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MVS/ESA
Interactive Storage Management Facility
User's Guide

Version 3 Release 1

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Version 3 Release 1

Second Edition (June 1989)

This edition replaces and makes obsolete the previous edition, SC26-4508-0.

This edition applies to Version 3 Release 1 of MVS/DFP™, Program Number 5665-XA3, and to any subsequent releases until otherwise indicated in new editions or technical newsletters.

The changes for this edition are summarized under "Summary of Changes" following the table of contents. Specific changes are indicated by a vertical bar to the left of the change. A vertical bar to the left of a figure caption indicates that the figure has changed. Editorial changes that have no technical significance are not noted.

Changes are made periodically to this publication; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, 4300, and 9370 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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MVS/DFP™

MVS/ESA™

Contents

Summary of Changes

Second Edition, June 1989

Service Changes

Minor technical and editorial changes have been made.

Preface

About This Book

This book is intended to help the end user manage data sets and storage using the Interactive Storage Management Facility (ISMF). It contains information on the different types of ISMF panels and provides information on how to use them. The information in this book must not be used for programming purposes.

As a general introduction to ISMF, this book is meant to be used in conjunction with the ISMF help panels. The help panels provide reference information about specific commands and fields on ISMF panels; help panels supplement the material presented in this manual.

Storage administrators should refer to the *MVS/ESA Storage Administration Reference* for information dealing with storage administration tasks.

Required Product Knowledge

To use this book efficiently, you should already be familiar with data and storage management concepts and the functions provided by the data facility family of products, Resource Access Control Facility (RACF), and Interactive System Productivity Facility/Program Development Facility (ISPF/PDF).

Related Publications

Within the text, references are made to some of the publications listed below. Others are publications that may be useful.

Short Title	Publication Title	Order Number
Access Method Services Reference	*MVS/ESA Integrated Catalog Administration: Access Method Services Reference*	SC26-4500
DFDSS: User's Guide	*Data Facility Data Set Services: User's Guide*	SC26-4388
DFHSM: User's Guide	*Data Facility Hierarchical Storage Manager: Version 2 Release 4 User's Guide*	SH35-0093
Device Support Facilities User's Guide and Reference	*Device Support Facilities User's Guide and Reference*	GC35-0033
DFSORT Installation and Customization	*DFSORT Installation and Customization*	SC33-4034
ISPF: Dialog Management	*Interactive System Productivity Facility: Dialog Management Services*	SC34-2137

Short Title	Publication Title	Order Number
ISPF/PDF: Program Reference	*Interactive System Productivity Facility/Program Development Facility: Program Reference*	SC34-2089
ISPF/PDF Version 2 Release 3 MVS Guide	*Interactive System Productivity Facility/Program Development Facility Version 2 Release 3 Guide MVS*	SC34-4118
DFP: General Information	*MVS/ESA Data Facility Product Version 3: General Information*	GC26-4507
DFP: Customization	*MVS/ESA Data Facility Product Version 3: Customization*	SC26-4504
DFP: Diagnosis Guide	*MVS/ESA Data Facility Product Version 3: Diagnosis Guide*	LY27-9550
JCL Reference	*MVS/ESA JCL Reference*	GC28-1829
Storage Administration Reference	*MVS/ESA Storage Administration Reference*	SC26-4514
MVS SML: Configuring Storage Subsystems	*MVS Storage Management Library: Configuring Storage Subsystems*	SC26-4409
MVS SML: Leading an Effective Storage Administration Group	*MVS Storage Management Library: Leading an Effective Storage Administration Group*	SC26-4405
MVS SML: Managing Data Sets	*MVS Storage Management Library: Managing Data Sets*	SC26-4408
MVS SML: Managing Storage Pools	*MVS Storage Management Library: Managing Storage Pools*	SC26-4407
MVS SML: Storage Management Reader's Guide	*MVS Storage Management Library: Storage Management Reader's Guide*	GC26-4403
MVS SML: Storage Management Subsystem Migration Planning Guide	*MVS Storage Management Library: Storage Management Subsystem Migration Planning Guide*	SC26-4406
System—Data Administration	*MVS/ESA System—Data Administration*	SC26-4515
VSAM Administration Guide	*MVS/ESA VSAM Administration Guide*	SC26-4518
OS/VS2 TSO Command Language Reference	*OS/VS2 TSO Command Language Reference*	GC28-0646
RACF Security Administrator's Guide	*Resource Access Control Facility (RACF) Security Administrator's Guide*	SC28-1340
TSO/E Version 2 Command Reference	*TSO/E Version 2 Command Reference*	SC28-1881

Chapter 1. Introduction

The Interactive Storage Management Facility (ISMF) will help you analyze and manage data and storage interactively. This important data and storage management tool gives you interaction with the entire data facility family of products supported by MVS/DFP™ and RACF.

ISMF is designed to use the space management and backup/recovery functions provided by the following products:

- The Data Facility Hierarchical Storage Manager (DFHSM)
- The Data Facility Data Set Services (DFDSS).

The following products provide additional functions for ISMF:

- The Interactive System Productivity Facility/Program Development Facility (ISPF/PDF) provides the edit and browse functions
- The Data Facility SORT (DFSORT) provides the record-level functions
- The Resource Authorization Control Facility (RACF) provides the security functions
- The Device Support Facilities (ICKDSF) provides the volume initialization, volume reformatting, volume inspection, and volume analysis functions. (These functions are available to storage administrators. See "ISMF Is a Tool for Storage Administrators" on page 2 for more information.)

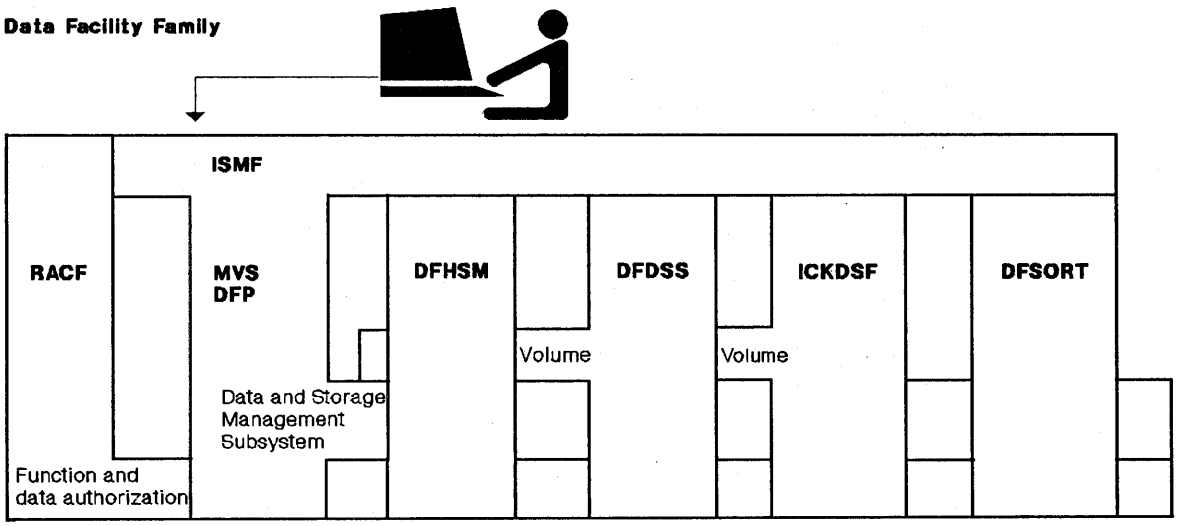


Figure 1. Storage Management Product Relationship. ISMF provides access to the functions of the data facility family of products. DFP supports the data facility products with data access, catalog services, and the Storage Management Subsystem. RACF supports DFP, DFHSM, DFDSS, ICKDSF and DFSORT with function and data authorization.

MVS/DFP is a trademark of the International Business Machines Corporation.

ISMF Is a Tool for End Users

As a user performing data management tasks, you can use ISMF to:

- Recover unused space from data sets or DASD volumes
- Migrate less active data sets or DASD volumes to another migration level
- Recall data sets, DASD volumes, or tapes that have been migrated
- Copy data sets or DASD volumes to another device
- Back up and recover data sets or DASD volumes
- Delete data sets
- Edit, browse, and sort data set records
- List and display storage and management classes
- Protect data sets by controlling their security level.

Using the panels in an ISMF application, you can construct a list of the allocation parameters for specific data sets or volumes. You can also list Data, Storage, and Management Classes to find out how data sets are being managed.

You will complete entry panels to determine the data sets that will appear in the data set list or the volumes that will appear in the volume list. ISMF builds a list based on your selection criteria. Once the list has been built, you can use ISMF entry panels to perform space management or backup and recovery tasks against the entries in the list. Because it is formatted to provide a variety of information in one place, the list can be a valuable management tool. For example, you could use the data set list to determine the amount of unused space in specific data sets, the organization of the data sets, or the date the data set was last changed or referenced. You could then use ISMF to release unused space or to delete data sets no longer needed.

ISMF Is a Tool for Storage Administrators

Where end users use ISMF primarily to manage their own data, storage administrators view a more comprehensive set of ISMF panels to perform broader storage management tasks. Storage administrators will help centralize storage management by setting up Data, Storage, and Management Classes that will simplify both the creation and management of data.

All of the ISMF functions that are available to end users are also available to storage administrators. In addition, storage administrators can perform the following tasks:

- Analyze volumes to distinguish errors that are caused by drive problems and errors caused by media problems
- Change volume labels
- Generate authorization codes
- Initialize volumes
- Inspect volumes to determine if there are defective tracks
- Modify the performance, availability, and resource characteristics of the storage control units associated with specific DASD volumes.

For more information about the role of storage administrators and how they use ISMF, refer to the *MVS/ESA Storage Administration Reference*.

Other Products You Need to Use ISMF

ISMF is an Interactive System Productivity Facility (ISPF) application. To use it you must have ISPF installed on your system. To make full use of ISMF, you will need:

- Interactive System Productivity Facility/Program Development Facility (ISPF/PDF)
- TSO/Extensions (TSO/E)
- Data Facility Hierarchical Storage Manager (DFHSM)
- Data Facility Data Set Services (DFDSS)
- Data Facility Sort (DFSORT)
- Device Support Facility (ICKDSF)
- Resource Access Control Facility (RACF)

Note: Although this guide explains how to use DFDSS, DFHSM, ICKDSF, DFSORT, and RACF through ISMF, the references to these IBM program products are not intended to imply that only these products can be used with ISMF. ISMF can be customized to invoke any functionally equivalent program. For information on the level of each product that is required, see the *MVS/ESA Data Facility Product Version 3: General Information*.

Chapter 2. Getting Started with ISMF

How you invoke ISMF depends on your installation. You begin by logging on to TSO.

If ISMF is installed as an option on the ISPF Master Application Menu, or as an option on the ISPF/PDF Primary Option Menu, specify the selection option (letter or number) that corresponds to ISMF. The ISMF Primary Option Menu will appear, and you can begin an ISMF session. Figure 2 shows the ISPF/PDF Primary Option Menu; to select ISMF you enter **9** following the arrow on the command line.

```
----------------------  ISPF/PDF PRIMARY OPTION MENU  -----------------------
OPTION  ===> 9
                                                          USERID   - K665941
   0  ISPF PARMS  - Specify terminal and user parameters   TIME     - 07:30
   1  BROWSE      - Display source data or output listings TERMINAL - 3279
   2  EDIT        - Create or change source data           PF KEYS  - 12
   3  UTILITIES   - Perform utility function
   4  FOREGROUND  - Invoke language processors in foreground
   5  BATCH       - Submit job for language processing
   6  COMMAND     - Enter TSO command or CLIST
   7  DIALOG TEST - Perform dialog testing
   8  LM UTILITIES- Perform library management utility functions
   9  ISMF        - Invoke interactive storage management facility
   E  SMP/E       - SMP/E Dialogs
   H  DFHSM       - DFHSM space maintenance
   I  IPCS        - IPCS problem analysis services
   C  CHANGES     - Display summary of changes for this release
   T  TUTORIAL    - Display information about ISPF/PDF
   X  EXIT        - Terminate ISPF using log and list defaults



Enter END command to terminate ISPF.
```

Figure 2. Starting an ISMF Session from the ISPF/PDF Primary Option Menu

To invoke ISMF directly from TSO, use this command:

```
ISPSTART PGM(DGTFMD01) NEWAPPL(DGT )
```

The ISMF Primary Option Menu will appear, and you can begin an ISMF session.

Selecting an Option from the ISMF Primary Option Menu

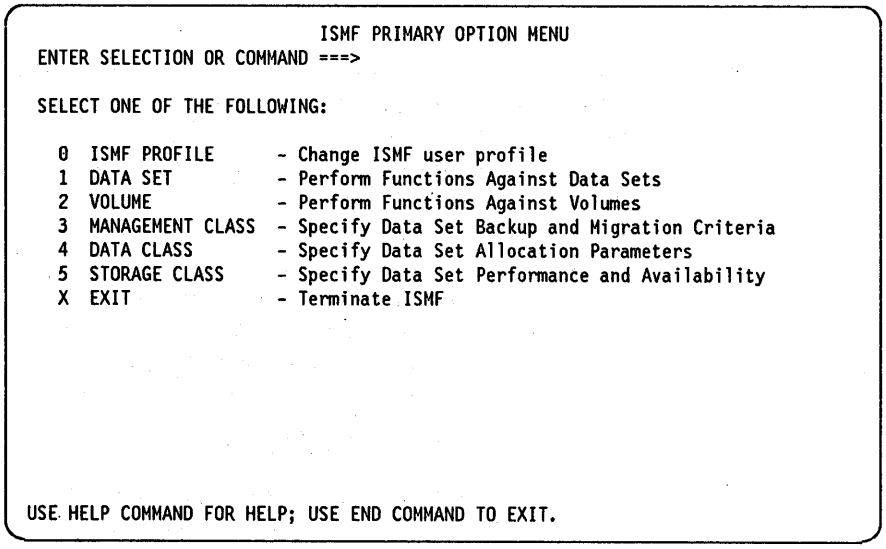


Figure 3. ISMF Primary Option Menu

Note: The Primary Option Menu example assumes all Data Facility family products have been installed at current release levels. For information about adding the DFSORT option to your Primary Option Menu, refer to the *DFSORT Installation and Customization* manual (SC33-4034).

The options you can choose from the Primary Option Menu are:

0—ISMF PROFILE

When you select this option, the ISMF Profile Option Menu is displayed. The Profile Option Menu allows you to display and change variables that control the way ISMF runs during your session. By changing the variables in your user profile you can control the logging of ISMF errors in the ISPF log data set and the way ISMF recovers from abends. You can also define JOB statements and DFDSS execute statements in your profile for ISMF to use in processing your jobs. "Setting Up Background Job Information" on page 116 explains how to use this option to set up JOB statements and execute statements for submitting background jobs. "Controlling Logging and Recovery from Abends" on page 112 explains how to use this option to control logging and recovery from abends.

1—DATA SET

With the data set application, you can construct a list of data sets. Using the list you can perform tasks against an individual data set or a group of data sets. You can use **line operators** to perform tasks against individual data sets and **list commands** to perform tasks against a group of data sets. The tasks you can perform include editing, browsing, recovering unused space, copying, migrating, deleting, backing up, and restoring data sets, and saving a copy of a data set list. You can also use TSO commands and user defined CLISTs as line operators or list commands. When you select this option, the Data Set Selection Entry Panel is displayed. Chapter 3, "Building a Data Set or Volume List" on page 23, Chapter 4, "Using the

Data Set or Volume List" on page 47, and Chapter 5, "Choosing Line Operators and List Commands" on page 79 explain when to select the Data Set option and the specific tasks you can perform using the Data Set Application.

2—VOLUME

With this application you can construct a list of volumes. With the list you can use **line operators** to perform tasks against an individual volume and **list commands** to perform tasks against a group of volumes. The tasks you can perform include consolidating or recovering unused space, copying, backing up, and restoring volumes. You can also use TSO commands and user defined CLISTs as line operators or list commands. You can save a copy of the volume list and reuse the saved list. When you select this option, the Volume Selection Entry Panel is displayed. Chapter 3, "Building a Data Set or Volume List" on page 23 and Chapter 4, "Using the Data Set or Volume List" on page 47 explain when to select the Volume option and the specific tasks you can perform using the Volume Application.

3, 4, and 5—MANAGEMENT, DATA, and STORAGE CLASSES

With these applications you can display the attributes associated with an individual class or construct a list of storage management classes. You can use a limited set of **line operators** and **list commands** to locate the information you need or to tailor the list itself. When you select any of these applications, an Application Selection Panel is displayed. Chapter 6, "Using the Storage Management Subsystem (SMS)" on page 95 explains when to select these options and what specific tasks you can perform using these classes.

6—DFSORT

Choose the DFSORT option to invoke the DFSORT product. With DFSORT you can sort, merge and copy data records. By selecting this option you will invoke a DFSORT primary option menu.

X—EXIT

Choose this option when you are finished with your ISMF session. If you invoked ISMF from ISPF, you will return to ISPF. If you used ISPSTART to invoke ISMF from TSO, you will return directly to TSO. You may also exit by using the END command (or its PF key equivalent).

Using ISMF Panels

A panel is a predefined screen of information presented on a display terminal. All ISMF panels are formatted for use by the ISPF Dialog Manager. The standard screen is 24 lines deep and 80 characters wide. Some panels require you to provide information, or to respond to a question. ISMF uses the information you enter to determine the next panel to display, or the specific function you want to perform. You can use either uppercase or lowercase characters for the entries you make.

The following keys and commands control panel flow on all types of ISMF panels:

ENTER key—takes you to the next sequential panel, verifies the fields on the panel, and then performs the operation you specified.

END command—takes you back to the previous panel in logical sequence. If you are using HELP, the END command will take you back to the panel from which you invoked HELP. If you are looking at a data set or volume list, END will take you back to the list selection panel. When you use the END command, ISMF cancels the task you are currently performing.

ERTB command—takes you to the Error Table. ISMF passes detailed information to the Error Table when an ISMF error occurs. This information can help you diagnose an error when the ISMF error messages fail to clarify the problem. You must enter the ERTB command as soon as the error occurs. You can enter the ERTB command from any ISMF panel except the ISMF Primary Option Menu, the ISMF Profile Option Menu, and when you are in PDF BROWSE or EDIT. For more information, see Appendix E, "Examples of Entries in the ISMF Error Table and ISPF Log" on page 197.

HELP command—takes you to a help panel. Help panels give you more information about a particular ISMF panel or function. HELP can also give you an explanation of error messages. For a more detailed explanation of how to use HELP, see "Help Panels for ISMF Panels" on page 14.

PROFILE command—takes you to the ISMF Profile Option Menu. From this menu, you can change the characteristics of your user profile. The PROFILE command can be entered from any ISMF panel except the Logging and Abend Control Entry Panels and the Profile Panels themselves.

RETURN command—takes you back to the ISMF Primary Option Menu, or, if you are using HELP, back to the panel from which help was invoked.

The END, RETURN, and HELP commands can be entered explicitly on the command line located at either the top left or bottom left of your screen, depending on the display characteristics specified in your ISPF user parameters. (Option 0, ISPF PARMS, on the ISPF Primary Option Menu, allows you to change the position of the command line.) The descriptions and examples in this book assume that the command line is located at the top left of the screen. END, RETURN, and HELP can also be set up as program function (PF) keys. "Program Function (PF) Key Assignments" on page 20 discusses the default PF key settings and how to change them.

There are six basic types of panels in ISMF:

- Menu panels
- Data entry panels
- List panels
- Display panels
- Confirmation panels
- Online help panels:
  - Help panels for ISMF panels
  - Help panels for error messages

Pages 9 through 20 contain descriptions and examples of each type of panel.

Menu Panel

A menu panel is a display of options that you can choose to invoke applications or functions supported by ISMF. In Figure 4, the Profile Option Menu, you enter the number of the option you want on the command line; ISMF displays the variables stored in your user profile for that option.

```
                          ISMF PROFILE OPTION MENU
ENTER SELECTION OR COMMAND ===>

SELECT ONE OF THE FOLLOWING:

  0  USER MODE
  1  LOGGING AND ABEND CONTROL
  2  ISMF JOB STATEMENT INFORMATION
  3  DFDSS EXECUTE STATEMENT INFORMATION
  4  ICKDSF EXECUTE STATEMENT INFORMATION
  5  DATA SET PRINT EXECUTE STATEMENT INFORMATION
  6  IDCAMS EXECUTE STATEMENT INFORMATION
  X  EXIT, RETURN TO ISMF PRIMARY OPTION MENU









USE ENTER TO SELECT OPTION;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 4. Example of an ISMF Menu Panel

Data Entry Panel

A data entry panel is a display of labeled fields that you fill in to generate a list or to perform storage management tasks. If you completed the information as shown in Figure 5 on page 10, ISMF would compress the data set using 3 as the maximum number of times to retry the compress, with 5 seconds between each retry. It would not serialize with dynamic allocation.

```
                          COMPRESS ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR
 DATA SET:  K665941.PROJA.SOURCE

  TO CONTROL OBTAINING ACCESS TO DATA SET, SPECIFY:
    MAXIMUM NUMBER OF RETRIES           ===> 3        (0 to 99)
    NUMBER OF SECONDS BETWEEN RETRIES   ===> 5        (0 to 255)
    SERIALIZE WITH DYNAMIC ALLOCATION   ===> N        (Y or N)

  FOR PASSWORD PROTECTED DATA SET, SPECIFY:
    DATA SET PASSWORD     ===>









USE ENTER TO PERFORM COMPRESS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 5. Example of an ISMF Data Entry Panel

List Panel

A list panel, as shown in Figure 6 on page 11, is a tabular display of data set names, volume serial numbers, Management Class names, Data Class names, or Storage Class names. List panels also contain status information. For example, the data set list includes the total amount of space allocated on a volume to a selected data set, the amount of space actually used by the data set, and the percentage of allocated space that is not currently used. This information can help you analyze and manage storage resources. Chapter 3, "Building a Data Set or Volume List" on page 23 further explains the format of list panels and how to use them.

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                          Entries 1-14 of 28
ENTER LINE OPERATORS BELOW:                               Data Columns 3-7 of 26

    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------        --(3)--  --(4)-- -(5)-  (6)  -(7)-
               USER230.ISMF.ALIST                   2483     2155     13    6  TRK
               USER230.ISMF.CLIST                   1124      750     33    2  TRK
               USER230.ISMF.DGTLLIB                  468      422      9    6  TRK
               USER230.ISMF.DGTMLIB                   47       47      0    1  TRK
               USER230.ISMF.DGTPLIB                  703      703      0    3  TRK
               USER230.ISMF.DGTSLIB                  141      141      0    2  TRK
               USER230.ISMF.DGTTABL                 1171     1171      0    1  TRK
               USER230.ISMF.DUMP                 -------  -------   ---  ---  ---
               USER230.ISMF.ISPFILE              -------  -------   ---  ---  ---
               USER230.ISMF.ISPPLIB                  234      234      0    1  TRK
               USER230.ISMF.ISPSLIB                   94       94      0    1  TRK
               USER230.ISMF.ISPTABL              -------  -------   ---  ---  ---
               USER230.ISMF.JCL                      281      281      0    2  TRK
               USER230.ISMF.JCLIN                -------  -------   ---  ---  ---

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 6. Example of an ISMF List Panel

Display Panel

A display panel displays the attributes of a Data, Management, or Storage Class. You can display any storage management class in the Active Control Data Set or Source Control Data Sets. Chapter 6, "Using the Storage Management Subsystem (SMS)" on page 95 provides more information about the storage management classes.

```
                          MANAGEMENT CLASS DISPLAY                Page 1 of 3
COMMAND ===>

CDS NAME:                CDS.LEOM
MANAGEMENT CLASS NAME:   MCHIGH

DESCRIPTION:


EXPIRATION ATTRIBUTES
  EXPIRE AFTER DAYS NON-USAGE: NOLIMIT
  EXPIRE AFTER DATE/DAYS:      NOLIMIT
  RETENTION LIMIT:             NOLIMIT









USE DOWN COMMAND TO VIEW NEXT PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 7. Example of an ISMF Display Panel

Confirmation Panel

A confirmation panel is a warning displayed before beginning some ISMF operations, usually for a DELETE. The confirmation panel allows you to verify that you really want ISMF to perform the specified operation. It is a last chance for you to make sure that ISMF is doing what you want. Press the ENTER key to continue or use the END command to cancel the operation.

```
                          DELETE CONFIRMATION PANEL
COMMAND ===>


********************************************************************************
********************************************************************************
********************************************************************************
********************************************************************************
*******                                                                 ********
*******    CONFIRM DELETE OF                                            ********
*******     DATA SET: USER230.ISMF.JCLIN                                ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
********************************************************************************
********************************************************************************
********************************************************************************
********************************************************************************


USE ENTER TO PERFORM DELETE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO CANCEL DELETE.
```

Figure 8. Example of an ISMF Confirmation Panel

Online Help Panels

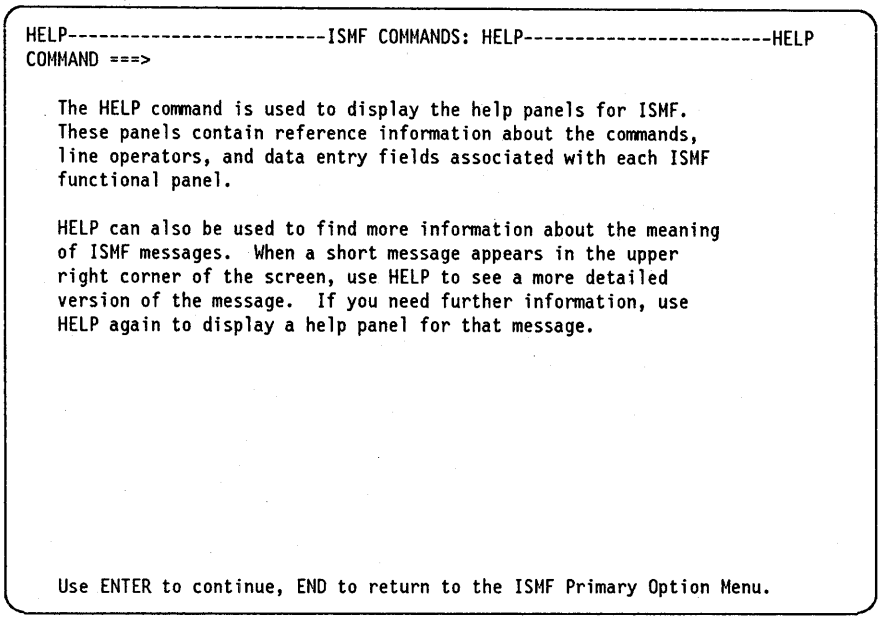


Figure 9. Example of an ISMF Help Panel

There are two types of ISMF help panels:

The help panels for ISMF panels give easy access to reference material about the commands, line operators, data entry fields, and how to complete the panels.

The help panels for error messages explain the error messages and informational messages associated with each ISMF panel.

The following keys and commands control panel flow on the help panels. They are the same as the keys and commands ISPF uses for navigation in HELP. You can abbreviate these commands as long as you include enough letters to distinguish the command from others.

ENTER key—takes you to the next sequential help panel associated with a particular panel.

END command—takes you to the ISMF panel that you were on when you originally asked for help.

RETURN command—takes you to the ISMF panel that you were on when you originally asked for help.

UP command—takes you to the help selection list that includes your topic as one of its choices. From here you can select another related topic.

BACK command—takes you to the help panel you looked at last.

SKIP command—takes you to the help panel for the next related topic. In some cases, entering the skip command is the same as pressing ENTER.

INDEX command—takes you to the index for the ISMF help panels. (Within the ISMF help index, you can use the ENTER key to continue with the index

or the END command to return to the data entry panel.) "Help Panel Index" on page 19 describes how to use the help panel index.

You can get online information about these commands by using the HELP command within HELP.

Help Panels for ISMF Panels

ISMF help panels offer immediate online overview information, reference information, and instruction to help you interpret and complete the ISMF panels. ISMF help is similar to ISPF help. Any time an ISMF panel is displayed, you can invoke help for that particular panel by entering **HELP** on the command line, or by pressing the associated PF key.

The figures on pages 14 and 15 show the reference available for page 1 of the Data Set Selection Entry Panel. When you use the HELP command or the associated PF key on this panel, ISMF takes you to a panel which gives you an overview of how the Data Set Selection Entry Panel works and lists topics you can choose for information about specific entry fields. If you enter option 3 on the help panel, which corresponds to Data Set Name, ISMF takes you to another help panel for that particular field. From here you can use either the RETURN or END command to take you back to the Data Set Selection Entry Panel, or you can use the UP command, which will take you back to the help menu so you can choose another topic.

```
                        DATA SET SELECTION ENTRY PANEL          Page 1 of 3
COMMAND ===> HELP

TO GENERATE A DATA SET LIST, SPECIFY:

  DATA SET NAME   ===>
                                                  (fully or partially qualified)
  SELECT SOURCE OF GENERATED LIST  ===>           (1-VTOC, 2-Catalog)

    1  GENERATE LIST FROM VTOC
         VOLUME SERIAL NUMBER  ===>               (fully or partially specified)

    2  GENERATE LIST FROM CATALOG
         CATALOG NAME  ===>
           CATALOG PASSWORD    ===>              (if password protected)
         VOLUME SERIAL NUMBER  ===>              (fully or partially specified)
         ACQUIRE DATA FROM VOLUME      ===>      (Y or N)
         ACQUIRE DATA IF DFHSM MIGRATED  ===>    (Y or N)



USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 10. Example of Invoking Help

```
HELP--------------DATA SET SELECTION FIELD DESCRIPTIONS----------------HELP
COMMAND ===> 1

  ISMF uses the information you specify on the Data Set Selection Entry
  Panels to select the data sets to be included in the Data Set List.

  You may see descriptions of the following fields in sequence or choose
  them by number.

                0  Overview
                1  DATA SET NAME
                2  SELECT SOURCE OF GENERATED LIST: VTOC
                3  VOLUME SERIAL NUMBER
                4  SELECT SOURCE OF GENERATED LIST: CATALOG
                5  CATALOG-GENERATED LIST FIELD DEFAULTS
                6  CATALOG NAME
                7  CATALOG PASSWORD
                8  VOLUME SERIAL NUMBER
                9  ACQUIRE DATA FROM VOLUME
               10  ACQUIRE DATA IF DFHSM MIGRATED


Use ENTER to continue, END to return to the Data Set Selection Entry Panel.
```

Figure 11. Example of Help Menu

```
HELP-----------------DATA SET SELECTION: DATA SET NAME-----------------HELP
COMMAND ===>

   To select entries for the data set list, you must specify a value in the
   DATA SET NAME field.  If you do not enter single quotation marks around
   the value, ISMF will prefix the data set name with 'USERID'.  The DATA
   SET NAME value may be:

     - A fully qualified data set name, up to 46 characters including
       delimiters (periods) and quotation marks.

     - A partially qualified name using one asterisk (*) as a place holder
       for a qualifier or for characters within a qualifier; or a double
       asterisk (**) as a place holder for zero or more qualifiers.

   For example, the following values might be used for DATA SET NAME:

       'SYS1.PARMLIB'
       'SYS1.*'              Note:  If you have PREFIX turned off in your
       MEMO.*LIB                    TSO profile and are using asterisk
       **.CLIST                     notation for a data set name, you must
       *                            specify a catalog name.

Use ENTER to continue, END to return to the Data Set Selection Entry Panel.
```

Figure 12. Example of Help for a Specific Field

Help Panels for Messages

ISMF also provides help for the ISMF messages displayed on your screen. Whenever ISMF detects an error, you will see a short error message in the upper right corner of your screen. If you want clarification, use the HELP command. ISMF will display a long error message that further describes the problem. The long error message is displayed just below the command line (if you have the command line set to the bottom of the screen in your ISPF user

profile, the long message appears just above the command line). If you invoke HELP again, ISMF displays a message help panel that contains both the short and long messages and offers suggestions on how to correct the problem. The figures on pages 16 and 17 illustrate this sequence.

For example, if you made an error when you typed in the command RESTORED DATASET, the short message in Figure 13 would indicate that ISMF did not recognize the command.

```
                              DATA SET LIST                    INVALID COMMAND
COMMAND ===> RESTORED DATASET                                  SCROLL ===> HALF
                                                             Entries 1-14 of 28
ENTER LINE OPERATORS BELOW:                                  Data Columns 3-7 of 26

     LINE                                        ALLOC    ALLOC   % NOT  NUM  ALLOC
     OPERATOR          DATA SET NAME             SPACE    USED    USED   EXT  UNIT
    ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
    ?RESTORED   USER230.ISMF.ALIST             2483     2155     13     6   TRK
                USER230.ISMF.CLIST             1124      750     33     2   TRK
                USER230.ISMF.DGTLLIB            468      422      9     6   TRK
                USER230.ISMF.DGTMLIB             47       47      0     1   TRK
                USER230.ISMF.DGTPLIB            703      703      0     3   TRK
                USER230.ISMF.DGTSLIB            141      141      0     2   TRK
                USER230.ISMF.DGTTABL           1171     1171      0     1   TRK
                USER230.ISMF.DUMP           -------  -------    ---   ---  ---
                USER230.ISMF.ISPFILE        -------  -------    ---   ---  ---
                USER230.ISMF.ISPPLIB            234      234      0     1   TRK
                USER230.ISMF.ISPSLIB             94       94      0     1   TRK
                USER230.ISMF.ISPTABL        -------  -------    ---   ---  ---
                USER230.ISMF.JCL                281      281      0     2   TRK
                USER230.ISMF.JCLIN          -------  -------    ---   ---  ---

 USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 13. Example of a Short Error Message

If you used the HELP command, ISMF would display the long message in Figure 14 on page 17. The long message gives a further explanation of the error, suggesting that you check your spelling.

```
                              DATA SET LIST                          INVALID COMMAND
COMMAND ===> RESTORED DATASET                                        SCROLL ===> HALF
COMMAND 'RESTORED' NOT FOUND OR CONTAINS INVALID SYNTAX.
ENTER LINE OPERATORS BELOW:                                  Data Columns 3-7 of 26

     LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
     OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
    ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
    ?RESTORED   USER230.ISMF.ALIST             2483     2155     13     6   TRK
                USER230.ISMF.CLIST             1124      750     33     2   TRK
                USER230.ISMF.DGTLLIB            468      422      9     6   TRK
                USER230.ISMF.DGTMLIB             47       47      0     1   TRK
                USER230.ISMF.DGTPLIB            703      703      0     3   TRK
                USER230.ISMF.DGTSLIB            141      141      0     2   TRK
                USER230.ISMF.DGTTABL           1171     1171      0     1   TRK
                USER230.ISMF.DUMP             -------  -------   ---   ---  ---
                USER230.ISMF.ISPFILE          -------  -------   ---   ---  ---
                USER230.ISMF.ISPPLIB            234      234      0     1   TRK
                USER230.ISMF.ISPSLIB             94       94      0     1   TRK
                USER230.ISMF.ISPTABL          -------  -------   ---   ---  ---
                USER230.ISMF.JCL                281      281      0     2   TRK
                USER230.ISMF.JCLIN            -------  -------   ---   ---  ---

 USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 14. Example of a Long Error Message

If you invoke help again, ISMF will display the message help panel, Figure 15, which tells you how to proceed. Some message help panels are linked back t the help panels for ISMF panels. If a message help panel is linked, the bottom directional line will tell you to use ENTER if you want to view the next ISMF hel panel.

```
HELP-----------------------------ISMF MESSAGE-----------------------------HELP
COMMAND ===>

   MESSAGE NUMBER:  DGTCT001

   SHORT MESSAGE:   COMMAND NOT RECOGNIZED

   LONG MESSAGE:    RESTORED IS NOT RECOGNIZED AS AN ISMF COMMAND,
                    CHECK YOUR SPELLING

   EXPLANATION:
     ISMF did not execute the command you requested.
     You may not have used the correct spelling or abbreviation.
     The commands which ISMF recognizes are kept in a series of
     application command tables; the command you tried was not
     found there.

   SUGGESTED ACTION:
     Use the correct spelling or abbreviation.  If you are sure
     of the spelling or abbreviation and the command will still not
     execute, contact your system programmer or IBM for assistance.


   Use ENTER to continue with ISMF HELP, Use END to return to ISMF.
```

Figure 15. Example of a Message Help Panel

Note: Because ISMF is an ISPF application, ISMF also displays ISPF error messages. In this case, there will always be a short error message and an

associated long error message, but there will only be a message help panel if ISPF provides one.

MESSAGE Line Operator

When you are working with list panels, you can use the **MESSAGE** line operator to view messages. Line operators are commands that are entered in the line operator field of a list panel. Line operators perform functions on individual entries in the list. For a more detailed discussion of line operators, see "Line Operators" on page 65.

The MESSAGE line operator allows you to see the ISMF messages for the last operation performed on a particular entry in a list panel. (This operation is not necessarily the last operation performed by ISMF.) MESSAGE is entered in the line operator column on top of the original line operator that has failed. You must include a space after the MESSAGE line operator. You can use MESSAGE on the list panels in any application. Figure 16 on page 18 shows an example of the MESSAGE line operator.

```
                              DATA SET LIST                    INVALID COMMAND
COMMAND ===>                                                   SCROLL ===> HALF

ENTER LINE OPERATORS BELOW:                                Data Columns 3-7 of 26

     LINE                                      ALLOC    ALLOC   % NOT  NUM  ALLOC
     OPERATOR        DATA SET NAME             SPACE    USED    USED   EXT  UNIT
    ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
                USER230.ISMF.ALIST             2483     2155     13    6   TRK
    *COMPRESS   USER230.ISMF.CLIST             1124      750     33    2   TRK
                USER230.ISMF.DGTLLIB            468      422      9    6   TRK
    *COMPRESS   USER230.ISMF.DGTMLIB             47       47      0    1   TRK
                USER230.ISMF.DGTPLIB            703      703      0    3   TRK
    message S   USER230.ISMF.DGTSLIB            141      141      0    2   TRK
                USER230.ISMF.DGTTABL           1171     1171      0    1   TRK
                USER230.ISMF.DUMP           -------  -------    ---  ---  ---
    *COMPRESS   USER230.ISMF.ISPFILE        -------  -------    ---  ---  ---
                USER230.ISMF.ISPPLIB            234      234      0    1   TRK
                USER230.ISMF.ISPSLIB             94       94      0    1   TRK
                USER230.ISMF.ISPTABL        -------  -------    ---  ---  ---
                USER230.ISMF.JCL                281      281      0    2   TRK
                USER230.ISMF.JCLIN          -------  -------    ---  ---  ---

 USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 16. Example of the MESSAGE Line Operator

Figure 16 shows a list panel where the COMPRESS line operator has been entered and processed for four individual data sets. However, the COMPRESS command was misspelled for the third data set that was operated against. The MESSAGE line operator has been entered on top of the original line operator that caused the error. In this case, the messages that appear on the list panel provide information about the last operation that was performed on that data set.

When you specify the MESSAGE line operator and press enter, a short message appears in the upper right corner of the list panel. If you invoke help after the short message is displayed, a longer version of the message appears just below the command line. If you invoke help a second time, ISMF takes you to a help panel similar to the one shown in Figure 15 on page 17. This MESSAGE help panel provides information about the line operator that failed.

The messages that appear can help you diagnose errors that occur when ISMF processes line operators. MESSAGE allows you to get information about a particular operation even if this operation was not the last one that ISMF performed. The information is saved from the last operation performed on the particular list entry that you are interested in.

Help Panel Index

There is an online index for ISMF help panels. You can get to this index from any help panel by using the **INDEX** command. From the index, you can select the topic you are interested in by entering the topic identifier on the command line. Index entries starting with that letter will appear. Select the entry you want by entering the number of the entry on the command line.

```
HELP------------------ISMF HELP INDEX: A (PAGE 1 OF 2)------------------HELP
COMMAND ===> 18

   To select a topic, enter its number in the command line.

     1   abend recovery                11   ACS SOURCE MEMBER
     2   ACCT_JOB variable             12   ACS TEST LIBRARY
     3   ACCT_STEP variable            13   ACS TEST MEMBER
     4   ACDS                          14   ACS TEST options
     5   ACQUIRE DATA FROM VOLUME      15   ACSENVIR variable
     6   ACQUIRE DATA IF DFHSM         16   ACTIVATE command
           MIGRATED                    17   ADD option (CDS)
     7   ACS (output listing           18   ALLOC USED
           disposition)                19   ADMIN OR USER COMMAND BACKUP
     8   ACS ROUTINE TYPE                     (ADM/USER BACKUP)
     9   ACS selections                20   ALLOCATED SPACE (ALLOC SPACE)
    10   ACS SOURCE DATA SET


                      (continued on next page)

  Use ENTER to view the next page, END to return to ISMF.
```

Figure 17. Example of a Page in the Help Panel Index

Figure 17 is one page of the help panel index. If you enter the topic identifier for ALLOC USED as shown, ISMF will display the appropriate help panel (Figure 18). The ENTER key will take you back to the help panel index. Enter the END command on either the index or help panel to return to the functional panel you were using when you invoked help.

