MAX IMS/UTIL supports the following entry types:

ALIAS	An entry that relates an alias (alternate entry name) to the real entry name in a User-catalog.
AIX	An Alternate IndeX is conceptually a key sequenced cluster that provides an alternate indexed access to a base cluster. An AIX entry points to data and index components, as well as a base cluster entry.
KSDS	Key-Sequenced VSAM Data Set is a data set whose records are loaded in a key sequence and controlled by an index. Includes data and index components.
ESDS	Entry Sequenced VSAM Data Set is a data set whose records are loaded without respect to their contents. New records are always added to the end of the data set. Contains a data component only.
RRDS	Relative Record VSAM Data Set. A data set whose records are fixed length and are loaded without respect to their contents. Each record may be accessed via a relative record number assigned to it when loaded. Contains data component only.
VRRDS	Variable length RRDS VSAM data set that operates similar to the fixed length RRDS data set. An index component is used to control Relative Record Number processing. Includes data and index component.
LINEAR	Linear VSAM data set is a data set whose control intervals equal the number of records. Contains data component only.
GDG	An entry which permits non-VSAM data sets to be associated (to maintain a historical collection) with other non-VSAM data set with the same name.
NONVSAM	A non-VSAM data set which may reside on tape or DASD.
PATH	An alias name that identifies an AIX and its base cluster.
UCAT	Pointed to by the Master-catalog and used to alleviate contention on the Master-catalog and to facilitate volume portability.

Specify MODEL entry name: A MODEL entry name may be supplied to pre-load the parameter values for the **DEFINE** function. The equivalent may be accomplished by first requesting an **INFORMATION** function for an entry followed immediately by the DEFINE function.

Parameter display: A full or short parameter display may be requested. 'FULL' displays a complete list of the parameters supported. 'SHORT'' displays a minimum list of the most widely used parameters.

Major Functions

Major functions are invoked by selecting one of the nine major functions available on the Enter Entry Name panel.

Titles	Description
ALTER data set	The **ALTER data set** function modifies the attributes of previously defined catalog entries. Entries may be renamed, volumes added or deleted, and various other parameters may be changed.
Build Alternate Indexes	The **Build alternate indexes** function builds alternate indexes for existing data sets.
DEFINE Data Set	The **DEFINE data set** function defines (creates) new entries. The entry type may be Alternate-index (AIX), ALIAS, Clusters (KSDS, ESDS, RRDS, VRRDS, or LINEAR), Generation Data Group (GDG), Non-VSAM, Path, or User Catalog (UCAT).
DELETE Data Set	The **DELETE data set** function deletes Catalogs, VSAM data sets, and non-VSAM data sets.
RENAME Data Set	The **RENAME data set** function renames Catalogs, VSAM data sets, and non-VSAM data sets.
REPRO Data Set	The **REPRO data set** function copies VSAM and non-VSAM data sets, copies Catalogs, and unloads and reloads VSAM Catalogs.
VERIFY Data Set	The **VERIFY data set** function insures that the Catalog correctly reflects the end of the data set after an error has occurred closing the data set.
Data Set INFORMATION	The **data set INFORMATION** function creates a complete detailed listing of a Catalog entry**.**
LIST Data Sets	When the **LIST data sets** function is invoked a list of data sets that match the entry name and entry type specified is displayed. Creates a list of entry names from a high-level qualifier.

Once a major function has been selected and the appropriate panel is presented to the user, parameter entry is accomplished by moving the cursor to the desired parameter and over-typing data to modify.

For example, the following panel is displayed to define a VSAM data set. Scrolling may be used to view other parameters not displayed on the current panel.

```
MAX DEFINE KSDS='MXS.TEST.KSDS' -------------------------------- Row 2 of 201
COMMAND ===>                                                  SCROLL ===> PAGE
Commands . . CHECK      (Syntax check parameters)
             RUN        (run IDCAMS)
             SAVE       (save parameters in dataset)

Type over data to modify parameters, use SCROLLING to view others. Position
cursor to a parameter and press Enter to view detail description.

CLUSTER'S ENTRYNAME. . . . . . . MXS.TEST.KSDS
 KEYED-SEQUENCED DATA SET. . . . INDEXED
 REUSE|NOREUSE . . . . . . . . . REUSE_____________________________________
 SHARE CROSS REGION, SYSTEM  N,N 2,3_____________________________________
ENTRYNAME OF THE DATA COMPONENT. MXS.TEST.KSDS.DATA
 CYLINDERS|RECORDS|TRACKS. . . . TRACKS____________________________________
  DATA PRIMARY SPACE ALLOCATION. 1_____________________________________
  DATA SECONDARY SPACE ALLOC . . 1     ____________________________________
 DATA CONTROL INTERVAL SIZE. . . 4096__________________________________
 DATA CI-PERCENT FREE. . . . . . 5_____________________________________
 DATA CA-PERCENT FREE. . . . . . 5_____________________________________
 KEY LENGTH. . . . . . . . . . . 10____________________________________
 KEY OFFSET. . . . . . . . . . . 0_____________________________________
 AVERAGE RECORD SIZE . . . . . . 100___________________________________
 MAXIMUM RECORD SIZE . . . . . . 100___________________________________
 DATA VOLUMES. . . . . . . . . . MXS001________________________________
ENTRYNAME OF THE INDEX COMPONENT MXS.TEST.KSDS.INDEX
 INDEX CONTROL INTERVAL SIZE . . _____________________________________
 CYLINDERS|RECORDS|TRACKS. . . . _____________________________________
  INDEX PRIMARY SPACE ALLOCATION _____________________________________
  INDEX SECONDARY SPACE ALLOC. . _____________________________________
 INDEX VOLUMES . . . . . . . . . _____________________________________
******************************** Bottom of data ********************************
```

Figure 25: Define Data Set Function panel

A quick detailed description of any specific parameter may be displayed by placing the cursor to a parameter and pressing the ENTER key.

```
MAX --------------------------- IDCAMS UTILITY --------------------------- MAX
COMMAND ===>


Specify IDCAMS value and press Enter.

  Value . . . . . : 5
  Parameter . . . . . DATA CA-PERCENT FREE

  Description
     The amount of space to be left free in each control area when the
     cluster is initially loaded.
     The amount is specified as percentage. This parameter applies only to
     key-sequenced clusters.

END to exit.
```

Figure 26: Detailed Parameter Description panel

Parameter Verification (Parameter Errors)

Each parameter entered on a Major Function panel is verified as it is entered. If a parameter does not pass the verification criteria, a panel similar to the following is displayed along with a message indicating the problem.

```
MAX --------------------------- IDCAMS UTILITY --------------- Must be numeric
COMMAND ===>


Specify IDCAMS value and press Enter.

  Value . . . . . : A
  Parameter . . . . . DATA CA-PERCENT FREE

  Description
     The amount of space to be left free in each control area when the
     cluster is initially loaded.
     The amount is specified as percentage. This parameter applies only to
     key-sequenced clusters.


END to exit.
```

Figure 27: Parameter Verification panel

Parameter Entry Primary Commands

When all the necessary parameters' values have been entered and/or modified, a primary command may be entered to **CHECK**, **RUN** or **SAVE** the parameters.

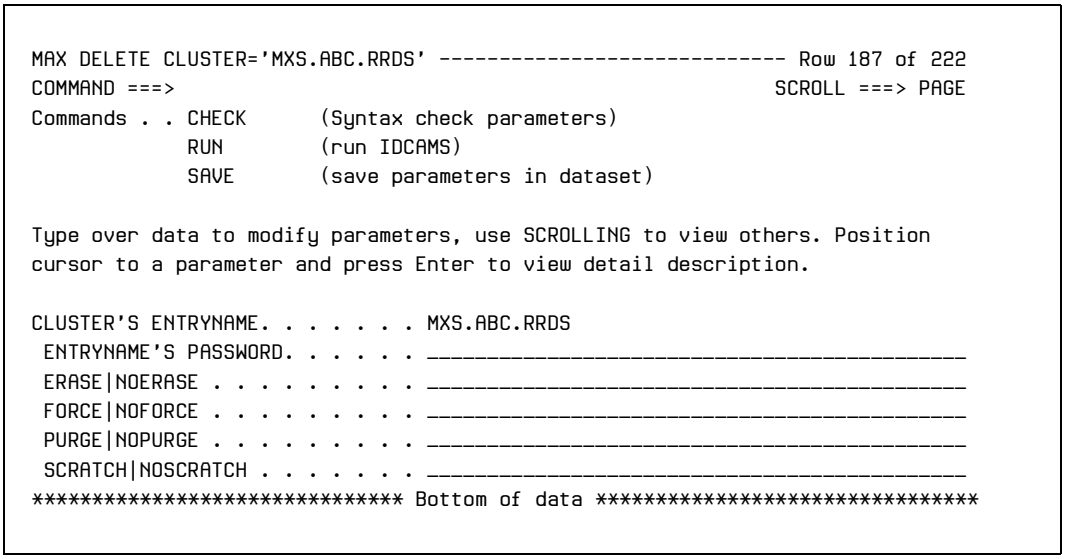


Figure 28: Delete Data Set Function panel

Parameter Entry Primary Command Panels

The following panels show the formats of the panels displayed for each Parameter Entry Primary Command:

CHECK, **RUN** and **SAVE**

CHECK

This command invokes only a syntax check on the parameters. The IDCAMS parameter listing will be presented in browse mode to allow further examination of the parameters. Upon return from the browse, if an error was detected, the parameter that caused the error will be positioned to the top of the entry display along with a message. If no error was detected, the display panel will be positioned as it was preceding the **CHECK** command.

```
BROWSE    SYS99338.T130819.RA000.MX11005.R0101733    Line 00000000 Col 001 080
 Command ===>                                                Scroll ===> CSR
********************************** Top of Data ***********************************


            DELETE                                                    -00000000
            (MXS.ABC.RRDS,                                            -00000187
            )                                                         -00000189
            CLUSTER                                                    00000187

 /* ****************************************************************** */ 00000187
 /* END CONTROL CARDS GENERATED BY THE MAX/IDCAMS UTILITY            */ 00000187
 /* ****************************************************************** */ 00000187


IDC0002I IDCAMS PROCESSING COMPLETE. MAXIMUM CONDITION CODE WAS 0
********************************** Bottom of Data ********************************
```

Figure 29: Parameter Entry panel (**CHECK** Primary Command)

RUN

This command invokes IDCAMS to run the parameters. If a problem is detected, the IDCAMS listing will be presented in browse mode to allow further investigation of the problem. Upon return from browse, the parameter that caused the error will be positioned to the top of the display along with a message.

```
BROWSE    SYS99338.T130952.RA000.MX11005.R0101735    Line 00000000 Col 001 080
 Command ===>                                                 Scroll ===> CSR
******************************** Top of Data ***********************************

             DELETE                                                   -00000000
             (MXS.ABC.RRDS,                                           -00000187
             )                                                        -00000189
             CLUSTER                                                   00000187
IDC3012I ENTRY MXS.ABC.RRDS NOT FOUND
IDC3009I ** VSAM CATALOG RETURN CODE IS 8 - REASON CODE IS IGGOCLA3-42
IDC0551I ** ENTRY MXS.ABC.RRDS NOT DELETED
IDC0001I FUNCTION COMPLETED, HIGHEST CONDITION CODE WAS 8

 /* ************************************************************** */ 00000187
 /* END CONTROL CARDS GENERATED BY THE MAX/IDCAMS UTILITY          */ 00000187
 /* ************************************************************** */ 00000187
IDC0002I IDCAMS PROCESSING COMPLETE. MAXIMUM CONDITION CODE WAS 8
******************************** Bottom of Data ********************************
```

Figure 30: Parameter Entry panel (**RUN** Primary Command)

SAVE

This command generates the IDCAMS control records and saves them in a data set. A panel will be presented prompting for the name of the data set to receive the control records. The data set that is to contain the control records must have a record length of at least 80.

```
MAX --------------------------- IDCAMS UTILITY --------------------------- MAX
COMMAND ===>

SPECIFY "TO" DATA SET BELOW. (Only if option 2 selected)

TO PARTITIONED OR SEQUENTIAL DATA SET:
   DATA SET NAME ===> 'TEST.PARAM.LIB(IDCDD3)'
   VOLUME SERIAL ===>              (If not cataloged)

"TO" DATA SET OPTIONS:
  IF PARTITIONED, REPLACE LIKE-NAMED MEMBER  ===> YES     (YES or NO)
  IF SEQUENTIAL, "TO" DATA SET DISPOSITION   ===> OLD     (OLD or MOD)
  SPECIFY PACK OPTION FOR "TO" DATA SET      ===>         (YES, NO or blank)
  COPY AND LOCK MEMBER                       ===>         (YES, NO or blank)

   Enter END command to cancel this operation.
```

Figure 31: Parameter Entry panel (**SAVE** Primary Command)

4. Update/Search/Count Database

The Update Database option is used to update or delete selected segments "in place" in an IMS database. Segment select/change criteria may be specified to group and optionally change a subset of segments. Only segments to which the PSB is sensitive can be selected and updated/deleted.

The **VERIFY** action request permits previewing the selected and changed segments prior to actually updating or deleting the database. The beginning root segment key, number, and format of segments to be previewed during verify may be specified.

The **COUNT** action request will provide a total count of segments in the entire database that meet the specified select/change criteria.

The **UPDATE** or **DELETE** action request initiates an online update operation to actually make the requested changes to the database. Alternatively, **SUBMIT** may be specified to build a batch job that is presented in an edit session. This batch job may then be changed, saved and/or submitted to run in a batch region.

Upon entering the GO command, the Select/Change Criteria panel will be presented for entry. See section "*Select/Change Criteria* on page 83 for more information.

```
MAX UPDATE DATABASE USING PSB=DFSSAM03/DBPCB01
COMMAND ===>

Update criteria:
  MAX NUMBER TO UPDATE    ===>             (Blank=ALL)
  BEGIN ROOT SEGMENT KEY  ===> ________________________________________________

UPDATE online, COUNT, VERIFY and review the output, or SUBMIT to batch:
  ACTION REQUEST          ===> VERIFY      (Update-process changes)
                                           (Delete-delete segments)
                                           (Verify-preview changes only)
                                           (Count -count all changes only)
                                           (Submit-build IMS/UTIL BATCH job)
    PREVIEW COUNT         ===> 200         (1-99999)
    PREVIEW FORMAT        ===> LIST        (List, Dump, Formatted)

    The COUNT request will provide a count of all segments to be changed.

Copybook, or mapping criteria library and member (Formatted Preview only):
    DATA SET NAME  ===> 'MXS.IMS.COPYLIB(DI21PARC)'
    COPYBOOK TYPE  ===> COBOL               (Cobol, P11)

  Enter GO  command to initiate update request.
  Enter END command to cancel request.
```

Figure 32: Update Database panel

Explanation of parameters

Update criteria:

MAX NUMBER TO UPDATE: Specifies the maximum number of segments to update or delete.

BEGIN ROOT SEGMENT KEY: May be a hexadecimal or unquoted character string which identifies the starting root segment key to begin searching for segments to update. This may specify a complete or partial key. However, HDAM/DEDB databases not accessed through a secondary index require a full key be specified.

UPDATE online, COUNT, VERIFY and review the output, or SUBMIT to batch:

UPDATE: Will cause update of the database to take place online immediately.

DELETE: Will cause delete of the database to take place online immediately.

VERIFY: Will allow you to preview the segments that will be selected/changed prior to actually updating the database.

COUNT: Will provide a total count of all segments in the entire database that meet the specified select/change criteria.

SUBMIT: Will prepare a batch job using MAX IMS/UTIL Batch for you to review and submit for update processing.

PREVIEW COUNT: Enter the number of segments you would like to see displayed in VERIFY mode. The MAX NUMBER TO UPDATE count overrides the PREVIEW COUNT if specified as a smaller value.

PREVIEW FORMAT: Enter the format of the preview report you would like to see in VERIFY mode. DUMP provides a hex/character display while LIST displays in character mode and is the most concise. FORMATTED will provide a formatted report with each segment displayed using its assigned mapping criteria copybook member.

Copybook or mapping criteria library and member (Formatted Preview only):

DATA SET NAME: Enter the library and member name of the mapping criteria to be used to format segments to their copybook layouts when FORMATTED has been chosen as the PREVIEW FORMAT during VERIFY. Enter blank to use default mapping criteria.

COPYBOOK TYPE: Enter the type of copybook that will be used, either Cobol or PL/I.

Using with Dynamic PSB

When **DYNAM** or **DYNAMSEG** is specified as the PSB name along with option 4, a dynamic PSB is generated from the segments contained in the specified DBD name. The PROCOPT of the dynamic PSB is 'GOT' with **VERIFY**/**COUNT** actions, while it is 'A' with **UPDATE**/**SUBMIT** actions for databases using a primary access path, and 'R' for databases accessed through a secondary index.

DYNAM will include only those segments contained in the DBD that are required as specified in the segment selection criteria. If no segment selection criteria is specified, all DBD segments are included in the generated PSB. Message RXPS019I will identify the PROCOPT and PSB segment names included as follows.

```
* RXPS019I DYNAMIC PSB SEGMENTS DETERMINED FROM BATCH COMMAND ANALYSIS
*      PROCOPT=G  PSB SEGMENTS: PARTROOT
```

DYNAMSEG will include only those segments contained in the DBD that have been chosen (along with their hierarchical parents) by the segment prompt panel. If segment selection criteria is specified, only those chosen that are also selected are included in the generated PSB, otherwise all chosen segments are included. Message RXPS018I will identify the PROCOPT and PSB segment names included as follows:

```
* RXPS018I DYNAMIC PSB SEGMENTS DETERMINED FROM DYNAMSEG FILE
*      PROCOPT=G  PSB SEGMENTS: PARTROOT STANINFO
```

5. Unload Database

The Unload Database option is used to copy selected segments from an IMS database to a specified 'TO' sequential data set or UNIX System Services file. Segment select/change criteria may be specified to group and optionally change a subset of segments during unload. The output format may also be transformed to XML, Comma Separated Variable (CSV), TAB delimited or other specified format. Only segments to which the PSB is sensitive are unloaded.

Requests can be made to unload entire Database records consisting of a root and all dependent segments or just individual segments without regard to hierarchy or parentage. This permits selection and change using different segments of a database record to determine whether the entire database record should be unloaded.

In addition, selection frequency, maximum number and beginning root segment key identification field (RID) may be specified as unload options. The Unload can take place online or a batch job will be built that can subsequently be submitted to run in a batch region. Prior to actually unloading the records, the result can be previewed so that you can verify the selections and changes.

```
MAX UNLOAD DATABASE USING PSB=DYNAM/DI21PART
COMMAND ===>

"TO" sequential data set:
  DATA SET NAME/UNIX PATH   ===> 'MX11005.TEST.DI21PART'_____________________
  DATA SET DISPOSITION      ===> OLD         (Old, Mod, New)
  DATA SET TYPE             ===> DSN         (Dsn, Unix)

Unload criteria:
  DATABASE RECORD COPY      ===> YES         (Yes or No)
  SELECT/CHANGE CRITERIA    ===> NO          (Yes or No)
  SELECTION FREQUENCY       ===>             (Blank=NONE)
  MAX NUMBER TO UNLOAD      ===>             (Blank=ALL)
  BEGIN ROOT SEGMENT KEY    ===> ____________________________________________
  TRANSFORMATION FORMAT     ===> ________    (Blank,CKEY,CSEG,CSV,TAB,XML)
  OUTPUT CODE PAGE          ===> _____       (1-65534; Use ? to list)
                                             (Reloadable formats=Blank,CSEG)
UNLOAD online, VERIFY and review the output, or SUBMIT to batch:
  ACTION REQUEST            ===> VERIFY      (Unload,Verify,Submit)
    PREVIEW COUNT           ===> 200         (1-99999)
    PREVIEW FORMAT          ===> LIST        (List,Dump,Formatted)

  Enter GO  command to initiate unload request.
  Enter END command to cancel request.
```

Figure 33: Unload Database panel

Explanation of parameters

TO sequential data set:

DATA SET NAME/UNIX PATH: Enter either a sequential data set name or UNIX path name into which unloaded segments are to be copied. The DATA SET TYPE field entered below specifies DSN if sequential data set or UNIX if unix path name.

If DSN, the data set should be allocated with a VB record format and record size that is 16 bytes larger than the longest segment in order to contain the segment name and attribute information. While smaller record sizes are OK, records will be truncated and a warning message issued along with RC=04. If uncertain, allocate the data set using RECFM=VB,LRECL=32756,BLKSIZE=32760.

If UNIX, the unix path name (up to 256 bytes) should be entered containing no embedded blanks. If the entered path name fills the initial field size, a prompt is issued providing a larger entry field. Also, any time the unix path name changes or is suffixed with a '+', the same larger field prompt is provided.

DATA SET DISPOSITION: OLD replaces the data set contents, while MOD appends to them. NEW will prompt for parameters that will create a new data set to contain the unloaded segments.

DATA SET TYPE: Enter DSN or UNIX to identify the type of data set into which segments are to be unloaded.

Unload criteria:

DATABASE RECORD COPY: specifies whether complete database records consisting of a root and all dependent segments are to be unloaded. Enter 'YES' to indicate select/change criteria will apply to the unload of an entire Database record.

SELECT/CHANGE CRITERIA: can be used to select and optionally change a subset of segments (or database records) during the unload operation. Enter 'YES' to transfer to a panel to enter this criteria. See section "*Select/Change Criteria*" on page 83 for more information.

SELECTION FREQUENCY: use this field to cause every nth segment (or database record) to be unloaded. To create a subset of a database, you can select every nth database record to be written to the output data set. For example, to create a file with 10% of the database records, enter '10' (ten) into the frequency field and request a database record copy. During the unload, all segments for every 10th database record chosen will be written to the output data set.

MAX NUMBER TO UNLOAD: use this field to limit the size of the output data set.

BEGIN ROOT SEGMENT KEY: may be a hexadecimal or unquoted character string. The RID entered can be either a full or partial key. However, HDAM/DEDB databases not accessed through a secondary index require a full key to be specified.

TRANSFORMATION OR OUTPUT FORMAT: Enter one of the following unload formats:

- Blank: Output segment prefix and data for reload using option 6. Load Database. DATABASE RECORD COPY=YES should be specified to reload using option 6.
- CKEY: Output segment prefix and concatenated key only.
- CSEG: Output segment prefix, concatenated key, and segment data for reload. Each individual segment can be reloaded using option 6. Load Database.
- CSV: Transform output into Comma Separated Variables using copybooks.
- TAB: Transform output into Tab delimited variables using copybooks.
- XML: Transform output into XML structured data formats using copybooks.

OUTPUT CODE PAGE: Enter the code page for output transformation if the output is to be written in a code page other than the default 37, EBCDIC US English. Enter '?' to view the list of valid code pages for selection.

UNLOAD online, VERIFY and review the output, or SUBMIT to batch:

UNLOAD: will cause the copy of the database to take place online immediately.

VERIFY: will allow you to preview the output prior to actually unloading the database.

SUBMIT: will prepare a batch job using MAX IMS/UTIL Batch for you to review and submit for processing.

PREVIEW COUNT: enter the number of segments (or database records) you would like to see in **VERIFY** Mode.

PREVIEW FORMAT: enter the format of the preview report you would like to see in **VERIFY** mode. DUMP provides a hex/character display while LIST displays in character mode and is the most concise. FORMATTED will provide a formatted report with each segment displayed using its assigned mapping criteria copybook member as entered on the Specify A Database Name panel.

Using with Dynamic PSB

When **DYNAM** or **DYNAMSEG** is specified as the PSB name along with option 5, a dynamic PSB is generated from the segments contained in the specified DBD name. The PROCOPT of the dynamic PSB is 'GOT'.

DYNAM will include only those segments contained in the DBD that are required as specified in the segment selection criteria. If no segment selection criteria is specified or a **DATABASE RECORD COPY** is performed, all DBD segments are included in the generated PSB. Message RXPS019I will identify the PROCOPT and PSB segment names included as follows.

```
* RXPS019I DYNAMIC PSB SEGMENTS DETERMINED FROM BATCH COMMAND ANALYSIS
*      PROCOPT=G   PSB SEGMENTS: PARTROOT
```

DYNAMSEG will include only those segments contained in the DBD that have been chosen (along with their hierarchical parents) by the segment prompt panel. If segment selection criteria is specified and a **DATABASE RECORD COPY** is not performed, only those chosen that are also selected are included in the generated PSB, otherwise all chosen segments are included. Message RXPS018I will identify the PROCOPT and PSB segment names included as follows:

```
* RXPS018I DYNAMIC PSB SEGMENTS DETERMINED FROM DYNAMSEG FILE
*      PROCOPT=G   PSB SEGMENTS: PARTROOT STANINFO
```

6. Load Database

The Load Database option is used to copy database record segments from a specified 'FROM' sequential data set produced by the MAX IMS/UTIL **UNLOAD** function 'TO' an IMS Database. Segment select and change criteria may be specified to group and optionally change a subset of segments during load.

Complete database records consisting of a root and dependent segments are inserted into the 'TO' database. The first segment in the 'FROM' data set must be a root segment to establish parentage. Segments containing duplicate keys are deleted and then the new segment is inserted. Dependent segments of any deleted duplicate segments are also deleted before the insert. Only segments to which the PSB is sensitive can be loaded. The PSB PROCOPT must support insert and delete of segments. When loading segments, a SYNCPT is issued every 20 database records.

In addition, if the 'FROM' data set is in root key sequence, a beginning root segment key identification field (RID) may be specified as a load option. The Load can take place online or a batch job will be built that can subsequently be submitted to run in a batch region. Prior to actually loading the records, the result can be previewed so that you can verify the segments to be loaded.

```
MAX LOAD DATABASE
COMMAND ===>

"FROM" sequential data set:
  DATA SET NAME             ===> 'MX11005.TEST.DI21PART'
  VOLUME SERIAL             ===>             (If not cataloged)

"TO" IMS database:
  IMSID                     ===> IMS1
  PSB NAME                  ===> DYNAM       (DYNAM to build dynamic PSB)
  PCB/DBD NAME              ===> DI21PART    (#n=rel PCB num)
  IMS RUN MODE              ===> BMP         (BMP, DLI)

Load criteria:
  SELECT/CHANGE CRITERIA    ===> NO          (Yes or No)
  BEGIN ROOT SEGMENT KEY    ===> ____________________________________________

LOAD online, VERIFY and review the output, or SUBMIT to batch:
  ACTION REQUEST            ===> VERIFY      (Load,Verify,Submit)
    PREVIEW COUNT           ===> 200         (1-99999)
    PREVIEW FORMAT          ===> LIST        (List,Dump,Formatted)

  Enter GO  command to initiate load request.
  Enter END command to cancel request.
```

Figure 34: Load Database panel

Explanation of parameters

"FROM" sequential data set: Specify the data set name that is to be loaded from. If this data set is not cataloged, specify the volume serial number where it is allocated.

"TO" IMS database: These fields override the IMS database name specified in the Specify A Database Name panel.

IMSID: Specify the IMS Subsystem ID to connect.

PSB NAME: Specify the PSB name to load.

PCB/DBD: Specify the PCB Name, DBD Name, or Rel DB PCB Number (#n) to load. If unknown, pattern characters may be entered to request PCB selection. '*' matches any number of characters, each '?' matches a specific character.

IMS RUN MODE: Specify the IMS run mode as BMP or DLI (offline Batch)

Load Criteria:

SELECT/CHANGE CRITERIA: can be used to select and optionally change a subset of segments during the load operation. Enter 'YES' to transfer to a panel to enter this criteria. See "*Select/Change Criteria*" on page 83 for more information.

BEGIN ROOT SEGMENT KEY: may be a hexadecimal or unquoted character string. The RID entered can be either a full or partial key. Input file must be in Root key sequence to successfully use this parameter.

LOAD online, VERIFY and review the output, or SUBMIT to batch:

LOAD: will cause the load of the database segments to take place online immediately.

VERIFY: will allow you to preview the input prior to actually loading the database segments.

SUBMIT: will prepare a batch job using MAX IMS/UTIL Batch for you to review and submit for processing.

PREVIEW COUNT: enter the number of segments you would like to see in VERIFY mode.

PREVIEW FORMAT: enter the format of the preview report you would like to see in VERIFY mode. DUMP provides a hex/character display while LIST displays in character mode and is the most concise. FORMATTED will provide a formatted report with each segment displayed using its assigned mapping criteria copybook member as entered on the Specify A Database Name panel.

Using with Dynamic PSB

When **DYNAM** is specified as the PSB name along with option 6, a dynamic PSB is generated from the segments contained in the specified DBD name. The PROCOPT of the dynamic PSB is 'A'.

DYNAM will include all segments from the specified DBD in the generated PSB. Message RXPS019I will identify the PROCOPT and PSB segment names included as follows.

```
* RXPS019I DYNAMIC PSB SEGMENTS DETERMINED FROM BATCH COMMAND ANALYSIS
*      PROCOPT=A  PSB SEGMENTS: ALL DBD SEGMENTS INCLUDED
```

DYNAMSEG or specifying a secondary index path name are not valid with the **LOAD** option.

Select/Change Criteria

Segment select and change criteria is used to group and optionally change a subset of database segments during **UPDATE**, **UNLOAD**, and **LOAD** options.

Up to 16 occurrences of select/change criteria may be specified to identify segment search and change actions to be performed during the operation. Criteria may be connected with AND/OR operators. A segment (or database record for **UNLOAD**) will be selected when it passes one of the search criteria conditions including all AND connectors. Once a segment is selected, an action may be performed on that segment prior to output. Various actions supported are: **REPLACE**, **CHANGE**, **EDIT**, **DELETE**, **TRANSLATE**, **SCRAMBLE**, **UNSCRAMBLE**, **CALCAMT**, **CALCDATE**.

For example, during **UNLOAD**, to replace code '3412' with '5412' in the PARTROOT segment:

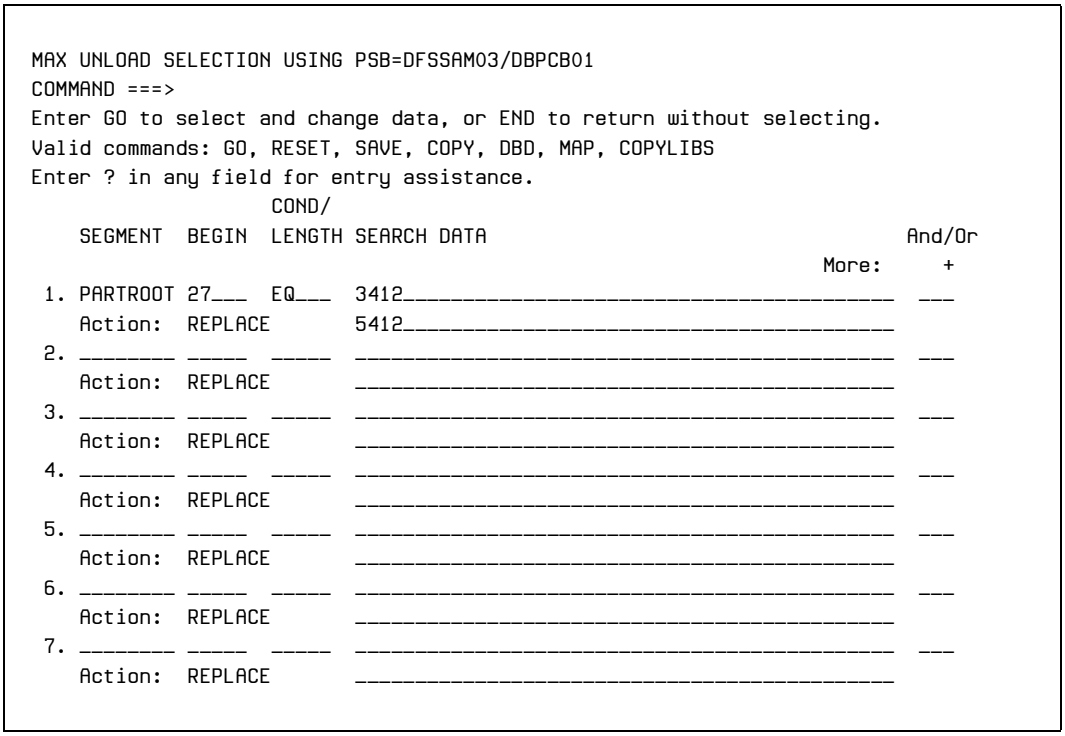


Figure 35: Unload Select/Change panel

A '?' may be entered in any field for additional prompting and entry assistance. The GO command will initiate the unload.

Field Descriptions for selected parameters:

SEGMENT: is a valid segment to which your PSB is sensitive.

BEGIN: is position in the segment where search is to begin.

COND/LENGTH: is a logical operator (EQ, NE, GT, GE, LT, LE, =, < >, >, > =, <, < =) or a numeric value. If numeric, a scan starting at the BEGIN position for an equal match to SEARCH DATA will be performed for this length. Specify zero to scan the remainder of the segment.

SEARCH DATA: is a character string, quoted string, hexadecimal string or packed string. A non-quoted string is case insensitive. A quoted string will remain case sensitive. Data can be entered in the following formats:

X'nnnn'	hexadecimal data
P'nnn'	packed data string
C'nnn'	case sensitive character string
T'nnn'	case insensitive character string
nnn	case insensitive character string (same as **T'nnn'**)
'nnn'	case sensitive character string (same as **C'nnn'**)

ACTION: to be performed on the selected segment when a change-to string is entered. The following actions are supported:

REPLACE	Replaces search data with new data overlaying any following characters if necessary
EDIT	Edits search data text with new data preserving following nonblank characters by removing repeating spaces and shifting
CHANGE	Changes search data with new data shifting any following characters left/right to accommodate missing/extra bytes
DELETE	Deletes each selected record/segment using the entered **SEARCH DATA**. If no **SEARCH DATA** is specified, all will deleted. This is only valid with the **UPDATE** option.
TRANSLATE	Substitutes specified characters in a designated string with corresponding characters in another target string or table
SCRAMBLE	Encodes a specified string to maximize data privacy
UNSCRAMBLE	Decodes a specified string that was encoded with Scramble
CALCAMT	Recalculates an amount field using constants or another field
CALCDATE	Recalculates a date field forward/backward by a number of days

See "*CHANGE-TO Actions*" on page 89 for more information.

CHANGE-TO: If the action is **REPLACE**, **EDIT**, or **CHANGE**, the `change-to` field may be a character string, quoted string, hexadecimal string or packed string. A non-quoted string is case insensitive. A quoted string will remain case sensitive. Data can be entered in the following formats:

X'nnnn'	hexadecimal data
P'nnn'	packed data string
C'nnn'	case sensitive character string
T'nnn'	case insensitive character string
nnn	case insensitive character string (same as **T'nnn'**)
'nnn'	case sensitive character string (same as **C'nnn'**)

Alternatively, for ANY of the actions, the actual MAX IMS/UTIL Batch operand format corresponding to the specified action may be entered directly if enclosed in parentheses.

For example, during **UNLOAD**, the following scrambles each PARTROOT segment:

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
COMMAND ===>
Enter GO to select and change data, or END to return without selecting.
Valid commands: GO, RESET, SAVE, COPY, DBD, MAP, COPYLIBS
Enter ? in any field for entry assistance.
                    COND/
    SEGMENT  BEGIN  LENGTH SEARCH DATA                                    And/Or
                                                                 More:      +
 1. PARTROOT _____  _____  ____________________________________________  ___
    Action:  SCRAMBLE      (1,0)_____________________________________
 2. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
 3. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
 4. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
 5. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
 6. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
 7. ________ _____  _____  ____________________________________________  ___
    Action:  REPLACE       ____________________________________________
```

Figure 36: Unload SCRAMBLE Example

A '?' entered into position `1` of the `change-to` field will prompt for all of the operand parameters possible for the specified action.

AND/OR: logical connectors to permit Boolean logic between segment search conditions.

AND	Selects if BOTH this condition and the following are true
OR	Selects if EITHER this condition or the following is true

Additional options with Selection Criteria

When Selection/Change criteria is entered, additional options are available.

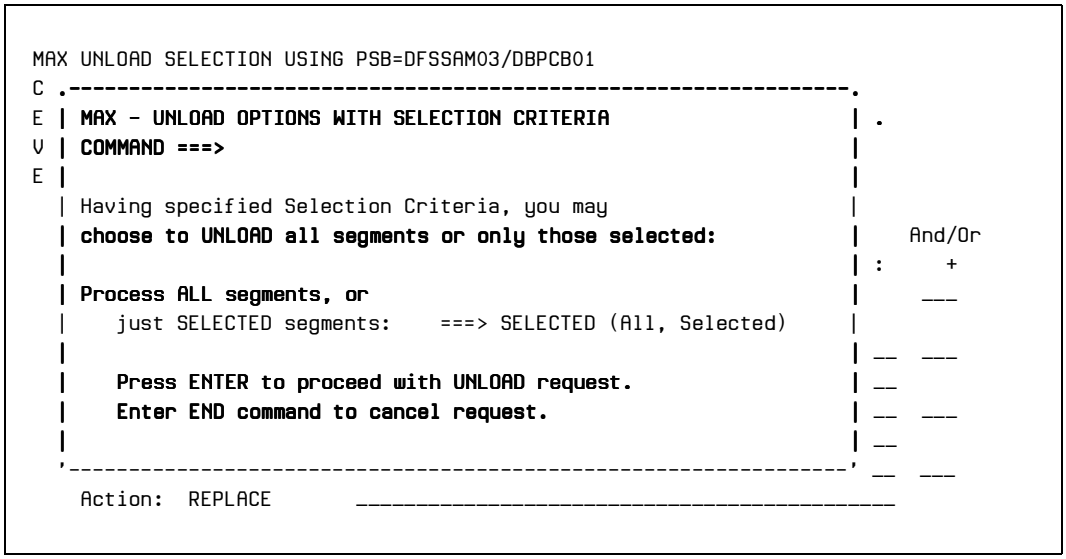


Figure 37: Selection Options

Explanation of Parameters

ALL: will process all segments regardless of selection criteria, while modifying only those selected by the entered criteria.

SELECTED: will process only those segments that pass the selection criteria

Commands

The following commands may be entered while specifying select/change criteria for **UPDATE**, **UNLOAD**, and **LOAD** options.

GO	initiates the **UPDATE**/**UNLOAD**/**LOAD** request
RESET	clears all Select/Change data on the panel
SAVE	current Select/Change criteria is saved for use in a subsequent session
COPY	restores previously saved Select/Change criteria for use in a session
DBD	displays contents of DBD and PSB for segment name reference
MAP	build mapping criteria (same as main menu option 7)
COPYLIBS	maintain copybook retrieval libraries

COPY

This command restores previously saved update/unload/load Select/Change Criteria data so that it may be used in this session. A panel will be presented prompting for the name of the data set containing the control records, as shown below.

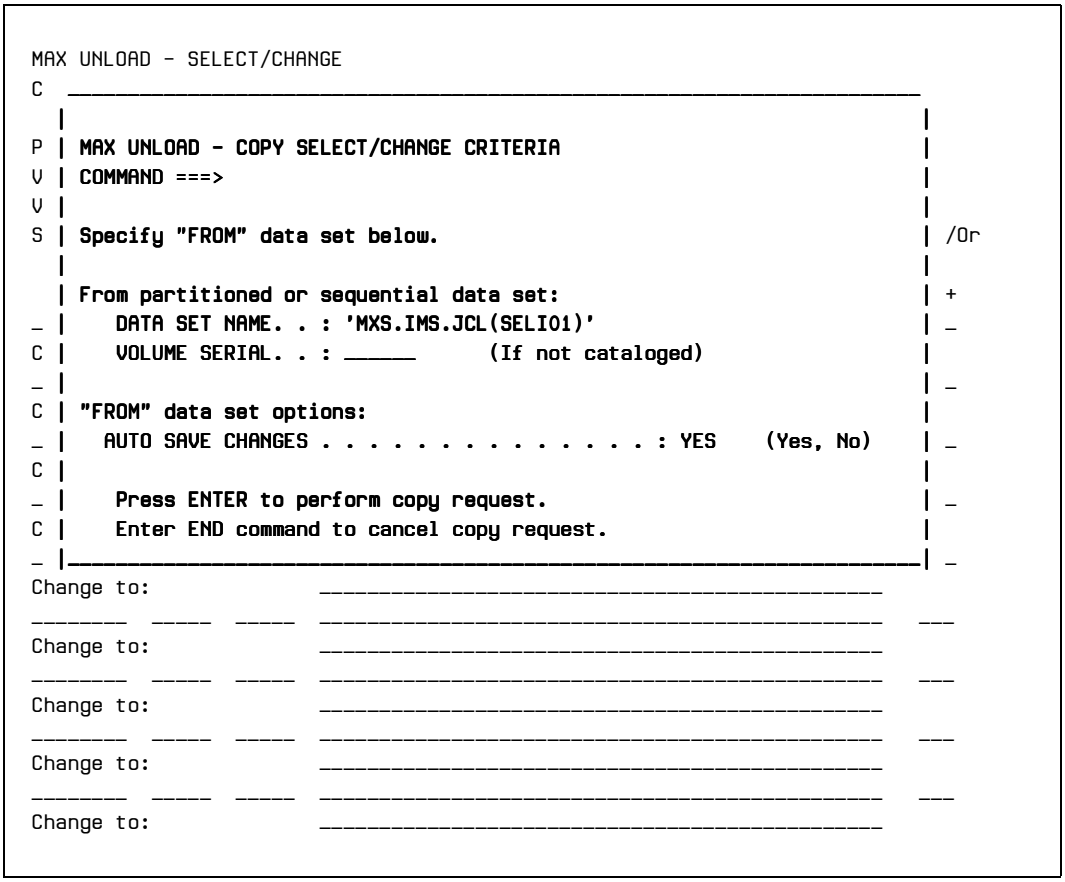


Figure 38: Restore Select/Change Criteria panel (**COPY** Primary Command)

Field Descriptions of selected functions:

FROM data set options: Partitioned data set with member in parentheses or existing sequential data set name. If this data set is not cataloged, specify the volume serial number where it is allocated.

AUTO SAVE CHANGES: When selection criteria changes in this session, automatically re-write the selection criteria to this same data set.

DBD

This command displays the contents of the current DBD and PSB. Segment names and attributes may be referenced for specification in select/change criteria.