```
HELP---------------------DATA COLUMNS: ALLOC USED (4)--------------------HELP
COMMAND ===>

    ALLOC          The value in this data column represents the total amount
    USED           of allocated space (in kilobytes) that is currently being
   --(4)--         used by this data set.
       16
                   Possible values:  0 to 9999999


   The following special characters may appear in this data column:

     <<<<<<<  If the value is less than 1
     >>>>>>>  If the value is greater than 9999999
     -------  If the value is not available
     ???????  If the value cannot be displayed because of an error in the
                 VTOC or catalog









   Use ENTER to continue, END to return to the Data Set List Panel.
```

Figure 18. Displaying a Help Panel from the ISMF Help Panel Index

Program Function (PF) Key Assignments

ISMF supports one set of PF key assignments for the Primary Option Menu, and one for each of the ISMF applications. When you install ISMF, the Primary Option Menu and the ISMF applications have common PF key assignments. Figure 19 shows the initial PF key assignments.

Figure 19. Initial PF Key Assignments

PF1/13 HELP	PF2/14 SPLIT	PF3/15 END
PF4/16 RETURN	PF5/17 NOT ASSIGNED	PF6/18 NOT ASSIGNED
PF7/19 UP	PF8/20 DOWN	PF9/21 SWAP
PF10/22 LEFT	PF11/23 RIGHT	PF12/24 CURSOR

To change the PF key assignments, you can use the **KEYS** command.

When you change a set of key assignments, the new PF key assignments will be in effect for the ISMF Primary Option Menu, or the application you specified, until you choose to alter them again. The KEYS command only affects the application you were using when you entered the command. For example, if you change the PF key assignments for the Data Set Application, the PF key assignments for the Volume Application will remain unchanged.

To change the PF keys for the Primary Option Menu:

1. Log on to TSO and invoke ISMF.
2. Enter the KEYS command on the command line of the ISMF Primary Option Menu.

   ```
   COMMAND ===> KEYS
   ```

   ISMF will display a PF Key Definition Panel with the current PF key settings for the ISMF Primary Option Menu.
3. Change the PF key definitions on the PF Key Definition Panel to accommodate your needs.

To change the PF keys for ISMF Applications:

1. Log on to TSO and invoke ISMF.
2. Specify the option on the ISMF Primary Option Menu that corresponds to the application you want.
3. Once you have invoked the application, enter the KEYS command from the command line of any panel within the application.

   ```
   COMMAND ===> KEYS
   ```

   This will display a PF Key Definition Panel with the current PF key settings for that application.
4. Change the PF key definitions on the PF Key Definition Panel to accommodate your needs.

Displaying PF Key Assignments

The ISPF **PFSHOW** command displays the current PF settings at the bottom of your screen. You can enter the command on any ISPF or ISMF panel. Once you enter PFSHOW, the PF key assignments will be displayed until you exit ISPF, or enter the **PFSHOW OFF** command.

Because the KEYS command is application-specific, the PF keys you see when you enter PFSHOW will vary with the ISMF application you are using. When you are in the Data Set Application you will see the Data Set Application keys. Profile will display the Profile keys. The Primary Option Menu will display the keys you can use on the Primary Option Menu. For more information on customizing PF keys, see the *ISPF Dialog Management Services*.

Chapter 3. Building a Data Set or Volume List

The ISMF data set and volume applications allow you to construct a list of information about specific data sets or DASD volumes. ISMF uses the information you specify on the Data Set Selection Entry Panel or the Volume Selection Entry Panel to create a list. Once the list has been constructed, you can use it to help manage your data and storage.

Data Set List or Volume List?

A **data set list** contains information about the data sets you select. From the data set list you can perform storage management tasks against a single data set or a group of data sets.

A **volume list** contains information about the volumes you select. From the volume list you can perform storage management tasks against one or more volumes.

The type of list you choose to build will depend on what you want to do and your security authorization level. Your answers to the questions below will help you decide which type of list you need to do the job.

1. Do you want to gather information about and perform tasks against data sets or volumes?

   For data sets, use the Data Set Application to build a data set list. For volumes, use the Volume Application to build a volume list.

2. What type of task do you want to do?

   From the **data set list** you can:

   Associate a new Management and/or Storage Class with a data set (must be an SMS-managed data set)
   Back up data sets
   Browse an individual data set or member
   Compress unused space in a partitioned data set
   Condense a data set to reduce the number of extents
   Control the frequency of backup
   Control the number of backup versions kept for a data set
   Copy data sets
   Delete backup versions of data sets
   Delete data sets and their catalog entries
   Dump data sets
   Edit an individual data set or member
   Invoke TSO commands or CLISTs
   Migrate and recall data sets
   Protect a data set
   Recover backup versions of data sets
   Release unused space in data sets
   Restore dumped data sets
   Save a copy of the list
   Sort records within a data set.

From the **DASD volume list** you can:

Compress all unused space from partitioned data sets on a volume
Copy the data sets on a volume to another volume
Dump the data sets from one volume to other media
Invoke TSO commands or CLISTs
Reduce the space fragmentation on a volume
Release allocated but unused space from all the data sets on a volume
Restore data sets to a volume from another medium
Save a copy of the list.

3. Do you have RACF or equivalent authorization to perform the task?

   ISMF allows each installation to define access authorization for the ISMF applications, line operators, and commands. Your organization may require you to have RACF authorization to perform certain tasks. Your security administrator should be able to explain any restrictions your installation has established.

"Building a Data Set List" explains how to use the Data Set Selection Entry Panel to create a data set list. "Building a Volume List" on page 33 explains how to use the Volume Selection Entry Panel to create a volume list.

Building a Data Set List

ISMF uses the information you provide on the Data Set Selection Entry Panel to create a data set list. To invoke the Data Set Selection Entry Panel, specify option 1, Data Set Application, on the ISMF Primary Option Menu.

The Data Set Selection Entry Panel has three pages. The following commands or keys are available:

CLEAR—resets the input fields. See "Specifying and Clearing the Input Fields" on page 25 for more detail.

DOWN—takes you to the next page of the Data Set Selection Entry Panel.

UP—takes you to the previous page of the Data Set Selection Entry Panel.

RETURN—takes you to the ISMF Primary Option Menu.

PROFILE—takes you to the ISMF Profile Option Menu.

ERTB—takes you to the ISMF Error Table. The Error Table shows you detailed information about errors that have occurred. See Appendix E, "Examples of Entries in the ISMF Error Table and ISPF Log" on page 197 for more information.

HELP—takes you to a series of help panels. There is a help panel for each of the fields on the Data Set Selection Entry Panel.

END—takes you to the ISMF Primary Option Menu.

ENTER key—takes you to the Data Set List you have generated.

Limiting the Entries on the Data Set List

The three pages of the Data Set Selection Entry Panel allow you to limit the entries that appear in the list to those that meet the selection criteria you specify. On the first page you can specify the criteria for the names of data sets that will appear in the list and select the source that ISMF will use to generate the list. On the second and third pages you can provide information to further limit the entries that appear in the list.

Each of the fields on the second and third pages of the Data Set Selection Entry Panel represents a category of information, a **data column**, that will appear on the data set list:

Allocated Space	Device Type	Expiration Date
Allocation Unit	Last Backup Date	Last Reference Date
Block/CI Size	Management Class Name	Multi-Volume Data Set
Number of Extents	Optimal Block/CI Size	Owner
Percent Space Unused	Record Format	Record Length
Secondary Allocation	Storage Class Name	Used Space

The online help describes each field in detail.

For each of these fields, you can specify a value or range of values that a data set must have in order to be included in the list. To indicate the criteria a data set must meet to be included in the list, you specify relational operators (comparison terms like equal to or less than) and values for the fields on the list that you want to limit. When ISMF constructs the data set list, only the data sets that fit your selection criteria will be included.

Note: If ISMF cannot determine whether or not a data set meets your selection criteria, the data set will be included in the list. The data columns that represent information ISMF could not obtain will contain a series of dashes (-------). If a value could not be calculated, the column will contain a series of question marks (????).

Specifying and Clearing the Input Fields

The input fields on all three pages of the Data Set Selection Entry Panel hold their values from one session to another. These fields are primed with the values that ISMF used the last time you generated a data set list. ISMF will use these values as selection criteria. If you do not want to use the values from previous sessions to generate your list, you must change or erase the input fields in the Data Set Selection Entry Panel.

The CLEAR command allows you to reset all of the input fields on the Data Set Selection Entry Panel. When you use the CLEAR command to clear input fields that require a value, ISMF sets these fields to their default values. When you use the CLEAR command to clear input fields that are optional, ISMF sets these fields to blanks.

You must use a parameter with the CLEAR command. You must leave one space between the CLEAR command and the parameter. The following parameters are available:

PAGE — When you use CLEAR with this parameter, ISMF clears the current page of the Data Set Selection Entry Panel.

PAGEx — When you use CLEAR with this parameter, ISMF clears the page of the Data Set Selection Entry Panel that is specified by x.

ALL — When you use CLEAR with this parameter, ISMF clears every page of the Data Set Selection Entry Panel.

For example, to reset all of the input fields on every page of the Data Set Selection Entry Panel, enter the following command from any page of the Data Set Selection Entry Panel.

```
COMMAND ===> clear all
```

Completing Page 1 of the Data Set Selection Entry Panel

Figure 20 is the first page of the Data Set Selection Entry Panel. The fields on this page allow you to set up your basic selection criteria: the criteria to determine the names of the data sets to be included in the list, and the source that ISMF will use to generate the list. The sections describe how to complete each field.

```
                        DATA SET SELECTION ENTRY PANEL              Page 1 of 3
COMMAND ===>

TO GENERATE A DATA SET LIST, SPECIFY:

  DATA SET NAME    ===> **
                                                  (fully or partially qualified)

  SELECT SOURCE OF GENERATED LIST  ===> 2         (1-VTOC, 2-Catalog)

    1  GENERATE LIST FROM VTOC
         VOLUME SERIAL NUMBER  ===>               (fully or partially specified)

    2  GENERATE LIST FROM CATALOG
         CATALOG NAME  ===>
           CATALOG PASSWORD     ===>             (if password protected)
         VOLUME SERIAL NUMBER  ===>               (fully or partially specified)
         ACQUIRE DATA FROM VOLUME         ===> Y  (Y or N)
         ACQUIRE DATA IF DFHSM MIGRATED   ===> N  (Y or N)


USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 20. Page 1 of the Data Set Selection Entry Panel

DATA SET NAME

To build a data set list you must complete the DATA SET NAME field. To do this you may use either a fully or partially qualified data set name of up to 46 characters (including periods used as delimiters, and quotation marks). You may put single quotation marks around the data set name (for example, 'K665941.CLIST.CLIST'). If you do, ISMF will use the name exactly as you enter it. If you do not use quotation marks, ISMF will follow TSO naming conventions and prefix the data set name. The data sets you specify must be stored on mounted DASD volumes.

To qualify a data set name, you use asterisks as place holders. Use a single asterisk as a place holder for characters within a qualifier. Use double asterisks as a place holder for any number of complete qualifiers. For example, if you specify

```
DATA SET NAME   ===> 'SYS1.*LIB'
```

ISMF will search for data sets with two qualifiers. The first qualifier must be SYS1. The second can be any character string ending in LIB (LINKLIB, PARMLIB, and so forth). Or, if you specify

```
DATA SET NAME   ===> 'SYS1.*.LOAD'
```

ISMF will search for data sets with three qualifiers. The first qualifier is SYS1. The second is *any* qualifier. The third is LOAD. If you specify

```
DATA SET NAME   ===> 'SYS1.**'
```

ISMF will search for data sets with any number of qualifiers. The first qualifier must be SYS1; the others may be anything.

You may also use single or double asterisks by themselves in the DATA SET NAME field. If you use a single asterisk

```
DATA SET NAME   ===> *
```

ISMF will use your prefix as the first qualifier and list all data sets that have two qualifiers. The first must be your prefix, the second can be any qualifier. If you use double asterisks in the DATA SET NAME field

```
DATA SET NAME   ===> **
```

ISMF will use your prefix and list all data sets that have the prefix as the first qualifier. However, you can only use this notation if you have a prefix specified in your TSO profile.

You may specify quotes with either a single asterisk used as a high level qualifier ('*.LOAD'), or double asterisks as the only qualifier ('**'), but if you do, you must supply the catalog name to direct the search (Figure 21).

```
DATA SET NAME   ===> '**'
                                                (fully or partially qualified)

SELECT SOURCE OF GENERATED LIST  ===> 2          (1 or 2)

  1  GENERATE LIST FROM VTOC
       VOLUME SERIAL NUMBER  ===>               (fully or partially specified)

  2  GENERATE LIST FROM CATALOG
       CATALOG NAME  ===> SYS1.ICFCAT.ABCOD1
```

Figure 21. Specifying ** for the Data Set Name Field

SELECT SOURCE OF GENERATED LIST

The SELECT SOURCE OF GENERATED LIST field allows you to tell ISMF where to go to gather the names that will appear in the data set list. You must specify either option 1, GENERATE LIST FROM VTOC, or option 2, GENERATE LIST FROM CATALOG. If you specify option 1, ISMF will go to the volume table of contents (VTOC) to gather information to construct the list; catalogs will not be accessed. If you specify option 2, ISMF will go to the catalog to gather information to construct the list; the VTOC will not be accessed unless you enter Y in the ACQUIRE DATA FROM VOLUME field under option 2.

GENERATE LIST FROM VTOC

Choose this option when you want to gather data set names from the VTOC without going through the catalog, or when you want to gather information about data sets that are not cataloged. When you choose to generate the data set list using information stored in the VTOC, you must also supply a volume serial number in the VOLUME SERIAL NUMBER field. The volume serial number tells ISMF which VTOCs to access to gather information about the data sets you specify in the DATA SET NAME field. Because ISMF reads the VTOC on each volume you specify, the time it takes to create the list varies with the number of volumes ISMF must access to build the list.

VOLUME SERIAL NUMBER

You may complete the VOLUME SERIAL NUMBER field with either a full or partial volume serial number of 1 to 6 characters. To specify a partial volume serial number, use an asterisk as a place holder. For example,

```
1  GENERATE LIST FROM VTOC
     VOLUME SERIAL NUMBER  ===> SYS*
```

You may specify six asterisks for the system residence volume (SYSRES):

```
1  GENERATE LIST FROM VTOC
     VOLUME SERIAL NUMBER  ===> ******
```

When the list is built it will contain all of the data sets that reside on the SYSRES volume that meet your other selection criteria. The actual volume serial number will appear in column (15).

You may not use a single asterisk or less than six asterisks for the volume serial number in this field.

GENERATE LIST FROM CATALOG

Choose this option when you want ISMF to go to the Integrated Catalog Facility catalog to retrieve information about the data sets you specify in the DATA SET NAME field. If you choose the catalog as the source of information for the list, you may also fill in the remaining fields under option 2: CATALOG NAME, CATALOG PASSWORD, VOLUME SERIAL NUMBER, ACQUIRE DATA FROM VOLUME, and ACQUIRE DATA IF DFHSM MIGRATED. If you choose the catalog as the only source for the list, the following information will appear in the list:

Data set name
Volume serial number
Device type
Creation date
Expiration date
Whether or not the data set is multi-volume
Storage Management Subsystem information.

CATALOG NAME

In the CATALOG NAME field you may specify a fully qualified integrated catalog facility catalog name of up to 44 characters. If you specify a catalog name, ISMF will search only that catalog for data sets that meet your selection criteria. If you do not specify a catalog name, ISMF will search in the standard catalog order of search (usually user catalogs, then master catalog). This method of searching the catalogs is the default choice for the CATALOG NAME field.

CATALOG PASSWORD

If you specify a catalog name in the CATALOG NAME field, and the catalog is password-protected, you must supply the password in the CATALOG PASSWORD field. This field is masked for security; when you enter the password, it does not appear on the screen. This field is not used if RACF is used for data set or catalog security.

VOLUME SERIAL NUMBER

The VOLUME SERIAL NUMBER field allows you to specify a full or partial volume serial number for the data sets that you want to include in the list. When ISMF builds the list, only those data sets that reside on the volumes you choose will be included. The volumes must be mounted in order to be accessed.

You may enter a specific volume serial number of 1 to 6 characters:

```
VOLUME SERIAL NUMBER ===> SYS001
```

Or you may enter a partial volume serial number by using a single asterisk as a place holder:

```
VOLUME SERIAL NUMBER ===> SYS*
```

To specify the system residence volume (SYSRES), you may use six asterisks

```
VOLUME SERIAL NUMBER ===> ******
```

Or you may specify the actual SYSRES volume serial number

```
VOLUME SERIAL NUMBER ===> RESI01
```

If you use six asterisks for the SYSRES volume, only data sets that have been cataloged with this notation (instead of a specific volume serial number) will appear on the list. If you specify the actual SYSRES volume serial number, only

data sets that have been cataloged using the actual volume serial number will appear on the list.

Use a single asterisk to specify all cataloged data sets that fit your other selection criteria, regardless of the volume they reside on:

```
VOLUME SERIAL NUMBER ===> *
```

ACQUIRE DATA FROM VOLUME

When you choose to generate the data set list from the catalog, you may also want to retrieve information about the data sets from the volume. If you specify Y in the ACQUIRE DATA FROM VOLUME field, ISMF will first access the catalog to gather as much information as possible, and then go to the volume to retrieve information to complete the list. If the data set has not been migrated, the information you gain by telling ISMF to access the volume as well as the catalog is the:

Amount of allocated space
Amount of used space (only for non-VSAM data sets)
Percentage of allocated space not used (only for non-VSAM data sets)
Number of extents
Allocation unit
Secondary allocation
Data set organization
Record format
Record length
Block size or control interval size
Optimal block or control interval size
Blocks unused
Last reference date
Change indicator.

ACQUIRE DATA IF DFHSM MIGRATED

In the ACQUIRE DATA IF DFHSM MIGRATED field, you choose whether or not to retrieve information about data sets that have been migrated by DFHSM. If you enter Y in this field, ISMF will go to the DFHSM control data set for information about data sets migrated to level 1 or level 2 volumes. Also, the expiration date is obtained. Specifying Y will increase the time it takes to build the list. For more information about migrated data sets, see "Using ISMF for Migrated Data Sets" on page 152.

Once you have decided on the names of the data sets to include in the list, whether you want to limit the list to data sets that reside on specific volumes, and whether you want to access the catalog or the VTOC, or DFHSM control data set, you are ready to use the next two pages of the Data Set Selection Entry Panel to finish setting up your selection criteria.

You can bypass any or all of these pages. If you choose to do so, ISMF checks for values on them anyway. If values are primed from a previous session, ISMF will display the short message OTHER VALUES PRESENT to warn you. For more information about the Data Set Selection Entry Panel input fields and clearing the values from previous sessions, see "Specifying and Clearing the Input Fields" on page 25.

Completing Page 2 of the Data Set Selection Entry Panel

The fields on page 2 of the Data Set Selection Entry Panel (Figure 22) allow you to further define your selection criteria.

```
                        DATA SET SELECTION ENTRY PANEL                Page 2 of 3
COMMAND ===>

TO FURTHER LIMIT THE GENERATED LIST, SPECIFY ONE OR MORE:
  A SINGLE VALUE OR RANGE OF VALUES:

                                 REL OP    VALUE      AND/OR  REL OP    VALUE
                                 ------  ----------   ------  ------  ----------
    ALLOCATED SPACE          ===>
    BLOCK/CI SIZE            ===>
    BLOCK UNUSED             ===>
    CREATION DATE            ===> GE      85/01/01    AND     LE      1985/12/31
    EXPIRATION DATE          ===>
    LAST BACKUP DATE         ===>
    LAST REFERENCE DATE      ===>
    NUMBER OF EXTENTS        ===>
    OPTIMAL BLOCK/CI SIZE    ===>
    PERCENT SPACE NOT USED   ===>
    RECORD LENGTH            ===>
    SECONDARY ALLOCATION     ===>
    USED SPACE               ===>

USE ENTER TO PERFORM SELECTION; USE UP/DOWN COMMAND FOR OTHER SELECTION PANELS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 22. Page 2 of the Data Set Selection Entry Panel

You can use any of the fields listed to define a single value or range of values a data set must have in order to be included in the list. To do this, you specify a relational operator in the field labeled **REL OP** and a value (either a number or an abbreviation) in the field labeled **VALUE**.

ISMF recognizes the following relational operators:

GT (greater than)
LT (less than)
GE (greater than or equal to)
LE (less than or equal to)
EQ (equal to)
NE (not equal to).

The relational operators and values you use determine the data set entries that will appear in the list. For example, you could use the relational operator GT to indicate that you are only interested in data sets that have greater than 500 kilobytes of allocated space:

```
                                 REL OP    VALUE      AND/OR  REL OP    VALUE
                                 ------  ----------   ------  ------  ----------
    ALLOCATED SPACE          ===> GT      500
    BLOCK/CI SIZE            ===>
    BLOCK UNUSED             ===>
```

Figure 23. Specifying a Relational Operator

When ISMF builds the list, only data sets larger than 500 kilobytes will be included.

You can also use relational operators to set up a range of values as selection criteria for a given category of information. There are three different ways to specify ranges:

1. Specify an Open Range

   To obtain an open range of values for a data column, use one relational operator and one value. For example, you could specify

   ```
   PERCENT SPACE NOT USED  ===> GE      80
   ```

   to generate a list that includes only those data sets with *greater than or equal to* 80 percent of allocated space not used.

2. Specify Two Open Ranges

   To obtain two open range values for a data column, use two combinations of relational operators and values that are mutually exclusive, and specify **OR** in the field labeled **AND/OR**. For example, if you specify

   ```
   ALLOCATED SPACE         ===> LE     500       OR     GE       2000
   ```

   only data sets with an allocated space less than or equal to 500 kilobytes *or* greater than or equal to 2000 kilobytes will be included in the list.

3. Specify a Closed Range

   To obtain a closed range of values for a data column, specify two combinations of relational operator and value, and specify **AND** in the **AND/OR** field. This will define boundaries around a group of values. For example, specify

   ```
   CREATION DATE           ===> GE     85/01/01  AND     LE       85/12/31
   ```

   to include only data sets with creation dates between January 1, 1985 and December 31, 1985.

   The EXPIRATION DATE field asks you to specify a closed range of values to include only data sets that will expire on a date somewhere within your specified range. However, the EXPIRATION DATE field can hold the value of NEVER. A data set that holds this value will never expire. To include data sets that will never expire in your list, specify EQ or NE, and NEVER in the EXPIRATION DATE field.

   For example, specify:

   ```
   EXPIRATION DATE         ===> EQ    NEVER
   ```

   to include all data sets that will never expire.

   99365 or 99366 These numbers represent the expiration date of a non-VSAM data set that will never expire.

   99999 This number represents the expiration date of a VSAM data set that will never expire.

Completing Page 3 of the Data Set Selection Entry Panel

On page 3 of the Data Set Selection Entry Panel you can specify one or more values for any of the fields listed. However, the fields included on this page require specific values rather than a range of values. Therefore, the only relational operators you can use are equal (EQ) and not equal (NE). The example in Figure 24 shows what you would specify on the panel to generate a data set list including only partitioned data sets stored on 3380 volumes.

```
                    DATA SET SELECTION ENTRY PANEL              Page 3 of 3
COMMAND ===>

TO FURTHER LIMIT THE GENERATED LIST, SPECIFY ONE OR MORE:
  A SINGLE VALUE OR LIST OF VALUES:

                              REL OP   VALUE     VALUE     VALUE     VALUE
                              ------  --------  --------  --------  --------
   ALLOCATION UNIT         ===>
   CHANGE INDICATOR        ===>
   DATA CLASS NAME         ===>
   DATA SET ORGANIZATION   ===> EQ      PO
    (1 to 8 values)        ===>
   DEVICE TYPE             ===> EQ      3380
    (1 to 8 values)        ===>
   MANAGEMENT CLASS NAME   ===>
   MULTI-VOLUME DATA SET   ===>
   OWNER                   ===>
   RECORD FORMAT           ===>
    (1 to 8 values)        ===>
   STORAGE CLASS NAME      ===>

USE ENTER TO PERFORM SELECTION; USE UP COMMAND TO VIEW PREVIOUS PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 24. Page 3 of the Data Set Selection Entry Panel

When you have entered the information you want on the three pages of the Data Set Selection Entry Panel, you are ready to build the list. Press the ENTER key and ISMF will display the data sets that meet your selection criteria. If you have limited more than one field on a selection entry panel, only the data sets meeting *all* of the specified parameters will be put in the list. Thus, a list generated for the fields specified in Figure 22 on page 31 and Figure 24 would include all partitioned data sets created between January 1, 1985, and December 31, 1985, that are stored on 3380 volumes.

Note: If ISMF cannot determine whether or not a data set meets your selection criteria, the data set will be included in the list. The data columns that represent information ISMF could not obtain will contain a series of dashes (-------). If a value could not be calculated, the column will contain a series of question marks (????).

Building a Volume List

Building a volume list is very similar to building a data set list. ISMF uses the information you provide on the Volume Selection Entry Panel to create a volume list. The entry panel consists of three pages. The following commands or keys are available:

CLEAR—resets the input fields. See "Specifying and Clearing the Input Fields" on page 35 for more detail.

DOWN—takes you to the next page of the Volume Selection Entry Panel.

UP—takes you to the previous page of the Volume Selection Entry Panel.

RETURN—takes you to the ISMF Primary Option Menu.

PROFILE—takes you to the ISMF Profile Option Menu.

ERTB—takes you to the ISMF Error Table. The Error Table shows you detailed information about errors that have occurred. See Appendix E, "Examples of Entries in the ISMF Error Table and ISPF Log" on page 197 for more information.

HELP—takes you to a series of help panels. There is a help panel for each of the fields on the Volume Selection Entry Panel.

END—takes you to the ISMF Primary Option Menu.

ENTER key—takes you to the volume list you have generated.

You use relational operators and values to specify selection criteria on the volume list just as you do when you are limiting entries on the data set list. For details, see "Building a Data Set List" on page 24.

The volume list can give you a wide range of information about the volumes you select, such as the amount of fragmentation on the volume, free extents, or largest extent that is free. The volume list will also tell you the amount of allocated space, the amount of free space, and the largest block of unallocated space available on the volume.

Limiting the Entries on the Volume List

The three pages of the Volume Selection Entry Panel allow you to limit the entries that appear in the list to those that meet the selection criteria you specify. On page 1 you can specify the following criteria:

- The names of the volumes you want to appear in the list
- The source that ISMF will use to generate the list
- The device type for the volumes you want to appear in the list
- The device number for the volumes you want to appear in the list
- The Storage Group name for the volumes you want to appear in the list.

On the second and third pages you can provide information to further limit the entries that appear in the list.

Each of the fields on the left of the second and third pages of the Volume Selection Entry Panel represents a category of information, a **data column**, that will appear on the volume list:

Allocated Space	Free Extents	Percent Free Space
Cache Fast Write	Free Space	Physical Status Read
Status DASD Fast	Free VIRs	Cache Status Shared
Write Status Duplex	Index Status	DASD Subsystem
Status Fragmentation	Largest Extent	Identifier Use
Index Free DSCBs	Other Device	Attributes

The online help describes each field in detail.

For each of these fields, you can specify a value or range of values that a volume must have in order to be included in the list. To indicate the criteria a

volume must meet to be included in the list, you specify relational operators (comparison terms like equal to or less than) and values for the fields on the list that you want to limit. When ISMF constructs the list, only the volumes that fit the limitations you impose will be included.

Note: If ISMF cannot determine whether or not a volume meets your selection criteria, the volume will be included in the list. The data columns that represent information ISMF could not obtain will contain a series of dashes (-------). If a value could not be calculated, the column will contain a series of question marks (????).

Specifying and Clearing the Input Fields

The Volume Selection Entry Panel works just like the Data Set Selection Entry Panel. The input fields on all three pages of the Volume Selection Entry Panel hold their values from one session to another. These fields are primed with the values that ISMF used the last time you generated a volume list. ISMF uses any values that are saved from a previous session as selection criteria. If you do not want to use these values as selection criteria, you must change or erase these values from the input fields on the Volume Selection Entry Panel.

The CLEAR command allows you to reset all of the input fields on the Volume Selection Entry Panel. When you use the CLEAR command to clear input fields that require a value, ISMF sets these fields to their default values. When you use the CLEAR command to clear input fields that are optional, ISMF sets these fields to blanks.

You must use a parameter with the CLEAR command. You must leave one space between the CLEAR command and the parameter. The following parameters are available:

PAGE — When you use CLEAR with this parameter, ISMF clears the current page of the Volume Selection Entry Panel.

PAGEx — When you use CLEAR with this parameter, ISMF clears the page of the Volume Selection Entry Panel that is specified by *x*.

ALL — When you use CLEAR with this parameter, ISMF clears every page of the Volume Selection Entry Panel.

For example, to reset the input fields on the third page of the Volume Selection Entry Panel, enter the following command from any page of the Volume Selection Entry Panel.

```
COMMAND ===> clear page3
```

Completing Page 1 of the Volume Selection Entry Panel

Figure 25 on page 36 is the first page of the Volume Selection Entry Panel.

```
                        VOLUME SELECTION ENTRY PANEL                Page 1 of 3
COMMAND ===>

SELECT SOURCE TO GENERATE VOLUME LIST  ===> 2   (1 - saved list, 2 - new list)

    1  GENERATE FROM A SAVED LIST
         LIST NAME  ===>
    2  GENERATE A NEW LIST FROM CRITERIA BELOW
         SPECIFY SOURCE OF THE NEW LIST  ===> 2 (1 - Physical, 2 - SMS)

         OPTIONALLY SPECIFY ONE OR MORE:
           TYPE OF VOLUME LIST   ===> 1      (1-Online, 2-Not Online, 3-Either)
           VOLUME SERIAL NUMBER  ===> 1P98*  (fully or partially specified)
           DEVICE TYPE           ===>        (fully or partially specified)
           DEVICE NUMBER         ===>        (fully specified)
             TO DEVICE NUMBER    ===>        (for range of devices)
           ACQUIRE PHYSICAL DATA ===> Y      (Y or N)
           ACQUIRE SPACE DATA    ===> Y      (Y or N)
           STORAGE GROUP NAME    ===> S1P*   (fully or partially specified)
           CDS NAME  ===> 'ACTIVE'
                                             (fully specified or 'ACTIVE')

USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 25. Volume Selection Entry Panel

The fields on page 1 allow you to select a source of data generation. The following is a description of how to complete each field.

SELECT SOURCE TO GENERATE VOLUME LIST

This field allows you to tell ISMF what data source to use when building the volume list. If you specify option 1, GENERATE FROM A SAVED LIST, information will be presented from a list that has been saved through use of the SAVE command.

If you select option 2 when completing the SELECT SOURCE TO GENERATE VOLUME LIST field, your volume list will be generated from a list of criteria.

LIST NAME

The LIST NAME field lets you specify a previously saved volume list. The list name can be up to eight alphanumeric characters long, following Partitioned Data Set (PDS) member naming conventions. ISMF displays the saved list just as it was when it was saved. Refer to "Saving a Copy of the List" on page 62 for more information.

SPECIFY SOURCE OF THE NEW LIST

You must complete this field if you want to generate a new list based on selection criteria. This field lets you specify whether to generate the volume list from only online DASD or to generate the volume list from volumes defined to a storage group of a specified CDS. If you select option 1, ISMF will generate the list from volumes that reside on online DASD. If you select option 2, ISMF will generate the list from volumes defined to a storage group of a specified CDS. The volumes that are retrieved can be either online or offline DASD.

TYPE OF VOLUME LIST

The TYPE OF VOLUME LIST field allows you to specify where the volumes in your list come from. If you specify option 1, ISMF only includes volumes that are online in the selection criteria. This option is the default response. When you specify option 2, ISMF only includes volumes that are not online in the volume list. Option 3 includes both online and not online volumes in the list.

VOLUME SERIAL NUMBER

The VOLUME SERIAL NUMBER field allows you to specify a full or partial volume serial number for the volumes that you want to include in the list. When ISMF builds the list, only the volumes you choose will be included.

You may enter a fully qualified volume serial number of 1 to 6 characters:

```
VOLUME SERIAL NUMBER ===> SYS001
```

Or you may enter a partial volume serial number by using a single asterisk as a place holder:

```
VOLUME SERIAL NUMBER ===> SYS*
```

Use six asterisks to specify the system residence volume (SYSRES):

```
VOLUME SERIAL NUMBER ===> ******
```

Use a single asterisk to specify all mounted volumes that fit your other selection criteria:

```
VOLUME SERIAL NUMBER ===> *
```

DEVICE TYPE

Use the DEVICE TYPE field to further describe the volumes you want to include in the list. The device type must be between 1 and 8 characters. If you enter a value, ISMF will access DASD volumes mounted on only the device types you choose. You may use a generic name (such as 3380) or an esoteric name (such as SYSDA). The name may be fully or partially qualified.

To specify a fully qualified name, enter the value in the DEVICE TYPE field:

```
DEVICE TYPE          ===> 3380
```

To specify a partial name, use a single asterisk as a place holder:

```
DEVICE TYPE          ===> 33*
```

Use a single asterisk by itself to indicate all device types:

```
DEVICE TYPE          ===> *
```

DEVICE NUMBER

Use the DEVICE NUMBER field to choose a single device or range of devices for the volumes you want to include in the list. Device number is sometimes called unit address. Each device number must be specified in 3 hexadecimal characters. For a single device you could enter:

```
DEVICE NUMBER          ===> 990
  TO DEVICE NUMBER     ===>
```

For a range of device numbers you could enter:

```
DEVICE NUMBER          ===> 990
  TO DEVICE NUMBER     ===> 99F
```

ACQUIRE PHYSICAL DATA

By specifying a Y in this field, you can gather information for the following data columns on the volume list that you generate:

CACHE FW STATUS
DASD FW STATUS
DEVICE TYPE
DEV NUM
DUPLEX STATUS
MVS SYSTEM STATUS (25)
RD CACHE STATUS
OTHER DEVICE
SUBSYS ID
SHR DASD
USE ATTR

The field is primed with an N to retrieve no information for these columns.

ACQUIRE SPACE DATA

By specifying a Y in this field, you can gather information for the following data columns on the volume list that you generate:

ALLOC SPACE
FRAG INDEX
FREE DSCBS
FREE EXTENTS
FREE SPACE
FREE VIRS
INDEX STATUS
LARGEST EXTENT
% FREE
PHYSICAL STATUS

The field is primed with an N to retrieve no information for these columns.

STORAGE GROUP NAME

Every volume that is managed by the Storage Management Subsystem (SMS) belongs to a Storage Group. Non-SMS volumes do not belong to Storage Groups. The Storage Group name is created by your site's storage administrator and can be up to 8 characters long. When you specify a 1 for the SPECIFY SOURCE OF THE NEW LIST FIELD, this field will be primed with blanks and will default to blanks.

When you specify a 2 for the SPECIFY SOURCE OF THE NEW LIST FIELD, this field will default to an asterisk to include volumes associated with all Storage Group names.

```
STORAGE GROUP NAME     ===> *
```

CDS NAME

Use this field in conjunction with the STORAGE GROUP NAME field to retrieve a list of volumes managed by SMS. If you specified a 1 for SPECIFY SOURCE OF THE NEW LIST this field will default to blanks.

If you specified a 2 for SPECIFY SOURCE OF THE NEW LIST this field will default to 'ACTIVE' to list volumes in the active control data set.

```
CDS NAME               ===> 'ACTIVE'
```

A Control Data Set name can be up to 44 characters long. When the name is enclosed in quotes, up to 46 characters can be used. ISMF processes quoted and unquoted data set names using TSO conventions.

Once you have completed the fields on the Volume Selection Entry Panel, press the ENTER key. ISMF will construct a list of volumes based on the information you supplied.

Completing Page 2 of the Volume Selection Entry Panel

The fields on page 2 of the Volume Selection Entry Panel (Figure 26) allow you to further define your selection criteria.

```
                        VOLUME SELECTION ENTRY PANEL              Page   2 of 3
COMMAND ===>

TO FURTHER LIMIT THE GENERATED LIST, SPECIFY ONE OR MORE:

  A SINGLE VALUE OR RANGE:        REL OP   VALUE    AND/OR  REL OP   VALUE
                                  ------  --------  ------  ------  --------
     ALLOCATED SPACE          ===>
     FRAGMENTATION INDEX      ===>
     FREE DSCBS               ===>
     FREE EXTENTS             ===>
     FREE SPACE               ===>
     FREE VIRS                ===>
     LARGEST EXTENT           ===>
     OTHER DEVICE             ===>
     PERCENT FREE SPACE       ===>
     SUBSYSTEM IDENTIFIER     ===>




USE ENTER TO PERFORM SELECTION; USE UP/DOWN COMMAND FOR OTHER SELECTION PANELS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 26. Page 2 of the Volume Selection Entry Panel

You can use any of the fields listed to define a single value or range of values a volume must have in order to be included in the list. To do this, you specify a relational operator in the field labeled REL OP and a value (either a number or an abbreviation) in the field labeled VALUE.

ISMF recognizes the following relational operators:

GT (greater than)
LT (less than)
GE (greater than or equal to)
LE (less than or equal to)
EQ (equal to)
NE (not equal to).

The relational operators and values you use determine the volume entries that will appear in the list. For more details about how to specify relational operators, see "Completing Page 2 of the Data Set Selection Entry Panel" on page 31.

Completing Page 3 of the Volume Selection Entry Panel

On page 3 of the Volume Selection Entry Panel you can specify one or more values for any of the fields listed. The fields included on this page require specific values rather than a range of values, so you will use the equal (EQ) and not equal (NE) relational operators.

```
                    VOLUME SELECTION ENTRY PANEL      page 3 of 3
COMMAND ===>

TO FURTHER LIMIT THE GENERATED LIST, SPECIFY ONE OR MORE:

  AS A SINGLE VALUE OR LIST:      REL OP   VALUE     VALUE     VALUE     VALUE
                                  ------   --------  --------  --------  --------
    CACHE FAST WRITE STATUS ===>
    DASD FAST WRITE STATUS  ===>
    DUPLEX STATUS           ===>
    INDEX STATUS            ===>
    PHYSICAL STATUS         ===>
    READ CACHE STATUS       ===>
    SHARED DASD             ===> eq      yes
    USE ATTRIBUTES          ===>




USE ENTER TO PERFORM SELECTION; USE UP COMMAND FOR PREVIOUS SELECTION PANELS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 27. Page 3 of the Volume Selection Entry Panel

When you have entered the information you want on the three pages of the Volume Selection Entry Panel, you are ready to build the list. Press the ENTER key and ISMF will display the volumes that meet your selection criteria. If you have limited more than one field on a selection entry panel, only the volumes meeting *all* of the specified parameters will be put in the list. Thus, the list (Figure 28 on page 41) generated for the fields specified in Figure 26 on page 39 and Figure 27 includes all shared DASD volumes with more than 100 extents.

Note: If ISMF cannot determine whether or not a volume meets your selection criteria, the volume will be included in the list. The data columns that represent information ISMF could not obtain will contain a series of dashes (-------). If a value could not be calculated, the data column will contain question marks (????).

```
                                VOLUME LIST
COMMAND ===>                                                SCROLL ===> DATA
                                                          Entries 1-4 of 4
ENTER LINE OPERATORS BELOW:                               Data Columns 3-8 of 39

    LINE       VOLUME  FREE     %     ALLOC    FRAG   LARGEST  FREE
    OPERATOR   SERIAL  SPACE    FREE  SPACE    INDEX  EXTENT   EXTENTS
   ---(1)----  -(2)--  --(3)--  (4)-  --(5)--  -(6)-  --(7)--  --(8)--
               SYS086   236795    19  1006907    756     3513     503
               SYS087   229675    18  1014027    759     2623     471
               SYS089   253190    20   990512    637    22110     373
               SYS090   236374    19  1007328    508    87270     386
   ----------  ------  ----------- BOTTOM OF DATA -------  --------

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 28. A Completed Volume List

How Errors Are Handled during List Building

ISMF uses short error messages to document errors in building a data set or volume list. The short error message will appear on the first panel that is displayed after the error is detected. If you need more information, use the HELP command to display the long error message. Use the HELP command again to see the help panel associated with the error message.

If ISMF cannot complete the list you request, you may still get a partial list. You can continue working with the partial list if you like. Any values that ISMF was not able to obtain will be marked by a series of dashes (-------) in the data column. Values in error will be marked by a series of question marks (???????). If a value cannot be displayed because it is less than one, but greater than zero, a series of less-than symbols (< < < < < < <) will appear in the data column. A value that is too large to display will be represented by a series of greater-than symbols (> > > > > > >). Information will appear next to the data set name on the list panel for data sets and volumes that ISMF is unable to access.

When you are using the VTOC as the source of the data set list on the Data Set Selection Entry Panel and your selection criteria includes a volume that is dismounted, the volume serial number is not available. In this case, the volume is included in the list, but the VOLUME SERIAL data column is left blank.

Figure 29 on page 42 shows a list panel with information about volumes that ISMF cannot access.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 15-28 of 29
ENTER LINE OPERATORS BELOW:                               Data Columns 3-7 of 26

    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------        --(3)--  --(4)-- -(5)-  (6)  -(7)-
               USER230.ISMF.LKED                     94       94      0    1   TRK
               USER230.ISMF.MACLIB                  187      187      0    1   TRK
               USER230.ISMF.OBJ                     187      187      0    1   TRK
               USER230.ISMF.PLIST                  2904     2530     12    7   TRK
               USER230.ISMF.PLS3                   1031      609     40    3   TRK
               USER230.ISMF.ROOT.DATA       CANNOT ACCESS VOLUME: D64DLB
               USER230.ISMF.SRC                 -------  -------    ---  ---  ---
               USER230.ISMF.TESTCOPY            -------  -------    ---  ---  ---
               USER230.ISMF.TESTHMI1            -------  -------    ---  ---  ---
               USER230.ISMF.TESTHMI2            -------  -------    ---  ---  ---
               USER230.ISMF.TESTHMI3            -------  -------    ---  ---  ---
               USER230.ISMF.TESTJCL                  47       47      0    1   TRK
               USER230.ISMFA.RELEASE            -------  -------    ---  ---  ---
               USER230.ISMFDCR9.SCRIPT               47       47      0    1   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 29. List Panel with Information about a Volume that Could Not Be Accessed

The Format of the List

When you have finished filling in the selection entry panel, press the ENTER key. ISMF will create the volume or data set list and will display it for you. Figure 30 shows the format of an ISMF list panel.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                               Data Columns 3-7 of 26
     **FILTERED LIST**                                   **ENTRIES HIDDEN**
    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------        --(3)--  --(4)-- -(5)-  (6)  -(7)-
               USER230.ISMF.ALIST                  2483     2155     13    6   TRK
               USER230.ISMF.CLIST                  1124      750     33    2   TRK
               USER230.ISMF.DGTLLIB                 468      422      9    6   TRK
               USER230.ISMF.DGTMLIB                  47       47      0    1   TRK
               USER230.ISMF.DGTPLIB                 703      703      0    3   TRK
               USER230.ISMF.DGTSLIB                 141      141      0    2   TRK
               USER230.ISMF.DGTTABL                1171     1171      0    1   TRK
               USER230.ISMF.ISPPLIB                 234      234      0    1   TRK
               USER230.ISMF.ISPSLIB                  94       94      0    1   TRK
               USER230.ISMF.JCL                     281      281      0    2   TRK
               USER230.ISMF.LKED                     94       94      0    1   TRK
               USER230.ISMF.MACLIB                  187      187      0    1   TRK
               USER230.ISMF.OBJ                     187      187      0    1   TRK
               USER230.ISMF.PLIST                  2904     2530     12    7   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 30. Format of the Data Set List Panel

A data set or volume list panel contains the following information:

Fixed Area

The fixed area of the panel consists of the title of the panel, the command line, a scroll field, an entries statement, a data columns statement, and a directional line. These fields are always present on the list panel. The information in the fixed area helps you keep track of the part of the list you are looking at and how you are navigating through the list. The entries statement identifies the data set or volume entries currently displayed. The scroll field shows the scroll amount you are currently using.

Warning Line

The warning line is at the top of the list, just above the data column headings (LINE OPERATOR, DATA SET NAME, ALLOC SPACE, and so forth). The warning line indicates whether the list has been filtered using the FILTER command, and if any of the entries in the list have been hidden using the HIDE line operator. The FILTER command is explained in "Filtering the List" on page 54. HIDE is explained in "Using the HIDE Line Operator" on page 61.

Data Column Headings

The data column headings identify the type of information presented in a particular column of the list. You can use the information in the data columns to help you decide what storage management tasks you want to perform against a particular data set or volume. When you are using ISMF commands, you use the number beneath the heading to reference the individual data columns. For example, to reference ALLOC SPACE, you specify the column tag (3). On both a data set list and a volume list there are more columns than can be displayed at one time. The data columns statement in the fixed area identifies the subset of data columns currently displayed. Chapter 4, "Using the Data Set or Volume List" on page 47, describes the scroll commands that allow you to view all of the data columns.

On a list panel, the data columns correspond to the entry fields on the Selection Entry Panel. The columns represent the different categories of information that ISMF can gather for the entries in a list. Figure 31 on page 44 shows the data columns included in a data set list and the data columns in a volume list. The online help describes each data column in detail.