```
MAX UNLOAD - SELECT/CHANGE PART DEFINITION
 ____________________________________________________________________________
|                                                                            |
| MAX CONTENTS OF DBD=DI21PART for PCB=DBPCB01                 Row 1 of 10 |
| COMMAND ===>                                              SCROLL ===> PAGE |
| Access Method is HISAM VSAM - Single DSG                                   |
| Press END when complete.                                                   |
|     SEG          HIER               PARENT   FIELD    FLD  FLD   FLD   MAX |
| PCB NUM SEGMENT  LVL TYPE           SEGMENT  NAME     FMT  POS  SIZE  SIZE |
|  Y    1 PARTROOT 01  SEGMENT,ROOT   -        -        -      -    50    50 |
|                      FIELD,SEQ               PARTKEY  CH     1    17     - |
|  Y    2 STANINFO 02  SEGMENT,CHILD  PARTROOT -        -      -    85    85 |
|                      FIELD,SEQ               STANKEY  CH     1     2     - |
|____________________________________________________________________________|
Change to:              ____________________________________________
________  ______ ______ ____________________________________________  ____
```

Figure 39: Contents of DBD

SAVE

This command saves Unload Select/Change Criteria data so that it may be used in a subsequent session. A panel will be presented prompting for the name of the data set to save the control records. The data set that is to contain the control records must have a record length of at least 80.

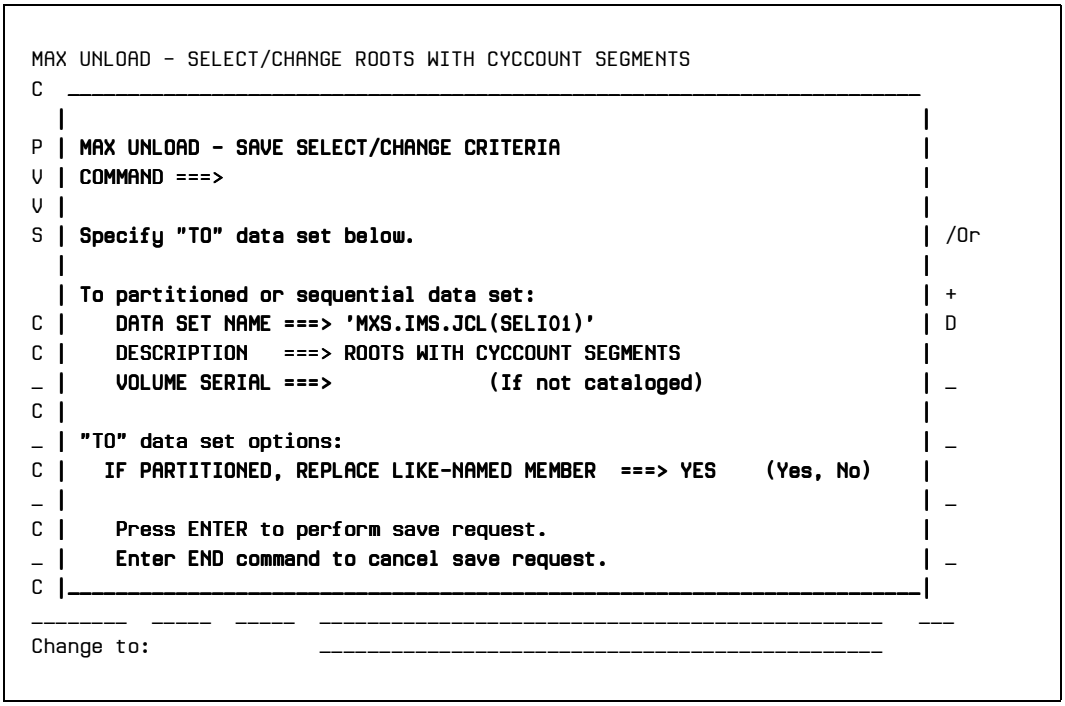


Figure 40: Save Select/Change Criteria panel (**SAVE** Primary Command)

Field Descriptions of selected functions:

TO partitioned or sequential data set: Partitioned data set name with member in parentheses or existing sequential data set name.

DESCRIPTION: Criteria description.

IF PARTITIONED, REPLACE LIKE-NAMED MEMBER: If in a partitioned data set, YES permits replacing an existing member with the same name.

CHANGE-TO Actions

When a '?' is entered into position 1 of the change-to field, a panel is presented to prompt for all operand parameters possible for the specified action.

REPLACE Action

The **REPLACE** action will overlay a SEARCH DATA string in a selected segment with a NEW DATA string if a specified test condition is true. Any data immediately following the replaced string will be overlayed if necessary.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX REPLACE STRING IN PARTROOT SEGMENT                                  |
 | COMMAND ===>                                                            |
 |                                                                         |
 | REPLACE will overlay a SEARCH DATA string in the PARTROOT segment with a |
 | NEW DATA string if a test CONDition is true.  Any characters immediately |
 | following the replaced string will also be overlayed if necessary.      |
 | Enter ? in any field for entry assistance.                              |
 |                                                                         |
 | Replace criteria:                                                       |
 |   BEGIN POSITION   ===>             (1-32760)                           |
 |   COND/LENGTH      ===>                                                 |
 |                                                                         |
 | Search data:                                                            |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 | New data:                                                               |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 |   Enter GO  command to generate replace request.                        |
 |   Enter END command to cancel request.                                  |
 |                                                                         |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
 10. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
```

Figure 41: **REPLACE** Action panel

Explanation of parameters

BEGIN POS: position in the segment where search is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

COND/LENGTH: logical operator (EQ, NE, GT, GE, LT, LE) or numeric. If numeric, a scan starting at the BEGIN position for an equal match to DATA will be performed for this LENGTH. Specify zero to scan the remainder of the segment. Entry of a '?' will display a list of valid conditions for selection.

SEARCH DATA: The search for string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

NEW DATA: The replacement string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

The following example will replace the string 'WASH' with 'WASHER' in position 27 of the selected segment overlaying the following 2 characters.

Replace criteria:

```
BEGIN POSITION      ===>      27          (1-32760)
COND/LENGTH         ===>      EQ
```

Search data:

```
CHARACTER STRING    ===>      WASH_____________________________________
```

New data:

```
CHARACTER STRING    ===>      WASHER___________________________________
```

EDIT Action

The **EDIT** action will overlay a SEARCH DATA string in a selected segment with a NEW DATA string if a specified test condition is true. Any following nonblank characters will be preserved by removing repeating spaces or shifting data to the right.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX EDIT STRING IN PARTROOT SEGMENT                                     |
 | COMMAND ===>                                                            |
 |                                                                         |
 | EDIT will overlay a SEARCH DATA string in the PARTROOT segment with a   |
 | NEW DATA string if a test CONDition is true.  Any following nonblank    |
 | characters will be preserved by removing repeating spaces or shifting   |
 | data to the right.  Enter ? in any field for entry assistance.          |
 |                                                                         |
 | Edit criteria:                                                          |
 |   BEGIN POSITION   ===>             (1-32760)                           |
 |   COND/LENGTH      ===>                                                 |
 |                                                                         |
 | Search data:                                                            |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 | New data:                                                               |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 |   Enter GO  command to generate edit request.                           |
 |   Enter END command to cancel request.                                  |
 |                                                                         |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
 10. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
```

Figure 42: **EDIT** Action panel

Explanation of parameters

BEGIN POS: position in the segment where search is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

COND/LENGTH: logical operator (EQ, NE, GT, GE, LT, LE) or numeric. If numeric, a scan starting at the BEGIN position for an equal match to DATA will be performed for this LENGTH. Specify zero to scan the remainder of the segment. Entry of a '?' will display a list of valid conditions for selection.

SEARCH DATA: The search for string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

NEW DATA: The replacement string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

> When the NEW DATA length is different from the SEARCH DATA length, the segment data may be increased to accommodate any new data. If the format is fixed length, it may be either truncated or padded accordingly.

The following example will replace the string 'WASH' with 'WASHER' in position 27 of the selected segment shifting the following 2 characters to the right (deleting repeating spaces if necessary) to preserve them. The segment data may be truncated if characters are shifted and the format is fixed length.

Edit criteria:

```
BEGIN POSITION      ===>    27          (1-32760)
COND/LENGTH         ===>    EQ
```

Search data:

```
CHARACTER STRING    ===>    WASH_____________________________________
```

New data:

```
CHARACTER STRING    ===>    WASHER___________________________________
```

CHANGE Action

The **CHANGE** action will overlay a SEARCH DATA string in a selected segment with a NEW DATA string if a specified test condition is true. Any data immediately following the replaced string will be shifted left/right to accommodate the missing/extra bytes.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX CHANGE STRING IN PARTROOT SEGMENT                                   |
 | COMMAND ===>                                                            |
 |                                                                         |
 | CHANGE will overlay a SEARCH DATA string in the PARTROOT segment with a |
 | NEW DATA string if a test CONDition is true.  Any characters following the |
 | changed string will be shifted left/right to accommodate missing/extra  |
 | bytes.  Enter ? in any field for entry assistance.                      |
 |                                                                         |
 | Change criteria:                                                        |
 |   BEGIN POSITION   ===>             (1-32760)                           |
 |   COND/LENGTH      ===>                                                 |
 |                                                                         |
 | Search data:                                                            |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 | New data:                                                               |
 |   CHARACTER STRING ===> ____________________________________________    |
 |                                                                         |
 |   Enter GO  command to generate change request.                         |
 |   Enter END command to cancel request.                                  |
 |                                                                         |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
 10. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       ________________________________________________
```

Figure 43: **CHANGE** Action panel

Explanation of parameters

BEGIN POS: position in the segment where search is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

COND/LENGTH: logical operator (EQ, NE, GT, GE, LT, LE) or numeric. If numeric, a scan starting at the BEGIN position for an equal match to DATA will be performed for this LENGTH. Specify zero to scan the remainder of the segment. Entry of a '?' will display a list of valid conditions for selection.

SEARCH DATA: The search for string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

NEW DATA: The replacement string is a character string, quoted string, packed string, or hexadecimal string. Quoted strings are case sensitive; non-quoted strings are case insensitive. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

When the NEW DATA length is different from the SEARCH DATA length, the segment data may be either truncated or padded accordingly if the format is fixed length.

The following example will replace the string 'WASH' with 'WASHER' in position 27 of the selected segment shifting the following 2 characters to the right to preserve them. The segment data will be truncated if the format is fixed length.

Change criteria:

```
BEGIN POSITION      ===>    27          (1-32760)
COND/LENGTH         ===>    EQ
```

Search data:

```
CHARACTER STRING    ===>    WASH_____________________________________
```

New data:

```
CHARACTER STRING    ===>    WASHER___________________________________
```

TRANSLATE Action

The **TRANSLATE** action will substitute specified characters in a selected segment with corresponding characters in a target string or table beginning at the entered POSITION for the entered LENGTH.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX TRANSLATE CHARACTERS IN PARTROOT SEGMENT                             |
 | COMMAND ===>                                                            |
 |                                                                         |
 | TRANSLATE will substitute selected characters in the PARTROOT segment with |
 | corresponding replacement characters beginning at the entered POSITION  |
 | for the entered LENGTH.  Enter ? in any field for entry assistance.     |
 |                                                                         |
 | Translate criteria:                                                     |
 |   BEGIN POSITION   ===>           (1-32760)                             |
 |   LENGTH           ===>           (0-32760, 0=Remainder of segment)     |
 |                                                                         |
 | Selected characters to be replaced (Blank=ALL characters):              |
 |   CHARACTER STRING ===> ________________________________________        |
 |                                                                         |
 | Replacement characters (Specify character string OR external table):    |
 |   CHARACTER STRING ===> ________________________________________        |
 |   EXTERNAL TABLE   ===> ________   (Contained in MAXDFLTS table)       |
 |   PAD CHARACTER    ===> _______    (Default replacement character)      |
 |                                                                         |
 |   Enter GO  command to generate translate request.                      |
 |   Enter END command to cancel request.                                  |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ____________________________________________  ___
     Action:  REPLACE       ____________________________________________
 10. ________ _____  _____  ____________________________________________  ___
     Action:  REPLACE       ____________________________________________
```

Figure 44: **TRANSLATE** Action panel

Explanation of parameters

BEGIN POS: Position in the segment where translate is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field and its length attribute entered into the translate length field (if empty).

LENGTH: Numeric length of the translate action to be performed (0-32760). Specify '0' to translate the remainder of the segment. Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the length attribute of that copybook field will be entered in this field.

SELECTED CHARACTERS TO BE REPLACED: Optional string identifying characters to be translated. The string may be a character or hexadecimal type string. If none is entered, all characters are translated. A selected character string is required when a replacement character string is specified. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

REPLACEMENT CHARACTERS: Optional string identifying substitution characters corresponding to each selected character to be translated. The string may be a character or hexadecimal type string. If none is entered, an external translate table name must be specified. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

EXTERNAL TABLE: Optional name of external translate table containing the set of substitution characters to be used in translating each selected character. An entered table name must be defined in the current MAXDFLTS load module. If none is entered, a replacement character string must be specified. Entry of a '?' in position 1 will display a selection list of all translate table names currently defined in the MAXDFLTS load module. See the MAX IMS/UTIL Batch manual for information on updating the MAXDFLTS load module.

PAD CHARACTER: Optional pad character to be used when no replacement exists for a selection character. Specify pad character value as a single character or a single character represented in hex format. Entry of a '?' will display a selection list of string type templates that can be used in this field.

The following example will translate all numeric characters (0-9) in position 27 for a length of 20 in the selected segment to alphabetic characters (A-J).

Translate criteria:

```
BEGIN POSITION      ===>    27          (1-32760)
LENGTH              ===>    20          (0-32760, 0=Remainder of segment)
```

Selected characters to be replaced (Blank=ALL characters):

```
CHARACTER STRING    ===>    C'0123456789'_____________________________
```

Replacement characters (Specify character string OR external table):

```
CHARACTER STRING    ===>    C'ABCDEFGHIJ'_____________________________
EXTERNAL TABLE      ===>    _____       (Contained in MAXDFLTS table)
PAD CHARACTER       ===>    _____       (Default replacement character)
```

SCRAMBLE Action

The **SCRAMBLE** action will substitute specified characters in a selected segment with encoded characters beginning at the entered POSITION for the entered LENGTH using an advanced algorithm formulated to maximize data privacy. The scrambled data may be decoded using the **UNSCRAMBLE** action.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

When initiated, a prompt for a PRIVACY PIN will be issued to further secure the scramble. This same pin must be presented when unscrambling the data.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX SCRAMBLE CHARACTERS IN PARTROOT SEGMENT                              |
 | COMMAND ===>                                                            |
 |                                                                         |
 | SCRAMBLE will substitute selected characters in the PARTROOT segment with  |
 | encoded characters beginning at the entered POSITION for the entered       |
 | LENGTH using an advanced algorithm formulated to MAXimize data privacy.    |
 | Enter ? in any field for entry assistance.                              |
 |                                                                         |
 | Scramble criteria:                                                      |
 |   BEGIN POSITION   ===>             (1-32760)                           |
 |   LENGTH           ===>             (0-32760, 0=Remainder of segment)   |
 |                                                                         |
 | Selected characters to be scrambled (Blank=ALL characters):             |
 |   CHARACTER STRING ===> _____________________________________________   |
 |                                                                         |
 |   One of the following reserved words may also be specified:            |
 |   ALPHA,UPPER,LOWER,ALPHAMERIC,NUMERIC,PACKED                           |
 |                                                                         |
 |   Enter GO  command to generate scramble request.                       |
 |   Enter END command to cancel request.                                  |
 |                                                                         |
 '-------------------------------------------------------------------------'
 9. ________ _____  _____  ________________________________________________  ___
    Action:  REPLACE       ________________________________________________
10. ________ _____  _____  ________________________________________________  ___
    Action:  REPLACE       ________________________________________________
```

Figure 45: **SCRAMBLE** Action panel

Explanation of parameters

BEGIN POS: Position in the segment where scramble is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field and its length attribute entered into the scramble length field (if empty).

LENGTH: Numeric length of the scramble action to be performed (0-32760). Specify '0' to scramble the remainder of the segment. Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the length attribute of that copybook field will be entered in this field.

SELECTED CHARACTERS TO BE SCRAMBLED: Optional string identifying characters to be scrambled. The string may be a character or hexadecimal string type. If none is entered, all characters are scrambled. One of the following reserved words may also be entered identifying the type of character to be scrambled: ALPHA, UPPER, LOWER, ALPHAMERIC, NUMERIC, PACKED. Entry of a '?' in position 1 will display a selection list of string type templates and character type reserved words that can be used in this field.

The following example will scramble all NUMERIC characters in the selected segment.