Figure 31. Data Columns Included in a Data Set List or a Volume List

Data Set List Data Columns	Volume List Data Columns
LINE OPERATOR (1)	LINE OPERATOR (1)
DATA SET NAME (2)	VOLUME SERIAL (2)
ALLOC SPACE (3)	FREE SPACE (3)
ALLOC USED (4)	% FREE (4)
% NOT USED (5)	ALLOC SPACE (5)
NUM EXT (6)	FRAG INDEX (6)
ALLOC UNIT (7)	LARGEST EXTENT (7)
SEC ALLOC (8)	FREE EXTENTS (8)
DS ORG (9)	INDEX STATUS (9)
REC FMT (10)	FREE DSCBS (10)
RECORD LENGTH (11)	FREE VIRS (11)
BLK SZ CI SIZE (12)	DEVICE TYPE (12)
OPTIMAL SIZE (13)	DEV NUM (13)
BLOCK UNUSED (14)	SHR DASD (14)
VOLUME SERIAL (15)	USE ATTR (15)
MULT VOL (16)	RD CACHE STATUS (16)
DEVICE TYPE (17)	DASD FW STATUS (17)
CREATE DATE (18)	CACHE FW STATUS (18)
EXPIRE DATE (19)	DUPLEX STATUS (19)
LAST REF DATE (20)	OTHER DEVICE (20)
LAST BACKUP DATE (21)	SUBSYS ID (21)
CHG IND (22)	PHYSICAL STATUS (22)
DATA CLASS NAME (23)	STORAGE GRP NAME (23)
MANAGEMENT CLASS NAME (24)	RESERVED SYSTEM1 SMS (24)
STORAGE CLASS NAME (25)	RESERVED SYSTEM1 MVS (25)
OWNER (26)	RESERVED SYSTEM2 SMS (26)
	RESERVED SYSTEM2 MVS (27)
	RESERVED SYSTEM3 SMS (28)
	RESERVED SYSTEM3 MVS (29)
	RESERVED SYSTEM4 SMS (30)
	RESERVED SYSTEM4 MVS (31)
	RESERVED SYSTEM5 SMS (32)
	RESERVED SYSTEM5 MVS (33)
	RESERVED SYSTEM6 SMS (34)
	RESERVED SYSTEM6 MVS (35)
	RESERVED SYSTEM7 SMS (36)
	RESERVED SYSTEM7 MVS (37)
	RESERVED SYSTEM8 SMS (38)
	RESERVED SYSTEM8 MVS (39)

List Area

The list area contains:

- The LINE OPERATOR column (1) where you enter line operators to perform storage management tasks against individual data sets or volumes
- The names of the data sets or volumes included in the list (in column 2)
- Specific information about these data sets or volumes (in columns following column 2)

- A BOTTOM OF DATA line appears after the last entry.

Instructional Line

The instructional line reminds you how to invoke help and how to exit from the data set list or volume list.

Reusing a List

When you return to the selection entry panel from the list panel, ISMF does not reconstruct the list unless you specify different selection criteria on the selection entry panel. You can press the ENTER key without changing the selection criteria, and ISMF will redisplay the data in the original list without reaccessing the data sets or volumes in the list. A message will appear in the upper right corner of the list panel to remind you of this:

```
DATA SET LIST                    REDISPLAYED LIST
                                 SCROLL ===> HALF
```

The long message will tell you explicitly that you have redisplayed the list without changing selection criteria.

If you want to regenerate the list without exiting the application, you can use REFRESH for the list panel or you can vary the way you specify values for the selection panels in the fields on the entry panel without actually altering your selection criteria. For example, if you have used an unquoted data set name to construct the original data set list,

```
ISMF.*
```

you can enter

```
'YOURUSERID.ISMF.*'
```

ISMF will regenerate the list because the data set name is specified differently.

You can reuse the list as long as you want during an individual session with ISMF. If you exit from the data set or volume application, or log off, ISMF will not save the list. If you want to save a copy of the list, you can use the SAVE command (see "Saving a Copy of the List" on page 62).

After generating a list, there are several ways you can examine it and tailor it to meet your needs before you actually perform storage management tasks with it. These are explained in Chapter 4, "Using the Data Set or Volume List" on page 47.

Chapter 4. Using the Data Set or Volume List

Once you have created a list of data sets or volumes, you can use ISMF commands to get the list ready to perform storage management tasks efficiently. You can use ISMF scroll commands to move through entries and data columns to view the list, and ISMF tailoring commands allow you to sort the list and to further limit the entries. Not only can you tailor list entries, but you can tailor records within data sets as well. Chapter 9, "Examples of ISMF" on page 125 includes some actual examples of using ISMF to perform storage management tasks.

Note: Although the descriptions of viewing and tailoring lists are directed primarily toward data set and volume lists, a limited set of the commands that are used for these tasks also apply to the SMS construct lists. Chapter 6, "Using the Storage Management Subsystem (SMS)" on page 95 provides more information about these lists.

Viewing the List

A data set list or volume list may contain more entries and columns of data about these entries than you can view on one display screen. In order to see all of the information contained in a list, you need to move through the list from top to bottom and from side to side. ISMF scrolling commands help you do this.

Scrolling through Data Columns

The following commands control the **data columns** displayed on the screen:

LEFT—allows you to view columns of data that extend to the left of the display screen.

RIGHT—allows you to view columns of data that extend to the right of the display screen.

FIND—allows you to locate a data column that is not currently displayed. When you use the FIND command, ISMF will scroll to that column and position the column to the right of column (2), the column that identifies the data set or volume. For example, if you want to look at the amount of space allocated when extending an individual data set, enter:

```
                                DATA SET LIST
COMMAND ===> FIND 8
```

ISMF will locate column (8) and reposition it next to the data set names in column (2):

```
ENTER LINE OPERATORS BELOW:                              Data Columns 8-11 of 26

   LINE                                      SEC     DS    REC   RECORD
   OPERATOR          DATA SET NAME           ALLOC   ORG   FMT   LENGTH
  ---(1)----  ------------(2)------------  --(8)--  (9)  (10)-  -(11)-
```

Figure 32. Using the FIND Command to Locate a Data Column

If the column you specify with the FIND command is already displayed on the screen, the column will not be repositioned. Specifying the parentheses is optional.

Note: Data columns (1) and (2) are always displayed on the left side of the list panel. Scrolling left or right or using the FIND command will not affect the position of these two columns.

Scrolling through List Entries

The following commands control the **data set** or **volume entries** displayed on the screen:

UP—allows you to view list entries that extend above the current screen display.

DOWN—allows you to view list entries that extend below the current screen display.

Scrolling Amounts

The amount in the SCROLL field at the top right of the list panel gives you the number of data columns or data set or volume entries to be manipulated with each use of a scroll command. Used with the UP, DOWN, LEFT, or RIGHT command, the scrolling amount determines which list entries and data columns will be displayed on the screen. With a LEFT or RIGHT command, the scrolling amount causes the repositioning of the data columns; with an UP or DOWN command the scrolling amount causes the repositioning of the data set or volume entries.

```
     SCROLL ===> PAGE
Entries 901-914 of 999
Data Columns 16-19 of 26
```

The scrolling amounts you can use are:

A number from 1 to 9999—scrolls the number of list entries or data columns you specify.

PAGE—scrolls a screen of data, either list entries or data columns.

HALF—scrolls a half page of list entries or data columns.

MAX—scrolls to display the first or last list entry or data column.

CSR—scrolls to position the list entry or data column pointed to by the cursor at the top, bottom, left or right of the screen.

DATA—scrolls one entry or one column less than a full page of data.

You can use the following methods to enter scroll amounts:

- Type the new amount in the SCROLL field on the panel. With this method, the new amount remains in effect until you change the scroll amount again. The scroll amount **MAX** is an exception. Following a MAX scroll, the scroll field reverts to its previous value.
- Type the LEFT, RIGHT, UP, or DOWN command followed by the scroll amount in the command field of the panel. Or, type the scroll amount in the command field of the panel and press a PF key that you have set to a scroll command. This results in a one-time override of the scroll amount.

PAGE, HALF, MAX, CSR, and DATA can be abbreviated by entering the first letter in the scroll field.

Folding the Data Set List

You can use the **FOLD** command to maximize the number of data sets that are displayed on a single screen of your data set list. FOLD controls the width of the Data Set Name data column on the Data Set List Panel.

The FOLD command is entered from the command line of the Data Set List Panel. This command works as a toggle to put your list in either folded mode or unfolded mode. When you enter FOLD on a list in one mode, ISMF redisplays the list in the other mode. To get back to the original mode, you can enter FOLD again.

When your list is in folded mode, the Data Set Name data column is 27 characters wide. If the data set names of your list entries are more than 27 characters, a second screen line is used to accommodate each entry. When you enter the FOLD command, the Data Set Name data column increases to 44 characters. This increase in size can accommodate the long data set names of your list entries with a single line instead of two.

In folded mode, your list can contain fewer list entries on a single screen than when it is in unfolded mode. However, the list in folded mode can accommodate more of the other data columns. By increasing the size of the Data Set Name data column, your list can contain more entries but fewer data columns.

Figure 33 on page 50 shows a data set list in folded mode with the FOLD command specified on the command line. All of the entries in this list have data set names that are too long to fit into the Data Set Name data column on a single line.

```
                              DATA SET LIST
COMMAND ===> fold                                          SCROLL ===> PAGE
                                                        Entries 1- 7 of 18
ENTER LINE OPERATORS BELOW:                             Data Columns 3-7 of 26

    LINE                                      ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR         DATA SET NAME            SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
               USER230.ISMF.DGTLLIB.          2483     2155     13    6   TRK
                 LSTAWL07
               USER230.ISMF.DGTLLIB.          1124      750     33    2   TRK
                 LSTAWL08
               USER230.ISMF.DGTLLIB.           468      422      9    6   TRK
                 LSTAWL09
               USER230.ISMF.DGTLLIB.            47       47      0    1   TRK
                 LSTAWL10
               USER230.ISMF.DGTLLIB.           703      703      0    3   TRK
                 LSTAWL11
               USER230.ISMF.DGTLLIB.           141      141      0    2   TRK
                 LSTAWL12
               USER230.ISMF.DGTLLIB.          1171     1171      0    1   TRK
                 LSTAWL13

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 33. Data Set List Panel in Folded Mode

The data set list shown in Figure 33 contains 7 of its 18 data sets on a single screen. This list also has 5 additional data columns displayed. Once the FOLD command is executed, this list will look like the one shown in Figure 34.

```
                              DATA SET LIST
COMMAND ===> fold                                          SCROLL ===> PAGE
                                                        Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                             Data Columns 3-4 of 26

    LINE                                                  ALLOC    ALLOC
    OPERATOR         DATA SET NAME                        SPACE    USED
   ---(1)----  --------------------(2)--------------------  --(3)--  --(4)--
               USER230.ISMF.DGTLLIB.LSTAWL07                2483     2155
               USER230.ISMF.DGTLLIB.LSTAWL08                1124      750
               USER230.ISMF.DGTLLIB.LSTAWL09                 468      422
               USER230.ISMF.DGTLLIB.LSTAWL10                  47       47
               USER230.ISMF.DGTLLIB.LSTAWL11                 703      703
               USER230.ISMF.DGTLLIB.LSTAWL12                 141      141
               USER230.ISMF.DGTLLIB.LSTAWL13                1171     1171
               USER230.ISMF.DGTLLIB.LSTAWL14                 234      234
               USER230.ISMF.DGTLLIB.LSTAWL15                  94       94
               USER230.ISMF.DGTLLIB.LSTAWL16                 281      281
               USER230.ISMF.DGTLLIB.LSTAWL17                  94       94
               USER230.ISMF.DGTLLIB.LSTAWL18                 187      187
               USER230.ISMF.DGTLLIB.LSTAWL19                 187      187
               USER230.ISMF.DGTLLIB.LSTAWL20                2904     2530

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 34. Data Set List Panel in Unfolded Mode

The Data Set List shown in Figure 34 on page 50 displays 14 of its 18 entries. However, only two of the additional data columns are shown on a single screen. You can use the same command to switch from one mode to the other. If you enter the FOLD command from the Data Set List shown in Figure 34 on page 50, ISMF will display the list shown in Figure 33 on page 50. You can only use the FOLD command in the data set application.

Tailoring the List

ISMF allows you to tailor your list to include only the entries you want, displayed in the order you want. To tailor the list you use the **SORT** and **FILTER** commands, and the **HIDE** line operator.

Sorting the List

Using the SORT command you can reorder the list entries on the basis of the information listed in a particular data column. For example, you could sort the data set list based on the amount of allocated space or allocated used space. First you identify the data columns you want to use for sort criteria. You can name one major field and one or two minor fields. You can also specify whether you want the entries to be sorted in ascending or descending order. If you do not specify this, the order defaults to ascending.

The major field is used first to sort the list entries. If two or more entries have the same value in the data column you are using as a major sort field, ISMF will use the data columns you chose as minor fields to complete the sort. For example, when you sort a group of data sets according to ALLOC SPACE (3), some of the data sets might have exactly the same amount of allocated space. You could sort these data sets further by indicating that you want ALLOC USED (4) as the first minor field. To sort still further, you could specify NUM EXT (6) as the second minor field.

```
                        DATA SET SORT ENTRY PANEL
COMMAND ===>

SPECIFY ONE OR MORE ATTRIBUTE NUMBERS FOR SORT SEQUENCE:
  MAJOR FIELD ===> 3      MINOR FIELD 1 ===> 4     MINOR FIELD 2 ===> 6
```

Thus, if two data sets have the same amount of allocated space, they are sorted by allocated used space; if they also have the same amount of allocated used space, they are sorted by the number of extents.

Entering the SORT Command

There are two ways to enter the SORT command:

1. You can enter the SORT command with no parameters on the command line of the list panel. The Data Set SORT Entry Panel or Volume SORT Entry Panel will be displayed. Completing the SORT Entry Panel is discussed in "Using the SORT Command Without Parameters" on page 52.
2. You can enter the SORT command with parameters on the command line of the list panel. ISMF will copy the parameters to the SORT Entry Panel without displaying the panel. The list entries will be sorted in the order

indicated by the SORT parameters. Entering the SORT command with parameters allows you to bypass the Data Set SORT Entry Panel or the Volume SORT Entry Panel. If you know the parameters you want to use ahead of time, you can use this method as a fast path to perform the sort. Entering the SORT command with parameters is discussed in "Using the SORT Command with Parameters" on page 54.

Note: You may refer to ISMF help panels for details about the sort order.

Using the SORT Command Without Parameters

When you enter the SORT command without parameters on the data set or volume list, ISMF will display the SORT Entry Panel. On the SORT Entry Panel you enter values for major and minor fields, and specify whether you want the list entries sorted in ascending or descending order. In the example that follows, we will use the Data Set SORT Entry Panel to reorder a data set list using two levels of sort criteria: one major field and one minor field. You use the same process to sort a volume list from the Volume SORT Entry Panel.

To display the Data Set SORT Entry Panel, enter SORT on the command line of the Data Set List, as shown in Figure 35.

```
                                DATA SET LIST
COMMAND ===> sort                                          SCROLL ===> PAGE
                                                        Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                             Data Columns 18-20 of 26
     **FILTERED LIST**                                  **ENTRIES HIDDEN**
   LINE                                        CREATE      EXPIRE      LAST REF
   OPERATOR          DATA SET NAME              DATE        DATE        DATE
  ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
              USER230.ISMF.ALIST           1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.CLIST           1985/04/29  NEVER       1986/09/11
              USER230.ISMF.DGTLLIB         1986/04/12  NEVER       1986/09/11
              USER230.ISMF.DGTMLIB         1986/05/08  NEVER       1986/09/11
              USER230.ISMF.DGTPLIB         1986/04/05  NEVER       1986/09/11
              USER230.ISMF.DGTSLIB         1986/05/29  NEVER       1986/09/11
              USER230.ISMF.DGTTABL         1986/05/29  NEVER       1986/09/11
              USER230.ISMF.ISPPLIB         1984/07/28  NEVER       1986/09/11
              USER230.ISMF.ISPSLIB         1983/11/18  NEVER       1986/09/08
              USER230.ISMF.JCL             1986/07/26  NEVER       1986/09/08
              USER230.ISMF.LKED            1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.MACLIB          1984/07/09  0000/00/00  1986/09/11
              USER230.ISMF.OBJ             1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.PLIST           1986/09/08  0000/00/00  1986/09/11

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 35. Sorting a List Using the SORT Command

Specify the major and minor sort fields, and ascending or descending order on the Data Set SORT Entry Panel, as shown in Figure 36 on page 53.

```
                          DATA SET SORT ENTRY PANEL
COMMAND ===>
SPECIFY ONE OR MORE ATTRIBUTE NUMBERS FOR SORT SEQUENCE:
  MAJOR FIELD ===> 18    MINOR FIELD 1 ===> 20    MINOR FIELD 2 ===>

SPECIFY A FOR ASCENDING OR D FOR DESCENDING SORT ORDER:
  MAJOR FIELD ===> D     MINOR FIELD 1 ===> D     MINOR FIELD 2 ===>

  (1)  LINE OPERATOR                (14) BLOCK UNUSED
  (2)  DATA SET NAME                (15) VOLUME SERIAL NUMBER
  (3)  ALLOCATED SPACE              (16) MULTI-VOLUME DATA SET
  (4)  USED SPACE                   (14) DEVICE TYPE
  (5)  PERCENT FREE SPACE           (15) CREATION DATE
  (6)  NUMBER OF EXTENTS            (19) EXPIRATION DATE
  (7)  ALLOCATION UNIT              (20) LAST REFERENCE DATE
  (8)  SECONDARY ALLOCATION         (21) LAST BACKUP DATE
  (9)  DATA SET ORGANIZATION        (22) CHANGE INDICATOR
  (10) RECORD FORMAT                (23) DATA CLASS NAME
  (11) RECORD LENGTH                (24) MANAGEMENT CLASS NAME
  (12) BLOCK SIZE / CI SIZE         (25) STORAGE CLASS NAME
  (13) OPTIMAL BLOCK / CI SIZE      (26) OWNER

USE ENTER TO PERFORM SORT;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 36. Using the SORT Entry Panel

When you press the ENTER key, ISMF will reorder the entire list (entries that extend beyond the screen, and those that have been hidden or excluded, as well as those displayed) using the sort criteria you chose. The major field, 18, and the minor field, 21, are sorted in descending order. The data set with the most recent creation date appears first on the sorted list. When two data sets have the same creation date, the data set with the change indicator turned on appears first. The reordered list looks like this:

```
                              DATA SET LIST              SORT WAS SUCCESSFUL
COMMAND ===>                                               SCROLL ===> PAGE
                                                      Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                           Data Columns 18-20 of 26
     **FILTERED LIST**                                **ENTRIES HIDDEN**
    LINE                                      CREATE      EXPIRE      LAST REF
    OPERATOR          DATA SET NAME            DATE        DATE        DATE
   ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
               USER230.ISMFDCR9.SCRIPT      1986/09/09  0000/00/00  1986/09/09
               USER230.ISMF.PLS3            1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.PLIST           1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.OBJ             1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.ALIST           1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.LKED            1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF230.DGTPLIB      1986/08/21  0000/00/00  1986/09/11
               USER230.ISMF.JCL             1986/07/26  NEVER       1986/09/08
               USER230.ISMF.TESTJCL         1986/07/01  NEVER       1986/09/04
               USER230.ISMF.DGTTABL         1986/05/29  NEVER       1986/09/11
               USER230.ISMF.DGTSLIB         1986/05/29  NEVER       1986/09/11
               USER230.ISMF.DGTMLIB         1986/05/08  NEVER       1986/09/11
               USER230.ISMF.DGTLLIB         1986/04/12  NEVER       1986/09/11
               USER230.ISMF.DGTPLIB         1986/04/05  NEVER       1986/09/11

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 37. Example of a Sorted List

Using the SORT Command with Parameters

You can use the SORT command with parameters to sort your list without leaving the list display. The syntax of the SORT command is:

SORT [(*column tag*) [**IN** {**A**|D}] [(*column tag*) [**IN** {**A**|D}] [(*column tag*) [**IN** {**A**|D}]]]]

where:

SORT
is the command name.

column tag
is the tag associated with a particular data column, for example (18). Up to three levels of sort order may be specified. The first data column will be the major field value; the second data column will be the first minor field value, and the third data column will be the second minor field value. Specifying the data column tag in parentheses is optional.

IN {A|D} or {ASCEND|DESCEND}
indicates ascending or descending sort order. The default is ascending order. The IN keyword is required if you specify sort order.

An example of the SORT command is shown in Figure 38.

```
                                DATA SET LIST
COMMAND ===> sort 18 in d 21 in d                          SCROLL ===> PAGE
                                                      Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                           Data Columns 18-20 of 26
     **FILTERED LIST**                                **ENTRIES HIDDEN**
   LINE                                      CREATE      EXPIRE      LAST REF
   OPERATOR          DATA SET NAME            DATE        DATE        DATE
  ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
              USER230.ISMFDCR9.SCRIPT      1986/09/09  0000/00/00  1986/09/09
              USER230.ISMF.PLS3            1986/09/08  0000/00/00  1986/09/11
```

Figure 38. Sorting a List Using the SORT Command with Parameters

This command will reorder the list with two levels of sort criteria. The major field (18) and the minor field (21) will be sorted in descending order.

Note: When you enter the SORT command with parameters, ISMF saves the values you specify. The next time you invoke the SORT Entry Panel, the panel will be primed with these values. For more information on the concept of priming, see Chapter 7, "Using Data Entry Panels" on page 105.

Filtering the List

Filtering is another way to tailor a data set or volume list so that it is more useful to you. With the FILTER command you use the data columns to set up filter criteria that identify a subset of your list. ISMF will then display the modified list with only those entries that meet your filter criteria. Like the list you originally selected, the subset of the list that you create with the FILTER command may be many pages long. You can use the scroll commands to move through it.

Filtering allows you to choose a subset of list entries to perform a task against. Once you have used the FILTER command to define a subset of the list, the

commands you specify are performed against only the entries in the list subset, without affecting the other entries in the original list. For example, you might want to compress all partitioned data sets in the data set list. Using the data column (9), DSORG, on the data set list, you could set up filter criteria to create a subset of the list which contains only partitioned data sets. When you enter the COMPRESS list command it affects only the list subset made up of partitioned data sets.

Filtering and performing tasks against a subset of the list does not alter the makeup of the list that you originally selected. The original list remains intact in virtual storage, with the original values in all of the data columns, regardless of the tasks that may have been performed against some of the data sets in the list. You can filter many times with different filter criteria, and use each subset you construct for a different task. However, you should keep in mind that each time you specify new filter criteria ISMF performs the filter against the data sets and values that were originally in the list.

Unfiltering the List

To redisplay the original list, simply delete all of the filter criteria and press the ENTER key. (You can also use **FILTER CLEAR** to blank out some or all of the filter criteria.) The line operators and list commands that you have used will appear with a history symbol, a single asterisk, in column (1) for the data set or volume affected by the line operator or list command. If you filter the list many times and use it to perform many tasks, the history symbol becomes a valuable tracking tool. When you redisplay the original list you have a clear record of what you have done to the individual entries. Figure 39 shows a redisplayed list with history symbols.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                        Entries 2-15 of 29
ENTER LINE OPERATORS BELOW:                             Data Columns 18-20 of 26

   LINE                                          CREATE      EXPIRE      LAST REF
   OPERATOR          DATA SET NAME               DATE        DATE        DATE
   ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
   *COPY       USER230.ISMFDCR9.SCRIPT     1986/09/09  0000/00/00  1986/09/09
               USER230.ISMF.PLS3           1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.PLIST          1986/09/08  0000/00/00  1986/09/11
   *DELETE     USER230.ISMF.OBJ            1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.ALIST          1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.LKED           1986/09/08  0000/00/00  1986/09/11
   *HRECALL    USER230.ISMF230.DGTPLIB     1986/08/21  0000/00/00  1986/09/11
               USER230.ISMF.TESTHMI3       1986/08/08  1999a12/31  ----------
               USER230.ISMF.TESTHMI2       1986/08/08  NEVER       ----------
               USER230.ISMF.TESTHMI1       1986/08/08  NEVER       ----------
               USER230.ISMF.TESTCOPY       1986/08/08  NEVER       ----------
   *EDIT       USER230.ISMF.JCL            1986/07/26  NEVER       1986/09/08
               USER230.ISMF.TESTJCL        1986/07/01  NEVER       1986/09/04
               USER230.ISMF.DGTTABL        1986/05/29  NEVER       1986/09/11

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 39. An Unfiltered Data Set List with History Symbols

Entering the FILTER Command

There are several ways to enter the FILTER command:

1. You can enter the FILTER command with no parameters on the command line of the list panel. The Data Set FILTER Entry Panel or the Volume FILTER Entry Panel will be displayed.
2. You can enter the FILTER command with parameters on the command line of the list panel. This sets up a single value and data column as filter criteria. ISMF will filter the list and display a new list made up of only those entries that meet the filter criteria you specified.
3. You can use the FILTER CLEAR command (with or without other parameters) on the command line of the list panel. This lets you blank out all or some of the existing filter criteria.

Using the FILTER Command with No Parameters

When you enter the FILTER command with no parameters on the data set list or volume list, ISMF will display the Data Set FILTER Entry Panel or the Volume FILTER Entry Panel.

The Data Set FILTER Entry Panel has three pages of input fields. The Volume FILTER Entry Panel has four pages of input fields. In either application, these fields correspond to the data columns on the list panel. On the FILTER Entry Panel you use relational operators for each field you want to limit. You can specify a single value, a list of values, or a range of values a particular data column must have in order to include the list entry in the filtered list. In the example that follows we use the Data Set FILTER Entry Panel to create a subset of a data set list that contains only data sets that have been referred to since January 1, 1986, *and* have the change indicator turned on. You could filter a volume list in a similar manner by using the Volume FILTER Entry Panel.

To display the Data Set FILTER Entry Panel, enter FILTER on the command line of the data set list (see Figure 40 on page 57).

```
                                DATA SET LIST
COMMAND ===> filter                                        SCROLL ===> PAGE
                                                      Entries 2-15 of 29
ENTER LINE OPERATORS BELOW:                           Data Columns 18-20 of 26

    LINE                                              CREATE      EXPIRE      LAST REF
    OPERATOR          DATA SET NAME                    DATE        DATE        DATE
    ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
                USER230.ISMFDCR9.SCRIPT     1986/09/09  0000/00/00  1986/09/09
                USER230.ISMF.PLS3           1986/09/08  0000/00/00  1986/09/11
                USER230.ISMF.PLIST          1986/09/08  0000/00/00  1986/09/11
                USER230.ISMF.OBJ            1986/09/08  0000/00/00  1986/09/11
                USER230.ISMF.ALIST          1986/09/08  0000/00/00  1986/09/11
                USER230.ISMF.LKED           1986/09/08  0000/00/00  1986/09/11
                USER230.ISMF230.DGTPLIB     1986/08/21  0000/00/00  1986/09/11
                USER230.ISMF.TESTHMI3       1986/08/08  NEVER       ----------
                USER230.ISMF.TESTHMI2       1986/08/08  NEVER       ----------
                USER230.ISMF.TESTHMI1       1986/08/08  NEVER       ----------
                USER230.ISMF.TESTCOPY       1986/08/08  NEVER       ----------
                USER230.ISMF.JCL            1986/07/26  NEVER       1986/09/08
                USER230.ISMF.TESTJCL        1986/07/01  NEVER       1986/09/04
                USER230.ISMF.DGTTABL        1986/05/29  NEVER       1986/09/11

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 40. Filtering a List Using the FILTER Entry Panel

ISMF will display page 1 of the Data Set FILTER Entry Panel. You can use the relational operators EQ or NE for a single value or a list of values to complete the fields on this panel. To include only changed data sets in the filtered list, use the relational operator EQ to complete the CHANGE INDICATOR field as shown. Then use the DOWN command to scroll to page 2 of the FILTER Entry Panel.

```
                        DATA SET FILTER ENTRY PANEL                  Page 1 of 3
COMMAND ===> DOWN

OPTIONALLY SPECIFY ONE OR MORE:
  A FULLY OR PARTIALLY QUALIFIED VALUE:

    DATA SET NAME ===>

  A SINGLE VALUE OR LIST OF VALUES:
                              REL OP   VALUE     VALUE     VALUE     VALUE
                              ------  --------  --------  --------  --------
    ALLOCATION UNIT       ===>
    CHANGE INDICATOR      ===> EQ      YES
    DATA SET ORGANIZATION ===>
       (1 to 8 values)    ===>
    DEVICE TYPE           ===>
       (1 to 8 values)    ===>
    MULTI-VOLUME DATA SET ===>
    RECORD FORMAT         ===>
       (1 to 8 values)    ===>
    VOLUME SERIAL NUMBER  ===>

USE ENTER TO PERFORM FILTERING; USE DOWN COMMAND TO VIEW NEXT FILTER PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 41. Page 1 of the Data Set Filter Entry Panel

You can complete the fields on page 2 of the FILTER Entry Panel (Figure 42 on page 58) using the relational operators EQ and NE to specify a single value, or

the relational operators GT, GE, LT, and LE to specify a range of values. To filter the data set list based on the last reference date, enter the relational operator and value as shown in Figure 42 on page 58.

```
                        DATA SET FILTER ENTRY PANEL      OTHER VALUES PRESENT
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE:

  A SINGLE VALUE OR RANGE OF VALUES:
                                REL OP    VALUE      AND/OR  REL OP    VALUE
                                ------  ---------- ------  ------  ----------
    ALLOCATED SPACE         ===>
    BLOCK/CI SIZE           ===>
    BLOCK UNUSED            ===>
    CREATION DATE           ===>
    EXPIRATION DATE         ===>
    LAST BACKUP DATE        ===>
    LAST REFERENCE DATE     ===>  ge      1986/01/01
    NUMBER OF EXTENTS       ===>
    OPTIMAL BLOCK/CI SIZE   ===>
    PERCENT SPACE NOT USED  ===>
    RECORD LENGTH           ===>
    SECONDARY ALLOCATION    ===>
    USED SPACE              ===>

USE ENTER TO PERFORM FILTERING; USE UP COMMAND TO VIEW PREVIOUS FILTER PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 42. Example of Completing Page 2 of the FILTER Entry Panel

When you press the ENTER key, ISMF will filter the list using the filter criteria you chose. Only data sets that have been referenced since January 1, 1986, that have the change indicator turned on will appear in the filtered list. Figure 43 shows the result. The message on the warning line, **FILTERED LIST**, reminds you that you now have a subset of the original list.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 1-7 of 7
ENTER LINE OPERATORS BELOW:                               Data Columns 18-20 of 26
     **FILTERED LIST**
   LINE                                          CREATE      EXPIRE      LAST REF
   OPERATOR          DATA SET NAME                DATE        DATE        DATE
  ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
              USER230.ISMF.PLS3            1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.PLIST           1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.OBJ             1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.ALIST           1986/09/08  0000/00/00  1986/09/11
              USER230.ISMF.DGTTABL         1986/05/29  NEVER       1986/09/11
              USER230.ISMF.DGTLLIB         1986/04/12  NEVER       1986/09/11
              USER230.ISMF.CLIST           1985/04/29  NEVER       1986/09/11
  ----------  ------  -----------  BOTTOM  OF DATA  -----------  ------  ----

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 43. Example of a Filtered List

Specifying and Clearing Filter Input Fields: When you use the FILTER command without parameters, you are working directly with the FILTER Entry Panel. The FILTER Entry Panel retains all of the filter criteria that you specified the last time you used the FILTER command. These previously specified values remain on the FILTER Entry Panel whether you specified them using FILTER without parameters from the FILTER Entry Panel, or you specified them using FILTER with parameters from the list panel.

ISMF uses all of the filtering criteria to limit your list even when the values are from a previous session. Also, only those data sets or volumes that meet all of the filtering criteria are included in the filtered list. ISMF reminds you when there are values already specified on the FILTER Entry Panel by displaying an OTHER VALUES PRESENT warning in the top right corner of the panel. If you do not want to use these values as criteria for filtering, you must change or erase the input fields.

You can use the CLEAR command to set all of the input fields to blanks. CLEAR is entered from the command line. There are four different ways to use CLEAR:

CLEAR PAGE
: This command is entered from the command line on any page of the FILTER Entry Panel. CLEAR PAGE sets all of the input fields to blanks on the page where you enter the command.

CLEAR PAGEx
: This command is entered from the command line on any page of the FILTER Entry Panel. CLEAR PAGEx sets all of the input fields to blanks on the page specified by x.

CLEAR ALL
: This command is entered from the command line on any page of the FILTER Entry Panel. CLEAR ALL sets all of the input fields to blanks on every page of the FILTER Entry Panel.

FILTER CLEAR
: This command is entered on the command line of the list panel. FILTER CLEAR sets either some or all of the input fields to blanks depending on the parameters you specify with the command. For more information about FILTER CLEAR, see "Using the FILTER Command with CLEAR" on page 60.

Using the FILTER Command with Parameters

If you have a single value and data column that you want to use as filter criteria, you can use the FILTER command with parameters to perform the filter without leaving the displayed list. You enter the FILTER command from the command line of the list panel. The syntax of the FILTER command is:

FILTER [(*column tag*) {**EQ|NE|LT|LE|GT|GE**} *value*]

where:

FILTER
is the command name.

column tag
is the tag associated with a particular data column, for example (21). Specifying the parentheses is optional.

EQ|NE|LT|LE|GT|GE
indicates the relationship between the value in the specified data column and the value specified in the *value* parameter.

value
indicates the value to be compared to the value in the data column to determine if this entry should be included in the list.

An example of the FILTER command with parameters is shown in Figure 44.

```
                                DATA SET LIST
COMMAND ===> filter 19 eq never                              SCROLL ===> PAGE
                                                        Entries 1-14 of 29
ENTER LINE OPERATORS BELOW:                             Data Columns 18-20 of 26

   LINE                                          CREATE      EXPIRE      LAST REF
   OPERATOR          DATA SET NAME                DATE        DATE        DATE
   ---(1)----  ------------(2)------------  ---(18)---  ---(19)---  ---(20)---
               USER230.ISMF.ROOT.DATA       CANNOT ACCESS VOLUME: D64DLB
               USER230.ISMFDCR9.SCRIPT      1986/09/09  0000/00/00  1986/09/09
               USER230.ISMF.PLS3            1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.PLIST           1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.OBJ             1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.ALIST           1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF.LKED            1986/09/08  0000/00/00  1986/09/11
               USER230.ISMF230.DGTPLIB      1986/08/21  0000/00/00  1986/09/11
               USER230.ISMF.TESTHMI3        1986/08/08  NEVER       ----------
               USER230.ISMF.TESTHMI2        1986/08/08  NEVER       ----------
               USER230.ISMF.TESTHMI1        1986/08/08  NEVER       ----------
               USER230.ISMF.TESTCOPY        1986/08/08  NEVER       ----------
               USER230.ISMF.JCL             1986/07/26  NEVER       1986/09/08
               USER230.ISMF.TESTJCL         1986/07/01  NEVER       1986/09/04

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 44. Filtering a List Using the FILTER Command

Note: If the FILTER Entry Panel is primed with values from the last time you used the FILTER command, these values will be used as filter criteria along with the parameters you specify with the FILTER command. The message, OTHER VALUES ALSO USED, will be displayed to remind you that ISMF filtered the list using values from the entry panel as well as those you specified from the list panel.

Using the FILTER Command with CLEAR

If you would like to clear or blank out some or all of the filter criteria without going to the FILTER entry panels, you can specify FILTER CLEAR from the list panel. The syntax of FILTER CLEAR is:

FILTER CLEAR [[**ALL**] (*column tag column tag...*)]

where:

FILTER CLEAR
is the command

ALL
tells ISMF to clear all entry fields. ALL is the default and does not need to be specified.

column tag column tag ...
corresponds to data columns, for example (5). You can clear the filter criteria (operands and values) associated with one or more data columns. Specifying the parentheses is optional.

Using the HIDE Line Operator

The HIDE line operator allows you to temporarily exclude one or more entries from the list. You enter HIDE in the line operator column, (1). Once the HIDE line operator has been performed, the warning line will contain the reminder, **ENTRIES HIDDEN**. Hidden entries are not affected by list commands.

Depending on the number of entries you want to hide, there are two ways you can specify the HIDE line operator:

HIDE
causes an individual list entry to be hidden. Enter HIDE in column (1) of the entry you want to hide. H, HI and HID are acceptable abbreviations.

Hnnnnn
causes a number of list entries to be hidden, starting with the entry against which H and a number from 1 to 99999 is entered. Enter H and the number of entries you want to hide (for example H9) in column (1) of the first list entry you want to hide. Do not add a blank space between H and the number of entries you want to hide. ISMF will interpret the blank as the end of the HIDE line operator and hide only one entry.

Reshowing Hidden Entries

Specify **RESHOW** in the command line when you want to redisplay all of the data sets or volumes you have hidden. The line operator history for hidden entries will also be redisplayed. If you sorted the list while entries were hidden, they will appear in the appropriate place when you reshow the list. If you filtered the list while entries were hidden, hidden entries that do not meet the filter criteria will not be included in the list when you reshow it. These entries will not be redisplayed until you unfilter the list, or specify new selection criteria on the Selection Entry Panel.

Refreshing the List

To see an updated version of your list without going back to the selection panel, just enter REFRESH on the command line in any list panel. When you specify REFRESH, ISMF lets you know that a new list is being generated from your current selection criteria. Upon completion of the command, ISMF displays the List Panel with the updated list and a message indicating the list is refreshed.

How Errors Are Handled during the Tailoring of a List

ISMF uses short and long error messages to document errors in tailoring a data set or volume list. An error will be redisplayed on the list panel with a short error message describing the problem. You can still continue working with the displayed list, but it may contain some entries that do not meet your filter or sort criteria. If the short error message does not give you enough information you can use the HELP command to display the long error message. Use the HELP command again to see the message help panel.

If an error occurs while sorting or filtering, ISMF will redisplay the list panel with an error message. The panel will be primed with the selection criteria you chose when you built the list. If you press the ENTER key, the list you originally created will be displayed and you can continue working with it.

Saving a Copy of the List

The **SAVE** command allows you to save a copy of the list for future analysis and reference. The saved list contains as many entries as the currently displayed list. The tailoring you do with the SORT command, FILTER command, and the HIDE line operator determines the content of the saved list. If the entries statement reads:

```
      SCROLL ===> PAGE
Entries 1-14 of 85
Data Columns 16-19 of 21
```

The saved list will have 85 entries and 21 data columns.

To save a list, enter SAVE on the command line followed by a name you want to use to identify the list (see Figure 45). Do not use a name that begins with DGT, ISP, or ISR. These prefixes are reserved for ISMF and ISPF tables. If you use other dialogs under ISPF, do not choose a name for the list that duplicates the name of any tables used by the dialog.

```
                                        DATA SET LIST
COMMAND ===> SAVE THISLIST

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
               USER230.ISMF.LKED
               USER230.ISMF.MACLIB
               USER230.ISMF.NEWNAME
```

Figure 45. Example of Entering the SAVE Command

ISMF will store the list as a member of the output table library currently allocated for ISPF (ISPTABL), using the name you provide. If a member by the name you specify already exists, you must specify the REPLACE option on the SAVE command. With the REPLACE option, the SAVE command looks like this:

```
COMMAND ===> SAVE THISLIST REPLACE
```

Once you have saved a list you can use ISPF services against it. For example, using ISPF file tailoring and table services, you can read, scan, and update the list; you can also format it for printing. As a member in ISPTABL, the list can be accessed in both the foreground and the background. Appendix B, "Examples of CLISTs" on page 157 contains an example of a CLIST that takes the output from the SAVE command and produces a formatted copy of the list. It also contains a CLIST that totals the allocated space column. For more information on using ISPF services, see the *ISPF Dialog Management Services*.

Using the ISPF PRINT or PRINT-HI Command

If you want to print only the portion of the list that is currently displayed on the screen, you can use the ISPF **PRINT** or **PRINT-HI** commands. Enter the PRINT command on the command line of the list panel to print the screen without highlighting any of the fields. If you enter PRINT-HI command, overstriking simulates the highlighted fields. When you enter either the PRINT or PRINT-HI command, the screen display will be formatted for output and placed in the ISPF list data set. For more information on PRINT and PRINT-HI, see the *ISPF/PDF Program Reference*.

Tailoring a Data Set from the List

ISMF uses the ISPF/PDF browse and edit facilities and DFSORT sort facilities to allow you to look at or change the contents of a data set from the data set list. The data set must be sequential or partitioned.

Browsing or Editing a Data Set

To use browse or edit, you enter the **BROWSE** or **EDIT** line operator in the line operator column next to the data set you want to view. Figure 46 is an example of entering the BROWSE line operator.

```
                                DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
               USER230.ISMF.ALIST
   BROWSE      USER230.ISMF.CLIST
               USER230.ISMF.DGTLLIB
```

Figure 46. Example of Entering the BROWSE Line Operator

When you enter either BROWSE or EDIT, ISMF will transfer control to ISPF/PDF to display the data set. Using BROWSE you can view the data set without altering it. With EDIT you can also make changes to the data set. When you have finished working with the data set, use the END command to return to the list. Any changes you have made to the data set using the EDIT line operator will be saved. For more information on BROWSE and EDIT, see the *ISPF/PDF Program Reference*.

Note: If your list is generated from the VTOC, you will not be able to browse or edit a data set that has been migrated by DFHSM while the list is displayed. If your list is generated from the catalog, the BROWSE or EDIT line operator will force a recall of the data set.

Sorting Data Set Records

The SORTREC line operator allows you to sort data set records by invoking the DFSORT process using the SORTREC panels. The three panel options include selection by physical sequential data sets, VSAM data sets, and partitioned data sets. The record format for VSAM data sets must be specified as F for fixed-length or V for variable length. Using the panel for partitioned data sets enables you to enter the correct data member name.

```
                        SORTREC ENTRY PANEL
COMMAND ===>

SPECIFY ONE OR MORE FOR DATA SET: <SAMPLE.DATA>

  SPECIFY OUTPUT DATA SET:
    OUTPUT DSN===> SAMPLE.SORTOUT
    IF PARTITIONED DATA SET ENTER MEMBER NAME ===>

  SPECIFY ONE OR MORE SORT CONTROL FIELDS:
     SORT                                                    SORT
    FIELD NO.      POSITION       LENGTH        FORMAT       ORDER
        1     ===> 1         ===> 75      ===>  CH      ===> A
        2     ===>           ===>         ===>  CH      ===> A
        3     ===>           ===>         ===>  CH      ===> A
        4     ===>           ===>         ===>  CH      ===> A




USE ENTER TO PERFORM SORTREC:
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 47. SORTREC Entry Panel

Note: For information about adding the DFSORT option SORTREC to your list of line operators by installing the DFSORT/ISMF panels, see the *DFSORT Installation and Customization*.

Entering Line Operators and List Commands

Once you have tailored the list and data sets to suit your needs, you will want to be familiar with the tools ISMF provides to perform a number of storage management tasks. These tools are line operators and list commands. They are used to perform tasks against the entries on the list panel.

Line operators perform tasks against single entries on list panels.

List commands perform tasks on all the entries included in the list except those entries that have been excluded by HIDE or because they did not meet criteria established using FILTER.

Figure 48 on page 65 lists the line operators that can be used for single data sets and volumes, and it lists the list commands that can be used for multiple data sets and volumes.

Figure 48. Data Set and Volume Line Operators and Commands

Data Set Line Operators	Data Set List Commands	Volume Line Operators	Volume List Commands
ALTER	CLEAR	CLIST	CLEAR
BROWSE	COMPRESS	COMPRESS	DOWN
CLIST	COPY	COPY	END
COMPRESS	DOWN	DEFRAG	ERTB
CONDENSE	DUMP	DUMP	FILTER
COPY	END	HIDE	FILTER CLEAR
DELETE	ERTB	MESSAGE	FIND
DUMP	FILTER CLEAR	RELEASE	HELP
EDIT	FIND	RESTORE	LEFT
HALTERDS	FOLD	TSO / CLISTs	PRINT
HBACKDS	HELP		PROFILE
HBDELETE	LEFT		REFRESH
HDELETE	PRINT		RESHOW
HIDE	PROFILE		RETURN
HMIGRATE	REFRESH		RIGHT
HRECALL	RELEASE		SAVE
HRECOVER	RESHOW		SORT
MESSAGE	RESTORE		TSO / CLISTs
RELEASE	RETURN		UP
RESTORE	RIGHT		
SECURITY	SAVE		
SORTREC	SORT		
TSO / CLISTs	TSO / CLISTs		
	UP		

Information about end user line operators and list commands, and how to choose appropriate ones for storage management tasks is presented in Chapter 5, "Choosing Line Operators and List Commands" on page 79.

Line Operators

Line operators work with the individual entries in a data set or volume list. You enter line operators in the line operator field, column (1), next to the data set or volume entries you want to affect. For example, to submit a job to compress a data set, enter the COMPRESS line operator in the line operator field next to the data set you want to compress (see Figure 49 on page 66).

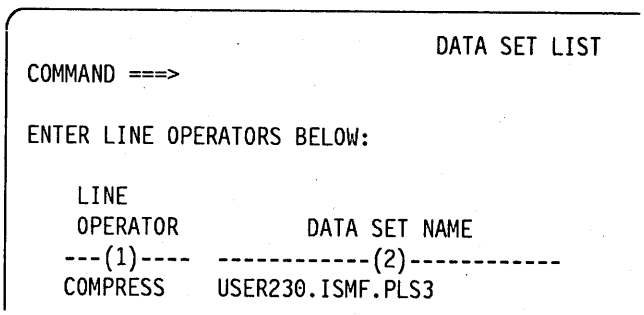


Figure 49. Entering the COMPRESS Line Operator

ISMF will then display the entry panel for the COMPRESS line operator (the COMPRESS Entry Panel) that allows you to view and change processing options for the COMPRESS.

Abbreviations

When you enter a line operator you may use the full word or you may abbreviate it by specifying enough of the word to make the line operator identifiable. ISMF will scan from left to right in the line operator field until any ambiguity is resolved. You could enter COP for COPY and COM for COMPRESS, REST for RESTORE and REL for RELEASE. Chapter 10, "ISMF Command and Line Operator Reference Summary" on page 147 contains a list of acceptable abbreviations for line operators.

If you want to reuse a line operator field by entering a different line operator, you can do so by entering the new line operator or an abbreviation followed by a single blank space. ISMF will recognize the new line operator even if you do not blank out the remaining characters of the previous line operator. For example, when you want to replace COMPRESS with DUMP, you do not need to erase the remaining characters in COMPRESS. You simply enter DUMP (or DU) followed by one or more blank spaces:

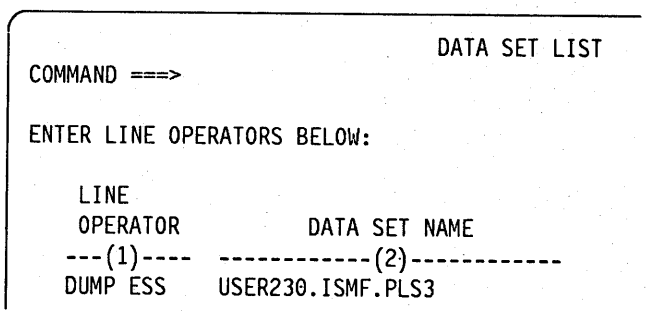


Figure 50. Reusing the Line Operator Field

Repeat Line Operator

You can use the repeat line operator to respecify a line operator against an entry that follows later in the list. ISMF repeats the last line operator that was executed when it finds an equal sign (=) in the line operator column. With this equal sign notation, you do not have to retype the same line operator for each list entry.

For example, Figure 51 shows how you can execute the same line operator over a number of data sets with the repeat line operator.

```
                                DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
   compress    USER230.ISMF.PLS01
   =           USER230.ISMF.PLS02
   =           USER230.ISMF.PLS03
   =           USER230.ISMF.PLS04
   delete      USER230.ISMF.PLS05
   =           USER230.ISMF.PLS06
   =           USER230.ISMF.PLS07
   =           USER230.ISMF.PLS08
```

Figure 51. Using the Repeat Line Operator

Figure 51 shows a list panel with two different line operators entered over all of the list entries. ISMF processes the COMPRESS line operator against the first four list entries and the DELETE line operator against the next four entries.

The repeat line operator can be used in last-use mode. See "Repeat Line Operator in Last-Use Mode" on page 71.

Line Operator Feedback

ISMF provides feedback for both successful completion or submission of line operators, and for error conditions.

Successful Completion of Line Operators: When a line operator is successful, ISMF inserts an asterisk before the line operator in the line operator field. Abbreviations are replaced with the full word. Figure 52 on page 68 shows the feedback for the DUMP line operator entered in Figure 50 on page 66. The asterisk represents a return code of 0.

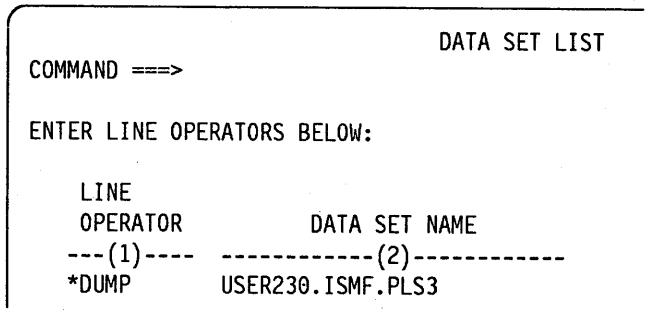


Figure 52. Asterisk Return Code Symbol

Because ISMF does not process line operators preceded by an asterisk, the asterisk history symbol gives you a record of the line operators you have used. You can also use an asterisk as the first character for any comments you want to place in the line operator field. The information following the asterisk (both comments and successful line operators) remains in the line operator field until you do one of the following:

- Blank out the field.
- Enter the CLEAR command on the command line. CLEAR erases pending line operators and line operator history for all entries in the list except those that have been hidden or excluded by filtering.
- Refresh the list or construct another list using different selection criteria.
- Exit the Data Set or Volume Application.

Error Condition that Affects a Particular Line Operator: When there is an error during the execution of a particular line operator and the error is not severe enough to keep ISMF from processing the rest of the list, ISMF will prefix the line operator with a not sign (¬). A line operator that is prefixed with a not sign has not been processed. However, processing continues for the rest of the line operators in the list. This symbol means that the particular line operator has been bypassed. The not sign prefix represents a return code of 4.

Figure 53 on page 69 shows a data set list where six line operators have been entered against six data sets.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 15-28 of 29
ENTER LINE OPERATORS BELOW:                               Data Columns 3-7 of 26

    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
    ---(1)----  ------------(2)------------      --(3)--  --(4)--  -(5)-  (6)  -(7)-
    *COPY       USER230.ISMF.DGTTABL               1171     1171      0    1   TRK
    ¬COPY       USER230.ISMF.DGTSLIB                141      141      0    2   TRK
    *COPY       USER230.ISMF.DGTMLIB                 47       47      0    1   TRK
    *COPY       USER230.ISMF.SRC                  -------  -------   ---  ---  ---
    *COPY       USER230.ISMF.DGTLLIB                468      422      9    6   TRK
    *COPY       USER230.ISMF.DGTPLIB                703      703      0    3   TRK
                USER230.ISMFA.RELEASE             -------  -------   ---  ---  ---
                USER230.ISMF.DUMP                 -------  -------   ---  ---  ---
                USER230.ISMF.JCLIN                -------  -------   ---  ---  ---
                USER230.ISMF.CLIST                  1124      750     33    2   TRK
                USER230.ISMF.ISPFILE              -------  -------   ---  ---  ---
                USER230.ISMF.ISPTABL              -------  -------   ---  ---  ---
                USER230.ISMF.ISPPLIB                234      234      0    1   TRK
                USER230.ISMF.MACLIB                 187      187      0    1   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 53. Example of the Not Sign Return Code Symbol

In Figure 53,the second line operator has not been processed. However, ISMF was able to process all of the following line operators successfully.

Error Condition that Affects the List Processing: If there is an error during the execution of a line operator that is so severe that ISMF cannot continue with the rest of the list, ISMF will prefix the line operator with a question mark. A question mark represents a return code that is greater than 4. For example, the list shown in Figure 54 could not continue processing once the error had occurred on the fourth line operator.

```
                                DATA SET LIST                    INVALID COMMAND
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 15-28 of 29
ENTER LINE OPERATORS BELOW:                               Data Columns 3-7 of 26

    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
    ---(1)----  ------------(2)------------      --(3)--  --(4)--  -(5)-  (6)  -(7)-
    *COPY       USER230.ISMF.DGTTABL               1171     1171      0    1   TRK
    *COPY       USER230.ISMF.DGTSLIB                141      141      0    2   TRK
    *COPY       USER230.ISMF.DGTMLIB                 47       47      0    1   TRK
    ?COPP       USER230.ISMF.SRC                  -------  -------   ---  ---  ---
     COPY       USER230.ISMF.DGTLLIB                468      422      9    6   TRK
     COPY       USER230.ISMF.DGTPLIB                703      703      0    3   TRK
     COPY       USER230.ISMFA.RELEASE             -------  -------   ---  ---  ---
     COPY       USER230.ISMF.DUMP                 -------  -------   ---  ---  ---
                USER230.ISMF.JCLIN                -------  -------   ---  ---  ---
                USER230.ISMF.CLIST                  1124      750     33    2   TRK
                USER230.ISMF.ISPFILE              -------  -------   ---  ---  ---
                USER230.ISMF.ISPTABL              -------  -------   ---  ---  ---
                USER230.ISMF.ISPPLIB                234      234      0    1   TRK
                USER230.ISMF.MACLIB                 187      187      0    1   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 54. Example of a Question Mark Return Code Symbol

Correcting Errors: To correct an error message for a line operator that is prefixed with either a not sign or a question mark, you have several options:

1. Correct any obvious spelling errors, erase the history symbol, and retry the line operator.
2. Use the HELP command to view the long error message and the message help panel. The long message and the help panel give you information to help you correct the error.
3. Enter the MESSAGE line operator on top of the line operator with the error. ISMF will display a message on the particular line operator that can help you diagnose the problem. For more information on the MESSAGE line operator, see "MESSAGE Line Operator" on page 18.
4. Hide the list entry and continue working with the list.
5. Erase the line operator field in error and continue working with the list.
6. Enter the CLEAR command on the command line. This will clear the entire line operator column and cancel any pending line operators. You can then retry the line operator that caused the error.

Line Operator Mode

There are two ways to enter line operators: normal mode and last-use mode.

In **normal mode** you enter the line operator by itself in the line operator field (like COMPRESS in Figure 49 on page 66). ISMF will display the entry panel associated with the line operator you specify. You can then view or change the processing options on the entry panel.

In **last-use mode** you enter the line operator followed by an equal sign in the line operator field. ISMF will not display the entry panel for the line operator. Instead, the line operator is processed with the values present on the entry panel the last time the line operator was executed.

In Figure 55, COMPRESS is specified in last-use mode.

```
                                DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
   com=        USER230.ISMF.DGTTABL
```

Figure 55. Example of Specifying a Line Operator in Last-Use Mode

Instead of displaying the COMPRESS Entry Panel, ISMF uses the processing options that you specified the last time the COMPRESS line operator was executed.

If you know what processing options you specified the last time you used a line operator, and you do not need to change them, you can enter the line operator

in last-use mode and bypass the line operator entry panel and background job submission panels. If you chose to submit the last job immediately, the new job will be sent to the job queue. If you chose to save the job stream in a data set the last time you submitted a background job, the new job will also be saved. However, the new job will be added to the end of the data set regardless of the option you specified the last time you used the Job Submission Entry Panel.

Repeat Line Operator in Last-Use Mode: You can use the repeat line operator in last-use mode. Two equal signs together in the line operator column will repeat the previous line operator in last-use mode. Figure 56 shows an example of the repeat line operator in last-use mode.

```
                                DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
   com=        USER230.ISMF.DGTTABL1
   ==          USER230.ISMF.DGTTABL2
   ==          USER230.ISMF.DGTTABL3
   com         USER230.ISMF.DGTTABL4
   =           USER230.ISMF.DGTTABL5
   =           USER230.ISMF.DGTTABL6
```

Figure 56. Example of Specifying a Repeat Line Operator in Last-Use Mode

In Figure 56, the first three data sets are compressed using last-use mode. The last three data sets are compressed using normal mode. For more information on the repeat line operator, see on page 67 "Repeat Line Operator"

Using Parameters with Line Operators

You can use TSO commands and CLISTs as line operators to perform functions against single list entries. These commands often require parameters. ISMF allows you to specify these parameters by typing on top of the data columns to the right of the line operator column.

When you use a TSO command with parameters, the command itself must be contained in the line operator column. The parameters can extend into the data columns to the right as far as the screen permits. You cannot scroll to the right to continue the parameter. You can specify TSO commands and CLISTs with parameters in any application.

Figure 57 on page 72 shows the XMIT command with parameters entered in the Data Set Name data column.

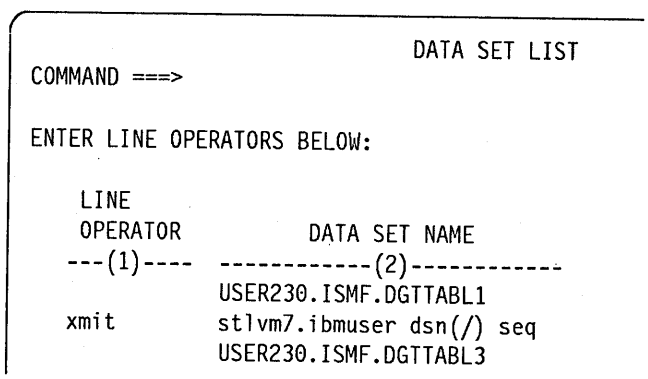


Figure 57. Overtyping Data Columns

In Figure 57, the parameter contains a slash character that represents the data set name. When you use a line operator whose parameter requires you to specify a list entry name or volume serial number, you can use this slash character in its place. ISMF replaces the slash with the list entry name or the volume serial number of the list entry. If the slash character is used on the data set list, ISMF encloses the data set name in quotes.

ISMF replaces only the first slash character that occurs in the string of parameters. For example:

```
SETDATE / NEWDATE(89/06/30)
```

ISMF translates the string shown above into the following string:

```
SETDATE name NEWDATE(89/06/30)
```

(In the example shown above, `name` represents the list entry name or the volume serial number.)

List Commands

List commands allow you to perform an operation against all of the entries in a data set or volume list at one time. You enter list commands on the command line of the list panel. For example, if you decided to build a job to compress all of the data sets in the list instead of a single data set, you could use COMPRESS as a list command (see Figure 58).

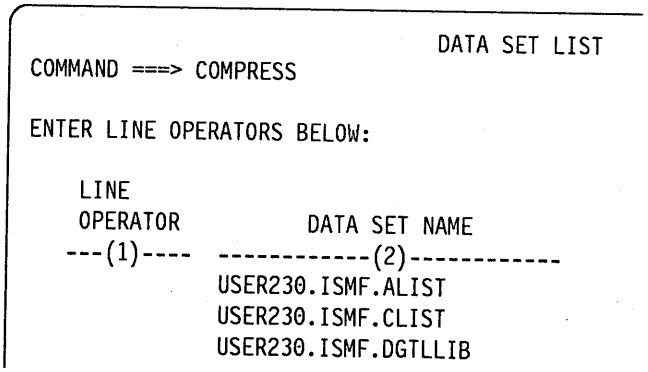


Figure 58. Entering the COMPRESS List Command

When you enter a list command, ISMF will display the entry panel associated with the list command. Like the entry panels for line operators, the entry panels for list commands allow you to view and change the processing options for executing the command. However, unlike line operators, you cannot specify list commands in last-use mode.

Each time you enter a list command, ISMF scans the entire list to make sure that each entry is correct before attempting to process the command. For example, when you issue the COMPRESS list command, ISMF checks to make sure that the list consists of only partitioned data sets before displaying the entry panel associated with COMPRESS. The list command will not be executed if there are any entries in error, or if you try to use a list command and line operator at the same time.

The rule for abbreviating list commands is the same as the rule for line operators: you may abbreviate a list command by entering enough of the word to resolve ambiguity.

List Command Feedback

The feedback for submission of list commands and for error conditions is similar to the feedback for line operators.

Successful Completion of a List Command: When a list command is successful, ISMF places a single asterisk followed by the command in the line operator field of each entry on the data set list. A short message in the upper right corner of the screen indicates that the job has been created successfully. If the COMPRESS command we issued in Figure 58 is successful, the data set list will contain the asterisk history symbols next to each data set entry and the short message shown in Figure 59.

```
                                DATA SET LIST            COMPRESS JOB CREATED
COMMAND ===>                                                SCROLL ===> PAGE
                                                         Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                              Data Columns 3-7 of 26
                                                       **ENTRIES HIDDEN**
    LINE                                        ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME             SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------      --(3)--  --(4)--  -(5)-  (6)  -(7)-
   *COMPRESS   USER230.ISMF.ALIST                 2483     2155     13    6   TRK
   *COMPRESS   USER230.ISMF.CLIST                 1124      750     33    2   TRK
   *COMPRESS   USER230.ISMF.DGTLLIB                468      422      9    6   TRK
   *COMPRESS   USER230.ISMF.DGTMLIB                 47       47      0    1   TRK
   *COMPRESS   USER230.ISMF.DGTPLIB                703      703      0    3   TRK
   *COMPRESS   USER230.ISMF.DGTSLIB                141      141      0    2   TRK
   *COMPRESS   USER230.ISMF.DGTTABL               1171     1171      0    1   TRK
   *COMPRESS   USER230.ISMF.ISPPLIB                234      234      0    1   TRK
   *COMPRESS   USER230.ISMF.ISPSLIB                 94       94      0    1   TRK
   *COMPRESS   USER230.ISMF.JCL                    281      281      0    2   TRK
   *COMPRESS   USER230.ISMF.LKED                    94       94      0    1   TRK
   *COMPRESS   USER230.ISMF.MACLIB                 187      187      0    1   TRK
   *COMPRESS   USER230.ISMF.OBJ                    187      187      0    1   TRK
   *COMPRESS   USER230.ISMF.PLIST                 2904     2530     12    7   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 59. Asterisk Return Code for a List Command

Error Condition that Affects a Particular List Entry: When there is an error during the execution of the list command against a particular list entry and the error is not severe enough to keep ISMF from processing the rest of the list, ISMF will display the command next to the list entry and prefix the command with a not sign (¬). This list entry has not been processed. However, processing continues for the rest of the entries in the list. This symbol means that the particular list entry has been bypassed. The not sign prefix represents a return code of 4.

Figure 60 shows a data set list where all of the list entries except the fifth one have been processed successfully.

```
                                DATA SET LIST              COMPRESS JOB CREATED
COMMAND ===>                                                  SCROLL ===> PAGE
                                                           Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                                Data Columns 3-7 of 26
                                                         **ENTRIES HIDDEN**
    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
    *COMPRESS  USER230.ISMF.ALIST             2483     2155     13     6   TRK
    *COMPRESS  USER230.ISMF.CLIST             1124      750     33     2   TRK
    *COMPRESS  USER230.ISMF.DGTLLIB            468      422      9     6   TRK
    *COMPRESS  USER230.ISMF.DGTMLIB             47       47      0     1   TRK
    ¬COMPRESS  USER230.ISMF.DGTPLIB            703      703      0     3   TRK
    *COMPRESS  USER230.ISMF.DGTSLIB            141      141      0     2   TRK
    *COMPRESS  USER230.ISMF.DGTTABL           1171     1171      0     1   TRK
    *COMPRESS  USER230.ISMF.ISPPLIB            234      234      0     1   TRK
    *COMPRESS  USER230.ISMF.ISPSLIB             94       94      0     1   TRK
    *COMPRESS  USER230.ISMF.JCL                281      281      0     2   TRK
    *COMPRESS  USER230.ISMF.LKED                94       94      0     1   TRK
    *COMPRESS  USER230.ISMF.MACLIB             187      187      0     1   TRK
    *COMPRESS  USER230.ISMF.OBJ                187      187      0     1   TRK
    *COMPRESS  USER230.ISMF.PLIST             2904     2530     12     7   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 60. Not Sign Return Code for a List Command

In Figure 60, the fifth data set has not been processed. However, ISMF was able to process all of the other entries successfully.

Error Condition that Affects the List Processing: If there is an error during the execution of a list command that is so severe that ISMF cannot continue with the rest of the list, ISMF will display the command next to the list entry that failed and prefix the command with a question mark. A question mark represents a return code that is greater than 4. For example, the list shown in Figure 61 on page 75 could not continue processing once the error had occurred on the fourth list entry.

```
                              DATA SET LIST              DSORG INVALID
COMMAND ===>                                                SCROLL ===> PAGE
                                                         Entries 1-14 of 18
ENTER LINE OPERATORS BELOW:                              Data Columns 3-7 of 26
                                                       **ENTRIES HIDDEN**
   LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
   OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------       --(3)--  --(4)--  -(5)-  (6)  -(7)-
   *COMPRESS   USER230.ISMF.ALIST                  2483     2155     13    6   TRK
   *COMPRESS   USER230.ISMF.CLIST                  1124      750     33    2   TRK
   *COMPRESS   USER230.ISMF.DGTLLIB                 468      422      9    6   TRK
   ?COMPRESS   USER230.ISMF.DGTMLIB                  47       47      0    1   TRK
               USER230.ISMF.DGTPLIB                 703      703      0    3   TRK
               USER230.ISMF.DGTSLIB                 141      141      0    2   TRK
               USER230.ISMF.DGTTABL                1171     1171      0    1   TRK
               USER230.ISMF.ISPPLIB                 234      234      0    1   TRK
               USER230.ISMF.ISPSLIB                  94       94      0    1   TRK
               USER230.ISMF.JCL                     281      281      0    2   TRK
               USER230.ISMF.LKED                     94       94      0    1   TRK
               USER230.ISMF.MACLIB                  187      187      0    1   TRK
               USER230.ISMF.OBJ                     187      187      0    1   TRK
               USER230.ISMF.PLIST                  2904     2530     12    7   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 61. Question Mark Return Code for a List Command

In Figure 61, ISMF did not process the list entries that followed the entry that failed.

Correcting Errors: There are several things you can do to correct errors for list commands:

1. Use the HELP command to view the long error message and the message help panel. The long error message and the help panel will give you information to help you correct the error.
2. Issue the MESSAGE line operator against the list entry that is causing the problem. ISMF will display a series of messages that can help you diagnose the problem. See "MESSAGE Line Operator" on page 18 for more information.
3. Use the HIDE line operator to exclude the entry causing the error from the list. Enter H followed by a blank space in the line operator field of the entry you want to hide. ISMF will execute the HIDE line operator and continue scanning beginning with the first entry on the list. If there are no other entries in error, the entry panel for the list command will be displayed.
4. Clear the command line by blanking out the list command. This will cancel the list command entirely.

Using Parameters with List Commands

You can use TSO commands and CLISTs as list commands to perform functions against every entry in the list. These commands often require parameters. ISMF allows you to enter these commands along with their parameters from the command line. The parameters can extend as far as the right margin of the screen. You can specify TSO commands and CLISTs with parameters in any application.

For example, the following command can be issued against every entry in the list by entering it from the command line.

```
COMMAND ===> xmit stlvm7.ibmuser dsn(/) seq
```

In the example above, the parameter contains a slash character that represents the data set name. When you use a list command with a parameter that requires you to specify a list entry name or volume serial number, you can use this slash character in its place. ISMF replaces the slash with the name or serial number of the list entry for every entry in the list. When you use the slash character on the data set list, ISMF encloses the data set names in quotes.

ISMF replaces only the first slash character that occurs in the string of parameters. For example:

```
COMMAND ===> E //PASSWORD
```

ISMF translates the string shown above into the following string for each list entry:

```
COMMAND ===> E name/PASSWORD
```

(In the example shown above, name represents the list entry name or the volume serial number.)

List Panel Processing Rules

ISMF follows a set sequence for processing on list panels:

1. TSO and ISPF commands (KEYS, for example) are executed before ISMF line operators.
2. The ISMF commands CLEAR, END, and RETURN are executed before line operators. Entering these commands cancels pending line operators.
3. Line operators are executed before the ISMF commands for scrolling and tailoring (UP, DOWN, LEFT, RIGHT, FIND, SORT, FILTER, FOLD), and the PROFILE, SAVE, REFRESH, and RESHOW commands.
4. If more than one line operator is specified, processing starts at the top of the list and continues until all of the line operators have been processed.

Following this sequence, if you entered COPY as a line operator and FILTER on the command line, as shown in Figure 62 on page 77, ISMF would execute the line operator first. The COPY Entry Panel is displayed and the COPY command performed before the FILTER Entry Panel is displayed.

```
                                        DATA SET LIST
COMMAND ===> FILTER

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
   COPY        USER230.ISMF.ALIST
               USER230.ISMF.CLIST
               USER230.ISMF.DGTLLIB
```

Figure 62. Processing Sequence for Commands and Line Operators

If you enter more than one line operator at a time, as shown in Figure 63, the processing will start at the top of the list and continue. COPY will execute first, then DUMP, and finally COMPRESS.

```
                                        DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
   COPY        USER230.ISMF.ALIST
   DUMP        USER230.ISMF.CLIST
   COMPRESS    USER230.ISMF.DGTLLIB
```

Figure 63. Processing Sequence for More than One Line Operator

Chapter 5. Choosing Line Operators and List Commands

This chapter will help you perform five general types of data and storage management tasks:

- Recovering unused space
- Migrating data sets
- Backing up and recovering data sets
- Protecting data
- Invoking TSO commands and CLISTs.

To perform these tasks, you will enter line operators or list commands on data set and/or volume lists and then complete data entry panels. By passing the information you have supplied to DFHSM, DFDSS, ICKDSF, RACF, or an existing TSO CLIST, ISMF has helped you use these products or CLISTs through a simple, uniform method.

Recovering Unused Space

You can use ISMF to recover the following kinds of unused space:

- Space occupied by members of a partitioned data set that have been updated or deleted.
- Unused space at the end of a data set.
- Space occupied by data sets that you no longer need.

Figure 64 summarizes the DFHSM and DFDSS functions that ISMF uses to perform these tasks.

Figure 64 (Page 1 of 2). Summary of Commands to Recover Unused Space

Task	Function	Scope	Action
Recover unused space at the end of a data set.	CONDENSE	Single data set	Frees unused space at the end of a data set. Compresses partitioned data sets. Performed in the foreground by DFHSM.
Recover unused space occupied by members of partitioned data sets.	COMPRESS	Single data set, group of data sets, or volume	Works only with partitioned data sets. Reclaims embedded unused space. Performed in the background by DFDSS.

Figure 64 (Page 2 of 2). Summary of Commands to Recover Unused Space

Task	Function	Scope	Action
Recover unused space at the end of data sets.	RELEASE	Single data set, group of data sets, or volume	Frees unused space at the end of data sets or frees all allocated, unused space on specified volume. Performed in the background by DFDSS.
Recover space occupied by data sets no longer needed.	DELETE	Single data set	Deletes online or DFHSM-migrated data sets. Performed in the foreground by TSO or DFHSM.
Reduce or eliminate free space fragmentation.	DEFRAG	Volume	Relocates nonVSAM and integrated catalog facility cataloged VSAM data set space to reduce free space fragmentation. Performed in the background by DFDSS.

Recovering Unused Space from Partitioned Data Sets

There are two ways to reclaim space occupied by members of a partitioned data set that have been updated or deleted. You can use the **CONDENSE** line operator or the **COMPRESS** line operator or list command. CONDENSE is performed in the foreground; COMPRESS is performed in the background.

CONDENSE can be used for individual entries in a data set list. The data sets can be either partitioned or sequential. For partitioned data sets, CONDENSE reclaims all embedded unused space. For both partitioned and sequential data sets with secondary allocation, the CONDENSE line operator causes DFHSM to free the unused space at the end of the data set by migrating and recalling the data set. For data sets with secondary allocation, CONDENSE may also reduce the number of extents the data set occupies; when DFHSM recalls the data set, it reallocates only the amount of space the data requires. However, CONDENSE will not change the allocation unit. If the data set was originally allocated in cylinders, some unused tracks may remain at the end of the data set after it has been condensed.

On the CONDENSE Entry Panel you can specify a volume serial number and device type for a specific volume to receive the condensed data set, or you can blank out the field and let DFHSM choose the volume. You can also indicate whether you want to wait for the command to execute or return immediately to the list panel. If you choose to wait, ISMF will display the CONDENSE Entry Panel

until the CONDENSE is completed. When the data set has been condensed, the list panel will be displayed again.

COMPRESS can be used as a line operator or a list command on a data set list and as a line operator on a volume list. You can compress a single partitioned data set, a group of partitioned data sets or a volume containing partitioned data sets. COMPRESS causes DFDSS to reclaim all embedded unused space from the specified data sets. However, it will not release unused space at the end of a data set. COMPRESS works only with partitioned data sets; if you try to compress a data set that is not partitioned, ISMF will display an error message.

On the COMPRESS Entry Panel, you provide information to control access to the data sets you wish to compress. You can specify the maximum number of times DFDSS should attempt to compress the data set and the number of seconds between each attempt. You can also indicate that you want DFDSS to use dynamic allocation instead of enqueue to coordinate use of the data set. If the data set is password protected, you must supply the password on this panel.

If you are performing a task against a volume, you may also list the data set names you do not wish to compress.

Recovering Unused Space from Data Sets

Both the **CONDENSE** line operator and the **RELEASE** line operator (or list command) free unused space at the end of a data set. When used as a volume application, **RELEASE** frees all allocated, unused space for partitioned and sequential data sets on the volume.

As noted in "Recovering Unused Space from Partitioned Data Sets" on page 80, you can use **CONDENSE** to free unused space at the end of individual sequential or partitioned data sets. CONDENSE also compresses partitioned data sets.

RELEASE is a DFDSS command that you can use against a single data set, a group of sequential or partitioned data sets, or a volume. RELEASE will free space that has been allocated but not used at the end of data sets. Because RELEASE frees only space at the end of data sets, you may want to compress partitioned data sets before releasing the space. Like CONDENSE, RELEASE will not change the allocation unit for a data set. If the data set was originally allocated in cylinders, some unused tracks may remain after the unused space has been released. RELEASE is performed in the background.

On the RELEASE Entry Panel you can specify a minimum amount of unused space and a minimum secondary allocation the data set must have for DFDSS to execute the command. You can specify the maximum number of times DFDSS should attempt to release the unused space and the number of seconds between each attempt. You can also indicate that you want DFDSS to use dynamic allocation instead of enqueue to coordinate use of the data set. If the data set is password protected you must supply the password on this panel.

Additionally, if you are performing a task against a volume, you can list names of data sets not to be released.

Deleting Data Sets

The **DELETE** line operator is performed in the foreground by TSO for cataloged data sets, SVC 29 or by TSO for uncataloged data sets, and DFHSM for migrated data sets. You can delete individual data sets that have been migrated by DFHSM, as well as those that are online. If you enter the DELETE line operator for a data set that has been migrated, ISMF will translate the DELETE line operator to an HDELETE and continue processing. You can delete a data set without being certain it is online. With DELETE you can also delete the DFHSM backup versions of a data set. A TSO message will confirm each DELETE. The DELETE line operator is supported for cataloged data sets as well as data sets that are generated from the VTOC. However, for VSAM data sets in a catalog generated list, you can only issue DELETE against the cluster entry.

On the DELETE Entry Panel you have the following options:

- Delete the data set from the VTOC as well as the catalog.
- For VSAM data sets, replace the data with binary zeros.
- Delete the data set even if its retention period has not expired.
- Delete any or all backup versions. (If you choose to do this, the HBDELETE panel will be displayed.)

If the data set is password protected, you must supply the password on the DELETE Entry Panel.

Defragmenting a Volume

The **DEFRAG** line operator applies only to volume applications. You can use it to relocate non-VSAM and Integrated Catalog Facility data set extents on a DASD volume to reduce or eliminate free space fragmentation. When protected data sets or data sets defined with the ERASE option are relocated, the data in the old locations is erased for security. DEFRAG is performed in the background by DFDSS.

On the DEFRAG Entry Panel you can specify the number of times DFDSS should attempt to gain control of the volume, the number of seconds between each attempt, and the password for protected data sets. You can also specify an index value to control the amount of fragmentation. Further, you can choose between three defragmentation techniques: one minimizes fragmentation, one minimizes data movement, and one minimizes volume involvement. You can list any data sets you wish to exclude from the relocation in the last field on the DEFRAG Entry Panel.

Migrating and Moving Data

ISMF uses both DFHSM and DFDSS commands to help you migrate or move data sets. The DFHSM **HMIGRATE** command allows you to migrate less active data sets from primary storage to other devices (like or unlike). With the DFHSM **HRECALL** command you can recall data sets when you need them again. The DFDSS **COPY** command allows you to move data sets to DASD volumes of like or unlike device types. Figure 65 summarizes the DFHSM and DFDSS commands ISMF uses for migration and data movement.

Figure 65. Summary of Commands to Migrate and Move Data Sets

Task	Function	Scope	Action
Move less active data sets from primary storage to other devices.	HMIGRATE	Single data set	Migrates a data set to a DFHSM level 1 or level 2 volume. Performed in the foreground by DFHSM.
Recall data sets that have been migrated by DFHSM.	HRECALL	Single data set	Recalls a single data set that has been migrated by DFHSM. Performed in the foreground by DFHSM.
Move data sets to DASD volumes of like or unlike device type.	COPY	Single data set, group of data sets, or volume	Copies data sets to DASD volumes of like or unlike device type. Performed in the background by DFDSS.

Using DFHSM for Migration of Data

When DFHSM migrates data, it uses a hierarchy of storage devices that have different costs for storing data and different speeds of accessing the data. Less active data is stored further down in the hierarchy. The hierarchy consists of three levels of devices and volumes:

Level 0 Storage devices that contain data directly accessible to you. Level 0 volumes are always mounted and online.

Level 1 Storage devices that contain data compressed by DFHSM. These devices may provide cheaper storage, but the access time is usually slower. Level 1 volumes contain data sets that DFHSM has moved from level 0 volumes. They are usually permanently mounted and online.

Level 2 Storage devices that contain data that DFHSM has compressed. Like level 1, these devices may provide cheaper storage, but the access time is usually slower. Level 2 volumes contain data sets that DFHSM has moved from level 1 or level 0 volumes. They are normally not mounted or online.

Usually, both migration and recall are performed automatically by DFHSM space maintenance. However, you may choose to perform space maintenance yourself. For example, if you know that certain data sets will not be used for some time, you may want to migrate them immediately. You may also need to recall a data set before DFHSM is scheduled to do so. With the HMIGRATE and HRECALL line operators you can make use of the DFHSM storage hierarchy manually.

HMIGRATE allows you to migrate individual data sets to level 1 or level 2 volumes. When you enter HMIGRATE in the line operator column of the data set you want to move, ISMF will display the HMIGRATE Entry Panel. On the data entry panel you can specify the migration level you want DFHSM to use and the password, if the data set is password protected. Because HMIGRATE is performed in the foreground, you may choose to wait for completion. If you choose to wait, ISMF will display the HMIGRATE Entry Panel until the data set has been migrated. When the HMIGRATE is completed the list panel will be displayed again.

The **HRECALL** line operator recalls individual data sets that have been migrated to level 1 or level 2 volumes. On the HRECALL Entry Panel you can direct the recall by specifying the volume serial number and device type for DFHSM to use. If you do not choose a specific volume and device type, DFHSM will choose a volume for the recall. Like HMIGRATE, the HRECALL line operator is performed in the foreground. You have the option of returning to the list panel immediately or waiting for the data set to be recalled before continuing.

Using COPY as a Device Migration Aid

With **COPY** you can copy or move a single data set, a group of data sets, or a volume to a DASD volume of like or unlike device type. For example, you could use COPY to move data sets from a 3350 to a 3380 or from one model 3380 to another. COPY is a valuable tool for device conversion.

When you enter the COPY line operator or list command, ISMF will display the data entry panel for COPY. On the COPY Entry Panel you can indicate the way you want the COPY to be performed. Using COPY you have the following options:

- Delete the original data sets after they have been copied.
- Rename the data sets as they are copied.
- Control replacing duplicate copies of data sets.
- Reblock sequential or partitioned data sets.
- Specify where to catalog the new data set.
- Specify the volume to receive the new data set and how much space to allocate on the volume.
- Provide the name of a RACF model data set to use to define the RACF profile for the new data set.
- Specify a maximum number of attempts DFDSS should make to serialize the data set and the number of seconds between each retry.
- Copy the data set even if it is being used by another program.
- Copy data sets that were allocated as unmovable.
- Use dynamic allocation instead of enqueue to serialize the use of the data set.
- Allow other programs read access to the data sets while they are being copied.
- Copy all allocated space or only space that has actually been used.
- Verify the data after the COPY.

- Terminate the COPY after the first I/O error or after 100 errors.
- Copy BDAM data sets by relative block or by TTR. =i2.data sets

If you are performing a task against a volume, you also have the following options:

- Specify a logical or physical copy.
- Copy multi-volume data sets.

The online help describes how to complete each field on the COPY Entry Panel. Defaults are provided for many of the options.

Backup and Recovery

ISMF uses DFHSM and DFDSS to help you make, store, and recover backup copies of your data sets. From the data set list, you can perform the following tasks:

- Create backup versions of a single data set or group of data sets.
- Control the frequency of backup and the number of backup versions made.
- Delete backup versions that you no longer need.
- Recover backup versions of data sets that you have stored on tape, DASD, or a mass storage volume.

Figure 66 summarizes the DFHSM and DFDSS commands ISMF uses for backup and recovery.

Figure 66 (Page 1 of 3). Summary of Commands for Backup/Recovery of Data Sets

Task	Function	Scope	Action
Create a backup version of a data set.	HBACKDS	Single data set	Creates a backup version of a data set. Performed in the foreground by DFHSM.
Create backup versions of data sets.	DUMP	Single data set, group of data sets, or volume	Dumps data sets to tape, DASD, or mass storage volumes. Performed in the background by DFDSS.
Control the frequency of backup and number of backup versions.	HALTERDS	Single data set	Changes the number of backup versions of a data set and controls the frequency of backup. Performed in the foreground by DFHSM.

Figure 66 (Page 2 of 3). Summary of Commands for Backup/Recovery of Data Sets

Task	Function	Scope	Action
Delete a backup version of a data set.	HBDELETE	Single data set	Deletes backup versions of a data set. Performed in the foreground by DFHSM.
Delete migrated version of a data set.	HDELETE	Single data set	Deletes a migrated version of a data set. Performed in the foreground by DFHSM.
Recover the backup version of a data set.	HRECOVER	Single data set	Recovers a backup version of a data set. Performed in the foreground by DFHSM.
Recover the backup versions of a data set.	RESTORE	Single data set or volume	Restores data dumped by DFDSS. If the data was compressed, it is expanded to its original form. Performed in the background by DFDSS.
Recover the backup version of a data set.	RESTORE DATASET	Single data set	Restores data dumped by DFDSS. If the data was compressed, it is expanded to its original form. Performed in the background by DFDSS. This command can be entered on the command line of the Data Set List Panel or the Data Set Selection Entry Panel.

Figure 66 (Page 3 of 3). Summary of Commands for Backup/Recovery of Data Sets

Task	Function	Scope	Action
Recover the backup versions of a list of data sets.	RESTORE LIST	Single data set or group of data sets	Restores data dumped by DFDSS. If the data was compressed, it is expanded to its original form. Performed in the background by DFDSS.

Creating Backup Versions of Data Sets or Volumes

ISMF provides two ways to create backup versions of your data sets: the **HBACKDS** line operator or the **DUMP** line operator or list command.

HBACKDS can be used against individual entries in a data set list. The data set must be cataloged. In a DFHSM environment, backing up data sets can be done automatically. However, if you do not want to wait, you can request an immediate backup using the HBACKDS line operator. When you use HBACKDS, DFHSM will create and store a backup version of the data set you specify. You do not need to identify the volume for DFHSM to store the data set; DFHSM will choose a volume.

HBACKDS is performed in the foreground. When you enter the line operator on the data set list, ISMF will display the HBACKDS Entry Panel. On the entry panel you can indicate whether you want to wait for the command to execute or return immediately to the list panel. If you choose to wait, ISMF will display the HBACKDS Entry Panel until the backup version of the data set has been created.

DUMP can be used for a single data set, a group of data sets, or a volume. It is performed as a background job by DFDSS. If you enter DUMP in the line operator field, DFDSS will place a backup copy of a single data set or volume on the media you choose: tape, DASD, or a mass storage volume. If you enter DUMP as a list command on the command line of the data set list, DFDSS will make backup copies of each data set in the list.

When you enter DUMP as either a line operator or list command, ISMF will display the associated data entry panels. The information you enter on the data entry panels allows you to use DUMP to do the following:

- Dump single volume, multi-volume, and VSAM data sets.
- Dump to tape or DASD.
- Specify allocation values for the new data set.
- Determine the disposition of the output data set when the dump is successful or if it is unsuccessful.
- Dump multiple copies of data sets.
- Automatically compress the data when it is dumped.
- Specify a maximum number of attempts DFDSS should make to dump the data set and the number of seconds between each retry.

- Dump the data set even if it is being used by another program.
- Use dynamic allocation instead of enqueue to coordinate the use of the data set.
- Allow other programs read access to the data set while it is being dumped.
- Dump all allocated space or only space that has actually been used.
- Terminate the DUMP after the first I/O error or after 100 errors.
- Specify the amount of I/O buffering DFDSS should use.
- Reset change indicators in the DSCB for all data sets successfully dumped.

Many of the previous DUMP capabilities also apply to the Entry Panel viewed during a volume application. In addition, when performing tasks against volumes, you can choose between a physical and a logical dump, and you can specify from which volumes allocated space will be dumped.

The online help explains the individual fields on the DUMP data entry panels and the different options you have when you use DUMP. ISMF supplies defaults for many of these options.

Controlling the Number of DFHSM Backup Versions and the Frequency of Backup

HALTERDS allows you to control the number of backup versions DFHSM maintains of a DFHSM-managed data set. With HALTERDS you can also change the default value for the frequency of creating backup versions. When you enter the HALTERDS line operator, ISMF will display the HALTERDS Entry Panel primed with the data set name. On the entry panel you can specify how often you want DFHSM to create backup versions of the data set and the number of backup versions you want to keep. HALTERDS is performed in the foreground. You cannot use this line operator in last-use mode. It will work only in normal mode.

Deleting Backup Versions of Data Sets

Use **HBDELETE** when you want to erase backup versions of data sets that have been made using DFHSM. When you enter the HBDELETE line operator, ISMF will display the HBDELETE Entry Panel for the data set you indicated. You can use the entry panel to delete all of the backup versions of the data set or you can delete only specific versions by number. HBDELETE works in normal mode and is performed in the foreground by DFHSM.

Note: You cannot use the HALTERDS and HBDELETE line operators in last-use mode. These line operators work only in normal mode.

Recovering Backup Versions of Data Sets and Volumes

There are two ways to recover backup versions of data sets. You can use the **HRECOVER** line operator for data sets backed up by using HBACKDS. You can also use the **RESTORE** line operator or list command for data sets backed up by using DUMP. The **RESTORE** line operator also can be used for volumes.

HRECOVER will recover a backup version of an individual cataloged data set from a DFHSM-managed volume. When you enter HRECOVER, ISMF will display the HRECOVER Entry Panel. The entry panel is primed with the name of the data set you want to recover. On the entry panel you can specify the generation

number and date of the backup version you want to recover as well as the serial number of the target volume. You can also choose to rename the data set as it is recovered, or to replace the existing data set with the backup version.

HRECOVER is performed in the foreground by DFHSM. You can wait for the data set to be recovered before you return to the list panel. If you choose to wait for completion, the HRECOVER Entry Panel will be displayed until the command has been performed. Otherwise, you will return to the list immediately.

RESTORE allows you to restore data sets dumped by DFDSS to a DASD volume. RESTORE is performed in the background. When you enter RESTORE, ISMF will display data entry panels for you to complete. The information you provide will allow you to use RESTORE to do the following:

- Restore multi-volume data sets.
- Restore VSAM data sets.
- Rename data sets as they are restored.
- Replace the original data set with the dumped data set.
- Catalog data sets as they are restored.
- Specify target volumes.
- Retain RACF protection for restored data sets that were originally RACF-protected.
- Specify a maximum number of attempts DFDSS should make to restore the data set and the number of seconds between each retry.
- Determine the disposition of the original data set when the RESTORE is successful or if it is unsuccessful.
- Restore the data set even if it is being used by another program.
- Restore data sets that were allocated as unmovable.
- Use dynamic allocation instead of enqueue to coordinate the use of the data set.
- Allow other programs read access to the data sets while they are being restored.
- Verify the data after the RESTORE.
- Terminate the RESTORE after the first I/O error or allow all errors.