Scramble criteria:

```
BEGIN POSITION      ===>    1       (1-32760)
LENGTH              ===>    0       (0-32760, 0=Remainder of segment)
```

Selected characters to be scrambled (Blank=ALL characters):

```
CHARACTER STRING    ===>    NUMERIC_____________________________________
```

One of the following reserved words may also be specified:

ALPHA, UPPER, LOWER, ALPHAMERIC, NUMERIC, PACKED

UNSCRAMBLE Action

The **UNSCRAMBLE** action will decode previously scrambled characters in a selected segment beginning at the entered POSITION for the entered LENGTH. This will return the data back to its original form prior to scrambling. The selected character set to be unscrambled must be the same as specified with the original scramble request.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

When initiated, the same PRIVACY PIN specified with the original scramble request must be entered to unscramble the data.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX UNSCRAMBLE CHARACTERS IN PARTROOT SEGMENT                            |
 | COMMAND ===>                                                            |
 |                                                                         |
 | UNSCRAMBLE will decode previously scrambled characters in the PARTROOT  |
 | segment beginning at the entered POSITION for the entered LENGTH.  The  |
 | SELECTED CHARACTER set must be the same as specified in the original    |
 | SCRAMBLE request.  Enter ? in any field for entry assistance.           |
 |                                                                         |
 | Unscramble criteria:                                                    |
 |   BEGIN POSITION   ===>             (1-32760)                           |
 |   LENGTH           ===>             (0-32760, 0=Remainder of segment)   |
 |                                                                         |
 | Original characters selected for scramble (Blank=ALL characters):       |
 |   CHARACTER STRING ===> _____________________________________________   |
 |                                                                         |
 |   One of the following reserved words may also be specified:            |
 |   ALPHA,UPPER,LOWER,ALPHAMERIC,NUMERIC,PACKED                           |
 |                                                                         |
 |   Enter GO  command to generate unscramble request.                     |
 |   Enter END command to cancel request.                                  |
 |                                                                         |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       _____________________________________________
 10. ________ _____  _____  ________________________________________________  ___
     Action:  REPLACE       _____________________________________________
```

Figure 46: **UNSCRAMBLE** Action panel

Explanation of parameters

BEGIN POS: Position in the segment where unscramble is to begin (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field and its length attribute entered into the unscramble length field (if empty).

LENGTH: Numeric length of the unscramble action to be performed (0-32760). Specify '0' to unscramble the remainder of the segment. Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the length attribute of that copybook field will be entered in this field.

SELECTED CHARACTERS TO BE UNSCRAMBLED: Optional string identifying characters to be unscrambled. The string may be a character or hexadecimal string type. If none is entered, all characters are unscrambled. One of the following reserved words may also be entered identifying the type of character to be unscrambled: ALPHA, UPPER, LOWER, ALPHAMERIC, NUMERIC, PACKED. **UNSCRAMBLE** requires the selected character set entry to be the same as specified when scrambled. Entry of a '?' in position 1 will display a selection list of string type templates and character type reserved words that can be used in this field.

The following example will unscramble all NUMERIC characters in the selected segment.

Unscramble criteria:

BEGIN POSITION ===> 1 (1-32760)
LENGTH ===> 0 (0-32760, 0=Remainder of segment)

Selected characters to be unscrambled (Blank=ALL characters):

CHARACTER STRING ===> NUMERIC_____

One of the following reserved words may also be specified:

ALPHA, UPPER, LOWER, ALPHAMERIC, NUMERIC, PACKED

CALCAMT Action

The **CALCAMT** action recalculates an amount FIELD-1 in a designated format located at the entered position in the selected segment using FIELD-2 and an arithmetic operator. The general formula is as follows:

RESULT = FIELD-1 <Operator> FIELD-2

FIELD-2 may be either a constant value or some other designated value located in the segment. The RESULT field may be located anywhere in the segment and can be a different format. Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX RE-CALCULATE AMOUNT FIELD IN PARTROOT SEGMENT                       |
 | COMMAND ===>                                                            |
 |                                                                         |
 | CALCAMT will re-calculate an amount FIELD-1 in a designated FORMAT      |
 | located at the entered POSITION in the PARTROOT segment using FIELD-2 and |
 | an arithmetic operator. Enter a ? in any field for entry assistance.    |
 |                                                                         |
 | Calculate amount criteria:      Result = Field-1 <Operator> Field-2     |
 |   FIELD-1:   BEGIN POSITION     ===>          (1-32760)                 |
 |              FORMAT             ===>          (Pn.n,Un.n.Zn.n,Nn.n,H,F,D) |
 |   OPERATOR:                     ===> +        (*,+,-,/)                 |
 |                                                                         |
 |   FIELD-2:   CONSTANT VALUE     ===>          (+nnnnn.nn,-nnnnn.nn)     |
 |              or BEGIN POSITION  ===>          (1-32760)                 |
 |                 FORMAT          ===>          (Pn.n,Un.n.Zn.n,Nn.n,H,F,D) |
 |                                                                         |
 |   RESULT:    BEGIN POSITION     ===>          (1-32760)                 |
 |              FORMAT             ===>          (Pn.n,Un.n.Zn.n,Nn.n,H,F,D) |
 |                                                                         |
 |   Enter GO  command to generate calcamt request.                        |
 |   Enter END command to cancel request.                                  |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ______________________________________________  ___
     Action:  REPLACE       ______________________________________________
 10. ________ _____  _____  ______________________________________________  ___
     Action:  REPLACE       ______________________________________________
```

Figure 47: **CALCAMT** Action panel

Explanation of parameters

FIELD-1 BEGIN POSITION: Position in the segment where the FIELD-1 amount is located (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

FIELD-1 FORMAT: format of the FIELD-1 amount may be one of the following: Binary format code (H, F, D), Decimal format code (**Pn.n**, **Un.n**, **Zn.n**, **Nn.n**). **n.n** indicates the number of digits before and after an assumed decimal position. Entry of a '?' will display a list of amount format templates that can be used in this field.

OPERATOR: Arithmetic operator to use in recalculation (*, +, -, /).

FIELD-2 CONSTANT VALUE: Numeric constant value to be used in recalculating amount. Specify either a FIELD-2 constant value or a FIELD-2 begin position, but not both. Entry of a '?' will display a list of constant value templates that can be used in this field.

FIELD-2 BEGIN POSITION: Position in the segment where the FIELD-2 amount is located (1-32760). Specify either a FIELD-2 begin position or a FIELD-2 constant value, but not both. Entry of a '?' will display a list of copybook fields that are defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

FIELD-2 FORMAT: Format of the FIELD-2 amount may be one of the following: Binary format code (H, F, D), Decimal format code (**Pn.n**, **Un.n**, **Zn.n**, **Nn.n**). **n.n** indicates the number of digits before and after an assumed decimal position. Entry of a '?' will display a list of amount format templates that can be used in this field.

RESULT BEGIN POSITION: Position in the segment where the RESULT amount is located (1-32760). Entry of a '?' will display a list of copybook fields that are defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

RESULT FORMAT: format of the RESULT amount may be one of the following: Binary format code (H, F, D), Decimal format code (**Pn.n**, **Un.n**, **Zn.n**, **Nn.n**). **n.n** indicates the number of digits before and after an assumed decimal position. Entry of a '?' will display a list of amount format templates that can be used in this field.

The following example will multiply the packed decimal amount field (with format P5.2) at position 36 in each selected segment by -1.56 and places the result back in the same location with the same format.

Calculate amount criteria: Result = `Field-1 <Operator> Field-2`

FIELD -1:	**BEGIN POSITION**	**===>**	**36**	**(1-32760)**
	FORMAT	**===>**	**P5.2**	**(Pn.n, Un.n, Zn.n, Nn.n, H, F, D)**
OPERATOR:		**===>**	*****	**(*, +, -, /)**
FIELD-2:	**CONSTANT VALUE**	**===>**	**-1.56**	**(+nnnnn.nn, -nnnnn.nn)**
or	**BEGIN POSITION**	**===>**	**(1-32760)**	
	FORMAT	**===>**	**(Pn.n, Un.n, Zn.n, Nn.n, H, F, D)**	
RESULT:	**BEGIN POSITION**	**===>**	**36**	**(1-32760)**
	FORMAT	**===>**	**P5.2**	**(Pn.n, Un.n, Zn.n, Nn.n, H, F, D)**

CALCDATE Action

The **CALCDATE** action recalculates a date field in a designated FORMAT located at the entered POSITION in the selected segment by adding or subtracting a specified number of days.

Upon entry of the GO command, the MAX IMS/UTIL Batch operand parameters will be built and placed into the previous panel. A '?' may be entered in any field for entry assistance.

```
MAX UNLOAD SELECTION USING PSB=DFSSAM03/DBPCB01
 .-------------------------------------------------------------------------.
 | MAX RE-CALCULATE DATE FIELD IN PARTROOT SEGMENT                         |
 | COMMAND ===>                                                            |
 |                                                                         |
 | CALCDATE will re-calculate a date field in a designated FORMAT located  |
 | at the entered POSITION in the PARTROOT segment by adding or subtracting a |
 | specified NUMBER OF DAYS.  Enter a ? in any field for entry assistance. |
 |                                                                         |
 | Calculate date criteria:                                                |
 |   BEGIN POSITION       ===>             (1-32760)                       |
 |   DATE FORMAT          ===>             (J1,J2,G1,G2,G3,EM=edit mask)   |
 |   NUMBER OF DAYS       ===>             (+nnnnn,-nnnnn)                 |
 |                                                                         |
 |   DATA FIELD FORMAT    ===> ZONED       (Packed,Zoned)                  |
 |   SIGN INCLUDED        ===> NO          (Yes,No)                        |
 |   SEPARATOR INCLUDED   ===> NO          (Yes,No)                        |
 |   CENTURY INCLUDED     ===> NO          (Yes,No)                        |
 |   EXIT PROGRAM NAME    ===>             (Example: MAXPDXIT)             |
 |   EDIT MASK            ===>             (valid chars are M,D,Y,C,/)     |
 |                                                                         |
 |   Enter GO  command to generate calcdate request.                       |
 |   Enter END command to cancel request.                                  |
 '-------------------------------------------------------------------------'
  9. ________ _____  _____  ______________________________________________  ___
     Action:  REPLACE       ______________________________________________
 10. ________ _____  _____  ______________________________________________  ___
     Action:  REPLACE       ______________________________________________
```

Figure 48: **CALCDATE** Action panel

Explanation of parameters

BEGIN POSITION: Position in the segment where the date field is located (1-32760). Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered in this field.

DATE FORMAT: Format of the date field may be one of the following: J1, J2, G1, G2, G3, EM. Entry of a '?' will display a selection list of date format templates and their explanations that can be used in this field.

NUMBER OF DAYS: Optionally signed numeric value to add/subtract to the date field. A positive value (**+nnnnn**) advances the date forward by 1-99999 days. A negative value (**-nnnnn**) advances the date backward by 1-99999 days.

DATA FIELD FORMAT: Specifies one of the following data formats for the date field: PACKED or ZONED.

SIGN INCLUDED: Select YES or NO to indicate the presence or absence of a sign in the date field.

SEPARATOR INCLUDED: Select YES or NO to indicate whether a separator is present in the zoned decimal date field. This is not valid with the EM date format.

CENTURY INCLUDED: Select YES or NO to indicate whether a century is included in the date field. This is not valid with the EM date format.

EXIT PROGRAM NAME: Specifies the name of a user exit program to be called after the date has been recalculated. MAXPDXIT is a sample user exit program that can be found in the install JCL library. Entry of a '?' provides additional information on this subject.

EDIT MASK: Specifies the edit mask to be used when the date format has been entered as EM indicating none of the standard date formats can be used. The edit mask string is built using the following characters: M=Month, D=Day, Y=Year, C=Century, /=Separator. Entry of a '?' provides additional information and examples on this subject.

The following example will add 365 days to a signed packed date field (MMDDYY format) located at position 53 in each selected segment.

Calculate date criteria:

BEGIN POSITION	**===>**	**53**	**(1-32760)**
DATE FORMAT	**===>**	**G2**	**(J1, J2, G1, G3, EM=Edit Mask)**
NUMBER OF DAYS	**===>**	**+365**	**(+nnnnn, -nnnnn)**
DATA FIELD FORMAT	**===>**	**PACKED**	**(Packed, Zoned)**
SIGN INCLUDED	**===>**	**YES**	**(Yes, No)**
SEPARATOR INCLUDED	**===>**	**NO**	**(Yes, No)**
CENTURY INCLUDED	**===>**	**NO**	**(Yes, No)**
EXIT PROGRAM NAME	**===>**		**(Example: MAXPDXIT)**
EDIT MASK	**===>**		**(valid chars are M, D, Y, C, /)**

7. Build Mapping Criteria

Mapping criteria is specified so that when browsing or editing with the Formatted or Horizontal display options, the correct layout will be presented for each segment in the database. In addition, mapping criteria is used for segment field selection. Field selection limits the amount of data that is displayed for a given segment.

A copybook member name and an optional library is specified for each segment name in the IMS database. The **COPYLIBS** command can be used to define up to 10 libraries to be searched for copybook members specified without a library.

This "mapping criteria" information is saved in a specified data set name and may then be entered in place of an individual copybook data set for the Formatted and Horizontal browse and edit functions.

When mapping criteria is not pre-built with this option, default criteria is used where each segment's copybook is assumed to be in a member with the same name as the segment, and located in a data set defined by the current **COPYLIBS** command concatenation list.

```
MAX MAP MULTIPLE SEGMENT TYPES for PSB=MAXIBRED                  Row 1 of 20
COMMAND ===>                                                  SCROLL ===> PAGE

Use the COPYLIBS command to display/change concatenated copybook libraries

Type one or more action codes; then press Enter. Press END when all specified.
1 - Insert layout       2 - Delete layout       3 - Specify selection criteria

ACTION              Segment layout data set name or COPYLIBS member
  _  Data set/Member MXS.IMS.COPYLIB(BACKORDR)
       Segment name BACKORDR  Desc: BACK ORDER INFO_____  Copybook type COBOL
  _  Data set/Member MXS.IMS.COPYLIB(CYCCOUNT)
       Segment name CYCCOUNT  Desc: CYCLE COUNT INFO____  Copybook type COBOL
  _  Data set/Member MXS.IMS.COPYLIB(STOKSTAT)
       Segment name STOKSTAT  Desc: STOCK STATUS________  Copybook type COBOL
  _  Data set/Member MXS.IMS.COPYLIB(STANINFO)
       Segment name STANINFO  Desc: STANDARD INFO_<=25__  Copybook type COBOL
  _  Data set/Member MXS.IMS.COPYLIB(STANINFO)
       Segment name STANINFO  Desc: STANDARD INFO >25___  Copybook type COBOL
  _  Data set/Member MXS.IMS.COPYLIB(PARTROOT)
       Segment name PARTROOT  Desc: PART DEFINITION_____  Copybook type COBOL
******************************** Bottom of data ********************************
```

Figure 49: Map Multiple Segment Types panel

Insert Layout

The “Insert layout” function is used to insert a new segment layout to map a specific segment.

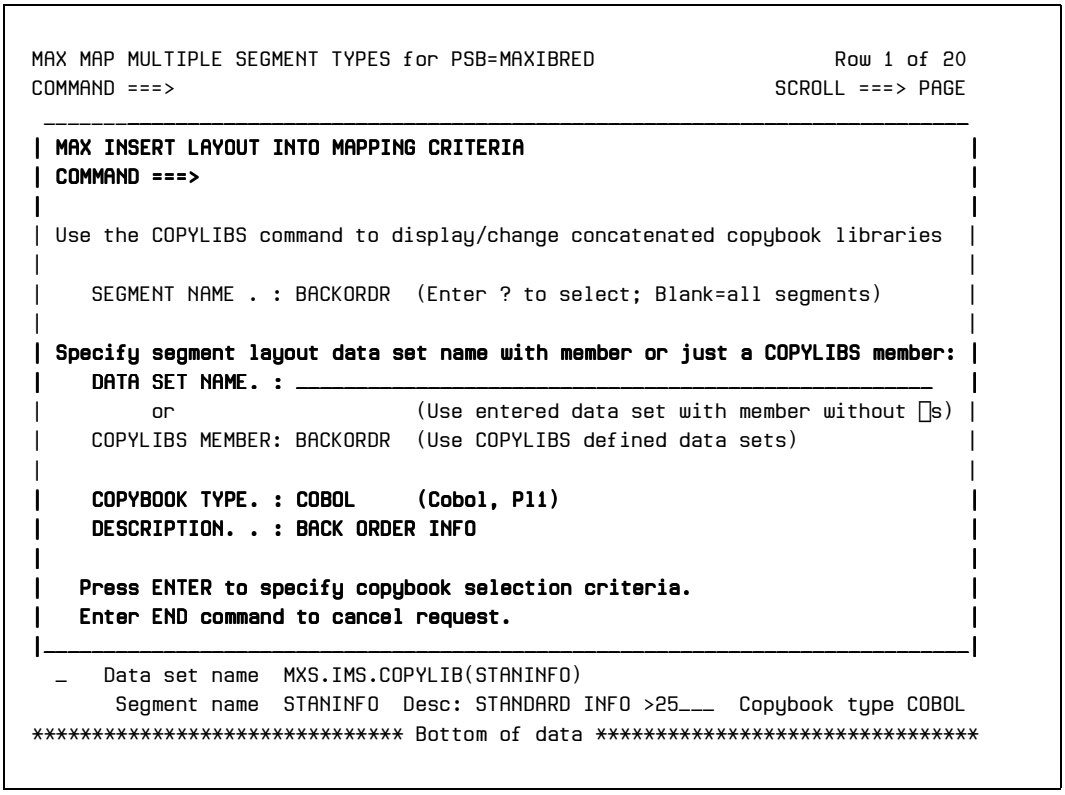


Figure 50: Insert Layout panel

Field Descriptions of selected functions:

SEGMENT NAME: Is the segment name for which this copybook will map during edit and browse

DATA SET NAME: Is the partitioned data set and member name in parenthesis that contains a COBOL or PL/I Copybook. A data set name and COPYLIBS MEMBER may not both be specified at the same time.

COPYLIBS MEMBER: Requests that the copybook member be retrieved from the libraries defined by the COPYLIBS command during browse or edit. A copylibs member and DATA SET NAME may not both be specified at the same time.

COPYBOOK TYPE: Indicates whether the copybook is COBOL or PL/I.

DESCRIPTION: Is the descriptive text that will be displayed in the heading of the formatted browse or edit when this layout is selected to map the segment.

Mapping Criteria

Mapping criteria is specified that will connect a layout to a specific segment name or provide specific information on field selection.

Specify a default for a field display. If the majority of the fields is to be displayed (or all of the fields), specify **INCLUDE** as the default. Any fields that are not to be displayed can then be marked as EX in the copybook detail. If only a small number of fields is to be displayed, enter **EXCLUDE** as the default. Any field to be displayed can then be chosen with the IN on the detail line. During Formatted or Horizontal edit/browse, only **INCLUDED** fields will be displayed.

For each field name displayed, enter **EX**(exclude) or **IN**(include) to reverse the default field selection value.

To select a copybook to be displayed with a specific segment name, the data must be entered exactly as it appears in the formatted browse or edit mode display. The data specified must match the format description of the data items format. For example, if the format indicates '`P 5`' (Packed-decimal 5 significant positions), the corresponding data must be all numeric and no longer than `5` (five) positions (leading zeros should not be specified).

```
MAX LAYOUT SELECTION CRITERIA DESC=STOCK STATUS                  Row 1 of 26
COMMAND ===>                                                 SCROLL ===> PAGE
Specify the layout selection criteria for segment STOKSTAT
Default field display is INCLUDE or EXCLUDE: INCLUDE   Press END when complete.
Valid CONDitions are: EQ, NE, GT, GE, LT, LE.
IN/EX *---------FIELD NAME---------* FORMAT COND *-----------DATA-----------*
__    STOKSTAT-FORMAT                          __  _____________________________
IN    REG                          C    2     __  _____________________________
__    STOKSTATUS-KEY                           __  _____________________________
IN    LOCATION                     C    8     __  _____________________________
EX    /FILLER-1/                   C    6     __  _____________________________
EX    /FILLER-2/                   C    4     __  _____________________________
IN    ON-HAND-QTY                  Z  6.3     __  _____________________________
EX    /FILLER-3/                   C    5     __  _____________________________
IN    UNIT                         C    4     __  _____________________________
EX    /FILLER-4/                   C   12     __  _____________________________
__    ATTRITION                                __  _____________________________
IN    ROP                          Z    3     __  _____________________________
IN    PLANNED                      Z    3     __  _____________________________
IN    MRP                          C    1     __  _____________________________
IN    /FILLER-5/                   C   32     __  _____________________________
__    REQUIREMENTS                             __  _____________________________
IN    CURRNT                       Z  7.1     __  _____________________________
IN    UNPLANNED                    Z  7.1     __  _____________________________
__    DISBURSEMENTS                            __  _____________________________
EX    /PLANNED/                    Z  7.1     __  _____________________________
```

Figure 51: Layout Selection Criteria panel

At the time of the display of the segments using Formatted or Horizontal edit or browse, the copybook will be selected based on the segment name AND the data provided. Fields will be displayed if the option for the field is **INCLUDE**.