You can use RESTORE to restore an individual data set or a list of data sets. To restore an individual data set, use the **RESTORE** line operator or the **RESTORE DATASET** list command. To restore a list of data sets, use the **RESTORE LIST** or the **RESTORE** list command.

When you enter **RESTORE** in the line operator field on the list panel, ISMF recognizes it as a line operator and restores the corresponding data set. **RESTORE DATASET** also restores an individual data set, but unlike the **RESTORE** line operator, the data set you want to restore need not appear on the list panel. For example, you may want to restore a data set that has been deleted. You can enter the **RESTORE DATASET** command on the command line of either the Data Set Selection Entry Panel or the Data Set List panel. When

you enter RESTORE DATASET, ISMF will display the first page of the Data Set RESTORE Entry Panel so that you can supply the name of the dumped data set you want to restore.

On the Data Set Selection Entry Panel, RESTORE is also an acceptable form of the RESTORE DATASET command. When you enter RESTORE on the command line of the Data Set Selection Entry Panel, ISMF assumes you want to restore an individual data set. **RESTORE** also may be specified on the Volume Selection Entry Panel. You may select either a logical or a physical **RESTORE** and you will view a confirmation panel if you choose to replace the volume serial number.

RESTORE LIST will restore an entire list of data sets that have been dumped by DFDSS. You enter the **RESTORE LIST** command on the command line of the Data Set List. RESTORE is also an acceptable form of the RESTORE LIST command. When you enter RESTORE on the command line of the Data Set List, ISMF assumes that you want to restore the entire list of data sets. RESTORE LIST is not a valid command on the Data Set Selection Entry Panel.

Protecting data with RACF

You can use the SECURITY line operator to invoke a RACF panel and provide security for a data set. Figure 67 summarizes the RACF command ISMF uses to protect data sets.

Figure 67. Summary of SECURITY Command

Task	Function	Scope	Action
Protect a data set.	SECURITY	Single data set	Invokes a RACF panel.

See the *Resource Access Control Facility (RACF) Security Administrator's Guide* for more information on RACF.

Invoking TSO Commands and CLISTs

You can invoke TSO Commands and CLISTs from the list panel in any application. TSO Commands and CLISTs can be entered on list panels as line operators or list commands. There is also a CLIST line operator.

Invoking TSO Commands and CLISTs from the Command Line

You can directly invoke TSO commands and CLISTs from the command line of any list panel. The command or CLIST is invoked for every entry in the list.

Entering TSO Commands or CLISTs with Parameters

Because these commands and CLISTs often require parameters, the command lines on the list panels allow you to extend parameters to the end of the screen. Figure 68 on page 91 shows an example of the XMIT command entered from the command line of a data set list panel.

```
                                    DATA SET LIST
COMMAND ===> xmit stlvm27.ibmuser dsn(/) seq

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR         DATA SET NAME
   ---(1)----  -----------(2)-----------
               USER230.ISMF.PLS1
               USER230.ISMF.PLS2
               USER230.ISMF.PLS3
               USER230.ISMF.PLS4
```

Figure 68. Entering a TSO Command from the Command Line

All of the entries in the list shown in Figure 68 will be sent to the user ID IBMUSER and the node ID STLVM27.

The parameter for the command shown in Figure 68 requires you to specify the data set name. Since the data set name changes for each entry in the list, you can use a slash character as a substitution for the data set name. Each data set name in the list replaces the slash when the list entry is processed. ISMF replaces only the first occurrence of the slash character with the data set name. For example, there are several slash characters used in the following command:

```
COMMAND ===> setdate / newdate(88/01/12)
```

If the data set name for a particular data set is TEST.PLI, ISMF translates the command as follows:

```
COMMAND ===> SETDATE 'TEST.PLI' NEWDATE(88/01/12)
```

You can invoke a user CLIST from the command line just like a TSO command. To improve performance, you can use a percent character as a prefix to the CLIST name. Figure 69 shows a CLIST with a percent character prefix.

```
                                    DATA SET LIST
COMMAND ===> %clistname stlvm27.ibmuser dsn(/)

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR         DATA SET NAME
   ---(1)----  -----------(2)-----------
               USER230.ISMF.PLS1
               USER230.ISMF.PLS2
               USER230.ISMF.PLS3
               USER230.ISMF.PLS4
```

Figure 69. Entering a CLIST from the Command Line

The percent character is optional. It causes ISPF to bypass its search through the program list and search only the CLIST libraries for the commands. This

method of locating the commands specified by the CLIST speeds up execution time by limiting the number of libraries ISPF searches.

Invoking TSO Commands and CLISTs from the Line Operator Column

You can invoke TSO commands and CLISTs for individual list entries in any list panel. These commands and CLISTs are entered just as you would enter them from the command line except that you enter them from the line operator column.

To enter parameters for these line operators, you can type over the data columns to the right of the line operator column. These data columns can act as input fields for the parameters as far as the right margin of the screen. You cannot scroll right to add more parameters. Figure 70 shows a CLIST with a percent character prefix entered as a line operator.

```
                                    DATA SET LIST
COMMAND ===>

ENTER LINE OPERATORS BELOW:

    LINE
    OPERATOR          DATA SET NAME
   ---(1)----  ------------(2)------------
               USER230.ISMF.PLS1
   %clistname  stlvm27.ibmuser dsn(/)
               USER230.ISMF.PLS3
               USER230.ISMF.PLS4
```

Figure 70. Entering a CLIST as a Line Operator

The CLIST shown in Figure 70 is only invoked against the one data set.

You can use the slash character in the parameter of a TSO command or CLIST to replace the list entry name. You can also use the optional percent character prefix with a CLIST to speed up execution time. Both of these characters are described in "Invoking TSO Commands and CLISTs from the Command Line" on page 90.

Using the CLIST Line Operator

The **CLIST** line operator allows you to call an existing TSO CLIST from the list panel in any application. With the CLIST line operator you can leave the list to perform tasks against individual list entries. The CLIST you call is executed in the foreground. When it has completed, control returns to ISMF so that you can continue working with the list. The tasks you could use a CLIST to perform include renaming a data set, querying the DFHSM status of a data set, or generating a list of all the data sets on a volume. The CLISTs you write must use a naming convention consistent with the program to which you want to pass data. Figure 71 summarizes the CLIST line operator.

Figure 71. Summary of the CLIST Line Operator

Task	Function	Scope	Action
Rename a data set, total the allocated space column, and any other function that you write a CLIST to perform.	CLIST	Single data set or volume	Invokes a TSO CLIST you have written. Performed in the foreground.

Using the ISMF Support for CLISTs

ISMF provides support for user created commands with a system of variables. You can use these variables in your CLIST to perform the following functions:

- Control the processing of your CLIST.
- Acquire data on the list panel where your CLIST is invoked.
- Save message text while your CLIST is in control.
- Acquire data on the list panel entries.
- Acquire data on the list panel selection criteria.

Appendix C, "Acquiring Data for a User Created CLIST" on page 179 describes how to use these variables in your CLIST. There are also reference tables listing the variables.

For information on coding user created CLISTs, see the *OS/VS2 TSO Command Language Reference* and the *ISPF/PDF Version 2 Release 3 Guide MVS*.

Examples of CLISTs are described in Appendix B, "Examples of CLISTs" on page 157.

Chapter 6. Using the Storage Management Subsystem (SMS)

ISMF has other applications that automate and simplify storage and data management tasks. These applications are the Storage Management Subsystem (SMS) classes and group; they combine functions provided by DFP, DFHSM, and DFDSS to optimize storage management. When you use ISMF, you will be able to list or display data from the Data Class, Management Class, and Storage Class applications. Your site storage administrator will have sole access to all applications.

What is SMS?

SMS is a component of DFP that is designed to help an installation balance user requirements for performance, availability, and space utilization. The SMS classes and groups are assigned to your data sets so that the system can take over storage management tasks previously done by users and storage administrators.

Figure 72 shows the SMS Data Class, Management Class, Storage Class, Storage Group (available only for the storage administrator), and their relationship to a data set. The classes and groups are elements of SMS that control the allocation, performance, and availability of the data that is associated with it. Automatic class selection (ACS) routines are used to assign SMS classes to data sets and to select the target Storage Groups for the data sets.

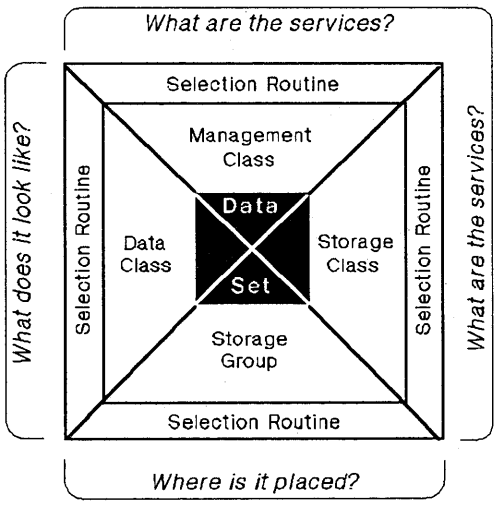


Figure 72. SMS and Its Relationship to a Data Set

By defining SMS classes and Storage Groups and writing ACS routines to assign them to data sets, a storage administrator can use the system to control a site's storage resources. Through SMS, the storage administrator can implement and maintain the site's storage management policies.

Using the storage administrator's version of ISMF, the administrator defines four types of constructs, each having a particular role in specifying a data set's space management, performance, and availability requirements.

Data Class	Data definition parameters.
Storage Class	Performance and device availability requirements.
Management Class	Space, data set availability, and retention attributes.
Storage Group	List of candidate allocation volumes.

For example, the administrator may define a Storage Class for data sets requiring high performance and may define another Storage Class specifying a standard performance level. The administrator will determine how many variations of each type of construct are necessary and may define, alter, or delete classes and groups depending on the needs of the data sets to be managed.

The storage administrator also defines one (ACS) routine for each of the four types of constructs. During the allocation of a new data set, the ACS routines are used by SMS to assign the SMS classes to the data set and determine the target Storage Groups. The values from the assigned classes are then used to govern the space management, performance, and availability of the data set from its creation to deletion.

Although your storage administrator sets up and maintains the SMS classes, all ISMF users can display the attributes associated with any Data Class, Management Class, or Storage Class. By monitoring the storage management attributes associated with your data sets, you can verify that they are being managed efficiently. Also, with authorization, you can alter the name of a Storage and Management Class associated with any of your SMS-managed data sets from the Data Set List Panel.

The Data Class Application

A Data Class is used to standardize the allocation of data sets. Your storage administrator defines and maintains the Data Class attributes to meet the current requirements of your data processing installation.

Used for allocating new data sets, Data Class attributes are assigned to a data set when it is created. Data Class attributes apply to SMS and non-SMS-managed data sets. Attributes specified in JCL or equivalent allocation statements will override those specified in a Data Class.

Data Class Name
Description
Data Set Organization
Record Size
Record Format
Key Length/Offset
Avg Rec
Avg Value
Retain Date/Expiration Date
Space (Primary, Secondary)
Space Directory
Volume Count
Index Options
Imbed
Replicate
Control Interval Size
Percent Free Space
Share Options

Figure 73. Data Class Attributes

Figure 73 on page 96 shows the attributes that can be associated with a Data Class. The online help describes each attribute in detail.

Examples of Data Classes

The following ISMF attributes and corresponding values show how a Data Class for general data sets might be defined. You will notice that these attributes comprise characteristics typically found on JCL DD statements, TSO ALLOCATE commands, and elsewhere. The class definitions that follow are for all system CNTL, DATA, JCL, and OBJ data sets.

DATA CLASS NAME	DCDATA
RECFM	FB (fixed block)
LRECL	80 (bytes per record)
AVG VALUE	80 (bytes per record)
AVG REC	U (the allocation quantity is multiplied by 1)
SPACE PRIMARY	1000 (1 kilobyte)
SPACE SECONDARY	100

The next example shows the definition of DCVAR, a Data Class defined for variable length text files. The class was defined for all system CLIST, FOIL, PLI, SCRIPT, TEXT, and VSBASIC data sets.

DATA CLASS NAME	DCVAR
RECFM	VB (variable block)
LRECL	255
AVG VALUE	255
AVG REC	U
SPACE PRIMARY	1000
SPACE SECONDARY	100

The Management Class Application

The storage administrator uses the Management Class attributes to control the migration and backup of data sets and to delete or archive expired data sets. By looking at the Management Class for a given data set, the system can decide how the data set should be backed up, when it should be migrated, and when backup copies should be deleted. The Management Class attributes will be used each time DFHSM is run.

When you build a Management Class list or display a Management Class, you can view the output associated with the Management Class attributes. Figure 74 on page 98 shows the attributes that can be associated with a Management Class. The online help describes each field in detail.

Management Class Name
Description
Partial Release

Expiration Attributes
Expire After Days Non-Usage
Expire After Date/Days
Retention Limit

Migration Attributes
Primary Days Non-Usage
Level 1 Days Non-Usage
Command or Auto Migrate

GDG Managed Attributes
GDG Elements on Primary
Rolled-off GDG Action

Backup Attributes
Backup Frequency
Number of Backups (data set exits)
Number of Backups (data set deleted)
Retain Days Only Backup
Retain Days Extra Backups
Administrator or User Command Backup
Auto Backup

Figure 74. Management Class Attributes

A Management Class Example

The following ISMF fields and corresponding values show how a Management Class for standard priority application data might be defined.

MANAGEMENT CLASS NAME	MCNORM
EXPIRE AFTER DAYS NON-USAGE	180
PARTIAL RELEASE	YES (Release all allocated but unused space)
PRIMARY DAYS NON-USAGE	30 (Migrate after 30 days)
BACKUP FREQUENCY	2 (every other day)
NUMBER OF BACKUP VERSIONS	1
RETAIN DAYS EXTRA BACKUP VERSIONS	90 (Delete after not using for 90 days)

The Storage Class Application

The Storage Class application lets the storage administrator specify performance and availability attributes which characterize a given collection of data sets. Although not true for the Data Class and Management Classes, a data set must be assigned to a Storage Class to be managed by SMS.

When you build a Storage Class List or display a Storage Class, you can view output that corresponds to the Storage Class attributes. Figure 75 on page 99 shows the Storage Class attributes. The online help describes them in detail.

Storage Class Name
Description
Direct Millisecond Response
Direct Bias
Sequential Millisecond Response
Sequential Bias
Availability
Guaranteed Space

Figure 75. Storage Class Attributes

A Storage Class Example

The following ISMF attributes and corresponding values represent a typical Storage Class, SCNORM, for most application data.

STORAGE CLASS NAME	SCNORM
DIRECT MILLISECOND RESPONSE	30 (ms)
DIRECT BIAS	READ
SEQUENTIAL MILLISECOND RESPONSE	30
SEQUENTIAL BIAS	READ
AVAILABILITY	STANDARD
GUARANTEED SPACE	NO (Placement depends on availability of pool space)

The Storage Group Application

The Storage Group application is used only by the storage administrator. Using this application, storage administrators view and operate on groups of DASD volumes rather than on individual volumes. Grouping or pooling data with common storage requirements helps your installation optimize its DASD resource and provide the space and performance levels required by your user group.

ISMF automatically selects a Storage Group for a specific data set when the data set is created.

Assigning Classes to Data Sets

As a TSO or PDF user, you can assign classes to your data sets. When the Storage Management Subsystem is active and you allocate a new data set using the TSO ALLOCATE or ISPF/PDF DEFINE commands, you can have classes defaulted for you, or optionally specify the names of the Data, Management, and Storage Class you would like to be retained with the data set definition. For details on how to specify a class name on the TSO allocate command, see the *TSO/E Version 2 Command Reference*. If you are using the ISPF/PDF DEFINE command, see the *ISPF/PDF Program Reference*.

Listing and Displaying Class Information

To access information about the Data, Management, and Storage Classes that may be associated with your data sets, you must select the Data Class, Management Class, or Storage Class application on the ISMF Primary Option Menu. After you select an application, a corresponding entry panel is displayed.

Figure 76 is the entry panel used for building a list of Data Classes and their attributes.

```
                    DATA CLASS APPLICATION SELECTION
COMMAND ===>

TO PERFORM DATA CLASS OPERATIONS, SPECIFY:

  CDS NAME         ===> 'ACTIVE'
                                (1 to 44 character data set name or 'ACTIVE')

  DATA CLASS NAME ===> *                    (For Data Class list, fully or
                                             partially specified or * for all)

SELECT ONE OF THE FOLLOWING OPTIONS  ===> 1


 1   LIST    - Generate a list of Data Classes
 2   DISPLAY - Display a Data Class


IF OPTION 1 CHOSEN ABOVE,
   RESPECIFY SORT CRITERIA           ===> N    (Y or N)


USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 76. Data Class Application Selection Panel

The following is a description of how to complete each field:

CDS NAME

Complete this required field by entering a 1 to 46 character (including quotes) control data set name. ISMF will process quoted and unquoted CDS names using TSO conventions. Enter 'ACTIVE' if you mean to specify the active control data set (ACDS). The ACDS contains the current active configuration for your installation.

This field is primed with the CDS name that was last referenced in ISMF, and the default is 'ACTIVE'.

DATA CLASS NAME

Complete this required field by entering a fully or partially specified class (in this case, Data Class) name. This field will be primed with the value that was last used and the default is an asterisk. When an asterisk is specified, ISMF will generate a list of all of the classes in the control data set you indicated.

```
DATA CLASS NAME ===> *
```

If you intend to list the classes, you may partially define the name so that the list will contain the members you are looking for.

```
DATA CLASS NAME ===> *t*
```

If you enter a whole class name and build a list, your list will contain information about that class and no other. But, if you want to display the attributes of a class without building a class list, you must specify the complete name and then enter the display option.

SELECT ONE OF THE FOLLOWING OPTIONS

Here you may choose whether to list or display the class names and their attributes. This field is primed with a 1 and defaults to 1.

```
1    LIST    - Generate a list of Data Classes
2    DISPLAY - Display a Data Class
```

Enter a 1 in this field to list the Data Classes you have specified. Figure 77 shows an example of a Data Class list. To display all of the attributes for a given class, select a 2. Figure 78 on page 102 shows the first page of the Data Class Display Panel.

```
                                DATA CLASS LIST
COMMAND ===>                                                 SCROLL ===> HALF
                                                          Entries 1-5 of 5
                                                          Data Columns 3-9 of 24
CDS NAME:  CDS.COPY1

ENTER LINE OPERATORS BELOW:

    LINE       DATACLAS                                                    AVG
    OPERATOR   NAME      RECORG  RECFM  LRECL  KEYLEN  KEYOFF  AVGREC  VALUE
   ---(1)----  --(2)---  -(3)--  -(4)-  -(5)-  -(6)--  -(7)--  -(8)--  -(9)-
               T1        --      ----   -----    ---   -----   -       -----
               T2        KS      ----   32761    255   30000   U       65535
               T3        KS      ----       9      8       1   U           2
               T4        --      ----   -----    ---   -----   -       -----
               T5        --      ----   -----    ---   -----   -       -----
   ----------  --------  ------  BOTTOM  OF  DATA  ------  --------  ----------




USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 77. Data Class List Panel

```
                              DATA CLASS DISPLAY                    Page   1 of 2
COMMAND ===>

CDS NAME:         CDS.COPY1
DATA CLASS NAME:  T2

DESCRIPTION:


RECORG:           KS
RECFM:
LRECL:                 32761
KEYLEN:                  255
KEYOFF:                30000
SPACE AVGREC:     U
      AVG VALUE:       65535
      PRIMARY:        999999
      SECONDARY:      999999
      DIRECTORY:
RETPD OR EXPDT:            1


USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 78. Data Class Display Panel

The number of pages in your display panel depends on whether you display a Data Class, Management Class, or Storage Class.

If you decide to display the attribute of a class after having built a class list, simply enter the line operator DISPLAY next to the name of the class you wish to see.

```
 LINE       DATACLAS
 OPERATOR   NAME      RECORG  RECFM  LRECL  KEYLEN  KEYOFF
---(1)----  --(2)---  -(3)--  -(4)-  -(5)-  -(6)--  -(7)--
            T1        --      ----   -----    ---   -----
DISPLAY     T2        KS      ----   32761    255   30000
```

Figure 79. Invoking the DISPLAY Line Operator

RESPECIFY SORT CRITERIA

The last field on the class Application Selection Panel lets you sort primary and secondary fields on the class list in ascending or descending order. This field is always primed with an N, and it defaults to N. If you specify a Y, a Class Sort Entry Panel will be displayed as shown in Figure 80 on page 103. You will complete this entry panel just as you would the Data Set or Volume Sort Entry Panel.

```
                        DATA CLASS SORT ENTRY PANEL
COMMAND ===>

SPECIFY ONE OR MORE ATTRIBUTE NUMBERS FOR SORT SEQUENCE:
  MAJOR FIELD ===> 2      MINOR FIELD 1 ===>        MINOR FIELD 2 ===>

SPECIFY A FOR ASCENDING OR D FOR DESCENDING SORT ORDER:
  MAJOR FIELD ===> A      MINOR FIELD 1 ===>        MINOR FIELD 2 ===>

  (1)  LINE OPERATOR              (13)  RETPD OR EXPDT
  (2)  DATA CLASS NAME            (14)  VOLUME COUNT
  (3)  RECORD ORGANIZATION        (15)  IMBED
  (4)  RECORD FORMAT              (16)  REPLICATE
  (5)  LOGICAL RECORD LENGTH      (17)  CONTROL INTERVAL SIZE DATA
  (6)  KEY LENGTH                 (18)  % FREESPACE CONTROL AREA
  (7)  KEY OFFSET                 (19)  % FREESPACE CONTROL INTERVAL
  (8)  AVG REC                    (20)  SHAREOPTIONS CROSSREGION
  (9)  AVG VALUE                  (21)  SHAREOPTIONS CROSSSYSTEM
 (10)  SPACE PRIMARY              (22)  LAST MODIFIED USERID
 (11)  SPACE SECONDARY            (23)  LAST DATE MODIFIED
 (12)  SPACE DIRECTORY            (24)  LAST TIME MODIFIED

USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 80. Data Class Sort Entry Panel

If you decide to sort the list after it is constructed, simply enter the SORT command, with or without parameters, on the command line of the list panel. "Tailoring the List" on page 51 provides details on the command.

To arrange the order of the entries in your list, complete the class Sort Entry Panel just as you would a Data Set or Volume Sort Entry Panel.

Viewing and Tailoring Storage Management Subsystem Lists

You can use a selective set of commands to scroll through and tailor a Management Class, Data Class, or Storage Class list. You can use these commands to manipulate the class lists just as you would with data set and volume lists.

Figure 81 lists these commands:

Figure 81. Class List Commands

CANCEL	ERTB	PRINT	SAVE
CLEAR	FIND	PROFILE	SORT
DOWN	HELP	RETURN	TSO / CLISTs
END	LEFT	RIGHT	UP

The online help describes these commands once you have accessed the class list.

Using Storage Management Subsystem Line Operators

You can specify the **DISPLAY** line operator next to any Data Class, Management Class, or Storage Class name on a class list to generate a panel that displays values associated with that particular class. This information may help you decide when to use the data set **ALTER** line operator. If you determine that a data set you own should be associated with a new Management Class and/or Storage Class, you can use the ALTER line operator on a data set list to specify a new name. Figure 82 summarizes the line operators you can use to facilitate system-managed storage. An example of using the ALTER line operator is provided in Chapter 9, "Examples of ISMF" on page 125.

Figure 82. Summary of Storage Management Subsystem Line Operators

Task	Function	Scope	Action
View the attributes associated with an SMS class.	DISPLAY	Data, Management, or Storage Class	Displays the entry selected from the list panel. Performed in the foreground by DFP.
Associate a new management or Storage Class with an SMS-managed data set.	ALTER	Single data set (Enter ALTER on a Data Set List Panel.)	A new management and/or Storage Class is assigned to a single data set. Performed in the foreground by DFP.

Chapter 7. Using Data Entry Panels

A data entry panel is a display of labeled fields that you fill in to perform a task. The panel may be displayed in response to an option that you choose on a selection panel, an ISMF command, or in response to line operators or list commands entered on list panel. For example, when you enter the DELETE line operator on a list panel, the Delete Entry Panel is displayed. The Delete Entry Panel allows you to specify the options to delete a data set.

Entering Values on Data Entry Panels

The values you enter on data entry panels determine the way ISMF performs a specific task. ISMF data entry panels are just like ISPF data entry panels. On each data entry panel, input fields are preceded by an input arrow (===>). Some of the fields are required and others are optional. If you fail to complete a required field, or enter an invalid value, ISMF will prompt you with a short error message.

Figure 83 shows the data entry panel displayed when you enter the DELETE line operator on a data set list. The name of the data set you want to delete appears on the panel along with any additional instructions. For example, you can instruct ISMF to delete the data set even if its retention period has not expired.

```
                              DELETE ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE TO UNCATALOG
 DATA SET: USER230.ISMF.NEWNAME

  SCRATCH DATA SET              ===>          (Y or N)

  CLEAR DATA SET WITH ZEROES    ===>          (Y or N)

  DELETE EVEN IF UNEXPIRED      ===>          (Y or N)

  DELETE DFHSM BACKUP VERSIONS  ===>          (Y or N)

  DATA SET PASSWORD             ===>          (if password protected)




USE ENTER TO PERFORM DELETE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 83. Example of a Data Entry Panel

Moving through Data Entry Panels

Like other types of ISMF panels, data entry panels may consist of more than one page. The scroll commands UP and DOWN allow you to move through them. ENTER performs the function. The END command takes you back to the list panel or to a selection panel without saving the values entered on the panel. If you enter the END command on a data entry panel for a list command or line operator, ISMF will return to the data set or volume list. If you enter the END command on a data entry panel that was displayed from a selection panel (the Profile Option Menu, for example), ISMF will return to the associated selection panel. END also verifies the data and saves the values.

Data entry panels are structured to provide a fast path for most of the line operators and list commands. Required values are usually displayed on the first page of the panel but can sometimes appear on the second or third page. The other pages are grouped so that related values are shown together. The pages you complete will vary with each task you perform; the values you enter on the first page of the panel determine the sequence and number of additional pages ISMF will display. Furthermore, after completing the first page of a panel, you often have the option of bypassing the optional fields on the other pages. This saves you the time it takes to view options that are not applicable to the specific task you want to perform.

For example, when you use the DUMP line operator during a data set application, you may or may not view all seven pages of the entry panel. Figure 84 is the first page.

```
                          DUMP ENTRY PANEL                        Page 1 of 7
COMMAND ===>

SPECIFY ONE OR MORE FOR
 DATA SET: USER230.ISMF.PLIST

  OUTPUT DSN  ===> PLIST.DUMP(+1)

  IF OUTPUT DATA SET IS NEW OR NOT CATALOGED, SPECIFY:
    VOLUME COUNT    ===>
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
     UNIT           ===>

  NUMBER OF COPIES         ===>            (1 to 5 copies)
  OUTPUT MEDIA TYPE        ===>            (TAPE or DASD)
  TYPE OF DUMP             ===>            (1 LOGICAL, 2 PHYSICAL)
  INPUT DATA SET PASSWORD  ===>            (if password protected)

VIEW OR CHANGE CURRENT ALLOCATION VALUES  ===> N      (Y or N)
VIEW OR CHANGE ADDITIONAL DUMP OPTIONS    ===> N      (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 84. Page 1 of the DUMP Entry Panel

The values you enter on this page determine which of the remaining six you view, and the path you take through them. You can make five choices:

1. The number of copies you want to dump.
2. Whether you are using tape or DASD for the output data set.
3. Whether or not you want to see the current allocation values for the output data set.
4. Whether or not you want to see the other options you can specify on the DUMP command.
5. Type of dump.

Your choices determine which additional pages ISMF will display. If you choose to see the current allocation values for the output data set, and specify tape as the media type, you see one group of pages; if you specify DASD you see another. If you choose to make more than one copy, ISMF displays a panel that allows you to specify the data set names, target volumes, and unit for the additional copies.

Fields Primed with Last-Used Values

ISMF saves the values you enter on data entry panels between each use of the panel, and from one session to the next. When you choose an option on a selection panel or enter a line operator or list command, the data entry panel ISMF displays will appear with values filled in from the last time you used the function. This is called priming. Password fields will be primed as well, but because these fields are masked for security, they appear blank.

For repetitive tasks, where the values you enter are consistently the same, priming helps avoid errors and saves time. For example, when you use the DELETE line operator, you may always choose to delete a data set even if it has not reached its expiration date. When ISMF displays a data entry panel, you can accept the primed values by pressing the ENTER key. If the data entry panel has more than one page, you may want to scroll through all of the pages to verify the primed values.

To alter the primed values, you simply enter new values in any of the fields on the data entry panel. If you choose to supply new values, these values will be used to prime the data entry panel the next time you use it. For example, the DELETE Entry Panel in Figure 83 on page 105 might have been primed with the values that appear in Figure 85 on page 108. If you press the ENTER key, ISMF will perform the delete using these values. However, if you enter new values in any of the fields, ISMF will perform the delete using the new values you supply. The next time you enter the DELETE line operator these new values will appear on the DELETE Entry Panel.

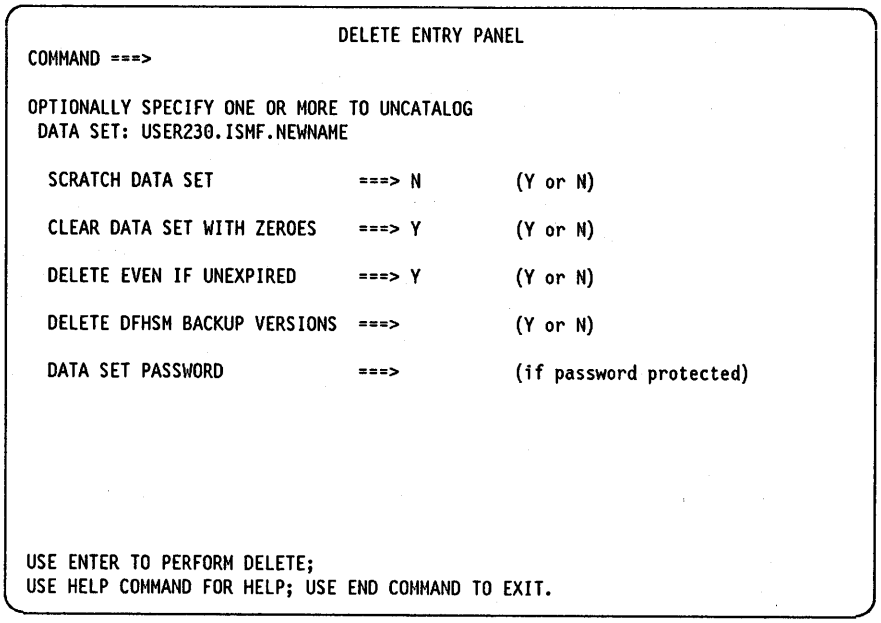


Figure 85. Priming on a Data Entry Panel

Default Values

As well as priming fields on data entry panels with the values you used last, ISMF provides default values for some fields when performing functions against data sets or volumes. You indicate that you want ISMF to supply the default value for a field on a data entry panel by blanking the field. When you press ENTER, ISMF will redisplay the panel with the default values and the short message DEFAULT PRIMING DONE. For example, if you want to compress a data set that is not password protected, you can use the default values for the COMPRESS line operator. When you enter the COMPRESS line operator on a data set list, ISMF displays the COMPRESS Entry Panel primed with the name of the data set you want to compress and the values from the last time you used the line operator. To see the default values, blank out the fields on the COMPRESS Entry Panel (Figure 86 on page 109) and press ENTER.

```
                        COMPRESS ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR
 DATA SET: USER230.ISMF.OBJ

  TO CONTROL OBTAINING ACCESS TO DATA SET, SPECIFY:
    MAXIMUM NUMBER OF RETRIES         ===>          (0 to 99)
    NUMBER OF SECONDS BETWEEN RETRIES ===>          (0 to 255)
    SERIALIZE WITH DYNAMIC ALLOCATION ===>          (Y or N)

  FOR PASSWORD PROTECTED DATA SET, SPECIFY:
    DATA SET PASSWORD     ===>









USE ENTER TO PERFORM COMPRESS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 86. Using Default Values on a Data Entry Panel

ISMF will display the COMPRESS Entry Panel primed with the default values. Figure 87 shows the default values.

```
                        COMPRESS ENTRY PANEL              DEFAULT PRIMING DONE
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR
 DATA SET: USER230.ISMF.OBJ

  TO CONTROL OBTAINING ACCESS TO DATA SET, SPECIFY:
    MAXIMUM NUMBER OF RETRIES         ===> 2        (0 to 99)
    NUMBER OF SECONDS BETWEEN RETRIES ===> 2        (0 to 255)
    SERIALIZE WITH DYNAMIC ALLOCATION ===> N        (Y or N)

  FOR PASSWORD PROTECTED DATA SET, SPECIFY:
    DATA SET PASSWORD     ===>









USE ENTER TO PERFORM COMPRESS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 87. Data Entry Panel Primed with Default Values

When you install ISMF, you can accept the defaults ISMF supplies, or you can customize them to suit your installation or personal needs. For information on changing default values, see the *MVS/ESA Data Facility Product Version 3: Customization*.

How Input Errors on a Data Entry Panel Are Handled

The information on a data entry panel will not be processed until the input fields on the panel are completed correctly. If there is an error, ISMF will point to it, prompting you to supply the correct information.

ISMF uses short and long error messages to indicate input errors on data entry panels. When there is an input error (for example, a required field left blank, or a field incorrectly specified), a short error message appears in the upper right corner, and the cursor is positioned at the beginning of the field containing the error. The short message briefly describes the error. If the short message does not give you enough information to correct the error, you can use the HELP command to display the long error message. Specifying HELP again displays the help panel associated with the error message, or, in some cases, the help panel associated with the data entry panel. The help panel gives you more information to help you complete the data entry panel.

You can display a record of input errors by entering the ERTB command. This command can be issued from any ISMF application and it results in the display of the Internal ISMF Error Table. The display panel consists of a command line, address of the ERTB table and the entry of the ERTB, and three windows for ERTBs. You can enter DOWN or UP on the command line to view previous and subsequent entries. Figure 162 on page 197 is an example of the ERTB.

If your ISMF profile has been used to set up an automatic display of the ERTB, every log record matching the values specified in the profile will generate an ERTB display. In some cases, ISMF may detect, log, and display more than one record per error. It may appear that one entry is being displayed over and over, but if you check the Module or Proc name and the entry address, you will see that the entries are distinct.

Chapter 8. Setting Up Your ISMF Profile

ISMF initially supplies the values in your profile that determine the way ISMF runs during your session. The information stored in your profile controls the mode and logging of trace and error data, the way ISMF recovers from abends, and the way background jobs are processed.

You can invoke the profile by either choosing option 0, ISMF Profile, on the ISMF Primary Option Menu, or by entering the PROFILE command on the command line of any ISMF panel (except the ISMF Profile Option Menu, an abend panel, or any panels under the profile option panel). When you choose the profile option on the Primary Option Menu or enter the PROFILE command, ISMF will display the ISMF Profile Option Menu. From the Profile Option Menu, you can then view your profile parameters for logging and error recovery, and the job statements and execute statement that ISMF uses to submit background jobs. You can also display the current ISMF operating environment.

Note: For background jobs, you can also change the job statements and the DFDSS execute statement each time you submit a job. Tailoring these statements for individual commands and line operators is discussed in "Specifying Job Statements when Submitting Jobs" on page 121.

Specifying a User Mode

Enter Option 0, USER MODE, on the ISMF Profile Option Menu to select the appropriate user mode of ISMF. Select Option 1 and press ENTER. See the User Mode Entry Panel as shown in Figure 88.

```
                                USER MODE ENTRY PANEL
COMMAND ===>

SPECIFY THE FOLLOWING:

  USER MODE ===> 1   (1 End User or 2 Storage Administrator)









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 88. ISMF User Mode Entry Panel

Controlling Logging and Recovery from Abends

To view or change the ISMF profile parameters for logging and the way ISMF handles abends, enter option 1, LOGGING AND ABEND CONTROL, on the ISMF Profile Option Menu. ISMF will display Figure 89, the Logging/Abend Control Entry Panel.

```
                    LOGGING/ABEND CONTROL ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE:

  LOG DETAILED ERROR DATA ===> Y    (Y or N)
  LOG INTER-MODULE TRACE  ===> N    (Y or N)
  LOG TRACE-POINT TRACE   ===> N    (Y or N)

  RECOVER FROM ABENDS     ===> Y    (Y or N)

  DISPLAY ERTB WHEN THE RECORD BELOW IS LOGGED ===> N     (Y or N)

    MODULE NAME ===>                                     (8 Characters)
    PROC   NAME ===>                                     (1 to 8 Characters)
    RETURN CODE ===>                                     (1 to 4 Digits)
    REASON CODE ===>                                     (1 to 4 Digits)
    SHORT MSG   ===>                                     (8 Characters)
    LONG MSG    ===>                                     (8 Characters)
    SERVICE     ===>                                     (1 to 8 Characters)
    FEEDBACK    ===>                                     (1 to 35 Characters)

USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 89. Entry Panel for Logging and Abend Parameters

The options on the Logging/Abend Control Entry Panel allow you to determine the amount of information ISMF records, the way abends are handled, and whether or not error tables (ERTBs) will be automatically displayed on your screen as errors are made. The first three options control the kind of logging ISMF performs for your session. They are discussed in "ISMF's Use of the ISPF Log." The fourth option determines whether ISMF will attempt to recover from abend conditions, and it is discussed in "Determining How ISMF Handles Abends" on page 114. The last option controls the automatic display of an error table when the record you specify is logged.

ISMF's Use of the ISPF Log

ISMF uses the ISPF log to record information about the execution of line operators and commands, and error conditions detected during processing. Used in conjunction with the information recorded for TSO and ISPF tasks, the entries ISMF makes are a valuable means of keeping track of the tasks you perform in a given ISPF or ISMF session. These entries can also help you diagnose errors (refer to the *DFP: Diagnosis Guide*). To facilitate IBM service, ISPF log information is required.

Note: To ensure that logging is done, you must specify a primary allocation greater than zero in the ISPF log parameters. If you specify zero as a primary allocation, no information about your session will appear in the ISPF log. For more information about setting up ISPF log parameters, see the *ISPF/PDF Program Reference*.

There is a standard set of information that ISMF records during each session. Entering Y in any of the fields that control logging on the Logging/Abend Control Entry Panel will determine the additional information that will be recorded in the ISPF log for each ISMF session. You can choose to log more detailed data about error conditions. You can also log inter-module trace records and trace-point trace records.

Standard Log Information

The standard information that appears in the log consists of the following:

For line operators performed in the foreground, the:

- Name of the line operator
- List entry for which the line operator was used (for example, USER19.FUNLIB.TEXT)
- ISMF application used (for example, data set application)
- Completion message.

For line operators or list commands that have been successfully submitted, the:

- Name of the line operator or list command
- List entry for which the line operator was used
- Number of entries for which the list command was used
- ISMF application
- Name of the job
- Job number or name of the job data set
- Status message.

For error conditions, the:

- ISMF application that was being used when the error occurred
- Function that was being performed (for example, FILTER)
- List entry associated with a line operator in error, if applicable
- Number of list entries associated with a list command in error
- Return code and reason code for the error.

Logging Detailed Error Data

Entering Y for the first option, LOG DETAILED ERROR DATA, on the Logging/Abend Control Entry Panel will give you additional information for error conditions, including the:

- Names of the ISMF module and procedure that detected the error
- Return code and reason
- ID of the error message associated with the failure and the ID of the last panel displayed before the error
- Name of the external service that failed and any error information that the service returned.

Figure 163 on page 197 is an example of the ISPF log with standard ISMF logging for successful use of line operators and list commands, and detailed logging for errors.

Inter-Module Traces

Entering Y for the second option, LOG INTER-MODULE TRACE, will give you a log record for every module that executes during an ISMF session. This information can help diagnose loops, or determine module flow when there is more than one possible path to an error. The log record for an inter-module trace consists of:

- The name of the module
- The contents of register 1 and register 11 when the trace entry was made
- Any additional trace data that was recorded.

Figure 164 on page 198 is an example of the ISPF log with ISMF inter-module trace entries.

Trace-Point Traces

Entering Y for the third option, LOG TRACE-POINT TRACE, will give you additional trace data from pre-established points in ISMF modules or functions. Used with the inter-module trace, this data provides detailed information about the flow of ISMF modules and functions. The log record consists of:

- The ID of the trace point
- The contents of register 1 and register 11 when the trace entry was made
- Any additional trace data that was recorded.

Figure 165 on page 198 is an example of the ISPF log with ISMF trace-point entries.

Determining How ISMF Handles Abends

ISMF responds to abend conditions based on both the value (Y or N) you specify in the RECOVER FROM ABENDS field in your profile, and the way you invoke ISPF (in normal or test/trace mode). The value in the RECOVER FROM ABENDS field on the Logging/Abend Control Entry Panel determines whether ISMF will retain control after an abend occurs and the type of data about the error that will be recorded. The ISPF mode determines where the control will be passed (to ISPF or TSO) when ISMF does not recover from abends.

Recovering from Abends

If you specify:

```
RECOVER FROM ABENDS     ===> Y
```

ISMF will try to recover from the abend and retain control. When an abend occurs, an ISMF symptom dump from the time of the failure will be placed in the ISPF log. See Figure 90 on page 115 for an example of the format. The ISMF symptom dump contains information about the:

- Application involved in the failure
- Function involved in the failure
- Current release level for ISMF
- Function modification identifier (FMID) for ISMF
- Abend code
- Name of the module involved in the failure
- Entry point address (EPA) of the failing module
- Program status word (PSW)
- Contents of the registers when the abend occurred.

Exceptions: ISMF cannot recover from user abends 111, 222, 997, 989, and 999. These codes are used by ISPF for certain unrecoverable errors. If you add functions to ISMF, you should avoid using these abend codes.

```
14:37   *****  ISMF ERROR  ***** - APPLICATION(DGT1 - DATA SET); FUNCTION(DGTFCTPR)
14:37                          - ISMF 3.1.0   FMID JDP3125   USERABEND CODE 0122
14:37                          - MODULE NAME DGTFDS00   EPA 01C8DB00   PSW 078D1000 80023534
14:37                          - R0  80000000   R1  8000007A   R2  01CE2668   R3  00000001
14:37                          - R4  00000001   R5  01CC0D28   R6  00027CB8   R7  00030B10
14:37                          - R8  00000000   R9  0002E7A0   R10 01C6A304   R11 01CE3B24
14:37                          - R12 800232A4   R13 0002E7A0   R14 800234CC   R15 00000000
```

Figure 90. ISMF Symptom Dump in the ISPF Log

Passing Control to ISPF or TSO

If you specify:

```
RECOVER FROM ABENDS      ===> N
```

ISMF will not attempt to retain control when an abend occurs. The type of dump that is taken depends on the ISPF mode.

If you invoked ISPF in normal mode: ISMF will pass control to ISPF. The ISPF Primary Option Menu or the ISPF Master Application Menu will be displayed and an ISPF symptom dump will be placed in the log. See Figure 91 for an example. The ISPF symptom dump consists of the:

- Level of ISPF
- Abend code
- PSW
- Name of the module involved in the failure, if it is available
- EPA of the module involved in the failure
- EPA of the modules ISPSUBS and ISPTBLS
- Contents of the registers when the abend occurred.

```
14:45      ISP SUBTASK ABEND     - VS 03.8 ISP 2.3.0000 ABEND CODE = 00007A PSW FF85000D 00000000
14:45                            - NAME  EPA 01C8DB00  ISPSUBS EPA 81C01F88 ISPTBLS EPA 000236B0
14:45      REGISTERS AT          - R0  80000000  R1  8000007A  R2  01CE2668  R3  00000001
14:45      ENTRY TO              - R4  00000001  R5  01CC0D28  R6  00027CB8  R7  00030B10
14:45      ABEND                 - R8  00000000  R9  0002E7A0  R10 01C6A304  R11 01CE3B24
14:45                            - R12 80036534  R13 0002E7A0  R14 8003675C  R15 00000000
```

Figure 91. ISPF Symptom Dump

If you invoked ISPF in test/trace mode: ISPF will pass control to TSO. A TSO error message will be displayed and, providing a SYSUDUMP, SYSABEND, or SYSMDUMP data set was preallocated, a dump will be taken. For more information on allocating a dump data set and the format of the dump, see the *MVS/ESA JCL Reference*.

Note: Test mode is set automatically any time you invoke the ISPF/PDF Dialog Test facility. It remains set until you exit from ISPF.

Setting Up Background Job Information

ISMF stores JCL and execute statements in your profile. Each time you use a line operator or list command in normal mode that generates a background job, ISMF draws on this information to prime the job statement on the Job Submission Entry Panel.

If you would like to modify the job statements, you can specify this information from two different places:

- You can change the job statements from the ISMF Profile Option Menu. This procedure is described in "Specifying Job Statements with the ISMF Profile Option Menu."
- You can change job statements just before you submit your background job. This procedure is described in "Specifying Job Statements when Submitting Jobs" on page 121.

Specifying Job Statements with the ISMF Profile Option Menu

All of the information that ISMF uses to process your background jobs is available from the ISMF Profile Option Menu. With the options that are available, you can access the following information:

- ISMF job statement information.
- DFDSS execute statement information.
- Data set print execute statement information.

Other options on the Profile Option Menu access the ICKDSF and IDCAMS execute statement information. This information affects line operators and commands that are available to storage administrators. See the *MVS/ESA Storage Administration Reference* for information on these options.

Specifying JCL on the ISMF Job Statement Entry Panel

Using option 2, ISMF JOB STATEMENT INFORMATION, on the Profile Option Menu, you can establish a standard set of JCL statements for background jobs. Because this information is stored by ISMF in your profile, you only have to enter it once rather than each time you submit a job.

To set up the job statements in your profile, enter option 2, ISMF JOB STATEMENT INFORMATION, on the Profile Option menu (Figure 92 on page 117). ISMF will display the ISMF Job Statement Entry Panel (Figure 93 on page 117).

```
                          ISMF PROFILE OPTION MENU
ENTER SELECTION OR COMMAND ===> 2

SELECT ONE OF THE FOLLOWING:

  0  USER MODE
  1  LOGGING AND ABEND CONTROL
  2  ISMF JOB STATEMENT INFORMATION
  3  DFDSS EXECUTE STATEMENT INFORMATION
  4  ICKDSF EXECUTE STATEMENT INFORMATION
  5  DATA SET PRINT EXECUTE STATEMENT INFORMATION
  6  IDCAMS EXECUTE STATEMENT INFORMATION
  X  EXIT, RETURN TO ISMF PRIMARY OPTION MENU









USE ENTER TO SELECT OPTION;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 92. Using the Profile Option Menu to Set Up Job Statement Information

```
                          ISMF JOB STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY ISMF JOB STATEMENT INFORMATION:

  ===> //USER230A JOB (ACCOUNT),'NAME'
  ===> //*
  ===> //*
  ===> //*
  ===> //*
  ===> //*
  ===> //*









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 93. Initial Job Statement Information

The first time you invoke the Job Statement Entry Panel, ISMF provides a skeleton job statement for you to complete. The format of the statement is shown in Figure 93. Your user ID followed by the letter A appears as the job name. The A is an identifier for the current job. Each time you submit a background job the letter is incremented. For example, if the current job name is USER230A, the next job name will be USER230B. If you choose to substitute a

number for the alphabetic identifier, 0 through 9 will be used for the cycle. If you want to use a job name other than your user ID you can do so, but:

- ISMF will not increment the name with each job you submit
- The TSO STATUS command will not be able to find your jobs
- You may end up with jobs with the same name.

The words ACCOUNT and NAME indicate the proper positions for you to supply accounting information and your name. You can add up to six additional JCL statements to complete the Job Statement Entry Panel. These statements can be JOBLIB, JES2, JES3, or comment statements. Figure 94 shows an example of the JCL you could use to set up your profile.

```
                          ISMF JOB STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY ISMF JOB STATEMENT INFORMATION:

  ===> //USER230A  JOB  (USER230,'B=090,D=D64,O=G42'),'R. M. NILLOD',
  ===> //     USER=USER230,NOTIFY=USER230,
  ===> //     TIME=(0,15),MSGCLASS=Z,MSGLEVEL=(1,1),REGION=1024K
  ===> //*
  ===> //*
  ===> //*
  ===> //*









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 94. Sample JCL on the Job Statement Entry Panel

For more information on JCL syntax and parameters on the JOB statement, see the *MVS/ESA JCL Reference*.

When you enter a list command or line operator that results in submitting a job for background processing, the information from this profile panel will be used to prime the Job Submission Entry Panel. See "Specifying Job Statements when Submitting Jobs" on page 121 for more information on the Job Submission Entry Panels.

Specifying an Execute Statement for a DFDSS Background Job

To set up the DFDSS execute statement in your profile, enter option 3, DFDSS EXECUTE STATEMENT INFORMATION, on the Profile Option Menu, Figure 95 on page 119. ISMF will display the DFDSS Execute Statement Entry Panel (Figure 96 on page 119).

```
                              ISMF PROFILE OPTION MENU
ENTER SELECTION OR COMMAND ===> 3

SELECT ONE OF THE FOLLOWING:

  0  USER MODE
  1  LOGGING AND ABEND CONTROL
  2  ISMF JOB STATEMENT INFORMATION
  3  DFDSS EXECUTE STATEMENT INFORMATION
  4  ICKDSF EXECUTE STATEMENT INFORMATION
  5  DATA SET PRINT EXECUTE STATEMENT INFORMATION
  6  IDCAMS EXECUTE STATEMENT INFORMATION
  X  EXIT, RETURN TO ISMF PRIMARY OPTION MENU









USE ENTER TO SELECT OPTION;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 95. Using the Profile Option Menu to Set Up a DFDSS Execute Statement

```
                        DFDSS EXECUTE STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY DFDSS EXECUTE STATEMENT INFORMATION:

  ===> //*
  ===> //*
  ===> //NOTE - THE REGION SIZE IS MINIMUM AND MAY BE CHANGED
  ===> //STEP1 EXEC PGM=ADRDSSU
  ===> //*
  ===> //*
  ===> //SYSPRINT DD SYSOUT=*









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 96. Skeleton Provided for the DFDSS Execute Statement

The first time you invoke the DFDSS Execute Statement Information Entry Panel, ISMF provides a skeleton DFDSS EXEC statement for you to complete. The format of this statement is shown in Figure 96.

When you tailor this statement for your own use you can add parameters to the DFDSS execute statement and up to six additional job steps to be executed

before the DFDSS EXEC step. Figure 97 shows an example of how you can tailor the DFDSS execute statement to suit your needs.

```
                    DFDSS EXECUTE STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY DFDSS EXECUTE STATEMENT INFORMATION:

  ===> //*
  ===> //*
  ===> //*
  ===> //S1DFDSS  EXEC PGM=ADRDSSU,
  ===> //  PARM='UTILMSG=YES,TYPRUN=SCAN'
  ===> //*
  ===> //SYSPRINT DD SYSOUT=*









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 97. Completed DFDSS Execute Statement

The execute statement information in Figure 97 contains both an EXEC statement with added parameters and a data definition (DD) statement. The first line of the EXEC statement:

```
//S1DFDSS  EXEC PGM=ADRDSSU,
```

names the step (S1DFDSS) and identifies DFDSS (PGM=ADRDSSU). The second line:

```
//  PARM='UTILMSG=YES,TYPRUN=SCAN'
```

contains parameter information. UTILMSG=YES specifies that utility messages are to be printed in the SYSPRINT listing. TYPRUN=SCAN specifies that the JCL syntax for the job will be checked and verified without actually executing the DFDSS function. The last line:

```
//SYSPRINT DD SYSOUT=*
```

contains a SYSPRINT statement which specifies that the SYSOUT class is the same as the MSGCLASS on the job statement.

When you enter a list command or line operator that is submitted to DFDSS for processing, ISMF will use the information on the DFDSS Execute Statement Entry Panel to construct the DFDSS job stream. See "Specifying Job Statements when Submitting Jobs" on page 121 for more information on submitting jobs for processing. For more information on the DFDSS execute statement, see the *DFDSS: User's Guide*.

Specifying JCL for a Data Set Print Background Job

You can select option 5, DATA SET PRINT EXECUTE STATEMENT INFORMATION, on the Primary Option Panel to select a job control language (JCL) statement for your print jobs. Figure 98 shows the ISMF Data Set Print Execute Statement Entry Panel.

```
                ISMF DATA SET PRINT EXECUTE STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY DATA SET PRINT EXECUTE STATEMENT INFORMATION

  ===> //*
  ===> //*
  ===> //*
  ===> //STEP1  EXEC PGM=IEBPTPCH
  ===> //*
  ===> //SYSPRINT DD SYSOUT=*
  ===> //SYSUT2   DD SYSOUT=*









USE ENTER TO REVIEW PROFILE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 98. Data Set Print Execute Statement

The JCL that is displayed includes an EXEC statement (PGM=IEBPTPCH). Use the control instructions required by your installation if they differ. You can specify JCL before and after the EXEC statements for other kinds of processing.

You can tailor or add JCL on the panels when you are in the Profile or when you are submitting a job. In both cases, the JCL you enter will be stored in the profile once you exit ISMF successfully.

Specifying Job Statements when Submitting Jobs

The Job Submission Entry Panel is primed with values from the Job Statement Entry Panel in your profile. The panel heading indicates the command or line operator you have specified. When the Job Submission Entry Panel is displayed, you can accept the job statements or modify them for your immediate needs. Any changes you make will be stored in your profile for use the next time you submit a background job.

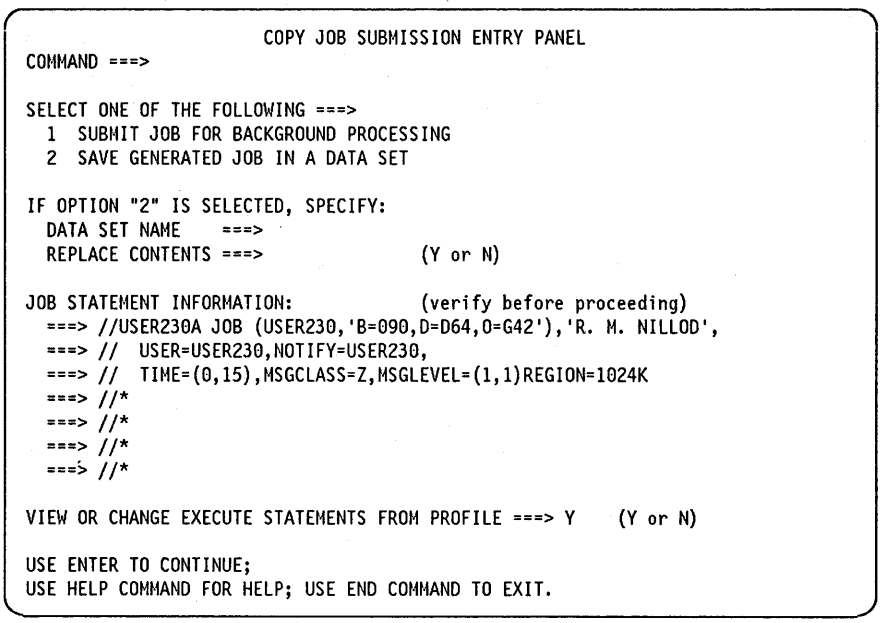


Figure 99. Sample Job Submission Entry Panel

Figure 99 is an example of the Job Submission Entry Panel you might see when you use the COPY command. After you complete the COPY Command Entry Panels, ISMF will display the COPY Job Submission Entry Panel. ISMF will use the information supplied on this panel to submit the COPY job to DFDSS.

On the Job Submission Entry Panel you have two options for submitting the job:

1 SUBMIT JOB FOR BACKGROUND PROCESSING
2 SAVE GENERATED JOB IN A DATA SET

Option 1 instructs ISMF to use the values you supplied on the data entry panels for the line operator or command, along with the information on the Job Submission Entry Panel and the DFDSS Execute Statement Entry Panel, to generate the job stream and submit the job immediately for background processing. Option 2 causes ISMF to generate the job stream and store it in a data set. This gives you the opportunity to save the job stream and look at it before you actually submit the job.

If you choose option 2 you must complete the DATA SET NAME field. This data set must be preallocated, cataloged, and either physical sequential or partitioned. It may be a PDS member or a relative generation data set. Further, it must be fixed or fixed block and must have a logical record length of 80.

The field labeled REPLACE CONTENTS allows you to indicate whether you want to replace any existing data with the new job stream or add the new job to the end of the data set.

The entries in the JOB STATEMENT INFORMATION fields come from your profile. They provide processing parameters, accounting information, and identify ownership. You can add JOBLIB, JES2, JES3, or comment statements. ISMF will accept up to seven statements.

In the field labeled VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE, you indicate whether you want to display the DFDSS Execute Statement Entry Panel from your profile. If you enter N (for no), ISMF will submit the job with the execute statements stored in your profile, without showing them to you. If you enter Y (for yes), ISMF will display the panel. This allows you to verify or change the DFDSS Execute Statement before submitting the job.

The DFDSS Execute Statement Entry Panel, shown in Figure 100, contains an example of an execute statement.

```
                    DFDSS EXECUTE STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY DFDSS EXECUTE STATEMENT INFORMATION:

  ===> //*
  ===> //*
  ===> //*
  ===> // EXEC PGM=ADRDSSU,
  ===> //  PARM='PAGENO=8,LINECNT=57,UTILMSG=YES'
  ===> //*
  ===> //SYSPRINT DD SYSOUT=*









USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 100. Sample DFDSS Execute Statement

For individual jobs you can add other steps before the execute statement (EXEC) and additional parameters to the EXEC step. Some useful parameters include:

TYPRUN=SCAN
Checks the JCL syntax without executing the DFDSS function.

UTILMSG=YES
Prints utility messages in the SYSPRINT listing.

PAGENO=nnnn
Indicates the starting page number for the SYSPRINT data set. nnnn can be any 1- to 4-digit number.

LINECNT=nnn
Indicates the number of lines to print per page. nnn can be any 1- to 3-digit number.

XABUFF=ABOVE16|BELOW16
Specifies whether the I/O buffer used for COPY, DUMP, and RESTORE is to be above or below the 16 megabyte virtual storage line.

For example, in Figure 100, the parameters on the EXEC statement specify that the listing should start on page 8. There will be 57 lines per page, and utility

messages will be printed. The *DFDSS: User's Guide* describes all of the parameters you can use.

Note: ISMF does not check the job statement or the DFDSS execute statement for validity. If you have a question about the correct way to specify a parameter, consult the *DFDSS: User's Guide*.

Job Submission for Line Operators and Commands Entered in Last-Use Mode

If you enter a line operator in last-use mode (for example, COPY=), ISMF will not display the Job Submission Entry Panel. The processing options stored in your profile will be used instead. If you chose to submit the last job immediately, the new job will be sent to the job queue. If you chose to save the job stream in a data set the last time you submitted a background job, the new job will also be saved. However, the new job will be added to the end of the data set regardless of the option you specified the last time you used the Job Submission Entry Panel.

Chapter 9. Examples of ISMF

This chapter contains examples of using ISMF to perform storage management tasks. The tasks include:

- Building a data set list
- Compressing a data set
- Copying a list of data sets to a 3380
- Dumping a copy of the ISPF log
- Restoring a CLIST that has been mistakenly deleted
- Deleting data sets that are no longer needed
- Building a DASD volume list
- Defragmenting a DASD volume
- Using the Data Set Alter line operator.

Building a Data Set List

We begin by building a data set list to use throughout our session. Assume that we have invoked ISMF and chosen the Data Set Application from the ISMF Primary Option Menu. The steps from here are:

1 Complete the Data Set Selection Entry Panel with the values shown in Figure 101. Generate the list from the catalog and acquire data from the VTOC and for data sets that have been migrated by DFHSM. Verify that pages 2 and 3 of the Data Set Selection Entry Panel are blank. If they are not blank, you will receive the short informational message,

OTHER VALUES PRESENT

```
                    DATA SET SELECTION ENTRY PANEL          Page 1 of 3
COMMAND ===>

TO GENERATE A DATA SET LIST, SPECIFY:

  DATA SET NAME   ===> **.ISMF.**
                                                (fully or partially qualified)
  SELECT SOURCE OF GENERATED LIST  ===> 2       (1-VTOC, 2-Catalog)

    1  GENERATE LIST FROM VTOC
         VOLUME SERIAL NUMBER  ===>             (fully or partially specified)

    2  GENERATE LIST FROM CATALOG
         CATALOG NAME  ===>
           CATALOG PASSWORD    ===>             (if password protected)
         VOLUME SERIAL NUMBER  ===>             (fully or partially specified)
         ACQUIRE DATA FROM VOLUME        ===> Y (Y or N)
         ACQUIRE DATA IF DFHSM MIGRATED  ===> Y (Y or N)



USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 101. Complete Page 1 of the Data Set Selection Entry Panel

2 Press ENTER to generate the data set list. A list that conforms to your selection criteria will appear, as shown in Figure 102.

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                         Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                              Data Columns 3-7 of 26

    LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------        --(3)--  --(4)-- -(5)-  (6)  -(7)-
               USER230.ISMF.ALIST                  2483     2155     13    6   TRK
               USER230.ISMF.CLIST                  1124      750     33    2   TRK
               USER230.ISMF.DGTLLIB                 468      422      9    6   TRK
               USER230.ISMF.DGTMLIB                  47       47      0    1   TRK
               USER230.ISMF.DGTPLIB                 703      703      0    3   TRK
               USER230.ISMF.DGTSLIB                 141      141      0    2   TRK
               USER230.ISMF.DGTTABL                1171     1171      0    1   TRK
               USER230.ISMF.DUMP                   7073     7073      0    1   BLK
               USER230.ISMF.ISPFILE                2061     2061      0    1   TRK
               USER230.ISMF.ISPPLIB                 234      234      0    1   TRK
               USER230.ISMF.ISPSLIB                  94       94      0    1   TRK
               USER230.ISMF.ISPTABL                 141      141      0    1   TRK
               USER230.ISMF.JCL                     281      281      0    2   TRK
               USER230.ISMF.JCLIN                   375      328     12    1   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 102. Building a Data Set List

Recovering Unused Space with the COMPRESS Line Operator

This example shows how to use the COMPRESS line operator to compress a data set, USER230.ISMF.ALIST, that we will use later on to store the job stream created for the RESTORE line operator.

1 Enter the COMPRESS line operator in the line operator column next to USER230.ISMF.ALIST as shown in Figure 103 on page 127. ISMF will display the COMPRESS Entry Panel (Figure 104 on page 127).

```
                                DATA SET LIST
COMMAND ===>                                                  SCROLL ===> PAGE
                                                          Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                               Data Columns 15-18 of 26

    LINE                                        VOLUME  MULT  DEVICE     CREATE
    OPERATOR         DATA SET NAME              SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------       -(15)-  (16)  -(17)--  ---(18)---
   compress    USER230.ISMF.ALIST              SYS096  NO    3380      1986/09/08
               USER230.ISMF.CLIST              SYS082  NO    3380      1985/04/29
               USER230.ISMF.DGTLLIB            SYS092  NO    3380      1986/04/12
               USER230.ISMF.DGTMLIB            SYS091  NO    3380      1986/05/08
               USER230.ISMF.DGTPLIB            SYS086  NO    3380      1986/04/05
               USER230.ISMF.DGTSLIB            SYS084  NO    3380      1986/05/29
               USER230.ISMF.DGTTABL            SYS091  NO    3380      1986/05/29
               USER230.ISMF.DUMP               SYS089  NO    3380      1985/08/29
               USER230.ISMF.ISPFILE            SYS083  NO    3380      1985/04/17
               USER230.ISMF.ISPPLIB            SYS084  NO    3380      1984/07/28
               USER230.ISMF.ISPSLIB            SYS087  NO    3380      1983/11/18
               USER230.ISMF.ISPTABL            SYS083  NO    3380      1984/11/05
               USER230.ISMF.JCL                SYS090  NO    3380      1986/07/26
               USER230.ISMF.JCLIN              SYS085  NO    3380      1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 103. Entering the COMPRESS Line Operator

2 Complete the COMPRESS Entry Panel as shown in Figure 104. ISMF will display the COMPRESS Job Submission Entry Panel primed with values from your profile (Figure 105 on page 128).

```
                            COMPRESS ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR
 DATA SET: USER230.ISMF.ALIST

  TO CONTROL OBTAINING ACCESS TO DATA SET, SPECIFY:
    MAXIMUM NUMBER OF RETRIES          ===> 2        (0 to 99)
    NUMBER OF SECONDS BETWEEN RETRIES  ===> 2        (0 to 255)
    SERIALIZE WITH DYNAMIC ALLOCATION  ===> N        (Y or N)

  FOR PASSWORD PROTECTED DATA SETS, SPECIFY:
    DATA SET PASSWORD     ===>

USE ENTER TO PERFORM COMPRESS;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 104. Completing the Compress Entry Panel

3 Verify the values on the COMPRESS Job Submission Entry Panel. Enter Y in the VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE field, to verify the DFDSS execute statements ISMF will use to submit the job. ISMF will display the DFDSS Execute Statement Entry Panel (Figure 106).

```
                    JOB SUBMISSION ENTRY PANEL
COMMAND ===>

SELECT ONE OF THE FOLLOWING ===> 1
  1  SUBMIT JOB FOR BACKGROUND PROCESSING
  2  SAVE GENERATED JOB IN A DATA SET

IF OPTION "2" IS SELECTED, SPECIFY:
 DATA SET NAME    ===>
 REPLACE CONTENTS ===> N              (Y or N)

JOB STATEMENT INFORMATION:             (verify before proceeding)
  ===> //USER230   JOB  (USER230,'B=090,D=D64,O=G42'),'R. M. NOLLID',
  ===> //     USER=USER230,NOTIFY=USER230,
  ===> //     TIME=(0,15),MSGCLASS=Z,MSGLEVEL=(1,1),REGION=1024K
  ===> //*
  ===> //*
  ===> //*
  ===> //*

VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE ===> Y    (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 105. Verifying the COMPRESS Job Statement Information

```
                    DFDSS EXECUTE STATEMENT ENTRY PANEL
COMMAND ===>

SPECIFY DFDSS EXECUTE STATEMENT INFORMATION:

  ===> //*
  ===> //*
  ===> //*
  ===> //STEP1 EXEC PGM=ADRDSSU
  ===> //*
  ===> //*
  ===> //SYSPRINT DD SYSOUT=*









USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 106. Verifying the DFDSS Execute Statement

4 Press ENTER to submit the job and redisplay the list (Figure 107). The asterisk next to COMPRESS in the line operator column indicates that the job has been successfully submitted for USER230.ISMF.ALIST.

```
                              DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                        Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                             Data Columns 15-18 of 26

    LINE                                    VOLUME  MULT  DEVICE     CREATE
    OPERATOR          DATA SET NAME         SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------  -(15)-  (16)  -(17)--  ---(18)---
   *COMPRESS   USER230.ISMF.ALIST            SYS096  NO    3380     1986/09/08
               USER230.ISMF.CLIST            SYS082  NO    3380     1985/04/29
               USER230.ISMF.DGTLLIB          SYS092  NO    3380     1986/04/12
               USER230.ISMF.DGTMLIB          SYS091  NO    3380     1986/05/08
               USER230.ISMF.DGTPLIB          SYS086  NO    3380     1986/04/05
               USER230.ISMF.DGTSLIB          SYS084  NO    3380     1986/05/29
               USER230.ISMF.DGTTABL          SYS091  NO    3380     1986/05/29
               USER230.ISMF.DUMP             SYS089  NO    3380     1985/08/29
               USER230.ISMF.ISPFILE          SYS083  NO    3380     1985/04/17
               USER230.ISMF.ISPPLIB          SYS084  NO    3380     1984/07/28
               USER230.ISMF.ISPSLIB          SYS087  NO    3380     1983/11/18
               USER230.ISMF.ISPTABL          SYS083  NO    3380     1984/11/05
               USER230.ISMF.JCL              SYS090  NO    3380     1986/07/26
               USER230.ISMF.JCLIN            SYS085  NO    3380     1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 107. Successful Submission for COMPRESS

Moving a List of Data Sets to a 3380 Using the COPY Command

In this scenario we will use the COPY command to move a list of data sets to a 3380.

1 Enter the COPY command on the command line of the data set list, as in Figure 108. ISMF will display the first page of the COPY Command Entry Panel (Figure 109 on page 131).

```
                                DATA SET LIST
COMMAND ===> copy                                          SCROLL ===> PAGE
                                                        Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                             Data Columns 15-18 of 26

    LINE                                          VOLUME  MULT  DEVICE     CREATE
    OPERATOR          DATA SET NAME               SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------        -(15)-  (16)  -(17)--   ---(18)---
   *COMPRESS   USER230.ISMF.ALIST                SYS096  NO    3380       1986/09/08
               USER230.ISMF.CLIST                SYS082  NO    3380       1985/04/29.
               USER230.ISMF.DGTLLIB              SYS092  NO    3380       1986/04/12
               USER230.ISMF.DGTMLIB              SYS091  NO    3380       1986/05/08
               USER230.ISMF.DGTPLIB              SYS086  NO    3380       1986/04/05
               USER230.ISMF.DGTSLIB              SYS084  NO    3380       1986/05/29
               USER230.ISMF.DGTTABL              SYS091  NO    3380       1986/05/29
               USER230.ISMF.DUMP                 SYS089  NO    3380       1985/08/29
               USER230.ISMF.ISPFILE              SYS083  NO    3380       1985/04/17
               USER230.ISMF.ISPPLIB              SYS084  NO    3380       1984/07/28
               USER230.ISMF.ISPSLIB              SYS087  NO    3380       1983/11/18
               USER230.ISMF.ISPTABL              SYS083  NO    3380       1984/11/05
               USER230.ISMF.JCL                  SYS090  NO    3380       1986/07/26
               USER230.ISMF.JCLIN                SYS085  NO    3380       1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 108. Entering the COPY Command

2 Complete the first page of the COPY Command Entry Panel as shown in Figure 109. Enter N in the VIEW OR CHANGE ADDITIONAL COPY OPTIONS field to take the last used values on the other pages of the entry panel. Press ENTER to display the COPY Job Submission Entry Panel, shown in Figure 110 on page 131.

```
                          COPY COMMAND ENTRY PANEL                  Page 1 of 10
COMMAND ===>

SPECIFY ONE OR MORE FOR THE 10 DATA SETS:

TARGET VOLUMES          ===> D64380  ===>          ===>          ===>
  PERCENT UTILIZATION   ===> 90      ===> 99       ===> 99       ===> 99
  UNIT                  ===> 3380    ===>          ===>          ===>
TARGET DATA SETS NEW FIRST LEVEL QUALIFIER  ===>

SELECT WHERE TO CATALOG TARGET DATA SETS  ===> 3
  1  DO NOT CATALOG    2  SAME CATALOG     3  DEFAULT CATALOG   4  NEW CATALOG
  SPECIFY NEW CATALOG NAME ===>

OPTIONALLY SPECIFY ONE OR MORE:
 REPLACE DUPLICATE          ===> N     (Y or N)
 REBLOCK TARGET DATA SETS   ===> N     (Y or N)
 RACF MODEL DATA SET NAME   ===>
 RACF MODEL VOLUME SERIAL   ===>

VIEW OR CHANGE ADDITIONAL COPY OPTIONS  ===> N    (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 109. Completing Page 1 of the COPY Command Entry Panel

```
                    COPY JOB SUBMISSION ENTRY PANEL
COMMAND ===>

SELECT ONE OF THE FOLLOWING ===> 1
  1  SUBMIT JOB FOR BACKGROUND PROCESSING
  2  SAVE GENERATED JOB IN A DATA SET

IF OPTION "2" IS SELECTED, SPECIFY:
 DATA SET NAME    ===>
 REPLACE CONTENTS ===> N              (Y or N)

JOB STATEMENT INFORMATION:            (verify before proceeding)
  ===> //USER230   JOB  (USER230,'B=090,D=D64,O=G42'),'R. M. NOLLID',
  ===> //    USER=USER230,NOTIFY=USER230,
  ===> //    TIME=(0,15),MSGCLASS=Z,MSGLEVEL=(1,1),REGION=1024K
  ===> //*
  ===> //*
  ===> //*
  ===> //*

VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE ===> n    (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 110. Verifying the COPY Job Statement Information

3 Verify the job statements on the COPY Job Submission Entry Panel. Enter N in the VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE field. Press ENTER to submit the job. ISMF will display the list (Figure 111 on page 132). The asterisks before each COPY command in the line operator column and the short message COPY JOB CREATED indicate that the job has been successfully submitted.

```
                                DATA SET LIST                  COPY JOB CREATED
COMMAND ===>                                                   SCROLL ===> PAGE
                                                          Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                               Data Columns 15-18 of 26

   LINE                                          VOLUME  MULT  DEVICE     CREATE
   OPERATOR          DATA SET NAME               SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------        -(15)-  (16)  -(17)--  ---(18)---
   *COPY       USER230.ISMF.ALIST                SYS096  NO    3380      1986/09/08
   *COPY       USER230.ISMF.CLIST                SYS082  NO    3380      1985/04/29
   *COPY       USER230.ISMF.DGTLLIB              SYS092  NO    3380      1986/04/12
   *COPY       USER230.ISMF.DGTMLIB              SYS091  NO    3380      1986/05/08
   *COPY       USER230.ISMF.DGTPLIB              SYS086  NO    3380      1986/04/05
   *COPY       USER230.ISMF.DGTSLIB              SYS084  NO    3380      1986/05/29
   *COPY       USER230.ISMF.DGTTABL              SYS091  NO    3380      1986/05/29
   *COPY       USER230.ISMF.DUMP                 SYS089  NO    3380      1985/08/29
   *COPY       USER230.ISMF.ISPFILE              SYS083  NO    3380      1985/04/17
   *COPY       USER230.ISMF.ISPPLIB              SYS084  NO    3380      1984/07/28
   *COPY       USER230.ISMF.ISPSLIB              SYS087  NO    3380      1983/11/18
   *COPY       USER230.ISMF.ISPTABL              SYS083  NO    3380      1984/11/05
   *COPY       USER230.ISMF.JCL                  SYS090  NO    3380      1986/07/26
   *COPY       USER230.ISMF.JCLIN                SYS085  NO    3380      1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 111. The List after Successful Submission of the COPY Command

Backing Up a Data Set Using the DUMP Line Operator

In this scenario we will generate a job to dump a copy of the CLIST.

1 Enter the DUMP line operator next to the data set USER230.ISMF.CLIST (Figure 112). ISMF will display page 1 of the DUMP Entry Panel, shown in Figure 113 on page 133.

```
                                DATA SET LIST
COMMAND ===>                                                   SCROLL ===> PAGE
                                                          Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                               Data Columns 15-18 of 26

   LINE                                          VOLUME  MULT  DEVICE     CREATE
   OPERATOR          DATA SET NAME               SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------        -(15)-  (16)  -(17)--  ---(18)---
   *COPY       USER230.ISMF.ALIST                SYS096  NO    3380      1986/09/08
   dump        USER230.ISMF.CLIST                SYS082  NO    3380      1985/04/29
   *COPY       USER230.ISMF.DGTLLIB              SYS092  NO    3380      1986/04/12
   *COPY       USER230.ISMF.DGTMLIB              SYS091  NO    3380      1986/05/08
   *COPY       USER230.ISMF.DGTPLIB              SYS086  NO    3380      1986/04/05
   *COPY       USER230.ISMF.DGTSLIB              SYS084  NO    3380      1986/05/29
   *COPY       USER230.ISMF.DGTTABL              SYS091  NO    3380      1986/05/29
   *COPY       USER230.ISMF.DUMP                 SYS089  NO    3380      1985/08/29
   *COPY       USER230.ISMF.ISPFILE              SYS083  NO    3380      1985/04/17
   *COPY       USER230.ISMF.ISPPLIB              SYS084  NO    3380      1984/07/28
   *COPY       USER230.ISMF.ISPSLIB              SYS087  NO    3380      1983/11/18
   *COPY       USER230.ISMF.ISPTABL              SYS083  NO    3380      1984/11/05
   *COPY       USER230.ISMF.JCL                  SYS090  NO    3380      1986/07/26
   *COPY       USER230.ISMF.JCLIN                SYS085  NO    3380      1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 112. Entering the Dump Line Operator

2 Complete page 1 as indicated in Figure 113. Enter N in both the VIEW OR CHANGE CURRENT ALLOCATION VALUES and the VIEW OR CHANGE ADDITIONAL DUMP OPTIONS fields to take the last used values for the other options on the DUMP line operator. Press ENTER to display the DUMP Job Submission Entry Panel (Figure 114 on page 134).

```
                          DUMP ENTRY PANEL                        Page 1 of 5
COMMAND ===>

SPECIFY ONE OR MORE FOR
 DATA SET: USER230.ISMF.CLIST

  OUTPUT DSN  ===> ISMF.CLIST.DUMP(+1)

  IF OUTPUT DATA SET IS NEW OR NOT CATALOGED, SPECIFY:
    VOLUME COUNT    ===> 1
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
    OUTPUT VOLUMES  ===>          ===>          ===>          ===>
     UNIT           ===> 3380

  NUMBER OF COPIES         ===> 1         (1 to 5 copies)
  OUTPUT MEDIA TYPE        ===> DASD      (TAPE or DASD)
  TYPE OF DUMP             ===> 1         (1 LOGICAL, 2 PHYSICAL)
  INPUT DATA SET PASSWORD  ===>           (if password protected)

VIEW OR CHANGE CURRENT ALLOCATION VALUES  ===> N      (Y or N)
VIEW OR CHANGE ADDITIONAL DUMP OPTIONS    ===> N      (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 113. Completing Page 1 of the DUMP Entry Panel

3 Verify the job statement. Enter N to bypass the DFDSS Execute Statement Entry Panel. ISMF will submit the job and redisplay the list (Figure 115).

```
                    DUMP JOB SUBMISSION ENTRY PANEL
COMMAND ===>

SELECT ONE OF THE FOLLOWING ===> 1
  1  SUBMIT JOB FOR BACKGROUND PROCESSING
  2  SAVE GENERATED JOB IN A DATA SET

IF OPTION "2" IS SELECTED, SPECIFY:
 DATA SET NAME    ===>
 REPLACE CONTENTS ===> N              (Y or N)

JOB STATEMENT INFORMATION:              (verify before proceeding)
  ===> //USER230   JOB  (USER230,'B=090,D=D64,O=G42'),'R. M. NOLLID',
  ===> //    USER=USER230,NOTIFY=USER230,
  ===> //    TIME=(0,15),MSGCLASS=Z,MSGLEVEL=(1,1),REGION=1024K
  ===> //*
  ===> //*
  ===> //*
  ===> //*

VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE ===> N    (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 114. Verifying the DUMP Job Statement Information

```
                              DATA SET LIST
COMMAND ===>                                          SCROLL ===> PAGE
                                                  Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                       Data Columns 15-18 of 26

   LINE                                    VOLUME  MULT  DEVICE     CREATE
   OPERATOR          DATA SET NAME         SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------  -(15)-  (16)  -(17)--   ---(18)---
   *COPY       USER230.ISMF.ALIST          SYS096  NO    3380       1986/09/08
   *DUMP       USER230.ISMF.CLIST          SYS082  NO    3380       1985/04/29
   *COPY       USER230.ISMF.DGTLLIB        SYS092  NO    3380       1986/04/12
   *COPY       USER230.ISMF.DGTMLIB        SYS091  NO    3380       1986/05/08
   *COPY       USER230.ISMF.DGTPLIB        SYS086  NO    3380       1986/04/05
   *COPY       USER230.ISMF.DGTSLIB        SYS084  NO    3380       1986/05/29
   *COPY       USER230.ISMF.DGTTABL        SYS091  NO    3380       1986/05/29
   *COPY       USER230.ISMF.DUMP           SYS089  NO    3380       1985/08/29
   *COPY       USER230.ISMF.ISPFILE        SYS083  NO    3380       1985/04/17
   *COPY       USER230.ISMF.ISPPLIB        SYS084  NO    3380       1984/07/28
   *COPY       USER230.ISMF.ISPSLIB        SYS087  NO    3380       1983/11/18
   *COPY       USER230.ISMF.ISPTABL        SYS083  NO    3380       1984/11/05
   *COPY       USER230.ISMF.JCL            SYS090  NO    3380       1986/07/26
   *COPY       USER230.ISMF.JCLIN          SYS085  NO    3380       1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 115. The List with Successful Submission of the DUMP Line Operator

Using the RESTORE Line Operator to Restore a Data Set

In this example, we will restore the data set that we dumped in the previous example. Again, we will submit the job for background processing.

1 Enter the RESTORE line operator next to the data set, USER230.ISMF.CLIST (Figure 116). Complete page 1 of the RESTORE Entry Panel, as shown in Figure 117 on page 136, using the same options as the DUMP example.

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                      Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                           Data Columns 15-18 of 26

    LINE                                      VOLUME  MULT  DEVICE     CREATE
    OPERATOR          DATA SET NAME           SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------    -(15)-  (16)  -(17)--   ---(18)---
    *COPY       USER230.ISMF.ALIST            SYS096  NO    3380       1986/09/08
    RESTORE     USER230.ISMF.CLIST            SYS082  NO    3380       1985/04/29
    *COPY       USER230.ISMF.DGTLLIB          SYS092  NO    3380       1986/04/12
    *COPY       USER230.ISMF.DGTMLIB          SYS091  NO    3380       1986/05/08
    *COPY       USER230.ISMF.DGTPLIB          SYS086  NO    3380       1986/04/05
    *COPY       USER230.ISMF.DGTSLIB          SYS084  NO    3380       1986/05/29
    *COPY       USER230.ISMF.DGTTABL          SYS091  NO    3380       1986/05/29
    *COPY       USER230.ISMF.DUMP             SYS089  NO    3380       1985/08/29
    *COPY       USER230.ISMF.ISPFILE          SYS083  NO    3380       1985/04/17
    *COPY       USER230.ISMF.ISPPLIB          SYS084  NO    3380       1984/07/28
    *COPY       USER230.ISMF.ISPSLIB          SYS087  NO    3380       1983/11/18
    *COPY       USER230.ISMF.ISPTABL          SYS083  NO    3380       1984/11/05
    *COPY       USER230.ISMF.JCL              SYS090  NO    3380       1986/07/26
    *COPY       USER230.ISMF.JCLIN            SYS085  NO    3380       1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 116. Entering the Restore Line Operator

2 Press ENTER to display the RESTORE Job Submission Entry Panel, as in Figure 118 on page 136.

```
                              RESTORE ENTRY PANEL                Page 1 of 5
COMMAND ===>

SPECIFY ONE OR MORE FOR DATA SET: USER230.ISMF.CLIST

  INPUT DSN ===> ISMF.CLIST.DUMP(+1)

  IF INPUT DATA SET IS NOT CATALOGED, SPECIFY:
    INPUT VOLUMES   ===>          ===>          ===>          ===>
    INPUT VOLUMES   ===>          ===>          ===>          ===>
    INPUT VOLUMES   ===>          ===>          ===>          ===>
     UNIT           ===>

  TYPE OF RESTORE   ===> 1                          (1 LOGICAL, 2 PHYSICAL)


VIEW OR CHANGE OUTPUT DATA SET OPTIONS     ===> N   (Y or N)
VIEW OR CHANGE INPUT ALLOCATION VALUES     ===> N   (Y or N)
VIEW OR CHANGE ADDITIONAL RESTORE OPTIONS  ===> N   (Y or N)


USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 117. Completing the RESTORE Entry Panel

3 Enter option 1, submit the job for processing. Enter N to bypass the DFDSS execute statement. ISMF will generate the RESTORE job and display the list again (Figure 119 on page 137).

```
                    JOB SUBMISSION ENTRY PANEL
COMMAND ===>

SELECT ONE OF THE FOLLOWING ===> 1
  1  SUBMIT JOB FOR BACKGROUND PROCESSING
  2  SAVE GENERATED JOB IN A DATA SET

IF OPTION "2" IS SELECTED, SPECIFY:
 DATA SET NAME    ===>
 REPLACE CONTENTS ===>                (Y or N)

JOB STATEMENT INFORMATION:             (verify before proceeding)
  ===> //USER230   JOB  (USER230,'B=090,D=D64,O=G42'),'R. M. NOLLID',
  ===> //    USER=USER230,NOTIFY=USER230,
  ===> //    TIME=(0,15),MSGCLASS=Z,MSGLEVEL=(1,1),REGION=1024K
  ===> //*
  ===> //*
  ===> //*
  ===> //*

VIEW OR CHANGE EXECUTE STATEMENTS FROM PROFILE ===> N    (Y or N)

USE ENTER TO CONTINUE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 118. Verifying the RESTORE Job Statement Information

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                         Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                              Data Columns 15-18 of 26

    LINE                                          VOLUME  MULT  DEVICE     CREATE
    OPERATOR          DATA SET NAME               SERIAL  VOL   TYPE       DATE
    ---(1)----  ------------(2)------------  -(15)-  (16)  -(17)--  ---(18)---
    *COPY       USER230.ISMF.ALIST          SYS096  NO    3380     1986/09/08
    *RESTORE    USER230.ISMF.CLIST          SYS082  NO    3380     1985/04/29
    *COPY       USER230.ISMF.DGTLLIB        SYS092  NO    3380     1986/04/12
    *COPY       USER230.ISMF.DGTMLIB        SYS091  NO    3380     1986/05/08
    *COPY       USER230.ISMF.DGTPLIB        SYS086  NO    3380     1986/04/05
    *COPY       USER230.ISMF.DGTSLIB        SYS084  NO    3380     1986/05/29
    *COPY       USER230.ISMF.DGTTABL        SYS091  NO    3380     1986/05/29
    *COPY       USER230.ISMF.DUMP           SYS089  NO    3380     1985/08/29
    *COPY       USER230.ISMF.ISPFILE        SYS083  NO    3380     1985/04/17
    *COPY       USER230.ISMF.ISPPLIB        SYS084  NO    3380     1984/07/28
    *COPY       USER230.ISMF.ISPSLIB        SYS087  NO    3380     1983/11/18
    *COPY       USER230.ISMF.ISPTABL        SYS083  NO    3380     1984/11/05
    *COPY       USER230.ISMF.JCL            SYS090  NO    3380     1986/07/26
    *COPY       USER230.ISMF.JCLIN          SYS085  NO    3380     1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 119. Successful Completion of the RESTORE Line Operator

Deleting Data Sets Using the DELETE Line Operator

Here we will delete two data sets using the DELETE line operator.