8. Compare Database

The Compare Database option is used to compare selected segments in an IMS database to a specified "TO" sequential data set previously produced by the MAX IMS/UTIL **UNLOAD** function (in FORM=IMS format). Segment selection and/or field compare criteria may be specified to further define the data to be compared. Only segments to which the PSB is sensitive are compared.

The compare either begins at the first segment in the database and compare-to files, or the beginning database and compare-to file root segment keys may be specified. The compare then proceeds sequentially to the end of both data set and file, or a maximum number of segments to read may be specified to limit the compare.

The compare may be tailored to report on each segment DIFFERENCE, a SUMMARY count of segment differences, or a LONG report of each segment compared. In addition, compare report format may be requested in CHARACTER, HEX, or a field-by-field FORMATTED display using a specified copybook mapping criteria.

The compare can take place online, or a batch job will be built that can subsequently be submitted to run in a batch region.

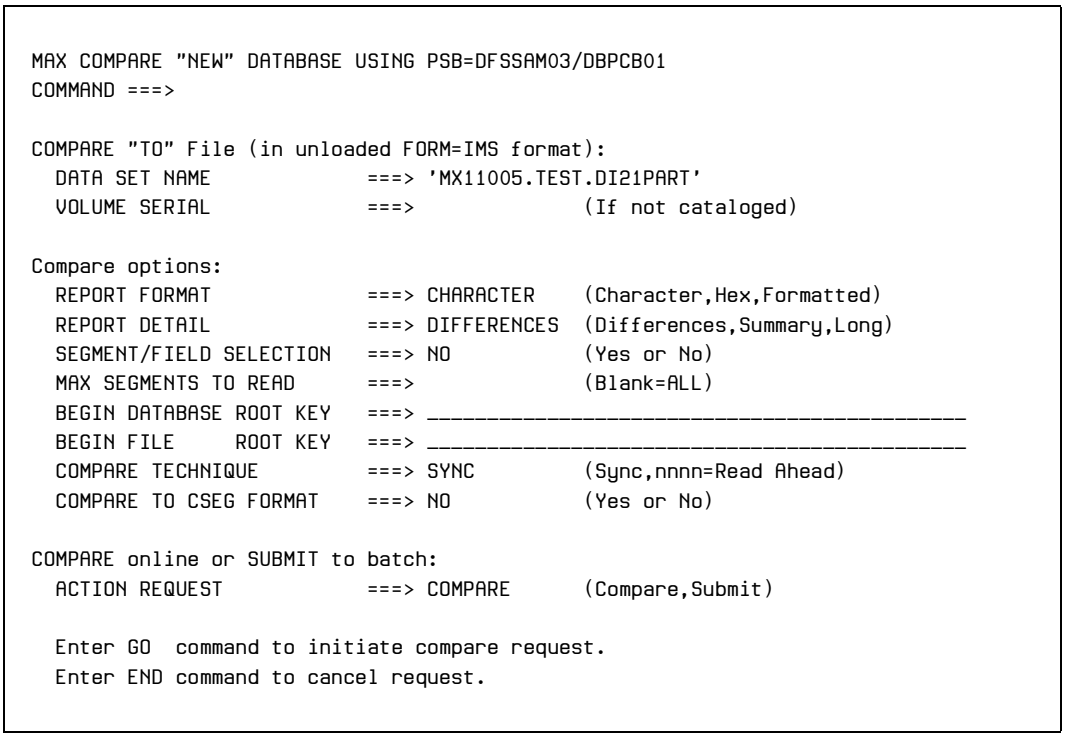


Figure 52: Compare Database panel

Explanation of parameters

COMPARE "TO" File (in unloaded FORM=IMS format):

DATA SET NAME: Enter the data set name to which database segments are to be compared against. This sequential data set must contain segments previously unloaded by MAX IMS/UTIL using the FORM=IMS option.

VOLUME SERIAL: If the data set is not cataloged, specify the volume serial number where it is allocated.

Compare options:

REPORT FORMAT: Enter the compare report format used to display segments. CHARACTER presents segments in a horizontal display format, while HEX builds a hex/character display of each segment. FORMATTED provides a field-by-field display of each segment according to its copybook mapping criteria as entered on the Specify A Database Name panel.

REPORT DETAIL: Enter the amount of detail to be included on the compare report. DIFFERENCES will display each segment that is different between the database and compare-to file, while SUMMARY will only count the differences. LONG will display all segments compared, whether mismatched or not.

SEGMENT/FIELD SELECTION: Enter YES to transfer to a panel to enter criteria for segment selection and individual field comparison. See "*Compare Selection Criteria*" on page 111 for more information.

MAX SEGMENTS TO READ: Enter the maximum number of segments to read from the input source for compare.

BEGIN DATABASE ROOT KEY: Enter a hexadecimal or unquoted character string which identifies the starting root segment key to compare in the database. This may specify a complete or partial key. However, HDAM/DEDB databases not accessed through a secondary index require a full key be specified.

BEGIN FILE ROOT KEY: Enter a quoted, hexadecimal or character string which identifies the starting root segment key to compare in the unloaded compare-to file. This may specify a complete or partial key.

COMPARE TECHNIQUE: Controls the number of segments that are compared before issuing a mismatch condition. Specify SYNC for synchronized compare of each segment on the database with each segment in the compare-to file. Specify '**nnnn**' to read ahead 1-9999 segments looking for a match. If no match is found within this limit, a mismatch is declared and processing begins with the next segment in the database and compare-to file. SYNC is equivalent to a segment read-ahead count of 1.

COMPARE TO CSEG FORMAT: Enter YES if the compare-to file was unloaded in IMSCSEG output format.

COMPARE online or SUBMIT to batch:

COMPARE: Will cause compare of the database to the file to take place online immediately.

SUBMIT: Will prepare a batch job using MAX IMS/UTIL Batch for you to review and submit for processing.

Using with Dynamic PSB

When **DYNAM** or **DYNAMSEG** is specified as the PSB name along with Option 8, a dynamic PSB is generated from the segments contained in the specified DBD name. The PROCOPT of the dynamic PSB is 'GOT'.

DYNAM will include only those segments contained in the DBD that are required as specified in the compare selection criteria. If no compare selection criteria is specified or ALL segments are to be compared, all DBD segments are included in the generated PSB. Message RXPS019I will identify the PROCOPT and PSB segment names included as follows.

```
* RXPS019I DYNAMIC PSB SEGMENTS DETERMINED FROM BATCH COMMAND ANALYSIS
*      PROCOPT=G   PSB SEGMENTS: PARTROOT
```

DYNAMSEG will include only those segments contained in the DBD that have been chosen (along with their hierarchical parents) by the segment prompt panel. If compare selection criteria is specified and only SELECTED segments are to be compared, only those chosen that are also selected are included in the generated PSB, otherwise all chosen segments are included. Message RXPS018I will identify the PROCOPT and PSB segment names included as follows:

```
* RXPS018I DYNAMIC PSB SEGMENTS DETERMINED FROM DYNAMSEG FILE
*      PROCOPT=G   PSB SEGMENTS: PARTROOT STANINFO
```

Compare Selection Criteria

Compare selection is used to identify criteria for grouping a subset of segments for compare processing.

Up to 16 occurrences of selection criteria may be specified to identify segments to be compared by name only or according to the contents of a selected field within the segment. Criteria may be connected with AND/OR operators. A segment will be selected when it passes one of the search criteria conditions including all AND connectors.

Entire segment contents are compared or you may choose to compare only specific fields within segments. Combinations of segments, together with field comparison, may also be employed.

Once you have selected either segments and/or specific fields to be compared, a prompt is issued to determine whether to compare ALL of the not selected segments in their entirety. Comparing only SELECTED segments is the default, and gives the best run-time performance.

Also, if not doing a formatted report, you may specify whether the ENTIRE segment's content should appear on the compare report, or just the selected COLUMNs.

```
MAX COMPARE SELECTION USING PSB=DFSSAM03/DBPCB01
COMMAND ===>
Enter GO to select and compare data, or END to return without selecting.
Valid commands: GO, RESET, SAVE, COPY, DBD, MAP, COPYLIBS
Enter ? in any field for entry assistance.
                    COND/
    SEGMENT  BEGIN  LENGTH SEARCH DATA                                    And/Or
                                                                 More:      +
 1. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 2. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 3. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 4. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 5. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 6. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
 7. ________ _____  _____  ____________________________________________  ___
    Compare field:          SEGMENT COL _____ LENGTH _____ FILE COL _____
```

Figure 53: Compare Selection panel

A '?' may be entered in any field for additional prompting and entry assistance. The GO command will initiate the compare.

Field Descriptions for selected parameters:

SEGMENT: Identifies a segment name, to which your PSB is sensitive, that will be included in the compare if the following SEARCH DATA condition is true (or not specified). Enter a '?' to select from a list of valid PCB segments.

BEGIN: Numeric starting position of a SEARCH DATA string within the SEGMENT whose presence will be tested to determine if the segment should be included in the compare. If not specified, each named SEGMENT is selected for compare. Entry of a '?' will display a list of copybook fields defined for the segment.

COND/LENGTH: Identifies a test to be performed between data at BEGIN position in the segment and the specified SEARCH DATA string. This can be either a logical operator (EQ, NE, GT, GE, LT, LE) or numeric entry. If numeric, a scan starting at the BEGIN position for an equal match to SEARCH DATA will be performed for this LENGTH. Specify zero to scan the remainder of the segment. Entry of a '?' will display a selection list of valid test conditions.

SEARCH DATA: The search for data "string" can be character, quoted, packed or hexadecimal. Quoted strings are case sensitive, non-quoted strings are not. Entry of a '?' in position 1 will display a selection list of string type templates that can be used in this field.

AND/OR: Logical connectors permit Boolean logic to be used between segment search conditions.

Compare field:

SEGMENT COL: Numeric position of a field in the selected database SEGMENT to be compared for a given LENGTH to a field in the compare-to file segment at FILE COL. Any number of "Compare field" requests can be specified without an intervening SEGMENT search condition. Entry of a '?' will display a list of copybook fields defined for the segment. Upon selection, the relative position of that copybook field in the segment will be entered into this field and its length attribute entered into the compare length (if empty).

LENGTH: Numeric length of the field in the database segment at SEGMENT COL to be compared to a field in the compare-to file. Entry of a '?' will display a list of copybook field lengths defined for the segment.

FILE COL: Numeric position of a field in the selected compare-to file SEGMENT to be compared for a given LENGTH to a field in the database segment at SEGMENT COL. Entry of a '?' will display a list of segment copybook fields.

Example to select all STANINFO segments with a commodity code of 02 and compare only two fields: 1) position=22, length=5 in both database and file; 2) position=56, length=1 in database, to position=78 in file.

```
                    COND/
    SEGMENT         BEGIN     LENGTH    SEARCH DATA                                          And/Or
                                                                                      More:      +
1.  STANINFO        67        EQ        02_____________________________________________
    Compare field:                      SEGMENT COL 22___   LENGTH 5____   FILE COL 22____
2.  ________        ____      ____      _____________________________________________
    Compare field:                      SEGMENT COL 56___   LENGTH 1____   FILE COL 78____
```

Compare Options with Selection Criteria

When compare selection criteria is entered, additional options are available.

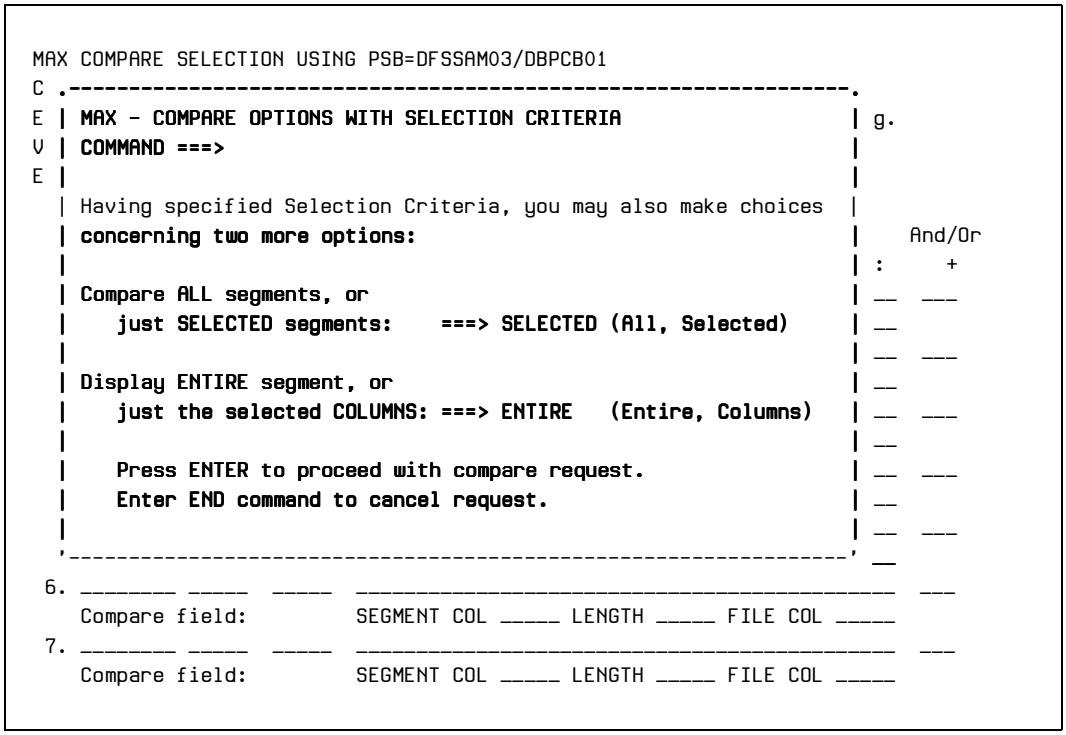


Figure 54: Compare Selection Options panel

Explanation of parameters

Compare ALL segments, or just SELECTED segments:

ALL: Will COMPARE those segments not selected in their entirety.

SELECTED: Will **COMPARE** only those segments that pass the selection criteria. All other segments are bypassed.

Display ENTIRE segment, or just selected COLUMNS:

ENTIRE: Will report the entire segment failing compare, even if only selected fields were used in the **COMPARE**.

COLUMNS: Will report only those portions of the segment that were compared.

Commands

The following commands may be entered while specifying **COMPARE** select/change criteria.

GO	initiates the **COMPARE** request
RESET	clears all Compare Selection criteria on the panel
SAVE	current Compare Selection criteria is saved for use in a subsequent compare
COPY	retrieves previously saved Compare Selection criteria for use in this session
DBD	displays contents of DBD and PSB for segment name reference
MAP	build mapping criteria (same as main menu option 7)
COPYLIBS	maintain copybook retrieval libraries

COPY

The **COPY** command is entered to retrieve previously stored compare selection criteria from a specified external data set. The selection criteria must have been previously stored with a **SAVE** command. A panel is presented requesting the external library data set and member name (or sequential data set name). If the member name is not known, a pattern may be entered to return a list of all members matching it. Pattern characters consist of a '?' and '*'. Use the question mark (?) when a specific number of characters can be substituted into the pattern. For example:

*	Display all member names for selection.
DB*	Display all member names beginning with DB for selection.
??TEST*	Display all member names with TEST in pos 3-6 for selection.

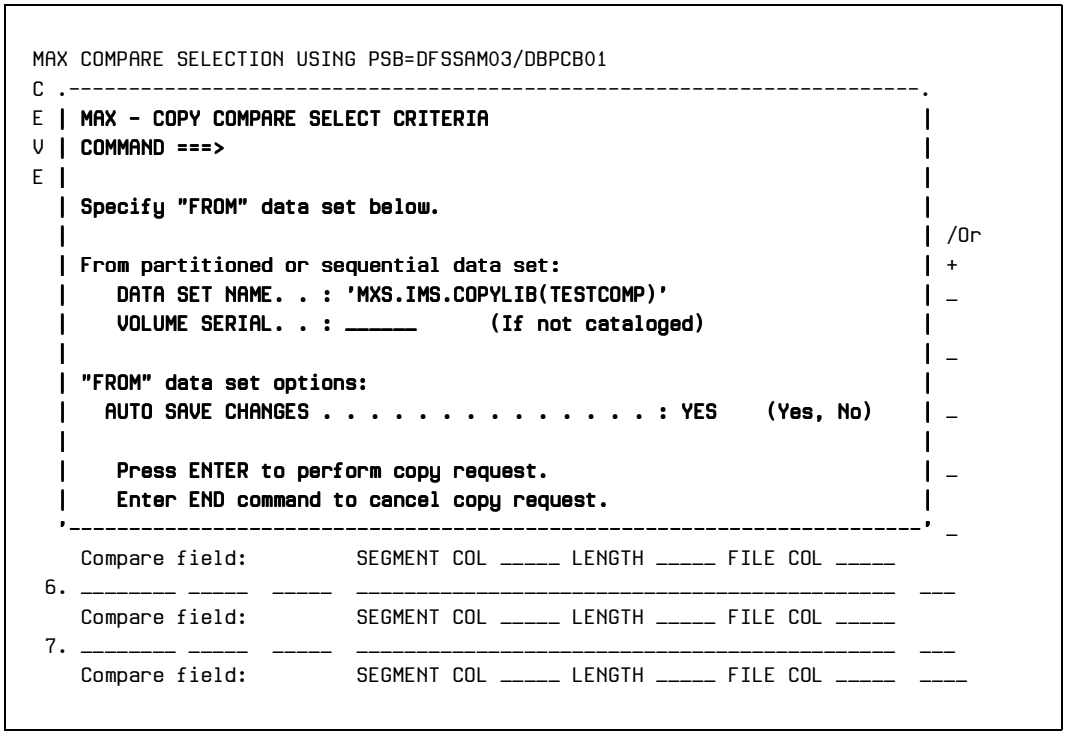


Figure 55: Copy Compare Select Criteria panel

Explanation of parameters

FROM: Partitioned data set name with member in parentheses or existing sequential data set name. If this data set is not cataloged, specify the volume serial number where it is allocated.

AUTO SAVE: Controls the automatic **SAVE** function when the compare selection criteria has been changed.

DBD

This command displays the contents of the current DBD and PSB. Segment names and attributes may be referenced for specification in compare select criteria.

```
MAX COMPARE SELECTION USING PSB=DFSSAM03/DBPCB01
.-------------------------------------------------------------------------------.
| MAX CONTENTS OF DBD=DI21PART for PCB=DBPCB01                  Row 1 of 10 |
| COMMAND ===>                                              SCROLL ===> CSR   |
| Access Method is HISAM VSAM - Single DSG                                    |
| Press END when complete.                                                    |
|     SEG          HIER               PARENT   FIELD    FLD  FLD   FLD   MAX  |
| PCB NUM SEGMENT  LVL TYPE           SEGMENT  NAME     FMT  POS  SIZE  SIZE  |
|  Y    1 PARTROOT 01  SEGMENT,ROOT   -        -        -      -    50    50  |
|                      FIELD,SEQ               PARTKEY  CH     1    17     -  |
|  Y    2 STANINFO 02  SEGMENT,CHILD  PARTROOT -        -      -    85    85  |
|                      FIELD,SEQ               STANKEY  CH     1     2     -  |
'-------------------------------------------------------------------------------'
 7. ________ _____  _____  ____________________________________________  ___
    Compare field:         SEGMENT COL _____ LENGTH _____ FILE COL _____
```

Figure 56: Contents of DBD panel

SAVE

The **SAVE** command is entered to store the compare selection criteria to a specified external data set. The stored selection criteria can be subsequently copied and reused during another compare session with the **COPY** command. A panel is presented requesting the name of the external library data set and member name (or sequential data set name) and an optional description.