1 Enter the DELETE line operator in the line operator column of the data sets that you want to delete. Enter the first line operator in normal mode so that you will see the DELETE Entry Panel. Enter the second line operator in last-use mode (Figure 120 on page 138). ISMF will display the DELETE Entry Panel (Figure 121 on page 138). Assume backup versions exist for both of the cataloged data sets being deleted.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                          Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                               Data Columns 15-18 of 26

   LINE                                          VOLUME  MULT  DEVICE     CREATE
   OPERATOR          DATA SET NAME               SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------        -(15)-  (16)  -(17)--  ---(18)---
   *COPY       USER230.ISMF.ALIST                SYS096  NO    3380      1986/09/08
   *RESTORE    USER230.ISMF.CLIST                SYS082  NO    3380      1985/04/29
   *COPY       USER230.ISMF.DGTLLIB              SYS092  NO    3380      1986/04/12
   *COPY       USER230.ISMF.DGTMLIB              SYS091  NO    3380      1986/05/08
   *COPY       USER230.ISMF.DGTPLIB              SYS086  NO    3380      1986/04/05
   *COPY       USER230.ISMF.DGTSLIB              SYS084  NO    3380      1986/05/29
   *COPY       USER230.ISMF.DGTTABL              SYS091  NO    3380      1986/05/29
   delete      USER230.ISMF.DUMP                 SYS089  NO    3380      1985/08/29
   *COPY       USER230.ISMF.ISPFILE              SYS083  NO    3380      1985/04/17
   *COPY       USER230.ISMF.ISPPLIB              SYS084  NO    3380      1984/07/28
   *COPY       USER230.ISMF.ISPSLIB              SYS087  NO    3380      1983/11/18
   *COPY       USER230.ISMF.ISPTABL              SYS083  NO    3380      1984/11/05
   *COPY       USER230.ISMF.JCL                  SYS090  NO    3380      1986/07/26
   delete=     USER230.ISMF.JCLIN                SYS085  NO    3380      1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 120. Entering the DELETE Line Operator

2. Complete the DELETE Entry Panel as shown in Figure 121. ISMF will delete the first data set on the list. For the second data set, the DELETE Confirmation Panel, Figure 122 on page 139, will be displayed.

```
                              DELETE ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE TO UNCATALOG
 DATA SET: USER230.ISMF.DUMP

  SCRATCH DATA SET              ===> Y        (Y or N)

  CLEAR DATA SET WITH ZEROES    ===> N        (Y or N)

  DELETE EVEN IF UNEXPIRED      ===> Y        (Y or N)

  DATA SET PASSWORD             ===>          (if password protected)




USE ENTER TO PERFORM DELETE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 121. Completing the DELETE Entry Panel

```
                          DELETE CONFIRMATION PANEL
COMMAND ===>


********************************************************************************
********************************************************************************
********************************************************************************
********************************************************************************
*******                                                                 ********
*******    CONFIRM DELETE OF                                            ********
*******     DATA SET: USER230.ISMF.JCLIN                                ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
*******                                                                 ********
********************************************************************************
********************************************************************************
********************************************************************************
********************************************************************************


USE ENTER TO PERFORM DELETE;
USE HELP COMMAND FOR HELP; USE END COMMAND TO CANCEL DELETE.
```

Figure 122. Confirmation Panel Displayed When DELETE Is Used in Last-Use Mode

3 When both data sets have been deleted, the list will be redisplayed (Figure 123). The asterisk in front of the DELETE line operator indicates that the data set has been successfully deleted.

```
                                DATA SET LIST
COMMAND ===>                                                 SCROLL ===> PAGE
                                                        Entries 1-14 of 26
ENTER LINE OPERATORS BELOW:                             Data Columns 15-18 of 26

    LINE                                      VOLUME  MULT  DEVICE     CREATE
    OPERATOR          DATA SET NAME           SERIAL  VOL   TYPE       DATE
   ---(1)----  ------------(2)------------  -(15)-  (16)  -(17)--  ---(18)---
   *COPY       USER230.ISMF.ALIST          SYS096  NO    3380     1986/09/08
   *RESTORE    USER230.ISMF.CLIST          SYS082  NO    3380     1985/04/29
   *COPY       USER230.ISMF.DGTLLIB        SYS092  NO    3380     1986/04/12
   *COPY       USER230.ISMF.DGTMLIB        SYS091  NO    3380     1986/05/08
   *COPY       USER230.ISMF.DGTPLIB        SYS086  NO    3380     1986/04/05
   *COPY       USER230.ISMF.DGTSLIB        SYS084  NO    3380     1986/05/29
   *COPY       USER230.ISMF.DGTTABL        SYS091  NO    3380     1986/05/29
   *DELETE     USER230.ISMF.DUMP           SYS089  NO    3380     1985/08/29
   *COPY       USER230.ISMF.ISPFILE        SYS083  NO    3380     1985/04/17
   *COPY       USER230.ISMF.ISPPLIB        SYS084  NO    3380     1984/07/28
   *COPY       USER230.ISMF.ISPSLIB        SYS087  NO    3380     1983/11/18
   *COPY       USER230.ISMF.ISPTABL        SYS083  NO    3380     1984/11/05
   *COPY       USER230.ISMF.JCL            SYS090  NO    3380     1986/07/26
   *DELETE     USER230.ISMF.JCLIN          SYS085  NO    3380     1985/05/01

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 123. Successful Completion for DELETE

Building a Volume List

Building a volume list is similar to building a data set list. However, we must choose Volume application from the ISMF Primary Option Menu. Once this is done, we can:

1 Complete the Volume Selection Entry Panel with the values shown in Figure 124. Generate the list from a partially specified volume serial number. Verify that pages 2 and 3 of the Volume Selection Entry Panel are blank. If they are not blank, you will receive the short informational message,

OTHER VALUES PRESENT

```
                        VOLUME SELECTION ENTRY PANEL                Page 1 of 3
COMMAND ===>

SELECT SOURCE TO GENERATE VOLUME LIST  ===> 2   (1 - Saved list, 2 - New list)

1  GENERATE FROM A SAVED LIST
     LIST NAME  ===>
2  GENERATE A NEW LIST FROM CRITERIA BELOW
     SPECIFY SOURCE OF THE NEW LIST  ===> 2     (1 - Physical, 2 - SMS)

     OPTIONALLY SPECIFY ONE OR MORE:
          TYPE OF VOLUME LIST   ===> 1        (1-Online,2-Not Online,3-Either)
          VOLUME SERIAL NUMBER  ===> SYS0*    (fully or partially specified)
          DEVICE TYPE           ===>          (fully or partially specified)
          DEVICE NUMBER         ===>          (fully specified)
            TO DEVICE NUMBER    ===>          (for range of devices)
          ACQUIRE PHYSICAL DATA ===> Y        (Y or N)
          ACQUIRE SPACE DATA    ===> Y        (Y or N)
          STORAGE GROUP NAME    ===> S1P*     (fully or partially specified)
          CDS NAME  ===>  'ACTIVE'
                                              (fully specified or 'ACTIVE')

USE ENTER TO PERFORM SELECTION; USE DOWN COMMAND TO VIEW NEXT SELECTION PANEL;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 124. Complete Page 1 of the Volume Selection Entry Panel

2 Press ENTER to generate the volume list. See Figure 125 on page 141 for the list that conforms to your selection criteria.

```
                                VOLUME LIST
COMMAND ===>                                                SCROLL ===> DATA
                                                          Entries 1-14 of 17
ENTER LINE OPERATORS BELOW:                               Data Columns 3-8 of 39

    LINE       VOLUME  FREE     %     ALLOC    FRAG   LARGEST  FREE
    OPERATOR   SERIAL  SPACE    FREE  SPACE    INDEX  EXTENT   EXTENTS
   ---(1)----  -(2)--  --(3)--  (4)-  --(5)--  -(6)-  --(7)--  --(8)--
               SYS080   255158    21   988544    752     6324      512
               SYS081   237076    19  1006626    611    27685      337
               SYS082   243915    20   999787    769     2530      574
               SYS083   260030    21   983672    725     8760      480
               SYS084   245321    20   998381    650    14053      364
               SYS085   191404    15  1052298    590    33681      328
               SYS086   223398    18  1020304    764     2670      501
               SYS087   214076    17  1029626    769     2623      467
               SYS088   205597    17  1038105    734     2764      404
               SYS089   251738    20   991964    637    22110      367
               SYS090   223210    18  1020492    506    87270      377
               SYS091   230612    19  1013090    705    26467      477
               SYS092   246492    20   997210    745    16161      550
               SYS093   203770    16  1039932    795     2061      540

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 125. Completed Volume List

Defragmenting a Volume

This example shows how to use the DEFRAG line operator to reduce the free space fragmentation a volume.

1 Enter the DEFRAG line operator against the item in the list that you are interested in. See Figure 126 on page 142. ISMF will display the DEFRAG Entry Panel as shown in Figure 127 on page 142.

```
                                VOLUME LIST                SORT WAS SUCCESSFUL
COMMAND ===>                                                  SCROLL ===> DATA
                                                          Entries 1-14 of 17
ENTER LINE OPERATORS BELOW:                               Data Columns 3-8 of 39

    LINE       VOLUME  FREE     %     ALLOC    FRAG   LARGEST  FREE
    OPERATOR   SERIAL  SPACE    FREE  SPACE    INDEX  EXTENT   EXTENTS
   ---(1)----  -(2)--  --(3)--  (4)-  --(5)--  -(6)-  --(7)--  --(8)--
   defrag      SYS093   203677    16  1040025    795     2061      540
               SYS096   251645    20   992057    780     2155      567
               SYS082   243915    20   999787    769     2530      574
               SYS087   214076    17  1029626    769     2623      467
               SYS086   223398    18  1020304    764     2670      501
               SYS080   255861    21   987841    751     6324      511
               SYS092   246492    20   997210    745    16161      550
               SYS094   208689    17  1035013    744     3607      442
               SYS088   205597    17  1038105    734     2764      404
               SYS083   259561    21   984141    725     8760      480
               SYS091   230612    19  1013090    705    26467      477
               SYS084   245321    20   998381    650    14053      364
               SYS089   251504    20   992198    637    22110      367
               SYS081   237076    19  1006626    611    27685      337

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 126. Defragmenting a Volume

2 Complete the DEFRAG Entry Panel as shown in Figure 127.

```
                              DEFRAG ENTRY PANEL
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR VOLUME:    SYS093

  TO CONTROL OBTAINING ACCESS TO VOLUME, SPECIFY:
    MAXIMUM NUMBER OF RETRIES         ===> 2      (0 to 99)
    NUMBER OF SECONDS BETWEEN RETRIES ===> 2      (0 to 255)
    PASSWORD DSN ===>

  TO CONDITIONALLY PERFORM DEFRAG, SPECIFY:
    MINIMUM FRAGMENTATION INDEX    ===>          (0 to 999)

  SELECT ONE OF THE FOLLOWING DEFRAGMENTATION TECHNIQUES ===> 1
      1  MINIMIZE FRAGMENTATION  (TWO PASS, FULL VOLUME)
      2  MINIMIZE DATA MOVEMENT  (ONE PASS, FULL VOLUME)
      3  MINIMIZE VOLUME INVOLVEMENT  (ONE PASS, PARTIAL VOLUME)
         FOR TECHNIQUE 3,SPECIFY: FREE SPACE THRESHOLD ===>          (kilobytes)

  TO PROVIDE A LIST OF DATA SETS NOT TO BE RELOCATED, SPECIFY:
    LIST DSN ===>

USE ENTER TO PERFORM DEFRAG;
USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 127. Completing the DEFRAG Entry Panel

3 Press ENTER to submit the job and redisplay the list. The asterisk next to DEFRAG in Figure 128 indicates that the operation has been completed successfully.

```
                                VOLUME LIST
COMMAND ===>                                              SCROLL ===> DATA
                                                       Entries 1-14 of 17
ENTER LINE OPERATORS BELOW:                            Data Columns 3-8 of 39

    LINE       VOLUME  FREE     %     ALLOC    FRAG   LARGEST  FREE
    OPERATOR   SERIAL  SPACE    FREE  SPACE    INDEX  EXTENT   EXTENTS
   ---(1)----  -(2)--  --(3)--  (4)-  --(5)--  -(6)-  --(7)--  --(8)--
   *DEFRAG     SYS093   203677    16  1040025    795     2061      540
               SYS096   251645    20   992057    780     2155      567
               SYS082   243915    20   999787    769     2530      574
               SYS087   214076    17  1029626    769     2623      467
               SYS086   223398    18  1020304    764     2670      501
               SYS080   255861    21   987841    751     6324      511
               SYS092   246492    20   997210    745    16161      550
               SYS094   208689    17  1035013    744     3607      442
               SYS088   205597    17  1038105    734     2764      404
               SYS083   259561    21   984141    725     8760      480
               SYS091   230612    19  1013090    705    26467      477
               SYS084   245321    20   998381    650    14053      364
               SYS089   251504    20   992198    637    22110      367
               SYS081   237076    19  1006626    611    27685      337

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 128. Successful Submission for DEFRAG

Using the Data Set Alter Line Operator

This example shows how to use the ALTER line operator to change the name of an SMS Storage Class associated with a data set.

1 Build a data set list and verify that the list has SMS-managed entries. Enter FIND 23 on the command line to view SMS columns. If a Storage Class name is listed for a given data set, that data set is SMS managed. Now, enter ALTER next to the data set for which you will assign a new Storage Class. (Figure 129 on page 144).

```
DGTLDDS1                        DATA SET LIST
COMMAND ===>                                                SCROLL ===> PAGE
                                                          Entries 1-4 of 4
ENTER LINE OPERATORS BELOW:                               Data Columns 23-25 of 26

    LINE                                          DATA      MANAGEMENT   STORAGE
    OPERATOR          DATA SET NAME             CLASS NAME  CLASS NAME  CLASS NAME
   ---(1)----  ------------(2)------------  ---(23)---  ---(24)---  ---(25)---
               S2IISAMP.S1P01.DS102.DATA    --------    --------    --------
               S2IISAMP.S1P98.DS101         --------    --------    S1P98S01
               S2IISAMP.S1P98.DS101.DATA    --------    --------    --------
   ALTER       S2IISAMP.S1P98.DS103         --------    --------    S2P98S01
   ----------  ------  ----------- BOTTOM OF DATA -----------  ------  ----
```

Figure 129. View SMS Columns on a Data Set List

2 Now ISMF will display the ALTER Entry Panel as shown in Figure 130.

At this point, you may want to use the SPLIT SCREEN function and build a Management Class list in order to list candidate Management Classes for your data set. However, if you know the name of the Management Class you would like to select, simply enter that name in the NEW MANAGEMENT CLASS FIELD.

```
DGTDDAL1              DATA SET ALTER ENTRY PANEL
COMMAND ===>

 DATA SET NAME:            S2IISAMP.S1P98.DS103
 CURRENT MANAGEMENT CLASS: --------
 CURRENT STORAGE CLASS:    S1P98S01



 SPECIFY:

   NEW MANAGEMENT CLASS  ===> S1P01M01       (1 to 8 characters, or blank for
                                              no associated Management Class)

   NEW STORAGE CLASS     ===> S1P01S01       (1 to 8 characters, or current
                                              value for no change)




PF13=HELP     14=SPLIT    15=END      16=RETURN   17=         18=
PF19=UP       20=DOWN     21=SWAP     22=LEFT     23=RIGHT    24=CURSOR
```

Figure 130. Completing the Alter Entry Panel

3 Press ENTER to submit the job and redisplay the list. The asterisk next to ALTER in Figure 131 indicates that the operation has been completed successfully.

```
DGTLDDS1                          DATA SET LIST                    COLUMN FOUND
COMMAND ===>                                                     SCROLL ===> PAGE
                                                                Entries 1-4 of 4
ENTER LINE OPERATORS BELOW:                                     Data Columns 23-25 of 26

   LINE                                                DATA      MANAGEMENT   STORAGE
   OPERATOR          DATA SET NAME                     CLASS NAME CLASS NAME  CLASS NAME
  ---(1)----  ------------(2)------------              ---(23)--- ---(24)---  ---(25)---
              S2IISAMP.S1P01.DS102.DATA                 --------   --------    --------
              S2IISAMP.S1P98.DS101                      --------   --------    S1P98S01
              S2IISAMP.S1P98.DS101.DATA                 --------   --------    --------
  *ALTER      S2IISAMP.S1P98.DS103                      --------   --------    S1P98S01
  ----------  ------ ----------- BOTTOM OF DATA ----------- ------ ----
```

Figure 131. Successful Submission for ALTER

4 To verify that the new Management Class will be used for the data set, refresh (with the REFRESH command) the list and view the Management Class column to make sure the new Management Class name is there. Figure 132 shows a refreshed data set list.

```
DGTLDDS1                          DATA SET LIST                    COLUMN FOUND
COMMAND ===>                                                     SCROLL ===> PAGE
                                                                Entries 1-4 of 4
ENTER LINE OPERATORS BELOW:                                     Data Columns 23-25 of 26

   LINE                                                DATA      MANAGEMENT   STORAGE
   OPERATOR          DATA SET NAME                     CLASS NAME CLASS NAME  CLASS NAME
  ---(1)----  ------------(2)------------              ---(23)--- ---(24)---  ---(25)---
              S2IISAMP.S1P01.DS102.DATA                 --------   --------    --------
              S2IISAMP.S1P98.DS101                      --------   --------    S1P98S01
              S2IISAMP.S1P98.DS101.DATA                 --------   --------    --------
              S2IISAMP.S1P98.DS103                      --------   S1P01S01    S1P01S01
  ----------  ------ ----------- BOTTOM OF DATA ----------- ------ ----
```

Figure 132. Verifying a Successful Data Set Alter

Chapter 10. ISMF Command and Line Operator Reference Summary

The following tables list the line operators and commands available to end users. Abbreviations in the Application column represent the following:

DS Data Set

DVOL DASD Volume

DC Data Class

MC Management Class

SC Storage Class

Figure 133 (Page 1 of 2). ISMF Line Operators

Line Operator	Minimum Abbreviation	Description	Application	Source
ALTER	AL	Alter the Management or Storage Class name assigned to a Data Set	DS	DFP
BROWSE	B	View a sequential data set or member of a PDS	DS	DFP
CLIST	CLI	Call a TSO CLIST	DS, DVOL	DFP
COMPRESS	COM	Reclaim embedded unused space from a PDS	DS, DVOL	DFDSS
CONDENSE	CON	Free unused space at the end of a data set; compress a PDS	DS	DFHSM
COPY	COP	Copy a data set and volume to a DASD volume of like or unlike device type	DS, DVOL	DFDSS
DEFRAG	DEF	Reduce fragmentation on a volume	DVOL	DFDSS
DELETE	DE	Delete an online, back-up, or DFHSM-migrated data set	DS	DFP or DFHSM
DISPLAY	DI	Display the attributes of a class or group	MC, SC, DC	DFP
DUMP	DU	Dump a data set or volume to tape, DASD, or mass storage volumes	DS, DVOL	DFDSS
EDIT	E	Edit a sequential data set or member of a PDS	DS	DFP
HALTERDS	HA	Change the number of backup versions of a data set; change frequency of backup	DS	DFHSM

Figure 133 (Page 2 of 2). ISMF Line Operators

Line Operator	Minimum Abbreviation	Description	Application	Source
HBACKDS	HBA	Create a backup version of a data set	DS	DFHSM
HBDELETE	HBD	Delete backup versions of a data set	DS	DFHSM
HDELETE	HDELETE	Delete a migrated data set	DS	DFHSM
HIDE	HI	Hide a list entry	DS, DVOL, MC, SC, DC	DFP
HMIGRATE	HMI	Migrate a data set to a DFHSM level one or level two volume	DS	DFHSM
HRECALL	HRECA	Recall a data set that has been migrated by DFHSM	DS	DFHSM
HRECOVER	HRECO	Recover a backup version of a data set	DS	DFHSM
MESSAGE	MES	Display message text for the last operation performed on a list entry	DS, DVOL, MC, SC, DC	DFP
RELEASE	REL	Free unused space at the end of data sets	DS, DVOL	DFDSS
=		Repeat the last line operator that was executed	DS, DVOL, MC, DC, SC	DFP
RESTORE	REST	Restore data sets that have been dumped by DFDSS	DS, DVOL	DFDSS
SECURITY	SE	Invoke a RACF panel to protect data sets	DS, MC, DC, SC	RACF
SORTREC	SORTREC	Invoke DFSORT to sort data set records	DS	DFSORT
TSO Commands and CLISTS		Invoke TSO Commands and CLISTs	DS, DVOL, MC, SC, DC	DFP

Note: If you specify an equal sign after any DFDSS or DFHSM line operator, processing will occur in last-use mode. ISMF will not display an entry panel. See "Line Operator Mode" on page 70.

Figure 134 (Page 1 of 2). ISMF Commands

Command	Minimum Abbreviation	Description	Application	Source
CANCEL	CA	Return to the previous dialog without performing any of the current dialog functions.	MC, DC, SC	DFP
CLEAR	CL	Clear line operator history	DS, DVOL, MC, DC, SC	DFP
CLEAR ALL	CL ALL	Clear pages on selection entry panels and filter panels	DS, DVOL, MC, DC, SC	DFP
CLEAR PAGE	CL PA	Clear pages on selection entry panels and filter panels	DS, DVOL, MC, DC, SC	DFP
CLEAR PAGEx	CL PAx	Clear pages on selection entry panels and filter panels	DS, DVOL	DFP
COMPRESS	COM	Reclaim embedded unused space from a list of PDSs	DS	DFDSS
COPY	COP	Copy a list of data sets to a DASD volume of like or unlike device type	DS	DFDSS
DOWN	DO	Scroll down the specified number of list entries	DS, DVOL, MC, DC, SC	DFP
DUMP	DU	Dump a list of data sets to tape, DASD, or mass storage volumes	DS	DFDSS
END	END	Exit the current ISMF function or panel	DS, DVOL, MC, DC, SC	DFP
ERTB	ERT	Display the ISMF Error Table	DS, DVOL, MC, DC, SC	DFP
FILTER	FIL	Tailor the list to include only specific entries	DS, DVOL	DFP
FILTER CLEAR	FIL C	Clear the filter entries but bypass the entry panel	DS, DVOL	DFP
FIND	FIN	Find a specific data column	DS, DVOL, MC, DC, SC	DFP
FOLD	FO	Extend the data set name data column	DS	DFP
LEFT	L	Scroll left the specified number of columns	DS, DVOL, MC, DC, SC	DFP
PROFILE	P	Invoke the ISMF profile	DS, DVOL, MC, DC, SC	DFP
REFRESH	REF	Display the updated list	DS, DVOL	DFP
RELEASE	REL	Free unused space at the end of a list of data sets	DS	DFDSS

Figure 134 (Page 2 of 2). ISMF Commands

Command	Minimum Abbreviation	Description	Application	Source
RESHOW	RESH	Redisplay hidden list entries	DS, DVOL, MC, DC, SC	DFP
RESTORE	REST	Restore a list of data sets that have been dumped by DFDSS	DS	DFDSS
RIGHT	RI	Scroll right the specified number of columns	DS, DVOL, MC, DC, SC	DFP
SAVE	SA	Save a copy of a list	DS, DVOL, MC, DC, SC	DFDSS
SORT	SO	Reorder list entries based on entries in specific data columns	DS, DVOL, MC, DC, SC	DFP
TSO Commands and CLISTs		Invoke TSO Commands and CLISTs	DS, DVOL, MC, SC, DC	DFP
UP	U	Scroll up the specified number of entries	DS, DVOL, MC, DC, SC	DFP

Appendix A. Special Considerations

This appendix contains supplemental information about building a data set list and using it to perform storage management tasks. The topics covered include:

- Differences between a list generated from the catalog and a list generated from the VTOC
- Considerations for data sets that are migrated
- How VSAM data sets are handled, both when ISMF builds a list and when you use line operators and list commands against them
- Temporary data sets that are created when you use ISMF.

Using a List Generated from the Catalog or the VTOC

There are several considerations to keep in mind when you decide whether to build a list generated from the catalog or the VTOC. The source of the list affects:

- The job streams ISMF builds for DUMP and COPY
- The type of dump data set created by the DUMP line operator or command
- The way ISMF determines if a data set is multivolume.

DUMP and COPY: Differences between a VTOC List and a Catalog List

Both DUMP and COPY are sensitive to the type of list you use.

DUMP

If you enter DUMP on a list generated from the VTOC, ISMF builds a job stream that contains input DD statements for every volume on which the data sets in the list reside. The output is a physical dump.

If you use DUMP on a catalog list, ISMF does not provide input DD statements for individual volumes. When the DFDSS background job executes, DFDSS will use a catalog search to determine which volumes the data set resides on. DFDSS will dump the data set from all volumes indicated in the catalog. The output is a logical dump. For more information on the difference between a physical and logical dump, see the *DFDSS: User's Guide*.

COPY

When you use COPY on a VTOC list, ISMF provides input DD statements to DFDSS for each volume on which the data sets reside. If the data set to be copied is catalogued on another volume, DFDSS will ignore the catalogued volume and will copy the data set from the specified volume.

If you use COPY on a catalog list, ISMF does not provide input DD statements for individual volumes. When the DFDSS background job executes, DFDSS will use a catalog search to determine which volumes the data set resides on. DFDSS will copy the data set from all volumes indicated in the catalog.

Multivolume Data Sets

The way ISMF determines if a data set is multivolume depends on the source of the list.

If you generate the list from the catalog, this information is determined by the way the data set is defined in the catalog. ISMF checks for multiple volume serial number entries in the catalog. When the list is built, data sets with more than one volume serial number will appear as multivolume. If you define a VSAM data set with the IMBED option, it may appear as multivolume.

If you generate the list from the VTOC, ISMF uses the VTOC entry to determine if a data set is multi-volume. For a VTOC list there are three cases in which the multi-volume information could be incorrect:

1. Data sets that have been defined but unopened could appear in the list as multi-volume.
2. Data sets defined as multivolume could appear as single volume if the second volume has not been used.
3. VSAM data sets could appear as multivolume data sets since VSAM does not update the FMT1 DSCB.

Using ISMF for Migrated Data Sets

You may choose to build a data set list and obtain information about migrated data sets. When completing page 1 of the Data Set Selection Entry Panel, generate a list from the catalog (as opposed to the VTOC) and complete the ACQUIRE DATA IF DFHSM MIGRATED field. (See "ACQUIRE DATA IF DFHSM MIGRATED" on page 30 for details.) This field lets you choose whether or not to retrieve information about data sets that DFHSM has migrated. Whether you select Y (yes) or N (no), the VOLUME SERIAL data column will indicate MIGRAT.

When Data Is Not Acquired from the Migrated Version of the Data Set

If a data set is migrated and you specify an N, the processing time will be reduced. The devices ISMF generates for the DEVICE TYPE column are the device types *AFTER* migration occurred. See Figure 135 on page 153.

One of seven DASD device types may appear in the column: 3330, 3330-1, 3330V, 3350, 3375, or 3380.

One of six TAPE device types may appear: 3400-3, 3400-4, 3400-5, 3400-6, 3400-9, or 3480.

ISMF will retrieve data for other columns, such as Volume Serial and Multi-volume.

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> HALF

                                                          Entries 1-9 of 9
ENTER LINE OPERATORS BELOW:                               Data Columns 14-17 of 26

    LINE                                          BLOCK    VOLUME  MULT  DEVICE
    OPERATOR          DATA SET NAME               UNUSED   SERIAL  VOL   TYPE
   ---(1)----  ------------(2)------------        -(14)--  -(15)-  (16)  -(17)--
               USER230.DASD1.DTYPE2               -------  MIGRAT  NO    3330-1
               USER230.DASD1.DTYPE3               -------  MIGRAT  NO    3330V
               USER230.DASD1.DTYPE4               -------  MIGRAT  NO    3350
               USER230.DASD1.DTYPE6               -------  MIGRAT  NO    3380
               USER230.DATASET1.DTYPE1            -------  MIGRAT  NO    3400-3
               USER230.DATASET1.DTYPE3            -------  MIGRAT  NO    3400-5
               USER230.DATASET1.DTYPE4            -------  MIGRAT  NO    3400-6
               USER230.DATASET1.DTYPE5            -------  MIGRAT  NO    3480
               USER230.DATASET1.DTYPE6            -------  MIGRAT  NO    3400-9
   ----------  ------  ----------- BOTTOM OF DATA -----------  ------  ----


USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 135. Data Set List When N Is Specified for the ACQUIRE DATA IF DFHSM MIGRATED Field

When Data Is Acquired from the Migrated Version of the Data Set

If a data set is migrated and you specify a Y for the ACQUIRE DATA IF DFHSM MIGRATED field, the devices in the DEVICE TYPE column are DASD device types *BEFORE* migration occurred. See Figure 136 on page 154.

One of nine DASD device types may appear in the column: 2305-2, 3330, 3330-1, 3330V, 3340, 3350, 3375, or 3380.

ISMF will retrieve data for a number of other columns, including: Allocated Space, Data Set Organization, Record Format, Block/CI Size Volume Serial, Multivolume Data Set, Creation Date, Expiration Date, Last Reference Date, and Change Indicator. Record Format will not be completed for VSAM data sets.

```
                                DATA SET LIST
COMMAND ===>                                                SCROLL ===> HALF

                                                         Entries 1-9 of 9
ENTER LINE OPERATORS BELOW:                              Data Columns 14-17 of 21

   LINE                                          BLOCK    VOLUME  MULT  DEVICE
   OPERATOR          DATA SET NAME               UNUSED   SERIAL  VOL   TYPE
  ---(1)----  ------------(2)------------  -(14)--  -(15)-  (16)  -(17)--
              USER230.DASD1.DTYPE2          -------  MIGRAT  NO    3330-1
              USER230.DASD1.DTYPE3          -------  MIGRAT  NO    3330V
              USER230.DASD1.DTYPE4          -------  MIGRAT  NO    3350
              USER230.DASD1.DTYPE6          -------  MIGRAT  NO    3380
              USER230.DATASET1.DTYPE1       -------  MIGRAT  NO    3380
              USER230.DATASET1.DTYPE3       -------  MIGRAT  NO    3380
              USER230.DATASET1.DTYPE4       -------  MIGRAT  NO    3380
              USER230.DATASET1.DTYPE5       -------  MIGRAT  NO    3380
              USER230.DATASET1.DTYPE6       -------  MIGRAT  NO    3380
  ----------  ------  ----------- BOTTOM OF DATA --------  ---    ---  ----



USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 136. Data Set List When Y Is Specified for the ACQUIRE DATA IF DFHSM MIGRATED Field

Using ISMF with VSAM Data Sets

ISMF handles VSAM data sets differently from other types of data sets. When you build a list that contains VSAM data sets you should understand:

- How VSAM data sets appear in the list
- How the last reference date is determined
- How COPY, DUMP, and RESTORE work with VSAM data sets.

How VSAM Data Sets Appear in the List

In general, all of the objects of a VSAM data set will appear in the list. When the list is originally displayed it is sorted by data set name. If all of the objects have the same high level qualifier, they will be grouped together in the list. If any of the objects have different names, they could appear separately depending on the names of the other data sets in the list.

Specifying a User Catalog

If you generate the list from a user catalog and specify the user catalog in the catalog name, only the data component of the user catalog will appear in the list. If you specify '**' as the data set name, both the data component and the cluster will appear.

Last Reference Date

The last reference date is based on datestamp processing. However, VSAM provides a datestamp control module that causes datestamp processing to be skipped for VSAM data sets. Because of this, the data set list will not contain last reference dates for VSAM data sets unless you have substituted your own module to perform datestamp processing. For more information about providing a datestamp routine for VSAM data sets, see the *MVS/ESA VSAM Administration Guide*.

DUMP, RESTORE, and COPY Considerations

If the list is generated from the catalog, COPY, DUMP, and RESTORE can only be entered against the cluster name of a VSAM data set.

If the list is generated from the VTOC, you can enter COPY, DUMP, and RESTORE against either the data or index component. ISMF will try to find the associated cluster name to perform the line operator or command. However, if the index component name of a user catalog appears in the list, you will not be able to use COPY, DUMP, or RESTORE against this list entry because ISMF cannot locate the index component cluster name. The cluster name is system-generated; it is not in the default order of search.

Temporary Data Sets Created When Using ISMF

Two types of temporary data sets are created when you use ISMF to generate the background jobs for DFDSS line operators and list commands: filter data sets and ISPF work data sets. These data sets are automatically deleted when they are no longer needed, but while they are still in use they can appear as entries in the data set list.

Filter Data Sets

A filter data set is a sequential data set created for DFDSS list commands. It is deleted when the job runs. For all of the commands except RELEASE the data set consists of the INCLUDE keyword and all of the data set names from the list. For RELEASE, ISMF creates a separate filter data set for each different device type.

If a filter data set appears in the data set list, it will look like this:

```
K665941.ISMF.COMP.D860309.T073029
```

The data set name identifies your TSO prefix or user ID (or both, if you use a TSO prefix different from your user ID), the name of the list command, the date, and the time. For RELEASE you also get the last two characters of the generic device name. For a 3380, the filter data set looks like this:

```
K665941.ISMF.R80.D86039.T073029
```

ISPF Work Data Sets for Background Jobs

The other temporary data sets that could appear in a data set list are ISPF work data sets created as part of generating a background job. These data sets are deleted when you exit ISPF. However, if ISPF terminates abnormally, the temporary data sets might not be deleted. If an ISPF work data set appears in the list, it looks like this:

```
K665941.SPFTEMP0.CNTL
```

Appendix B. Examples of CLISTs

This appendix describes five CLISTs that are included as sample CLISTs. These CLISTs demonstrate the ISMF CLIST support.

- "Migrating an Entire List of Data Sets" on page 176 describes the MIGRATE command. This CLIST performs the HMIGRATE line operator for each data set in a Data Set List Panel.
- "Recalling an Entire List of Migrated Data Sets" on page 177 describes the RECALL command. This CLIST performs the HRECALL line operator for each data set in a Data Set List Panel.
- "Sending a Data Set to Another User" on page 177 describes the SENDC command. This CLIST transmits a data set to another user.

See "Invoking TSO Commands and CLISTs" on page 90 for information on how to execute these commands.

Formatting the Data Set List and Printing Data Columns

The CLIST, LISTPRNT, takes the output from the SAVE command and formats a data set list. LISTPRNT allows you to print the information in all of the data columns or to print only selected data columns. It calls one of two skeleton files, U20DLST1 or U20DLST2. LISTPRNT also calls BLANK, an ISPF file skeleton consisting of a single blank line. U20DLST1 prints the data set name, volume serial number, creation date, expiration date, last reference date, change indicator, and last ISMF function. U20DLST2 prints the information in all of the data columns.

This CLIST should be located in a library that is a part of SYSPROC or ISPCLIB. The skeletons should be in ISPSLIB. The output from the SAVE command is stored in ISPTABL. LISTPRNT goes to ISPTLIB to find the input data set.

Figure 137 on page 158 is the CLIST itself. Figure 138 on page 162 is the skeleton U20DLST1. Figure 139 on page 164 is the other skeleton, U20DLST2. Figure 140 on page 167 is an example of the formatting for one entry from a data set list.

The data set you use to save a copy of the list should be allocated to ISPTABL and ISPTLIB. The formatted result is placed in a data set allocated to ISPFILE under the name you gave to the list, or a data set name you choose when you run the CLIST.

```
PROC 0 INNAME() OUTNAME() FORMAT() DESC()
/*********************************************************************
/*                                                                   *
/*   CLIST: LISTPRNT                                                 *
/*                                                                   *
/*   (C) COPYRIGHT IBM CORPORATION 1986, 1987.                       *
/*                                                                   *
/*   DATE OF LAST CHANGE: 11/21/85                                   *
/*                                                                   *
/*   DESCRIPTIVE NAME: ISMF DATA SET LIST PRINT                      *
/*                                                                   *
/*   STATUS: RELEASE 1 LEVEL 0                                       *
/*                                                                   *
/*   PERSON RESPONSIBLE:  USER20, D64                                *
/*                                                                   *
/*   FUNCTION:                                                       *
/*     THIS CLIST OPENS A SAVED ISMF DATA SET LIST AND FORMATS IT    *
/*     USING THE ISPF FILE TAILORING SKELETON U20DLST1 OR U20DLST2.  *
/*                                                                   *
/*   INPUT:  ISPTLIB MEMBER &INNAME                                  *
/*           ISPSLIB MEMBER U20DLST1                                 *
/*           ISPSLIB MEMBER U20DLST2                                 *
/*           ISPSLIB MEMBER &BLANK                                   *
/*                                                                   *
/*   OUTPUT:  ISPFILE MEMBER &OUTNAME                                *
/*                                                                   *
/*   PROCESSOR: ISPF                                                 *
/*                                                                   *
/*   CHANGE ACTIVITY: LEVEL 0                                        *
/*   $L0=ISMFREL,JDP2221,,STLMRD:                                    *
/*   11/27/85, NO CHANGES NEEDED FOR "X" NAMING, MRD                 *
/*                                                                   *
/*********************************************************************
CONTROL NOFLUSH NOLIST MSG
/*********************************************************************
/*   BEGIN CLIST MAINLINE                                            *
/*********************************************************************
SET &LASTCC = 0
SET &OPENTB = 0
SET &OPENFT = 0
IF &STR(&INNAME) = &STR() THEN +
  DO
    WRITENR ENTER NAME OF THE SAVED LIST ===>
    READ &INNAME
  END
```

Figure 137 (Part 1 of 4). CLIST to Format a List for Printing

```
IF &STR(&OUTNAME) = &STR() THEN +
  DO
    WRITE DEFAULT OUTPUT NAME: &INNAME
    WRITENR ENTER DESIRED OUTPUT NAME ===>
    READ &OUTNAME
    IF &STR(&OUTNAME) = &STR() THEN +
      DO
        SET &OUTNAME = &STR(&INNAME)
      END
  END
IF &STR(&FORMAT) = &STR() THEN +
  DO
    WRITENR ENTER Y FOR ALL COLUMNS ===>
    READ &FORMAT
   IF &STR(&FORMAT) = &STR(Y) THEN +
     DO
       SET &SKEL = U20DLST2
     END
   ELSE  +
     DO
       SET &SKEL = U20DLST1
     END
  END
IF &STR(&DESC) = &STR() THEN +
  DO
    WRITENR ENTER QUOTED DESCRIPTION ===>
    READ &DESC
   IF &STR(&DESC) = &STR() THEN +
     DO
       SET &U20DDESC = &STR(NONE)
     END
   ELSE  +
     DO
       SET &U20DDESC = &STR(&DESC)
     END
  END
/*********************************************************************
/*   OPEN THE SAVED LIST                                             *
/*********************************************************************
/*   OBTAIN TABLE STATISTICS                                         *
/*********************************************************************
ISPEXEC TBSTATS &INNAME CDATE(U20DCDAT) CTIME(U20DCTIM) +
                        UDATE(U20DUDAT) UTIME(U20DUTIM) +
                        USER(U20DUSER)
```

Figure 137 (Part 2 of 4). CLIST to Format a List for Printing

```
IF &LASTCC ¬= 0 THEN +
  DO
    WRITE *** TBSTATS FAILED(RC:&LASTCC), &INNAME ***
    GOTO ERROR
  END
ELSE +
  DO
    WRITE *** &INNAME STATS DONE ***
  END
/*********************************************************************
ISPEXEC TBOPEN &INNAME NOWRITE
IF &LASTCC ¬= 0 THEN +
  DO
    WRITE *** TBOPEN FAILED(RC:&LASTCC), &INNAME ***
    GOTO ERROR
  END
ELSE +
  DO
    WRITE *** &INNAME NOW OPEN ***
    SET &OPENTB = 1
  END
/*********************************************************************
/*   OPEN THE FILE TAILORING DATA SET                                *
/*********************************************************************
ISPEXEC FTOPEN
IF &LASTCC ¬= 0 THEN +
  DO
    WRITE *** FTOPEN FAILED(RC:&LASTCC) ***
    GOTO ERROR
  END
ELSE +
  DO
    WRITE *** FTOPEN DONE ***
    SET &OPENFT = 1
  END
/*********************************************************************
/*   DO THE FTINCL TO GENERATE THE OUTPUT LIST                       *
/*********************************************************************
ISPEXEC FTINCL &SKEL
IF &LASTCC ¬= 0 THEN +
  DO
    WRITE *** FTINCL &SKEL FAILED(RC:&LASTCC) ***
    GOTO ERROR
  END
ELSE +
  DO
    WRITE *** FTINCL DONE ***
  END
```

Figure 137 (Part 3 of 4). CLIST to Format a List for Printing

```
/*********************************************************************
/*   CLOSE THE FILE TAILORING DATA SET                               *
/*********************************************************************
ERROR:  +
IF &OPENFT = 1 THEN +
  DO
   ISPEXEC FTCLOSE NAME(&OUTNAME)
   IF &LASTCC ¬= 0 THEN +
     DO
        WRITE *** FTCLOSE FAILED(RC:&LASTCC) ***
     END
   ELSE +
     DO
       WRITE *** FTCLOSE DONE ***
     END
  END
ELSE +
  DO
       WRITE *** FTCLOSE NOT DONE ***
  END
/*********************************************************************
/*   CLOSE THE SAVED LIST                                            *
/*********************************************************************
IF &OPENTB = 1 THEN +
  DO
   ISPEXEC TBCLOSE &INNAME
   IF &LASTCC ¬= 0 THEN +
     DO
       WRITE *** TBCLOSE FAILED(RC:&LASTCC), &INNAME ***
       GOTO DONE
     END
   ELSE +
     DO
       WRITE *** &INNAME NOW CLOSED ***
     END
  END
ELSE +
  DO
       WRITE *** TBCLOSE NOT DONE, &INNAME ***
  END
/*********************************************************************
/*   END OF LISTPRNT                                                 *
/*********************************************************************
DONE:   +
  WRITE *** END OF CLIST: LISTPRNT ***
END
```

Figure 137 (Part 4 of 4). CLIST to Format a List for Printing

```
)CM ********************************************************************
)CM                                                                     **
)CM  SKELETON: U20DLST1                                                 **
)CM                                                                     **
)CM  (C) COPYRIGHT IBM CORPORATION 1986.                                **
)CM                                                                     **
)CM  DATE OF LAST CHANGE: 11/21/85                                      **
)CM                                                                     **
)CM  DESCRIPTIVE NAME: ISMF DATA SET APPLICATION: FORMAT A SAVED        **
)CM                    DATA SET LIST                                    **
)CM                                                                     **
)CM  STATUS:  LEVEL 0                                                   **
)CM                                                                     **
)CM  PERSON RESPONSIBLE = USER20, D64                                   **
)CM                                                                     **
)CM  FUNCTION:                                                          **
)CM                                                                     **
)CM     THIS IS A FILE TAILORING SKELETON WHICH CREATES A               **
)CM     LIST WITH:                                                      **
)CM                DATA SET NAME, VOLSER, CREATION DATE, EXPIRATION     **
)CM                DATE, LAST REF DATE, CHANGE IND, LAST ISMF           **
)CM                FUNCTION                                             **
)CM                                                                     **
)CM  PROCESSOR:  ISPF                                                   **
)CM                                                                     **
)CM  CHANGE ACTIVITY:  LO                                               **
)CM  $LO=ISMFREL1.JDP221,,STLMRD:                                       **
)CM  11/27/85, MODIFIED FOR "X" NAMING, MRD                             **
)CM                                                                     **
)CM ********************************************************************
)CM
)CM ********************************************************************
)CM CLEAR THE EXPIRED AND TOTAL COUNTERS
)CM ********************************************************************
)SET EXPCNT = 0
)SET TLCNT = 0
)CM ********************************************************************
)CM SET TABS FOR FORMATTING (EXCLAMATION POINT)
)CM ********************************************************************
)TB 14 24 70
)CM ********************************************************************
)CM GENERATE THE HEADINGS LINE
)CM ********************************************************************
-----------------------------------------------------------------------
--              ISMF DATA SET LIST: &INNAME!--
--                                                                     --
--  DESCRIPTION: &U20DDESC!--
--  PRINTED:!&ZDATE!AT: &ZTIME HRS.!--
--       BY:!&ZUSER! !--
--  CREATED:!&U20DCDAT!AT: &U20DCTIM HRS.!--
--  UPDATED:!&U20DUDAT!AT: &U20DUTIM HRS.!--
--       BY:!&U20DUSER! !--
-----------------------------------------------------------------------
)CM *
```