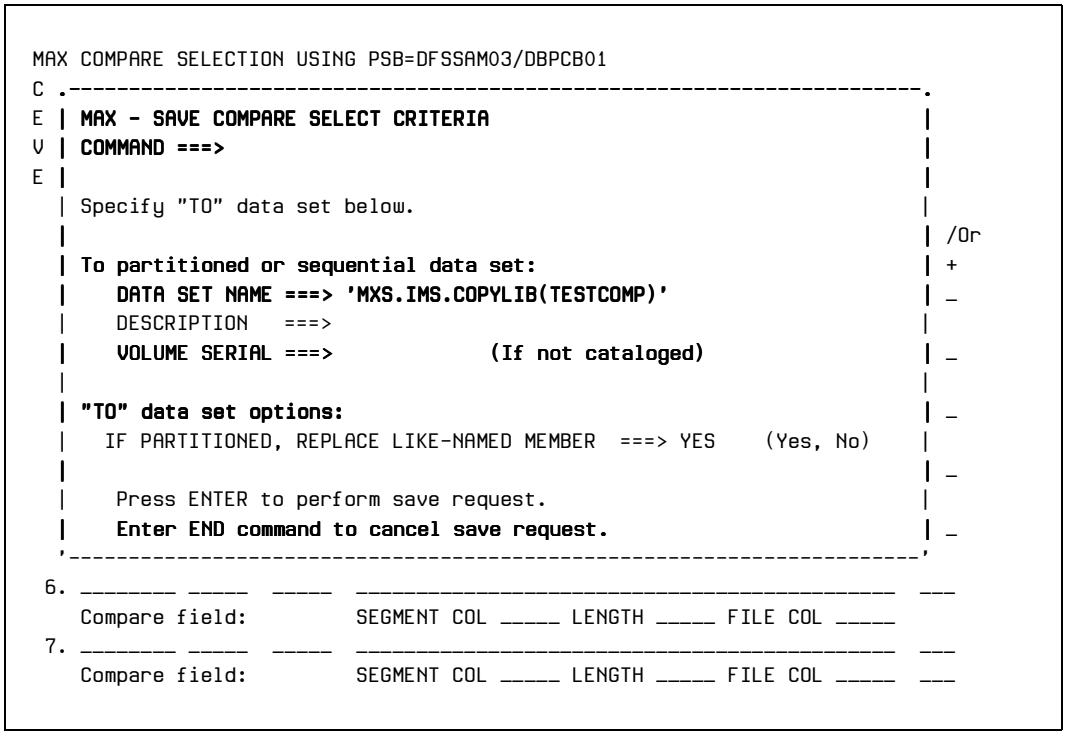


Figure 57: **SAVE** Compare Select Criteria panel

Explanation of parameters

TO: Partitioned data set name with member in parentheses or existing sequential data set name.

DESCRIPTION: Criteria description.

REPLACE LIKE-NAMED MEMBER: If in a partitioned data set, YES permits replacing an existing member with the same name.

CHAPTER 3: DATA SET NAME LIST FUNCTIONS

Introduction

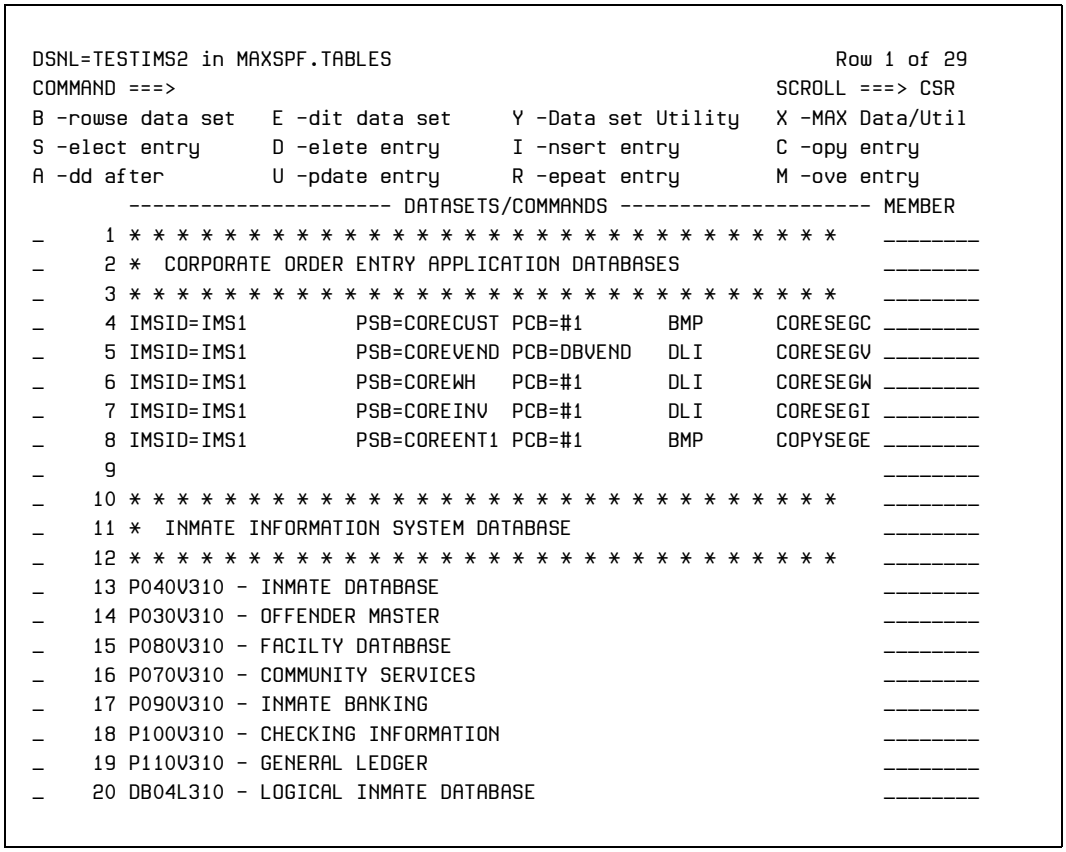
The DSNL provides a unique and customized front-end for accessing MAX IMS/UTIL. It can be thought of as a "Project Organizer" that allows a user to organize their database names in the manner which is most natural for them.

The DSNL eliminates the need to continually enter IMSID, PSB and PCB/DBD information needed for accessing your databases with MAX IMS/UTIL. Associated copybook mapping criteria, DBD/PSB library names and DLI database allocation data set names can also be stored in a DSNL entry for quick recall and usage by MAX IMS/UTIL. A DSNL is maintained for each user or shared between users and saved across TSO sessions.

You can create and maintain multiple DSNLs to allow further grouping of data sets by function. With this capability, you can, for example, group all databases used for a given application, or group databases undergoing conversion or quality assurance activities. If appropriate, a given database name may appear in multiple DSNLs.

DSNLs are stored as PDS members in a Project DSN that can be established by assigning the MAXCDSN variable name to a standard PDS name in the MAX startup procedure. See the MAX Product Installation Guide for more information on this. The default is to use the user's ISPF profile data set. The Project DSN can also be changed when creating a new DSNL with the CREATE command or using the PROFILE command to list the contents of a Project DSNL.

DSNL is a set of functions that are part of the larger companion product MAX/PDF. PDF provides for organizing access to all kinds of files (i.e. VSAM, SAM, PDS, etc.) besides IMS databases and requires a separate license to use. However, the DSNL extension to store and access IMS databases is included in your MAX IMS/UTIL license and is described in this chapter.



```
DSNL=TESTIMS2 in MAXSPF.TABLES                                    Row 1 of 29
COMMAND ===>                                                  SCROLL ===> CSR
B -rowse data set   E -dit data set     Y -Data set Utility   X -MAX Data/Util
S -elect entry      D -elete entry      I -nsert entry        C -opy entry
A -dd after         U -pdate entry      R -epeat entry        M -ove entry
        ---------------------- DATASETS/COMMANDS ---------------------- MEMBER
_     1 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    ________
_     2 *  CORPORATE ORDER ENTRY APPLICATION DATABASES                  ________
_     3 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    ________
_     4 IMSID=IMS1         PSB=CORECUST PCB=#1       BMP      CORESEGC ________
_     5 IMSID=IMS1         PSB=COREVEND PCB=DBVEND   DLI      CORESEGV ________
_     6 IMSID=IMS1         PSB=COREWH   PCB=#1       DLI      CORESEGW ________
_     7 IMSID=IMS1         PSB=COREINV  PCB=#1       DLI      CORESEGI ________
_     8 IMSID=IMS1         PSB=COREENT1 PCB=#1       BMP      COPYSEGE ________
_     9                                                            ________
_    10 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    ________
_    11 *  INMATE INFORMATION SYSTEM DATABASE                         ________
_    12 * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *    ________
_    13 P040V310 - INMATE DATABASE                                     ________
_    14 P030V310 - OFFENDER MASTER                                     ________
_    15 P080V310 - FACILTY DATABASE                                    ________
_    16 P070V310 - COMMUNITY SERVICES                                  ________
_    17 P090V310 - INMATE BANKING                                      ________
_    18 P100V310 - CHECKING INFORMATION                                ________
_    19 P110V310 - GENERAL LEDGER                                      ________
_    20 DB04L310 - LOGICAL INMATE DATABASE                             ________
```

Figure 58: Data Set Name List panel

The following explains the various fields on the Sample DSNL panel, which could have been invoked by entering `TESTIMS2` as project name on the command line.

The first line displays information on the current DSNL; you can have more than one DSNL, but this panel will display one at a time. The PDS in which the DSNL is stored is also displayed.

Primary Commands may be entered at the `COMMAND ===>` field.

Following are the available functions that can be used.

- The numbers (1- 20) to the left of the DSNL indicates the number of the IMS database to be accessed.
- Line commands may be entered in the column to the left of the DSNL entry numbers. For example, '`E`' for Edit.
- The database as shown in DSNL entry #4 indicates an IMS database to be accessed in the IMS1 control region using PCB #1 in PSB CORECUST with BMP mode. Also, mapping criteria CORESEGC is to be used in the browse/edit session.
- The text string in entry #13 is an example of a description added to explain the contents of the DSNL entry.
- The text string '`COPYSEGE`' shown to the right of DSNL entry #8 indicates that a mapping criteria is to be used when this entry is selected.

The functions shown above are established when entries are added to the DSNL or when they are updated once they exist in the DSNL.

Creating and Maintaining the DSNL

A DSNL is created using the **CREATE** primary command. For information on procedures for creating a DSNL, refer to the **CREATE** primary command description.

Individual DSNL entries are added or changed by using the **(I)nsert** or **(U)pdate** line commands. For information on and procedures for maintaining a DSNL, refer to the line command descriptions contained in the following section.

Using the Data Set Name List

A unique feature of DSNL is the row numbers to the left of each data set entry in the list. On Page 126, in the Figure showing the TESTIMS2 DSNL, the panel contains 20 visible entries (13 database, 7 comment). These data set entries are numbered so that they may be identified and processed by actual name or by number. The remaining 9 entries are accessible by scrolling the DSNL forward.

The numbering of the database entries provides users with various methods of using the DSNL to select a database for processing:

One method is to type a line command to the left of the database entry, then press ENTER.

A second method of accessing a database is to specify in the command field, the number displayed to the left of the database. This would produce the same result as typing an 'S' next to the database.

Additionally, you could select a database and specify edit by typing the edit command next to the number entered in the command field.

For example, typing the characters '8E' on the command line would process the eighth entry from the DSNL directly, bringing the database up immediately in Edit mode with MAX IMS/UTIL. This same technique can be used for entering any of the line commands as primary commands.

Command Stacking

As you become familiar with your own DSNLs, you will probably find that you have memorized the list number of the most frequently referenced of your databases. Using the ISPF capability of "command stacking", you can access your databases directly from the Primary Options panel.

In the following example, we stack the command '`MAX DSNL`' to run the DSNL, followed by the number '`13`' to select the thirteenth entry in the DSNL for processing. This feature allows you to process any entry in the list without displaying any intervening panels, by entering only few keystrokes.

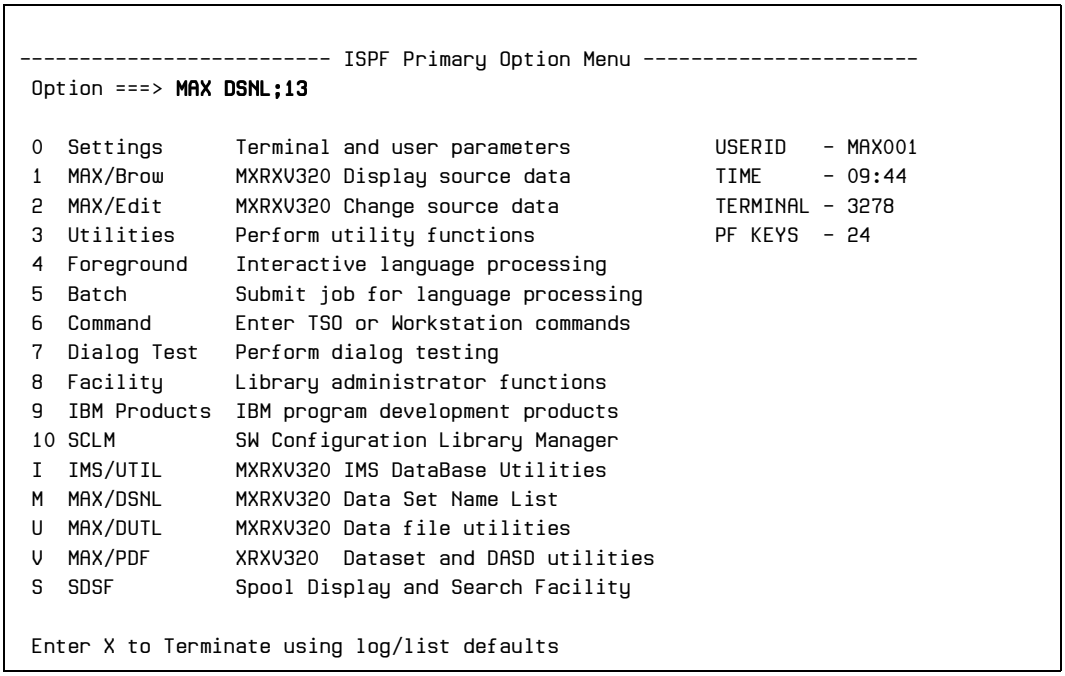


Figure 59: Command Stacking panel

DSNL Primary Commands

Primary commands generally apply to an entire DSNL. Enter primary commands at the `COMMAND ===>` prompt located in the upper left corner of a panel utilizing the following guidelines:

Enter a blank space to separate command operands. Do not use the cursor keys to achieve spacing.

Insert or expand operands using the insert mode of your keyboard.

Optionally, enter multiple commands in the `COMMAND` line by entering a semicolon (`;`) between each command. This process is known as "Command Stacking".

The following primary commands are discussed in this section:

C (Change)
CA (Change All)
COPY
CREATE
DELETE
F (Find)
LISTCAT
MOVE
PROFILE
RC (Repeat previous C command)
RESET
RF (Repeat previous F command)
View Another Data Set Name List

C (Change)/CA (Change All)

Use the **C** command to change the next occurrence of a string that is found in the DSNL. Use the **CA** command to change every occurrence of a string in the entire DSNL.

The commands have the following format:

C	**fromstring tostring**
C	**fromstring tostring**
C	**fromstring tostring**
CA	**fromstring tostring**
CA	**fromstring tostring**
CA	**fromstring tostring**
C	(note that a **C** with no data will repeat the prior **C** command)

Operand Definitions

fromstring is the search string. The **fromstring** can be a quoted (case sensitive) or unquoted (case insensitive) string. If the **fromstring** contains embedded blanks, then it must be quoted. If the **fromstring** contains single quotes, then it must be quoted using double quotes. If the **fromstring** contains double quotes, then it must be quoted using single quotes.

tostring will appear in the case that it was entered. However, if the value is a data set name, the editing will force it to uppercase. If the **tostring** contains embedded blanks, then it must be quoted. If the **tostring** contains single quotes, then it must be quoted using double quotes. If the **tostring** contains double quotes, then it must be quoted using single quotes.

The **C** command will look at all of the values that comprise an entry in the DSNL, although some of the values may not be visible. It will begin with the entry currently positioned at the top of the panel. If a match is found, the **fromstring** will be changed to the **tostring** and the entry will be positioned to the top of the panel. Every occurrence of the value in that entry will be changed.

The **CA** command will look at every value in every entry of the DSNL. It will look at values that may not be visible on the panel. If a match is found, the **fromstring** will be changed to the **tostring** and the search will continue. Upon completion, the DSNL will be positioned to the first entry in the DSNL.

If no match is found, the DSNL will remain positioned as it was and a message will be returned noting that the value could not be found.

COPY

With the **COPY** command, you can copy an existing DSNL into the DSNL you are viewing. The copied DSNL is inserted after the location you specify with the **A** (Add after) line command (see Line Commands Used in DSNL). The copied list remains unchanged.

The **COPY** command has the following format:

COPY dsnlname

In the above command, **dsnlname** is a 1 to 8 character name of an existing DSNL.

CREATE

You can create a new DSNL by using the **CREATE** command.

The **CREATE** command has the following format:

CREATE dsnlname

In the above command, **dsnlname** is a 1 to 8 character name of a DSNL.

Upon execution of this command, the **CREATE** a Project Data Set Name List panel is displayed, allowing you to create a new DSNL using a combination of several different methods to retrieve data set names and include them in the new DSNL.

If END is pressed upon initial entry, a DSNL is created with one null entry.

Option 4 allows you to change the project DSN where DSNLs are stored.

The following example shows the result of entering a CREATE NEWDSNL command, to create a new DSNL named NEWDSNL in MAXSPF.TABLES.

```
MAX/PDF --------- CREATE A PROJECT DATA SET NAME LIST     0 ENTRIES IN NEWDSNL
 COMMAND ===>

 Projects data set name (where DSNLs are stored/fetched).
   PROJECT DSN. . . . : MAXSPF.TABLES

 Specify the data set name(s) to include in the new PROJECT DSNL=NEWDSNL

 Select one of the following. Then press Enter.
 _   1 - Select data sets from Catalog
     2 - Select data sets from another DSNL list
     3 - Insert an Entry directly
     4 - Change Project DSN where DSNLs are stored

 Enter a high level qualifier (option 1), or DSNL name (option 2) below:
  DSNAME LEVEL, or DSNL    ===>


  Press END to display newly created DSNL.
  Enter CANCEL to return without creating DSNL.
```

Figure 60: **CREATE** a Project Data Set Name List panel

When the panel is initially displayed, enter an 'S' line command for each entry you want to include in the new DSNL.

The following panel displays the result of specifying option 1 - Select data sets from catalog as well as specifying a high level qualifier in the **CREATE DSNL** function.

```
------------------------- INSERT ENTRIES FROM CATALOG---------------- IDC3012I
 COMMAND ===>                                                SCROLL ===> CSR
 S -elect entries that you want inserted into  DSNL=NEWDSNL  .
   -------------------------------- DATASETS --------------------------COBOL
 _ MXS.MAXPDF.EXECS
 S MXS.MAXPDF.JCL
 _ MXS.MAXPDF.MESSAGES
 S MXS.MAXPDF.PANELS
 _ MXS.MAXPDF.TABLES
 ****************************** Bottom of data ********************************
```

Figure 61: Create Selection List panel

In this example, the second and fifth entries in the list were selected to be added by placing S (as indicated by arrows) next to them, then pressing ENTER.

DELETE

Use the **DELETE** command to eliminate an existing DSNL.

The **DELETE** command has the following format:

DELETE **dsnlname**

In the above command, **dsnlname** is a 1 to 8 character name of an existing DSNL.

If you delete the DSNL you are viewing, a **PROFILE** command display is shown for you to select another DSNL to view. See the **PROFILE** command for additional information.

Before any **DELETE** is processed, an additional panel is displayed to confirm the request.

Note: Deleting a DSNL will not delete the data sets in the list.

F (Find)

Use the **F** command to position to the next occurrence of the string to the top of the panel.

The **F** command has the following format:

F **string**
F **string**
F (entered with no data will repeat the prior find command)

Operand Definitions

string can be a quoted (case sensitive) or unquoted (case insensitive) string. If **string** contains embedded blanks, then it must be quoted. If **string** contains single quotes, then it must be quoted using double quotes. If **string** contains double quotes, then it must be quoted using single quotes.

The **F** command will look at all of the values that comprise an entry in the DSNL, although some of the values may not be visible. If a match is found, the entry will be positioned to the top of the panel. If no match is found, the DSNL will remain positioned as it was and a message will be returned noting that the value could not be found.

LISTCAT

With the **LISTCAT** command, you can display a list of data sets from the OS catalog.

The **LISTCAT** command has the following format and/or aliases:

LISTCAT	**XXXX.XXXX full qualifier**
LISTCAT	**XXXX.XXX* partial qualifier**
LISTC	"
LC	"

In the above command, **qualifier** is any high level data set name qualifier. If you omit the qualifier, a panel appears where you can enter it. **LISTCAT** supports both full and partial qualifiers. The high order qualifier, however, must always be fully specified. This is an MVS requirement.

The following example panel displays the result of entering a `LC MXS.MXRXTEST` DSNL command.

```
LISTCAT=MXS.                                                    IDC0002I
 COMMAND ===>                                                SCROLL ===> CSR
 B -rowse data set   E -dit data set   Y - Data set Utility   X - MAX Data/Util
 S -elect entry      C -opy entry
         ------------------ DATASETS ------------------
 _     1 MXS.MXRXTEST.BIGLRECL
 _     2 MXS.MXRXTEST.FLEET
 _     3 MXS.MXRXTEST.KSDS
 _     4 MXS.MXRXTEST.SAM
 ****************************** Bottom of data ********************************
```

Figure 62: **LISTCAT** Primary Command in DSNL panel

MOVE

Use the **MOVE** command to move the contents of an existing DSNL into the DSNL you are viewing. It is inserted after the location specified with the **A** line command and its name is deleted from the list of available DSNLs, upon successful execution of this command.

The **MOVE** command has the following format:

MOVE	**dsnlname**

In the above command, **dsnlname** is a 1 to 8 character name of an existing DSNL.

PROFILE

The **PROFILE** command displays a list of all DSNLs currently available to the user.

The **PROFILE** command has the following format:

PROFILE

Upon entry, a panel is displayed allowing you to change the Project DSN where DSNLs are stored. The last 10 Project DSNs used are also displayed and may be selected by placing an 'S' next to one of them. Upon entry, a list of all DSNLs currently available in that Project DSN is then displayed.

There are three line commands that are specific to the **PROFILE** command and made available to users after the **PROFILE** command list has been displayed. These commands are:

D (Delete) - Line Command
R (Rename) - Line Command
S (Select) - Line Command

The following example panels display the results of the **PROFILE** command in MAX/PDF DSNL.

The current Project DSN of MAXSPF.TABLES is displayed for confirmation or change.

```
DSNL=QADSNL in MAXSPF.TABLES                                    Row 1 of 77
C .-------------------------------------------------------------------------.
B | CONFIRM PROJECTS DATA SET NAME                                          | 1
S | COMMAND ===>                                                           |
A |                                                                         |
  | Specify the projects data set name (where DSNLs are stored/fetched).    |
_ |   PROJECT DSN. . . . : MAXSPF.TABLES                                    | OG
_ |                                                                         | CE
_ | or type S next to choice and press ENTER to select PROJECT DSN          | AT
_ |                                                                         | __
_ | _ => MAXSPF.TABLES                                                      | F
_ | S => MXS.IMS.TABLES                                                     | __
_ | _ => MAXSPF.TABLES                                                      | __
_ | _ => MXS.IMS.TABLES                                                     | __
_ | _ => MAXSPF.TABLES                                                      | __
_ | _ => MXS.IMS.TABLES                                                     | __
_ | _ => MAXSPF.TABLES                                                      | __
_ | _ => MXS.IMS.TABLES                                                     | __
_ | _ => MAXSPF.TABLES                                                      | __
_ | _ => MXS.IMS.TABLES                                                     | __
_ |                                                                         | __
_ | Press ENTER to confirm data set name specified.                         | __
_ | Enter END   to return without changing.                                 | __
_ '-------------------------------------------------------------------------' __
_    19 MXS.MAXREXX.TABLES.TEST                                    ________
_    20 MXS.MAXREXX.LAYOUTS                                        ________
```

Figure 63: **PROFILE** Project DSN Confirmation panel

Entry of an 'S' next to MAX.IMS.TABLES selects it as the new Project DSN whose profile is displayed as follows:

```
LIST ALL DSNLs in MXS.IMS.TABLES                                  Row 1 of 65
 COMMAND ===>                                                  SCROLL ===> CSR
 S -elect for processing            D -elete                        R -ename
   NAME    MSG           -- CREATED --    -- CHANGED --      CUR   MOD USER
 _ ALLIANZ
 _ BENCH
 _ BYTEME
 _ CAV240
 _ CA154
 _ CK4
 _ CMVS
 _ DB2
 _ IBMREXX
 _ IMS
 _ IMSTRIAL
 _ IMS61
 _ JANDSNL
 _ LDCT
 _ MAKEREL
 _ MARTEMP
 _ MARTEST
 _ MAXDEVL
 _ MAXGML
 _ MAXPROJ
```

Figure 64: **PROFILE** Primary Command in DSNL panel

The following three primary commands (**DELETE**, **RENAME**, **SELECT**) are **PROFILE** sub-commands and can only be entered after you issue the **PROFILE** command.

DELETE

To **DELETE** a DSNL, type the single letter 'D' in the command area to the left of the data set. When you press the ENTER key, the DSNL is deleted.

Note: Deleting a DSNL will not delete the data sets in the list.

RENAME

To **RENAME** a DSNL, type the single letter 'R' in the command area to the left of the data set. A panel is then displayed requesting the new name for the data set.

SELECT

To **SELECT** a DSNL for processing, type the single letter 'S' in the command area to the left of the data set. Press the ENTER key and the data set name list is presented.

RC (Repeat previous C command)

Use the **RC** command to position to the next occurrence of the string entered in the previous **C** command and make the change as was entered.

RC

No data string is entered with this command. The repeat change will repeat the previous **C** (change) command

RESET

The **RESET** command clears any outstanding **MOVE** or **COPY** commands, pending **A** (Add after) line commands, as well as any **ADD PENDING** or **COPY/MOVE** pending commands.

The **RESET** command has the following format and/or aliases:

RESET
RES

RF (Repeat previous F command)

Use the **RF** command to position to the next occurrence of the string found by a prior **F** command that has been positioned to the top of the panel.

The **RF** command has the following format:

RF

No data string is entered with this command. The Repeat find will find the data that was entered for the prior **FIND** command.

View Another Data Set Name List

To view a specific DSNL, type the name of the DSNL at the command prompt.

This command has the following format:

dsnlname

In the above command, the **dsnlname** specified is the 1 to 8 character name of an existing DSNL.

Line Commands Used in DSNL

Line commands generally apply to individual data set entries in a DSNL. Enter Line Commands to the left of a data set name entry. The command will effect only the entry next to it.

The following Line Commands are discussed in this section:

A (Add after)
B (Browse)
C (Copy)
D (Delete)
E (Edit)
I (Insert)
J (submit a Job) Submit a member from the JES queue from this data set.
M (Move)
R (Repeat)
S (Select)
U (Update)
X (MAX Data/Util, MAX DB2/UTIL, or MAX IMS/UTIL)
Y (Utilities Commands)

A (Add after)

The **A** (Add after) command is used with primary commands to move or copy entire DSNLs, or with line commands to move or copy DSNL entries.

Typing an `A` in the command area to the left of a specified entry inserts the copied or moved DSNL or DSNL entry after that position in the list.

B (Browse)

To browse a DSNL entry, type the single letter B in the command area to the left of the data set.

The results of the **B** (Browse) command depend upon the type of data set selected. If the selected data set is a partitioned data set (PDS) or PDS concatenation, then the MAX/PDF MSL is displayed and the default line command is browse.

If the selected data set is not a partitioned data set (PDS) or PDS concatenation, the ISPF browse is invoked. If the data set cannot be processed by the ISPF Browse (such as in the case of a VSAM data set), MAX Data/Util is invoked. (This requires installation of the companion MAX Data/Util product). If the entry is IMS type, MAX IMS/UTIL is invoked (product must be installed to use). If the entry is DB2 type, MAX DB2/UTIL is invoked (product must be installed to use).

C (Copy)

To copy a DSNL entry, type the single letter 'C' in the command area to the left of the DSNL entry to be copied and type an 'A' to the left of the DSNL entry indicating the target location.

Press the ENTER key and the entry with the 'C' is copied after the target location marked with the 'A'.

D (Delete)

To delete a DSNL entry, type the single letter 'D' in the command area to the left of the entry. A confirmation panel will be presented showing the complete detail for the requested entry before the entry is actually removed from the list.

Deleting a DSNL entry will not delete the data set. To delete a data set from disk, use the Utilities command D (Delete) on page 149.

E (Edit)

To edit a DSNL entry, type the single letter 'E' in the command area to the left of the data set. The results of the **E** (Edit) line command depend upon the type of data set selected. If the selected data set is a partitioned data set (PDS) or PDS concatenation, then the MAX/PDF MSL is displayed. The default line command is Edit.

If the data set cannot be processed by the ISPF editor (such as in the case of a VSAM data set, a SAM file containing records longer than 255 bytes, or an extremely large SAM file), MAX Data/Util will be invoked. (This requires installation of the companion MAX Data/Util product). If the entry is IMS type, MAX IMS/UTIL is invoked (product must be installed to use). If the entry is DB2 type, MAX DB2/UTIL is invoked (product must be installed to use).

I (Insert)

To insert a DSNL entry, type the single letter 'I' in the command area to the left of the data set where an insertion is to be made. The following panel will be displayed to provide choices of what to insert.

```
DSNL=MAXDEVL ------------- INSERT OPTIONS ----------------- USER=MX11003
 COMMAND ===>                                               DATE=2003/03/05
                                                            TIME=11:28:21
 _   Select type entry to insert.

      1  FUNCTION  - ISPF function
                    (Menu PANEL, PROGRAM, CLIST, REXX EXEC, TSO COMMAND)

      2  DATA SET  - PDS, PDS concatenation, Sequential, or VSAM file

      3  IMS DB    - IMS/UTIL DB

      4  DB2 TABLE - DB2 Database Table

      5  UNIX File - Enter path name

      6  DSNAMES   - Select data sets from Catalog
         Enter a high level qualifer (option 6) below:
         DSNAME LEVEL  ===>

 Press ENTER to continue, or END to return.
```

Figure 65: Insert Options panel

The following display and describe each **I** (Insert) option from the panel above.

Insert: Select option 1. FUNCTION

The following panel is displayed:

```
DSNL=MX10002 ------------- INSERT FUNCTION ------------------ USER=MX10002
 COMMAND ===>                                                  DATE=2002/11/12
                                                               TIME=13:50:12
 FUNCTION - PANEL, CMD or PGM (see syntax below):
 SELECT  ===>

 Syntax:    { PANEL(panel-name) < OPT(option) >                          }
            { CMD(command) < LANG(APL) > < MODE(LINE|FSCR) >             }
            { PGM(program-name) < PARM(parameters) > < MODE(LINE|FSCR) > }
            < NEWAPPL < (application-id) >  < PASSLIB > | < NEWPOOL >  >
 Specify Description to appear in DSNL:
DESCRIPTION ===>
 LIBDEF data sets:                                      STACK/COND/UNCOND/volser
 ISPLLIB ===>                                                ===>
 ISPMLIB ===>                                                ===>
 ISPPLIB ===>                                                ===>
 ISPSLIB ===>                                                ===>
 ISPTABL ===>                                                ===>
 ISPTLIB ===>                                                ===>
         ===>                                                ===>
         ===>                                                ===>
         ===>                                                ===>

 GO process data sets/cmds;  END return with updates;  CANCEL return no updates
```

Figure 66: Insert Function panel

In this example, the program ISPYXDR has been entered with the description of `Dialog Test`.

Field Descriptions:

COMMAND ===>: Primary commands may be entered at the command line.

SELECT ===>: The target of a valid ISPF SELECT function should be entered following the `SELECT ===>`. The function should be a panel, a TSO command or a program. The syntax is shown below the entry field.

DESCRIPTION ===>: Text may be entered to explain the function. It will be displayed on the DSNL entry line. If nothing is entered, the function will be displayed on that line.

LIBDEF Data Sets: Use LIBDEF to define the application level libraries that will be in effect while the application is running.

ISPLLIB===>: Load module library.

ISPMLIB===>: Message library.

ISPPLIB===>: Panel library.

ISPSLIB===>: Skeleton library.

ISPTABL===>: Table output library.

ISPTLIB===>: Table input library.

STACK/COND/UNCOND/volser:

STACK: Use this application level library regardless of the existence of an application level library being previously defined. Restore any prior allocations upon completion of using these libraries. This option is the default.

COND: Use this application level library only if no application level library was previously defined.

UNCOND: Use this application level library regardless of the existence of an application level library previously defined.

Volser: Enter the volume serial number for USER DEFINED data sets. (See the following.)

USER DEFINED Data Sets: Following the LIBDEF statements are fields available to enter up to 3 user defined data sets to be allocated and used by the Function, Command or Program. Enter the DDNAME in front of the arrow and the Data Set name following the arrow. If the data set is not in the catalog, enter the Volser under the column STACK/COND/UNCOND/volser:

Insert: Select option 2. DATA SET

and the following Insert Entry panel is displayed. In this example, the data set

MAX001.MAXTEST.EXECS

has been entered.

```
DSNL=MAXDEVL -------------- INSERT ENTRY -------------------- USER=MX10002
 COMMAND ===>                                                 DATE=1999/11/02
 A - Allocate new data set    C - Catalog data set            TIME=10:09:25
 R - Rename entire data set   U - Uncatalog data set
 D - Delete entire data set   I - Data set information   X - Compress data set
 *** Delete name with ERASE EOF - overtype to make changes ***

 _   DSN ===> MAX001.MAXTEST.EXECS                          VOLSER ===>
              PDS concatenations to the entry listed above
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
 _   DSN ===>                                               VOLSER ===>
  MEMBER ===>
COMMANDS ===>
DESCRIPTION ===>
              COBOL Copybook data set and member name ----*
     DSN ===>                                               VOLSER ===>
  MEMBER ===>
 GO process datasets/cmds;  END return with updates;  CANCEL return no updates
```

Figure 67: Insert Data Set panel

The utility functions shown at the top of the Insert Entry Panel may be used with all DSNs shown on the Insert Entry Panel.

Field Descriptions:

COMMAND ===>: Primary commands may be entered at the command line.

DSN ===>: Data set names may be entered on the lines indicated with a DSN ===>. Up to nine data sets may be specified for each DSNL entry; concatenating all data sets specified.

VOLSER ===>: If a data set is not cataloged, the volume serial number must be entered to the right of the data set name after the VOLSER ===>, to uniquely locate and identify the data set.

MEMBER ===>: A member name or pattern may be entered in this field to select a specific member to be edited or browsed or to select a subset of members to be included in the Member Selector List.

COMMANDS ==>: Commands may be entered in this field that will be automatically executed when this entry is selected. Alpha commands bypass the menu and are invoked immediately.

DESCRIPTIONS ===>: A text string may be entered following the DESCRIPTIONS ===> to explain the contents of the DSNL entry.

COBOL Copybook data set and member name —*

The data set name of the library containing the Cobol copybook member shown below may be entered in this field.

The member name of a Cobol copybook may be entered in this field. The presence of a Cobol Copybook data set name and member name specifies that a COBOL copybook will to be used to display information from a SAM or VSAM file when this entry is selected for browse or edit.

Insert: Select option 3. IMS DB

and the following entry panel is displayed:

```
DSNL=TESTIMS ---------------- INSERT IMS DB ----------------- USER=MX11005
COMMAND ===>                                                  DATE=2001/11/06
                                                              TIME=16:44:10
END  to return with updates  CANCEL to return no updates  GO process IMS/UTIL
DOWN to scroll forward       UP     to scroll backward
                                                                  More:     +
SPECIFY PSB PANEL VARIABLES
IMSID        ===> IMS1________
PSB NAME     ===> DFSSAM03
PCB/DBD NAME ===> #1______       (*=Display DB PCB selection list)
IMS RUN MODE ===> DLI            (BMP, DLI)
MAPPING DSN  ===> 'MXS.IMS.COPYLIB'_______________________________
MAPPING MEM  ===> DI21PARC
COMMANDS     ===> ________       (Alpha command is invoked immediately)
DESCRIPTION  ===> IMS/UTIL DFSSAM03/DBPCB01 - DLI MODE_____________________

PROFILE VARIABLES UPDATED
AGN CODE     ===> ________       (BMP run mode only)
DBDLIB 1     ===> 'IMS.DBDLIB'_____________________________________
DBDLIB 2     ===> _____________________________________________
PSBLIB 1     ===> 'IMS.PSBLIB'_____________________________________
PSBLIB 2     ===> _____________________________________________
User LOADLIB ===> _____________________________________________
User RESLIB  ===> _____________________________________________

DLI ALLOCATIONS   DDNAME       DATASET NAME
DB DSN 1     ===> DI21PART     'IMS.DI21PART'_____________________________
DB DSN 2     ===> DI21PARO     'IMS.DI21PARO'_____________________________
DB DSN 3     ===> ________     _____________________________________________
DB DSN 4     ===> ________     _____________________________________________
   ETC.
DB DSN 24    ===> ________     _____________________________________________..
```

Figure 68: Insert IMS DB panel

MAX IMS/UTIL parameters to process `PSB=DFSSAM03  PCB=#1` in `IMSID=IMS1` and DLI run mode have been entered. Upon selection, these and any other entries will be passed to MAX IMS/UTIL for processing.

Field Descriptions:

`COMMAND ===>`: Primary commands may be entered at the command line.

`IMSID ===>`: IMS subsystem ID to connect.

`PSB NAME ===>`: PSB name to process.

PCB NAME ===>: PCB name or relative database PCB number.

IMS RUN MODE ===>: BMP or DLI (offline batch).

MAPPING DSN ===>: The data set name of the library containing the COBOL/PL/I copybook mapping criteria member shown below may be entered in this field.

MAPPING MEM ===>: The member name of a COBOL/PL1 copybook mapping criteria that will be used to display IMS segments in formatted mode. Specify DEFAULT to request default mapping criteria.

COMMANDS ===>: MAX IMS/UTIL menu commands may be entered in this field that will automatically be executed when this entry is selected. Alpha commands bypass the MAX IMS/UTIL menu and are invoked immediately.

DESCRIPTION ===>: A text string may be entered to explain the DSNL entry.

AGN Code ===>: The one-to-eight character group name for inter-region communication security. This value becomes the AGN parameter which is passed to the IMS DFSRRC00 program when initiated to edit, unload, or load database segments in BMP mode. The logged on user must be authorized to use the specified application group name.

DBDLIB 1,2 ===>: The name of up to two partitioned data sets containing standard DBD load modules defined for each IMS database to be accessed. These load modules are produced from the standard output of the IMS DBDGEN process.

PSBLIB 1,2 ===>: The name of up to two partitioned data sets containing standard PSB load modules defined for each IMS database to be accessed. These load modules are produced from the standard output of the IMS PSBGEN process.

User LOADLIB ===>: The name of a partitioned data set (DSORG=PO) that is concatenated second to the TASKLIB data set list.

User RESLIB ===>: The name of an authorized IMS RESLIB partitioned data set that is concatenated third to the TASKLIB data set list. The data set is also concatenated to the DFSRESLB ddname for DLI run mode.

DLI ALLOCATIONS ===>: The DDname and data set name of up to 24 IMS Database data sets to be allocated when running in DLI mode.

Insert: Select option 4. DB2 TABLE

and the following insert entry panel is displayed:

```
DSNL=MX10002 --------------- INSERT DB2 TABLE --------------- USER=MX11002
 COMMAND ===>                                                  DATE=2003/01/29
                                                               TIME=14:21:49
 SPECIFY DB2 PANEL VARIABLES
 OWNER ID        ===> ________          (Wild cards (% or _) may be used)
 TABLE/VIEW NAME ===> ____________________________________________________
                      ____________________________________________________
                      ________________  (Wild cards (% or _) may be used)
 DB2 SUBSYSTEM   ===> ____

 INITIAL DISPLAY ===> FORMATTED__       (Formatted, Horizontal)
 CRITERIA DSN    ===> ____________________________________________________
 CURRENT SQLID   ===> ________
 COMMANDS        ===> ________          (Alpha command is invoked immediately)
 DESCRIPTION     ===> ____________________________________________________

 GO process DB2 table;  END return with updates;  CANCEL return no updates
```

Figure 69: Insert DB2 Table panel

MAX DB2/UTIL parameters to process `DB2 TABLE = SYSIBM.LOCATIONS` in `subsystem = DSN1` have been entered. Upon selection, these and any other entries will be passed to MAX DB2/UTIL for processing.

Field Descriptions:

`COMMAND ===>`: Primary commands may be entered at the command line.

`OWNER ID ===>`: High-level qualifier of DB2 table. Use the '`%`' wildcard when any number of characters can be substituted. Use one or more '`_`' wildcards when a single character can be substituted.

`TABLE/VIEW NAME ===>`: DB2 Table or View name. Use the '`%`' wildcard when any number of characters can be substituted. Use one or more '`_`' wildcards when a single character can be substituted.

`DB2 SUBSYSTEM ===>`: DB2 subsystem ID to connect.

`INITIAL DISPLAY ===>`: Initial display format to use (Formatted, Horizontal).

`CRITERIA DSN ===>`: The optional data set and/or member name in parentheses containing previously saved selection criteria. If member name is not specified, a member list is displayed for selection.

`CURRENT SQLID ===>`: Optional user ID passed to DB2. Blank defaults to log on user ID.

`COMMANDS ===>`: Menu option to be passed to MAX DB2/UTIL when entry is selected. Alpha commands bypass the MAX DB2/UTIL menu and are invoked immediately.

`DESCRIPTION ===>`: A text string may be entered to explain the DSNL entry.

Insert: Select option 5. UNIX File

This option allows you to display a directory in the UNIX file system or a file in the UNIX file system.

```
DSNL=MX10002 --------------- INSERT UNIX FILE --------------- USER=MX11002
 COMMAND ===>                                                  DATE=2003/01/22
                                                               TIME=11:53:30
 Enter UNIX file name... /u




 COMMANDS        ===>                    (Alpha command is invoked immediately)
 DESCRIPTION     ===>

 GO process UNIX file;  END return with updates;  CANCEL return no updates
```

Figure 70: Insert UNIX File panel

Field Descriptions:

UNIX file name ===>: Enter the directory or a complete File name to be viewed.

COMMANDS ===>: Menu option to be passed to the UNIX File display system when the option is selected.

DESCRIPTION ===>: a text string may be entered to explain the DSNL entry.

On the previous panel, the directory description '/u' was entered. When this entry is selected, the directory will be presented as follows:

```
 FSL /u                                                        MAX/PDF VNNN
COMMAND ===>                                                 SCROLL ===> PAGE
A - ttributes    B - rowse    D - elete    E - dit    V - iew
  Message Permissions User    Group Size    Last modified    File name
_          drwx------ MX11002 SYS1  8192 2003/01/13 08:56:34 ./
_          drwxr-xr-x MX11002 SYS1  8192 2003/01/21 14:16:10 ../
_          drwxr-xr-x MX11002 SYS1  8192 2003/01/22 11:55:16 dbond/
_          drwxr-xr-x MX11002 SYS1  8192 2002/11/13 16:21:59 ibmuser/
_          drwxr-xr-x MX11002 SYS1  8192 2000/10/31 15:32:58 open1/
_          drwxr-xr-x MX11002 SYS1  8192 2000/10/31 15:33:04 open2/
_          drwxr-xr-x MX11002 SYS1  8192 2000/10/31 15:33:08 open3/
_          drwxr-xr-x MX11002 SYS1  8192 2000/10/31 15:33:14 p390/
****************************** Bottom of data ********************************
```

Figure 71: View UNIX File panel

Insert: Select option 6. DSNAMES

With associated high level qualifier(s) and a list of data set names from the catalog will be presented. On the Insert Options panel, the high level qualifier(s) for the data sets to be listed must be entered.

For example, if you enter `MXS.MXRXV153` in the DSNAME LEVEL field on the Insert Options panel, the following panel will be presented. If you had entered only `MXS` as a high level qualifier, likely a longer list of data set names would be displayed.

```
------------------------- INSERT ENTRIES FROM CATALOG---------------- IDC3012I
 COMMAND ===>                                                SCROLL ===> CSR
 S -elect entries that you want inserted into  DSNL=MAXDEVL  .
   ------------------------------- DATASETS -------------------------COBOL
 _ MXS.MXRXV153.EXECS
 _ MXS.MXRXV153.JCL
 _ MXS.MXRXV153.LOADLIB
 _ MXS.MXRXV153.LPALOAD
 _ MXS.MXRXV153.MESSAGES
 _ MXS.MXRXV153.OBJECT
 _ MXS.MXRXV153.OBJECTC
 _ MXS.MXRXV153.OBJECTR
 _ MXS.MXRXV153.PANELS
 _ MXS.MXRXV153.TABLES
 _ MXS.MXRXV153.TEMPLOAD
 ****************************** Bottom of data ********************************
```

Figure 72: Insert Entries from Catalog panel

Enter ‘S’ to select the entry or entries to be inserted into the DSNL list.

Line Command Descriptions

J (submit a Job)

To submit a member of a data set to the JES job queue, enter a 'J' in the command area to the left of the DSNL entry for the data set that contains the member. Type the member name into the MEMBER field to the right of the data set name. Press the ENTER key. The member will be submitted to the JES job queue for processing.

M (Move)

To move a DSNL entry, type the single letter 'M' in the command area to the left of the DSNL entry to be moved and an 'A' to the left of the DSNL entry that indicates the target location. When you press the ENTER key, the entry with the 'M' is moved after the target location marked with the 'A'.

R (Repeat)

To repeat a DSNL entry, type the letter 'R' in the command area to the left of the entry to be repeated. The DSNL Insert Entry panel is displayed allowing you to make changes to the newly created entry.

S (Select)

To select a DSNL entry for processing, type the single letter 'S' in the command area to the left of the data set.

The results of the **S (Select)** line command depend upon the data set selected. If the entry selected is a partitioned data set (PDS) or PDS concatenation, a MSL is displayed. If the selected entry is a VSAM or sequential file and MAX Data/Util has been installed, MAX Data/Util is invoked. If this selected entry is IMS, MAX IMS/UTIL is invoked (product must be installed). If this selected entry is DB2, MAX DB2/UTIL is invoked (product must be installed).

Point & Shoot is available to select an entry from the DSNL for processing. Position the cursor to the entry in the DSNL and press the ENTER key. This will be the same as entering an 'S' to select the entry for processing.

U (Update)

The **U (Update)** line command is used to update/change a DSNL entry. You issue this command by typing the letter 'U' in the command area to the left of the DSNL entry. When you press the ENTER key, an Update Entry panel is displayed.

X (MAX Data/Util, MAX DB2/UTIL, or MAX IMS/UTIL)

MAX Data/Util is a related product for processing data type files; that is, files that are SAM, or VSAM, that contain data which may optionally be mapped using copybooks. MAX Data/Util provides a complete set of data manipulation utilities including: **BROWSE**, **EDIT**, **COPY/EXTRACT**, **UPDATE**, **IDCAMS**, **COMPARE**, **RECORD MAPPING**, **SELECTION CRITERIA**, etc. for processing data files. (This requires installation of the MAX Data/Util product). If IMS type, MAX IMS/UTIL is invoked (if product is installed). If DB2 type, MAX DB2/UTIL is invoked (if product is installed).

Y (Utilities Commands)

The Data Set Utilities panel is similar to other MAX/PDF panels, allowing a choice of many actions from a single panel. Data sets are entered at the "DSN" prompts. The panel is invoked by entering 'Y' to the left of a data set name listed in a DSNL is shown below.

Any of the line commands **A**, **R**, **D**, **C**, **U**, **I** or **X** can be issued to the left of the data set names. This gives you the opportunity to perform any of these functions on any data set(s) displayed on the following panel.

```
DSNL=MAXDEVL ------------ DATASET UTILITIES ----------------- USER=MX10001
 COMMAND ===>                                                 DATE=2000/10/11
                                                              TIME=12:45:57
 A - Allocate new data set               C - Catalog data set
 R - Rename entire data set              U - Uncatalog data set
 D - Delete entire data set              I - Data set information
 X - Compress data set

 *** Enter utility option next to the dataset below ***

 _   DSN ===> MXS.TEST.PDS2                                VOLSER ===>
              PDS concatenations to the entry listed above
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
 _   DSN ===>                                              VOLSER ===>
```

Figure 73: Data Set Utilities panel

The following section describes the utility functions that are available when using the MAX/PDF Data Set Utilities panel.

Enter utilities commands to the left of a data set name entry. The command will affect only the entry next to it.

The following utilities commands, as displayed in the previous figure, are discussed in this section:

A (Allocate)
C (Catalog)
X (Compress)
D (Delete)
I (Information)
R (Rename)
U (Uncatalog)

A (Allocate)

To allocate a new data set, first type the name of the new data set next to `DSN ===>`, then, the single letter '`A`' in the command area to the left of the data set. A panel is displayed which requests the attributes for the new data set.

Note: If you want to model the attributes of the new data set after an existing data set you should start by displaying the attributes of that data set with the **I (Information)** command.

```
Menu  RefList  Utilities  Help
 ------------------------------------------------------------------------------
                            Allocate New Data Set
 Command ===>
                                                                        More:     +
 Data Set Name  . . . : MXS.TEST.NEWPDS

 Management class . . .                (Blank for default management class)
 Storage class  . . . .                (Blank for default storage class)
  Volume serial . . . . MAX003         (Blank for system default volume) **
  Device type . . . . .                (Generic unit or device address) **
 Data class . . . . . .                (Blank for default data class)
  Space units . . . . . CYLINDER       (BLKS, TRKS, CYLS, KB, MB, BYTES
                                        or RECORDS)
  Average record unit                  (M, K, or U)
  Primary quantity  . . 1              (In above units)
  Secondary quantity    1              (In above units)
  Directory blocks  . . 0              (Zero for sequential data set) *
  Record format . . . . FBA
  Record length . . . . 121
  Block size  . . . . . 8107
  Data set name type  : PDS            (LIBRARY, HFS, PDS, or blank)  *
                                       (YY/MM/DD, YYYY/MM/DD
  Expiration date . . .                 YY.DDD, YYYY.DDD in Julian form
```

Figure 74: **A(llocate)** New Data Set panel

C (Catalog)

To catalog a data set, type the single letter 'C' in the command area to the left of the data set. You must specify the VOLSER where the data set resides to catalog a data set.

X (Compress)

To compress a data set, type the single letter 'X' in the command area to the left of the data set. No confirmation panel is displayed.

Note: You cannot compress VSAM data sets with this command.

D (Delete)

To delete an entire data set from disk, type the single letter 'D' in the command area to the left of the data set. A confirmation panel is displayed before the data set is deleted. Once the data set is deleted, there is no way to undelete the data set.

Note: You cannot delete VSAM data sets with this command.

I (Information)

To display data set information, type the single letter 'I' in the command area to the left of the data set. A panel showing the attributes of the data set is displayed.

Note: You cannot display information on VSAM data sets with this command.

The following panel is presented as a result of using the **I (Information)** utilities command in MAX/PDF.

```
Data Set Information
 Command ===>

 Data Set Name  . . . : MXS.TEST.PDS2

 General Data                          Current Allocation
  Volume serial . . . : MAX004          Allocated cylinders : 1
  Device type . . . . : 3380            Allocated extents . : 1
  Organization  . . . : PO              Maximum dir. blocks : 25
  Record format . . . : FB
  Record length . . . : 80
  Block size  . . . . : 3120           Current Utilization
  1st extent cylinders: 1               Used cylinders  . . : 1
  Secondary cylinders : 0               Used extents  . . . : 1
                                        Used dir. blocks  . : 1
  Creation date . . . : 2000/10/11      Number of members . : 0
  Referenced date . . : 2000/11/02
  Expiration date . . : ***None***
```

Figure 75: **I(nformation)** Utilities Command panel

R (Rename)

To rename an entire data set, type the single letter 'R' in the command area to the left of the data set. A panel is displayed requesting the new name for the data set.

Note: You cannot rename VSAM data sets with this command.

U (Uncatalog)

To uncatalog a data set, type the single letter 'U' in the command area to the left of the data set. No confirmation panel is displayed. Once the data set is uncataloged, the only information remaining in the system about it will be in the VTOC of the VOLSER where it resides, if it exists.

Note: You cannot uncatalog VSAM data sets with this command.

APPENDIX A: COPYBOOK SUPPORT

COBOL Copybook Support

COBOL copybooks are supported as follows:

- Field names to 40 bytes in length.
- REDEFINES up to 10 levels.
- OCCURS up to 9999 occurrences.
- USAGE types of `BINARY`, `COMPUTATIONAL`, `COMPUTATIONAL-1`, `COMPUTATIONAL-2`, `COMPUTATIONAL-3`, `COMPUTATIONAL-4`, `COMP`, `COMP-1`, `COMP-2`, `COMP-3`, `COMP-4`, `DISPLAY`, `PACKED-DECIMAL`.
- PIC clause characters supported:
  `B 0 / , . + - CR DB Z * $ 9 A X S V P`
  Duplicate field names supported as FILLER
- Support for copybooks containing multiple 01 levels. See "*LF (LOCATEF)*" on page 40 and "*LF (LOCATE)*" on page 55.
- Support for **COPY** statements within copybook.

PL/I Copybook Support

PL/I copybooks are supported as follows:

- Field names up to 31 characters.
- Multi dimensional arrays with up to 999 occurrences.
- Data types as follows:

`BITS`	`BIN`	`BINARY FIXED`	`BIN FLOAT`
`CHAR`	`DEC`	`DEC FIXED`	`FIXED`
`FIXED DEC`	`DEC FLOAT`	`FIXED BINARY`	`FLOAT*`
`FLOAT BIN*`	`FLOAT DEC*`	`PICTURE`	

*** Note:** These are displayed in hexadecimal data format.

APPENDIX B: DFSRRC00 PROCESSING EXIT

Overview

A TSO command procedure name may be specified to perform exit processing before/after DFSRRC00 is executed online to edit/browse a database. The exit is also given control before a batch job is submitted to Update/Unload/Load/Compare database segments using DFSRRC00. For example, some of the following might be done:

Inspect and modify the DFSRRC00 PARM string before online or submit to batch.

Enter and allocate database files for DLI BATCH processing before DFSRRC00 runs online.

Enter and generate JCL statements for inclusion into a Job that is to be submitted to batch for loading or unloading a database.

Allocate log and other standard files before DFSRRC00 runs online.

Submit a job after DFSRRC00 has run online if the database was changed. This could serve to accumulate log files into archive storage.

Additional security monitoring and/or enforcement.

Sample Exit: MAXIX001

A sample exit program has been included in the MAX IMS/UTIL EXECS library to demonstrate these possibilities. This fully functional REXX exit program can be run by entering its name in the DFSRRC00 processing exit profile parameter and then selecting a database for edit, browse, unload, load, or compare.

Indicators in the program that can be changed to turn features off/on are as follows:

`MXIPARMS` Inspect and modify DFSRRC00 parm string before submit and online execution.

`MXIDLIDB` Enter and allocate database files before DFSRRC00 runs online or is submitted in DLI mode.

`MXIDLIFI` Allocate log and other standard files before DFSRRC00 runs online in DLI mode.

`MXIBMPFI` Allocate other standard files before DFSRRC00 runs online in BMP mode.

`MXICOPLG` If database was changed, submit a job after DFSRRC00 has run online to copy the MAX IMS/UTIL log data set to another file for archive purposes.
Log Disposition = K is validated to ensure only a single log file is used during the edit session.

The REXX exit may be run interpretively out of the EXECS library or compiled into a load module using an available REXX compiler.

The following exit program parameters are available to the exit program for inspection and selective modifications.

Upon entry: 'MAXIXTBL' contains the name of an ISPF table that may be accessed to retrieve the following variables:

Variable	Type	Length	Description
MAXIXNAM	I	8	Name of this exit module.
MAXIXREQ	I	1	Type of exit request. • B = before DFSRRC00 • A = after DFSRRC00 • S = submit DRSRRC00 (prior to)
MAXIXOPT	I	1	Main menu option selected. • B=browse • E=edit • U=unload • L=load • A=compare • C=update/search/count
MAXIXIMS	I	17	IMSID (subsystem name).
MAXIXPSB	I	8	PSB name.
MAXIXPCB	I	17	PCB/DBD name.
MAXIXDBD	I	8	DBD name.
MAXIXIDX	I	8	PROCSEQ index name.
MAXIXRUN	I	4	IMS run mode. • BMP – Batch Message Processing • DLI – Offline batch
MAXIXPRM	I/O	-	DFSRRC00 parameter string containing data beginning after the PSB name. e.g. 7,0000,,1,,N,,T,<IMSID>, etc. Upon return, a modified string will be passed on to DFSRRC00.
MAXIXUSR	I/O	-	User data may be stored and retrieved across all entries/exits to this module.
MAXIXUDD	I/O	-	User DDnames may be stored and retrieved across all entries/exits to this module.
MAXIXDBU	I	1	Database update indicator. Identifies if database was updated during DFSRRC00 processing. • Y = database updated • N = database not updated

Variable	Type	Length	Description
MAXIXDBP	I	46	DBD library data set name – optional (from profile).
MAXIXDBL	I	46	DBD library data set name – required (from profile).
MAXIXPSP	I	46	PSB library data set name – optional (from profile).
MAXIXPSL	I	46	PSB library data set name – required (from profile).
MAXIXDFV	I	46	DFSVSAMP data set name (from profile).
MAXIXAGN	I	8	Application group name (from profile).
MAXIXFTS	I/O	8	File tailoring skeleton to be submitted (submit requests only).
MAXIXJCL	I	8	Table name containing JCL statements to be included in the file tailoring skeleton to be submitted. Statements may be added to this table (submit request only).
MAXIXLDS	- I/O I	44	Log data set name (null=no log in profile). (B)efore req. - log data set name prefix defaults to 'zprefix.MAX.IMSUTIL.' (modifiable). (A)fter req. - log data set name (last) defaults to 'zprefix.MAX.IMSUTIL.LOGnnn' (not modifiable).
MAXIXLGD	1	2	Log data set disposition (P,PD,D,K,KN) (Disp=K produces 1 log/edit session)

Upon return: parameters labeled as I/O above can be modified in the table.

RC=0 **no error**
RC<>0 **error**

Upon return from the B(efore) or S(ubmit) requests, DFSRRC00 is not initiated. A message is displayed if none is displayed by this module.

APPENDIX C: PSB IDENTIFICATION EXIT

Overview:

A TSO command procedure name may be specified to perform exit processing whenever a PSB name, IMSID, or RUN MODE is entered to edit/browse, update, load, unload, or compare database segments. The exit receives control before the PSB name is validated to exist so that pre-validation and/or substitution may be performed. For example, some of the following might be done:

Inspect and modify the PSB name before online or submit to batch.

Inspect and modify the IMSID or RUN MODE before online or submit to batch.

Additional security monitoring and / or enforcement.

Sample Exit: MAXIY001

A sample exit program has been included in the MAX IMS/UTIL EXECS library to demonstrate these possibilities. This fully functional REXX exit program can be run by entering its name in the PSB processing exit profile parameter and then selecting a database for edit, browse, unload, or load.

The REXX exit may be run interpretively out of the EXECS library or compiled into a load module using an available REXX compiler.

The following exit program parameters are available to the exit program for inspection and selective modifications:

Upon entry: 'MAXIYTBL' contains the name of an ISPF table that may be accessed to retrieve the following variables:

Variable	Type	Length	Description
MAXIYNAM	I	8	Name of this exit module.
MAXIYOPT	I	1	Main menu option selected. • B=browse • E=edit • U=unload • L=load • A=compare • C=update/search/count
MAXIYIMS	I/O	12	IMSID.
MAXIYPSB	I/O	8	PSB name.
MAXIYRUN	I/O	4	IMS run mode. • BMP – Batch Message Processing • DLI – Offline batch
MAXIYUSR	I/O	-	User data may be stored and retrieved across all entries/exits to this module.

Upon return: parameters labeled as I/O above can be modified in the table.

RC=0 **no error**
RC<>0 **error**

Upon return a message is displayed if none is displayed by this module.

INDEX

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

X