Figure 138 (Part 1 of 2). File Tailoring Skeleton to Print a Subset of Data Columns

```
)CM ********************************************************************
)CM GENERATE AN OUTPUT LINE FOR EACH TABLE ENTRY
)CM ********************************************************************
)DOT &INNAME
)IM BLANK NT
)SET TLCNT = &TLCNT + 1
)SEL &ZDATE GE &XEXPIRD
 ******************************
 *  WARNING: EXPIRED DATA SET  *
 ******************************
)SET EXPCNT = &EXPCNT + 1
 &TLCNT) DATA SET NAME: &XOBJ
)ENDSEL
)SEL &ZDATE LT &XEXPIRD
 &TLCNT) DATA SET NAME: &XOBJ
)ENDSEL
        VOLSER: &XVOLSER
        CREATED: &XCREATD
        EXPIRES: &XEXPIRD
        LAST REF: &XLASTREF
        CHANGED: &XCHNGIND
        LAST ISMF FUNCTION: &XLINEOP
)ENDDOT
)CM ********************************************************************
)CM SET TABS FOR FORMATTING (EXCLAMATION POINT)
)CM ********************************************************************
)TB    70
)CM ********************************************************************
)CM GENERATE THE END OF LIST LINE
)CM ********************************************************************
)IM BLANK NT
--------------------------------------------------------------------------
--                            END OF LIST!--
)SEL &TLCNT EQ 0
--  THERE ARE NO DATA SETS LISTED!--
)ENDSEL
)SEL &TLCNT NE 0
--  DATA SETS LISTED-&TLCNT!--
)ENDSEL
)SEL &EXPCNT EQ 0
--  THERE ARE NO EXPIRED DATA SETS!--
)ENDSEL
)SEL &EXPCNT NE 0
--  EXPIRED DATA SETS-&EXPCNT!--
)ENDSEL
--------------------------------------------------------------------------
```

Figure 138 (Part 2 of 2). File Tailoring Skeleton to Print a Subset of Data Columns

```
)CM ********************************************************************
)CM                                                                     **
)CM  SKELETON: U20DLST2                                                 **
)CM                                                                     **
)CM  (C) COPYRIGHT IBM CORPORATION 1986, 1987.                          **
)CM                                                                     **
)CM  DATE OF LAST CHANGE: 11/21/85                                      **
)CM                                                                     **
)CM  DESCRIPTIVE NAME: ISMF DATA SET APPLICATION: FORMAT A SAVED        **
)CM                    DATA SET LIST                                    **
)CM                                                                     **
)CM  STATUS:  LEVEL 0                                                   **
)CM                                                                     **
)CM  PERSON RESPONSIBLE = USER20, D64                                   **
)CM                                                                     **
)CM  FUNCTION:                                                          **
)CM                                                                     **
)CM     THIS IS A FILE TAILORING SKELETON WHICH CREATES A LIST          **
)CM     WITH ALL THE DISPLAYABLE DATA COLUMNS                           **
)CM                                                                     **
)CM  PROCESSOR:  ISPF                                                   **
)CM                                                                     **
)CM  CHANGE ACTIVITY:  LO                                               **
)CM  $LO=ISMFREL1,JDP2221,,STLMRD:                                      **
)CM  11/27/85, MODIFIED FOR "X" NAMING, MRD                             **
)CM  05/29/85, CORRECTED TYPO ON XCHNGIND, MRD                          **
)CM  05/29/85, CORRECTED MISSING LAST DASHED LINE, MRD                  **
)CM  12/15/87, MODIFIED FOR 26 DATA COLUMNS, KTB                        **
)CM                                                                     **
)CM ********************************************************************
)CM
)CM ********************************************************************
)CM CLEAR THE EXPIRED, EXTENT AND TOTAL COUNTERS
)CM ********************************************************************
)SET EXPCNT = 0
)SET TLCNT = 0
)CM ********************************************************************
)CM SET TABS FOR FORMATTING (EXCLAMATION POINT)
)CM ********************************************************************
)TB 14 24 70
)CM ********************************************************************
)CM GENERATE THE HEADINGS LINE
)CM ********************************************************************
-----------------------------------------------------------------------
--              ISMF DATA SET LIST: &INNAME!--
--                                                                    --
--                                                                    --
--  PRINTED:!&ZDATE!AT: &ZTIME HRS.!--
--       BY:!&ZUSER! !--
--  CREATED:!&U20DCDAT!AT: &U20DCTIM HRS.!--
--  UPDATED:!&U20DUDAT!AT: &U20DUTIM HRS.!--
--       BY:!&U20DUSER! !--
-----------------------------------------------------------------------
)CM *
```

Figure 139 (Part 1 of 3). File Tailoring Skeleton to Print All of the Data Columns

```
)CM ********************************************************************
)CM GENERATE AN OUTPUT LINE FOR EACH TABLE ENTRY
)CM ********************************************************************
)DOT &INNAME
)IM BLANK NT
)SET TLCNT = &TLCNT + 1
)SEL &ZDATE GE &XEXPIRD
 ******************************
 *  WARNING: EXPIRED DATA SET  *
 ******************************
)SET EXPCNT = &EXPCNT + 1
)ENDSEL
 &TLCNT) DATA SET NAME: &XOBJ
        VOLSER: &XVOLSER
        DEV TYPE: &XDEVTYPE
        MULT-VOLUME: &XMULTV
        ALLOC SPACE: &XALLOCSP
        ALLOC USED: &XALLOCUS
        % UNUSED: &XALLONU
        NUM EXT: &XNUMEXT
        ALLOC UNIT: &XALLOCUT
        SEC ALLOC: &XSECALLO
        DSORG: &XDSORG
        RECFM: &XRECFMT
        RECLEN: &XRECLEN
        BLKSIZE: &XBLKSIZE
        OPTIMAL: &XOPTIMAL
        BLK NOT USED: &XBLOCKNU
        CREATED: &XCREATD
        EXPIRES: &EXPIRD
        LAST REF: &XLASTREF
        CHANGED: &XCHNGIND
        LAST BACKUP DATE: &XLASBKDT
        DATA CLASS NAME: &XDATACLS
        MANAGEMENT CLASS NAME: &XMGMTCLS
        STORAGE CLASS NAME: &XSTORCLS
        OWNER ID: &XOWNERID
        LAST ISMF FUNCTION: &XLINEOP
)ENDDOT
```

Figure 139 (Part 2 of 3). File Tailoring Skeleton to Print All of the Data Columns

```
)CM ********************************************************************
)CM SET TABS FOR FORMATTING (EXCLAMATION POINT)
)CM ********************************************************************
)TB    70
)CM ********************************************************************
)CM GENERATE THE END OF LIST LINE
)CM ********************************************************************
)IM BLANK NT
------------------------------------------------------------------------
--                            END OF LIST!--
)SEL &TLCNT EQ 0
--  THERE ARE NO DATA SETS LISTED!--
)ENDSEL
)SEL &TLCNT NE 0
--  DATA SETS LISTED-&TLCNT!--
)ENDSEL
)SEL &EXPCNT EQ 0
--  THERE ARE NO EXPIRED DATA SETS!--
)ENDSEL
)SEL &EXPCNT NE 0
--  EXPIRED DATA SETS-&EXPCNT!--
)ENDSEL
------------------------------------------------------------------------
```

Figure 139 (Part 3 of 3). File Tailoring Skeleton to Print All of the Data Columns

```
--------------------------------------------------------------------------
--              ISMF DATA SET LIST: U20LIST2                            --
--                                                                      --
--                                                                      --
--  PRINTED: 86/01/17  AT: 12:55 HRS.                                   --
--       BY: USER20                                                     --
--  CREATED: 86/01/17  AT: 12:55.05 HRS.                                --
--  UPDATED: 86/01/17  AT: 12.55.06 HRS.                                --
--       BY: USER20                                                     --
--------------------------------------------------------------------------

 ******************************
 *  WARNING: EXPIRED DATA SET  *
 ******************************
1)  DATA SET NAME: USER20.DFP220.DGTTLIB
        VOLSER: USER99
        DEV TYPE: 3380
        MULT-VOLUME: NO
        ALLOC SPACE:      47
        ALLOC USED:      47
        % UNUSED:
        NUM EXT:   1
        ALLOC UNIT: TRK
        SEC ALLOC:      47
        DSORG: PO
        RECFM: FB
        RECLEN:    80
        BLKSIZE:  3120
        OPTIMAL: 23440
        BLK NOT USED:        6
        CREATED: 86/01/11
        EXPIRES: 00/00/00
        LAST REF: 86/01/17
        CHANGED: YES
        LAST BACKUP DATE: 86/01/17
        DATA CLASS NAME: DCNORM
        MANAGEMENT CLASS NAME: MCONE
        STORAGE CLASS NAME: SCONE
        OWNER ID:
        LAST ISMF FUNCTION: BROWSE
```

Figure 140. Example of an Entry from a Saved List Formatted for Printing

Totaling the Allocated Space Column

The CLIST TOTAL enables you to total the values in the Allocated Space data column on the Data Set List Panel. Not only does TOTAL tell you how many kilobytes of space are allocated, it gives you the number of entries in the list, the number of entries totaled, the number of entries skipped, and the number of entries migrated. TOTAL also places an entry in the ISPF log data set that summarizes the transaction.

This CLIST should be located in a library that is a part of SYSPROC or ISPCLIB. The skeletons should be in ISPSLIB. The output from the SAVE command is stored in ISPTABL. TOTAL goes to ISPTLIB to find the input data set.

Figure 141 is the CLIST itself. Figure 142 on page 175 and Figure 143 on page 176 show how TOTAL is invoked, and Figure 144 on page 176 is an example of the data that is sent to your screen.

```
PROC 0 INNAME() TEST()
/*************************************************************
/*
/*   CLIST: TOTAL
/*
/*   (C) COPYRIGHT IBM CORPORATION 1986, 1987.
/*
/*   DATE OF LAST CHANGE: 08/04/86
/*
/*   DESCRIPTIVE NAME: ISMF DATA SET SAVED LIST TOTALING EXAMPLE
/*
/*   PERSON RESPONSIBLE:  M.R. NOLLID, D64
/*
/*   FUNCTION:
/*     THIS CLIST IS AN EXAMPLE OF HOW TO PERFORM TOTALING OF
/*     THE ALLOCATED SPACE COLUMN FOR AN ISMF SAVED DATA SET
/*     LIST.
/*
/*   INPUT:(1)SAVED TABLE - ISPTLIB MEMBER: &INNAME
/*         (2)TEST PARAMETER: YES OR NON-YES
/*
/*   OUTPUT: THIS CLIST DOES WRITES TO THE SCREEN
/*           A SUMMARY RECORD IS ALSO PLACED IN THE ISPF LOG
/*
```

Figure 141 (Part 1 of 8). CLIST to Total the Allocated Space Column

```
/*   PROCESSING:
/*
/* 1.IF THE LIST NAME IS NOT PRESENT THEN SOLICIT FOR THE NAME
/* 2.OPEN THE SAVED LIST, AN ISPF TABLE
/* 3.POSITION TO THE TOP OF THE TABLE (INNAME)
/* 4.SKIP TO THE FIRST ROW IN THE TABLE
/* 5.CLEAR THE COUNTERS FOR:
/*   - NUMBER OF LIST ENTRIES (ENTRYCNT)
/*   - NUMBER OF ENTRIES PROCESSED (PROCCNT)
/*   - NUMBER OF ENTRIES SKIPPED (SKIPCNT)
/*   - NUMBER OF ENTRIES MIGRATED (MIGCNT)
/*   - CURRENT ALLOCATED SPACE (COUNTER),
/*   - SUBTOTAL OF ALL ENTRIES (SUBTOTAL).
/* 6.FOR EACH TABLE ROW:
/*     -TBGET THE ROW FOR ALL LIST VARIABLES
/* 7.NO ERROR, BUMP THE NUMBER OF ENTRIES READ
/* 8.IF THE ENTRY IS MIGRATED, BUMP THE MIGRATED COUNT
/* 9.CHECK THE CURRENT VALUE OF ALLOCATED SPACE, IF NOT EQUAL
/*   TO "-" AND "?" AND "<" AND ">" THEN:
/*    -BUMP THE NUMBER OF ENTRIES PROCESSED
/*    -ADD THE CURRENT ALLOCATED SPACE TO THE SUBTOTAL
/* 10.CHECK THE CURRENT VALUE OF ALLOCATED SPACE, IF IT IS
/*    EQUAL TO "-" OR "?" OR "<" OR ">" THEN:
/*     -IF IN TEST MODE, SHOW THE NAME AND VALUE SKIPPED
/*     -ADD TO THE NUMBER OF ENTRIES SKIPPED
/* 11.IF NO ERROR ON THE TBGET, ISSUE TBSKIP TO POSITION TO
/*    THE NEXT ENTRY IN THE TABLE. END-OF-LIST WILL SHOW UP
/*    AS A TBSKIP ERROR, RETURN CODE EIGHT; THIS IS NORMAL.
/*    WHEN THIS HAPPENS, SET DISPLOOP TO OFF.
/* 12.END OF LIST PROCESSING, CLOSE THE SAVED LIST
/* 13.END OF CLIST
/*     -MAKE AN ENTRY IN THE ISPF LOG
/*     -DISPLAY A SUMMARY ON THE SCREEN
/*
/*   CHANGE ACTIVITY: LEVEL 0
/*   $L0=ISMFREL,JDP2221,,STLMRD:
/*
/*****************************************************************
CONTROL NOFLUSH NOLIST MSG
/*****************************************************************
/* 1.BEGIN CLIST MAINLINE. IF THE LIST NAME IS NOT PRESENT THEN
/*   SOLICIT FOR THE NAME.
/*****************************************************************
SET &LASTCC = 0
SET &OPENTB = 'OFF'
IF &STR(&INNAME) = &STR() THEN -
  DO
    WRITENR ENTER NAME OF THE SAVED LIST ===>
    READ &INNAME
  END
```

Figure 141 (Part 2 of 8). CLIST to Total the Allocated Space Column

```
/*************************************************************
/*   IF RUNNING IN "TEST" MODE, DISPLAY TABLE STATISTICS.
/*************************************************************
IF &STR(&TEST) = &STR(YES) THEN -
  DO
    /*************************************************************
    /*   OBTAIN TABLE STATISTICS
    /*************************************************************
    ISPEXEC TBSTATS &INNAME CDATE(U20DCDAT) CTIME(U20DCTIM) -
                            UDATE(U20DUDAT) UTIME(U20DUTIM) -
                            USER(U20DUSER)
    IF &LASTCC ¬= 0 THEN -
      DO
        WRITE *** TBSTATS FAILED(RC:&LASTCC), &INNAME ***
        GOTO LDONE
      END
    ELSE -
      DO
        WRITE *** &INNAME STATISTICS ***
        WRITE *** CREATED: &U20DCDAT  TIME:&U20DCTIM
        WRITE *** UPDATED: &U20DUDAT  TIME:&U20DUTIM
        WRITE *** BY:      &U20DUSER
      END
  END
/*************************************************************
/* 2.OPEN THE SAVED LIST, AN ISPF TABLE
/*************************************************************
ISPEXEC TBOPEN &INNAME NOWRITE
IF &LASTCC ¬= 0 THEN -
  DO
    WRITE *** TBOPEN FAILED(RC:&LASTCC), &INNAME ***
    GOTO LDONE
  END
ELSE -
  DO
/*************************************************************
/*   IF TEST MODE, NOTE OPEN SUCCESSFUL
/*************************************************************
    IF &STR(&TEST) = &STR(YES) THEN -
      DO
        WRITE *** &INNAME NOW OPEN ***
      END
    SET &OPENTB = 'ON'
  END
```

Figure 141 (Part 3 of 8). CLIST to Total the Allocated Space Column

```
/*************************************************************
/* 3.POSITION TO THE TOP OF THE TABLE (INNAME)
/*************************************************************
SET &LASTCC = 0
SET &EXECCC = 0
ISPEXEC TBTOP  &INNAME
SET &EXECCC = &LASTCC
IF &EXECCC ¬= 0 THEN    -
  DO
    WRITE *** &INNAME TBTOP FAILED : &EXECCC ***
    GOTO LDONE
  END
/*************************************************************
/* 4.SKIP TO THE FIRST ROW IN THE TABLE
/*************************************************************
SET &EXECCC = 0
ISPEXEC TBSKIP  &INNAME  NUMBER(1)
SET &EXECCC = &LASTCC
IF &EXECCC ¬= 0 THEN    -
  DO
    WRITE *** &INNAME TBSKIP FOR ROW 1 FAILED : &EXECCC ***
    GOTO LDONE
  END
/*************************************************************
/* 5.CLEAR THE COUNTERS FOR: NUMBER OF LIST ENTRIES (ENTRYCNT),
/*   - NUMBER OF LIST ENTRIES (ENTRYCNT)
/*   - NUMBER OF ENTRIES PROCESSED (PROCCNT)
/*   - NUMBER OF ENTRIES SKIPPED (SKIPCNT)
/*   - NUMBER OF ENTRIES MIGRATED (MIGCNT)
/*   - CURRENT ALLOCATED SPACE (COUNTER),
/*   - SUBTOTAL OF ALL ENTRIES (SUBTOTAL).
/*************************************************************
SET &EXECCC = 0
SET ENTRYCNT = 0
SET PROCCNT = 0
SET SKIPCNT = 0
SET MIGCNT = 0
SET COUNTER  = 0
SET SUBTOTAL = 0
/*************************************************************
/* 6.FOR EACH TABLE ROW:
/*     -TBGET THE ROW FOR ALL LIST VARIABLES
/*************************************************************
SET DISPLOOP = 'ON'
DO WHILE &DISPLOOP = 'ON'
   ISPEXEC TBGET  &INNAME  POSITION(NEWCRP)
   SET &EXECCC = &LASTCC
   IF &EXECCC ¬= 0 THEN    -
     DO
       WRITE *** &INNAME TBGET FAILED : &EXECCC ***
       SET &DISPLOOP = 'OFF'
     END
```

Figure 141 (Part 4 of 8). CLIST to Total the Allocated Space Column

```
/*************************************************************
/* 7.NO ERROR, BUMP THE NUMBER OF ENTRIES READ
/*************************************************************
   ELSE  -
     DO
       SET LASTCC = 0
       SET ENTRYCNT = &ENTRYCNT + 1
/*************************************************************
/*   IF TEST MODE, LIST ALL ROW VARIABLES
/*************************************************************
       IF &STR(&TEST) EQ &STR(YES) THEN  -
         DO
           WRITE
           WRITE THE CURRENT LIST ENTRY HAS THESE VALUES:
           WRITE
           WRITE          COL    VARIABLE    CURRENT
           WRITE          TAG      NAME        VALUE
           WRITE          ____   _________   _______
           WRITE          (--)   CDISPFLG:   &CDISPFLG
           WRITE          (--)   CFILTFLG:   &CFILTFLG
           WRITE          (--)   CHIDEFLG:   &CHIDEFLG
           WRITE          (1 )   CLINEOP     &CLINEOP
           WRITE          (2 )   COBJ        &COBJ
           WRITE          (3 )   CALLOCSP    &CALLOCSP
           WRITE          (4 )   CALLOCUS    &CALLOCUS
           WRITE          (5 )   CALLOCNU    &CALLOCNU
           WRITE          (6 )   CNUMEXT     &CNUMEXT
           WRITE          (7 )   CALLOCUT    &CALLOCUT
           WRITE          (8 )   CSECALLO    &CSECALLO
           WRITE          (9 )   CDSORG      &CDSORG
           WRITE          (10)   CRECFMT     &CRECFMT
           WRITE          (11)   CRECLEN     &CRECLEN
           WRITE          (12)   CBLKSIZE    &CBLKSIZE
           WRITE          (13)   COPTIMAL    &COPTIMAL
           WRITE          (14)   CBLOCKNU    &CBLOCKNU
           WRITE          (15)   CVOLSER     &CVOLSER
           WRITE          (16)   CMULTV      &CMULTV
           WRITE          (17)   CDEVTYPE    &CDEVTYPE
           WRITE          (18)   CCREATD     &CCREATD
           WRITE          (19)   CEXPIRD     &CEXPIRD
           WRITE          (20)   CLASTREF    &CLASTREF
           WRITE          (21)   CLASTBKDT   &CLASTBKDT
           WRITE          (22)   CCHNGIND    &CCHNGIND
           WRITE          (23)   CDATACLS    &CDATACLS
           WRITE          (24)   CMGMTCLS    &CMGMTCLS
           WRITE          (25)   CSTORCLS    &CSTORCLS
           WRITE          (26)   COWNERID    &COWNERID
           WRITE          (--)   CENTYP      &CENTYP
           WRITE          (--)   CUCAT       &CUCAT
           WRITE          (--)   CTAPE       &CTAPE
           WRITE          (--)   CCTLNIDX    &CCTLNIDX
           WRITE
         END
```

Figure 141 (Part 5 of 8). CLIST to Total the Allocated Space Column

```
/*************************************************************
/* 8.CHECK THE CURRENT VALUE FOR THE VOLSER IF IS MIGRAT THEN
/*    -BUMP THE NUMBER OF ENTRIES MIGRATED
/*************************************************************
       IF &STR(&XVOLSER) = &STR(MIGRAT) THEN   -
            DO
              SET MIGCNT = &MIGCNT + 1
            END
/*************************************************************
/* 9.CHECK THE CURRENT VALUE OF ALLOCATED SPACE, IF NOT EQUAL
/*   TO "-" THEN:
/*    -BUMP THE NUMBER OF ENTRIES PROCESSED
/*    -ADD THE CURRENT ALLOCATED SPACE TO THE SUBTOTAL
/*************************************************************
       SET TESTVAL  = &SUBSTR(2,&XALLOCSP)
       IF &STR(&TESTVAL) ¬= &STR(-) AND    -
          &STR(&TESTVAL) ¬= &STR(?) AND    -
          &STR(&TESTVAL) ¬= &STR(<) AND    -
          &STR(&TESTVAL) ¬= &STR(>) THEN   -
            DO
              SET PROCCNT = &PROCCNT + 1
              SET COUNTER = &XALLOCSP
              SET SUBTOTAL = &SUBTOTAL + &COUNTER
/*************************************************************
/*   IF TEST MODE, DISPLAY THE CURRENT VALUE AND THE SUBTOTAL
/*************************************************************
              IF &STR(&TEST) = &STR(YES) THEN   -
                DO
                  WRITE *** &XOBJ ALLOC SPACE IS &COUNTER ***
                  WRITE *** SUBTOTAL IS &SUBTOTAL ***
                END
            END
       ELSE  -
         DO
/*************************************************************
/* 10.CHECK THE CURRENT VALUE OF ALLOCATED SPACE, IF IT IS
/*    EQUAL TO "-" THEN:
/*     -IF IN TEST MODE, SHOW THE NAME SKIPPED
/*     -ADD TO THE NUMBER OF ENTRIES SKIPPED
/*************************************************************
           IF &STR(&TEST) = &STR(YES) THEN   -
             DO
               WRITE *** &XOBJ SKIPPED, &XALLOCSP ***
             END
           SET SKIPCNT = &SKIPCNT + 1
         END
    END
/*************************************************************
/* 11.IF NO ERROR ON THE TBGET, ISSUE TBSKIP TO POSITION TO
/*    THE NEXT ENTRY IN THE TABLE. END-OF-LIST WILL SHOW UP
/*    AS A TBSKIP ERROR, RETURN CODE EIGHT; THIS IS NORMAL.
/*    WHEN THIS HAPPENS, SET DISPLOOP TO OFF.
/*************************************************************
```

Figure 141 (Part 6 of 8). CLIST to Total the Allocated Space Column

```
   IF &DISPLOOP = 'ON' THEN  -
   DO
     SET &EXECCC = 0
     ISPEXEC TBSKIP  &INNAME  NUMBER(1)
     SET &EXECCC = &LASTCC
     IF &EXECCC ¬= 0 THEN    -
       DO
         IF &STR(&TEST) = &STR(YES) THEN -
           DO
             WRITE *** &INNAME TBSKIP FAILED : &EXECCC ***
           END
         SET &DISPLOOP = 'OFF'
       END
   END
END
SET &LASTCC = 0
/*************************************************************
/* 12.END OF LIST PROCESSING, CLOSE THE SAVED LIST
/*************************************************************
DONE:   -
IF &OPENTB = 'ON' THEN -
  DO
   ISPEXEC TBCLOSE &INNAME
   IF &LASTCC ¬= 0 THEN -
     DO
       WRITE *** TBCLOSE FAILED(RC:&LASTCC), &INNAME ***
       GOTO DONE
     END
   ELSE -
     DO
/*************************************************************
/*   IF TEST MODE, NOTE THAT THE TABLE WAS CLOSED SUCCESSFULLY
/*************************************************************
       IF &STR(&TEST) = &STR(YES) THEN -
         DO
           WRITE *** &INNAME NOW CLOSED ***
         END
     END
  END
ELSE -
  DO
/*************************************************************
/*   IF TEST MODE, NOTE THAT TABLE CLOSE NOT NEEDED
/*************************************************************
    IF &STR(&TEST) = &STR(YES) THEN -
      DO
       WRITE *** TBCLOSE NOT DONE, &INNAME ***
      END
  END
```

Figure 141 (Part 7 of 8). CLIST to Total the Allocated Space Column

```
/*************************************************************
/* 13.END OF CLIST
/*     -MAKE AN ENTRY IN THE ISPF LOG
/*     -DISPLAY A SUMMARY ON THE SCREEN
/*************************************************************
DONE:   -
    SET &LOGBAPPL = &STR(DATA SET)
    SET &LOGBFUNC = &STR(TOTAL)
    SET &LOGBOBJ=   -
        &STR(&INNAME, &PROCCNT DATA SETS: &SUBTOTAL KILO-BYTES)
    ISPEXEC LOG MSG(DGTUV044)     /* FUNCTION AND DSNAME */
    ISPEXEC LOG MSG(DGTUV036)     /* COMPLETED */
    WRITE ***  TOTAL ALLOCATED SPACE........&SUBTOTAL KILO-BYTES
    WRITE ***  LIST ENTRIES TOTALED ........&PROCCNT
    WRITE ***  ENTRIES IN LIST..............&ENTRYCNT
    WRITE ***  LIST ENTRIES SKIPPED.........&SKIPCNT
    WRITE ***  LIST ENTRIES MIGRATED........&MIGCNT
    SET &LASTCC = 0
END
```

Figure 141 (Part 8 of 8). CLIST to Total the Allocated Space Column

```
                              DATA SET LIST
COMMAND ===> tso total                                  SCROLL ===> PAGE
                                                     Entries 1-13 of 27
ENTER LINE OPERATORS BELOW:                          Data Columns 3-7 of 26

    LINE                                      ALLOC    ALLOC   % NOT  NUM  ALLOC
    OPERATOR         DATA SET NAME            SPACE    USED    USED   EXT  UNIT
   ---(1)----  ------------(2)------------   --(3)--  --(4)--  -(5)-  (6)  -(7)-
               USER230.ISMF.ALIST              2483      375     84    6   TRK
   *EDIT       USER230.ISMF.CLIST              1124      796     29    2   TRK
               USER230.ISMF.COPY.D86254.         47       47      0    1   BLK
                 T152842
               USER230.ISMF.DGTLLIB             468      422      9    6   TRK
               USER230.ISMF.DGTMLIB              47       47      0    1   TRK
               USER230.ISMF.DGTPLIB             703      703      0    3   TRK
               USER230.ISMF.DGTSLIB             141      141      0    2   TRK
               USER230.ISMF.DGTTABL            1171     1171      0    1   TRK
               USER230.ISMF.DUMP               7073     7073      0    1   BLK
               USER230.ISMF.ISPFILE            2061     2061      0    1   TRK
               USER230.ISMF.ISPPLIB             234      234      0    1   TRK
               USER230.ISMF.ISPSLIB              94       94      0    1   TRK
               USER230.ISMF.ISPTABL             141      141      0    1   TRK

USE HELP COMMAND FOR HELP; USE END COMMAND TO EXIT.
```

Figure 142. Data Set List with the TSO TOTAL Command Specified

```
                                DATA SET LIST
COMMAND ===> tso total                                      SCROLL ===> PAGE
                                                         Entries 1-13 of 27
ENTER LINE OPERATORS BELOW:                              Data Columns 3-7 of 26

   LINE                                          ALLOC    ALLOC   % NOT  NUM  ALLOC
   OPERATOR          DATA SET NAME               SPACE    USED    USED   EXT  UNIT
  ---(1)----  ------------(2)------------  --(3)--  --(4)--  -(5)-  (6)  -(7)-
              USER230.ISMF.ALIST              2483      375     84    6   TRK
  *EDIT       USER230.ISMF.CLIST              1124      796     29    2   TRK
              USER230.ISMF.COPY.D86254.         47       47      0    1   BLK
                T152842
              USER230.ISMF.DGTLLIB             468      422      9    6   TRK
              USER230.ISMF.DGTMLIB              47       47      0    1   TRK
              USER230.ISMF.DGTPLIB             703      703      0    3   TRK
              USER230.ISMF.DGTSLIB             141      141      0    2   TRK
              USER230.ISMF.DGTTABL            1171     1171      0    1   TRK
              USER230.ISMF.DUMP               7073     7073      0    1   BLK
              USER230.ISMF.ISPFILE            2061     2061      0    1   TRK
              USER230.ISMF.ISPPLIB             234      234      0    1   TRK
ENTER NAME OF THE SAVED LIST ===> DSNAME                                    TRK
```

Figure 143. Data Set List with the Saved Data Set Name Specified

```
***  TOTAL ALLOCATED SPACE.....20568 KILO-BYTES
***  LIST ENTRIES TOTALED .....34
***  ENTRIES IN LIST.....66
***  LIST ENTRIES SKIPPED.....32
***  LIST ENTRIES MIGRATED.....30
```

Figure 144. Example of Information Appended to the Data Set List after TOTAL Executes

Migrating an Entire List of Data Sets

This CLIST and the two others that follow are included with ISMF to demonstrate some of the functions that can be created with the ISMF CLIST support.

MIGRATE is invoked as a list command from the Data Set List Panel. MIGRATE issues the HMIGRATE line operator for each data set in the list. "Using DFHSM for Migration of Data" on page 83 describes the HMIGRATE line operator.

MIGRATE migrates each data set in the list panel. If a data set is already migrated, the CLIST will set the history symbol prefix to a not sign (¬) and continue to process the list. See "List Command Feedback" on page 73 for information on history symbols. If a serious error occurs while MIGRATE is executing, the CLIST will halt processing.

You can use the MESSAGE line operator to review the result of the CLIST for each data set. (See "MESSAGE Line Operator" on page 18.)

Recalling an Entire List of Migrated Data Sets

The RECALL CLIST is used as a list command from the Data Set List Panel. RECALL issues the HRECALL line operator for each data set in the list. "Using DFHSM for Migration of Data" on page 83 describes the HRECALL line operator.

RECALL recalls each migrated data set in the list panel. If a data set is not migrated, the CLIST will set the history symbol prefix to a not sign (¬) and continue to process the list. If a serious error occurs while RECALL executing, the CLIST will halt processing.

You can use the MESSAGE line operator to review the result of the CLIST for each data set.

Sending a Data Set to Another User

The SENDC CLIST is invoked as a line operator from the Data Set List Panel. SENDC performs the XMIT function on a single data set. When you invoke SENDC against a data set, the panel shown in Figure 145 is displayed.

```
COMMAND ===>

OPTIONALLY SPECIFY ONE OR MORE FOR : USER230.ISMF.PLS1

  TYPE OF XMIT   ===>           (1-entire data set, 2-member only, 3-a note)

  DATA SET NAME  ===>

  IF TYPE OF XMIT IS '2', THEN SPECIFY:
    MEMBER NAME ===>           (1 to 8 character member name)

  TO USER ID    ===>
     AT NODE ID ===>

  LOG XMIT       ===>              (Y or N)
  NOTIFICATION   ===>              (Y or N)




USE ENTER TO PERFORM XMIT. USE END COMMAND TO EXIT.
```

Figure 145. Data Entry Panel for the SENDC CLIST

The data set name is already filled in when the panel is displayed. With the other fields on the panel you can:

- Send the entire data set or just a member
- Log the transaction
- Receive notification that the data set or member was transmitted.

If the data set is not transmitted, the CLIST sets the history symbol prefix to a question mark (?) for the data set. You can use the MESSAGE line operator to review the result of the SENDC execution.

Appendix C. Acquiring Data for a User Created CLIST

As part of the support ISMF provides for the user created CLISTs, there is a shared variable pool. You can use the variables in this pool to control processing and supply information to your CLIST. There are five different sets of variables:

- Variables that control processing.
- Variables that supply information about the list panel.
- Variables that save message text.
- Variables that supply information about the list panel entries.
- Variables that supply information about the selection criteria.

For detailed information on how to write CLISTs, see the *OS/VS2 TSO Command Language Reference* and the *ISPF/PDF Version 2 Release 3 Guide MVS*. Also, Appendix B, "Examples of CLISTs" on page 157 describes five sample CLISTs that are included with ISMF.

Variables That Control Processing

The **control variables** allow your CLIST to direct the processing of the command. The following list describes the control variables and their valid values.

DGTCONTN

This variable directs the processor to either continue or stop processing the list depending on the return code. DGTCONTN has a character attribute with a length of one character. You can set this variable to one of the following values:

' ' The default value for this variable is a blank. This value directs the processor to continue processing the list entries until all the entries have been operated against or until an error occurs. The processor reacts to the different error codes as described in "List Command Feedback" on page 73.

N The value N directs the processor to stop processing the list entries. No entries will be processed after a DGTCONTN with a value of N is found.

Y The value Y directs the processor to continue processing the list entries regardless of the return code. The list entries that cause the error are not processed. However, processing continues until all of the entries have been operated against.

You can also code your CLIST to be interruptible. This support allows you to interrupt a CLIST with your ATTN key when the CLIST is invoked as a list command. See the *OS/VS2 TSO Command Language Reference* for an example of how to code this attention support.

DGTLISTC

This variable affects the line operator history for the current list entry. DGTLISTC has a character attribute with a length of one character. You can set this variable to one of the following values:

Y This value updates the line operator history for the current list entry. This value is the default.

N This value does not update the line operator history for the current entry.

Variables That Supply Information about the List Panel

The **informational variables** supply your CLIST with information about the list panel. They do not affect processing. These variables resolve to a certain value that you can use to provide your CLIST with this information.

ZAPPLID

This ISPF variable indicates to your CLIST which application is running. ZAPPLID has a character attribute with a length of eight characters. See the *Interactive System Productivity Facility: Dialog Management Services* for more information on this variable.

DGTCOUNT

This variable contains the number of the list entry that the CLIST is being invoked against.

DGTTOTAL

This variable contains the total number of entries in the list. This number does not include hidden entries or entries that have been filtered out of the list. DGTTOTAL has a character attribute with a length of six characters.

DGTLASTU

This variable indicates whether the command was invoked in last-use mode or normal mode. DGTLASTU has a character attribute with a length of one character. This variable can hold one of the following values:

Y This value indicates last-use mode.

N This value indicates normal mode.

DGTTYPEC

This variable indicates the type of command in control. DGTTYPEC has a character attribute with a length of one character. This variable can hold one of the following values:

C This value indicates that the command in control was invoked as a list command.

L This value indicates that the command in control was invoked as a line operator.

DGTCMDNM

This variable contains the name of the current list command. DGTCMDNM has a character attribute with a length of eight characters.

DGTGDRBA

This variable contains the GDRB address in Zoned format.

Variables That Save Message Text

The **message variables** allows your CLIST to save the long and short message text for any command or line operator. The following variables contain the message information supplied by your CLIST.

DGTMSGID

This variable can contain a message ID if one is supplied by your CLIST. DGTMSGID has a character attribute with a length of eight characters.

DGTCSMSG and DGTCLMSG

These variables allow your CLIST to save message text while the CLIST is in control.

DGTCSMSG This variable saves the short message text. DGTCSMSG has a character attribute and can hold 35 characters.

DGTCLMSG This variable saves the long message text. DGTCLMSG has a character attribute and can hold 79 characters.

The message text is saved depending on the conditions described in Figure 146.

Figure 146. Using Message Variables

Is message text supplied?	Is message ID supplied?	The CLIST will:
Yes	No	Save messages from DGTCSMSG and DGTCLMSG.
Yes	Yes	Save messages from DGTCSMSG and DGTCLMSG.
No	Yes	Obtain message by using the message ID supplied through DGTMSGID.
No	No	Use default messages.

Variables That Supply Information about the List Entries

All the data on the list panel entries is available through the shared variable pool. There is a variable assigned to each of the data columns on the list panel. These variables resolve to the value in the data column for the current list entry. The following tables list these variables for each application.

- Figure 147 lists the variables for the data columns on the Data Set List Panel.
- Figure 148 on page 184 lists the variables for the data columns on the Volume List Panel.
- Figure 149 on page 185 lists the variables for the data columns on the Management Class List Panel.
- Figure 150 on page 186 lists the variables for the data columns on the Data Class List Panel.
- Figure 151 on page 187 lists the variables for the data columns on the Storage Class List Panel.
- Figure 152 on page 187 lists the special symbols used to represent errors in the data columns on all list panels (--------, ????????, > > > > > > > >, and < < < < < < < <).

Figure 147 (Page 1 of 2). Variable Names, Attributes, and Lengths for the Data Set List

Column Tag	Column Name	Variable Name	Attribute	Length
1	LINE OPERATOR	CLINEOP	character	10
2	DATA SET NAME	COBJ	character	44
3	ALLOC SPACE	CALLOCSP	character	7
4	ALLOC USED	CALLOCUS	character	7
5	% NOT USED	CALLOCNU	character	3
6	NUM EXT	CNUMEXT	character	3
7	ALLOC UNIT	CALLOCUT	character	3
8	SEC ALLOC	CSECALLO	character	7
9	DS ORG	CDSORG	character	3
10	REC FMT	CRECFMT	character	5
11	RECORD LENGTH	CRECLEN	character	5
12	BLK SZ CI SIZE	CBLKSIZE	character	5
13	OPTIMAL SIZE	COPTIMAL	character	5
14	BLOCK UNUSED	CBLOCKNU	character	7
15	VOLUME SERIAL	CVOLSER	character	6
16	MULT VOL	CMULTV	character	3
17	DEVICE TYPE	CDEVTYPE	character	7
18	CREATE DATE	CCREATD	character	8
18	CREATE DATE[1]	CCREATD2	character	10
19	EXPIRE DATE	CEXPIRD	character	8

[1] The DATE columns with lengths of 10 support the display of 4-digit years (for example, 1987). The other DATE columns support 2-digit years (for example, 87).

Figure 147 (Page 2 of 2). Variable Names, Attributes, and Lengths for the Data Set List

Column Tag	Column Name	Variable Name	Attribute	Length
19	EXPIRE DATE[1]	CEXPIRD2	character	10
20	LAST REF DATE	CLASTREF	character	8
20	LAST REF DATE[1]	CLASTRE2	character	10
21	LAST BACKUP DATE	CLASTBKDT	character	10
22	CHG IND	CCHNGIND	character	3
23	DATA CLASS NAME	CDATACLS	character	8
24	MANAGEMENT CLASS NAME	CMGMTCLS	character	8
25	STORAGE CLASS NAME	CSTORCLS	character	8
26	OWNER	COWNERID	character	8

Figure 148 (Page 1 of 2). Variable Names, Attributes, and Lengths for the Volume List

Column Tag	Column Name	Variable Name	Attribute	Length
1	LINE OPERATOR	CLINEOP	character	10
2	VOLUME SERIAL	COBJ	character	6
3	FREE SPACE	CFREESPA	character	7
4	% FREE	CFREE	character	3
5	ALLOC SPACE	CALLOCSP	character	7
6	FRAG INDEX	CFRAGIND	character	3
7	LARGEST EXTENT	CLGSTEXT	character	7
8	FREE EXTENTS	CFREEXTN	character	5
9	INDEX STATUS	CINDXSTS	character	8
10	FREE DSCBs	CFREEDSCB	character	5
11	FREE VIRs	CFREVIRS	character	5
12	DEVICE TYPE	CDEVTYPE	character	7
13	DEV NUM	CDEVNUM	character	3
14	SHR DASD	CSHRDASD	character	4
15	USE ATTR	CUSEATTR	character	4
16	RD CACHE STATUS	CCAHEST	character	8
17	DASD FW STATUS	CFSTWRST	character	8
18	CACHE FW STATUS	CNONRTST	character	8
19	DUPLEX STATUS	CDUPLXST	character	8
20	OTHER DEVICE	COTHRDEV	character	6
21	SUBSYS ID	CSBSYSID	character	6
22	PHYSICAL STATUS	CPHYSCST	character	7
23	STORAGE GRP NAME	CSTORGRP	character	8
24	RESERVED SYSTEM1 SMS	CSY01SMS	character	8
25	RESERVED SYSTEM1 MVS	CSY01MVS	character	8
26	RESERVED SYSTEM2 SMS	CSY02SMS	character	8
27	RESERVED SYSTEM2 MVS	CSY02MVS	character	8
28	RESERVED SYSTEM3 SMS	CSY03SMS	character	8
29	RESERVED SYSTEM3 MVS	CSY03MVS	character	8
30	RESERVED SYSTEM4 SMS	CSY04SMS	character	8
31	RESERVED SYSTEM4 MVS	CSY04MVS	character	8
32	RESERVED SYSTEM5 SMS	CSY05SMS	character	8
33	RESERVED SYSTEM5 MVS	CSY05MVS	character	8
34	RESERVED SYSTEM6 SMS	CSY06SMS	character	8
35	RESERVED SYSTEM6 MVS	CSY06MVS	character	8

Figure 148 (Page 2 of 2). Variable Names, Attributes, and Lengths for the Volume List

Column Tag	Column Name	Variable Name	Attribute	Length
36	RESERVED SYSTEM7 SMS	CSY07SMS	character	8
37	RESERVED SYSTEM7 MVS	CSY07MVS	character	8
38	RESERVED SYSTEM8 SMS	CSY08SMS	character	8
39	RESERVED SYSTEM8 MVS	CSY09MVS	character	8

Figure 149. Variable Names, Attributes, and Lengths for the Management Class List

Column Tag	Column Name	Variable Name	Attribute	Length
	CDS NAME	FMUVCDSN	character	44
1	LINE OPERATOR	CLINEOP	character	10
2	MGMTCLAS NAME	COBJ	character	8
3	EXPIRE NON-USAGE	CEXPIRNU	character	9
4	EXPIRE DATE/DAYS	CEXPIRDD	character	10
5	RET LIMIT	CMAXRET	character	7
6	PARTIAL RELEASE	CPARTREL	character	7
7	PRIMARY DAYS	CPRIMDAY	character	8
8	LEVEL 1 DAYS	CLVL1DAY	character	7
9	CMD/AUTO MIGRATE	CMIGRATE	character	8
10	# GDG ON PRIMARY	CGDGPRIM	character	8
11	ROLLED-OFF GDS ACTION	CGDSACTN	character	10
12	BACKUP FREQUENCY	CBAKFREQ	character	9
13	# BACKUPS (DS EXISTS)	CDSEXIST	character	11
14	# BACKUPS (DS DELETED)	CDSDELET	character	12
15	RETAIN DAYS ONLY BACKUP	CONLYBAK	character	11
16	RETAIN DAYS EXTRA BACKUPS	CXTRABAK	character	13
17	ADM/USER BACKUP	CADMUBAK	character	8
18	AUTO BACKUP	CAUTOBAK	character	6
19	LAST MOD USERID	CLUSERID	character	8
20	LAST DATE MODIFIED	CLDATE	character	10
21	LAST TIME MODIFIED	CLTIME	character	9

Figure 150. Variable Names, Attributes, and Lengths for the Data Class List

Column Tag	Column Name	Variable Name	Attribute	Length
	CDS NAME	FMUVCDSN	character	44
1	LINE OPERATOR	CLINEOP	character	10
2	DATACLAS NAME	COBJ	character	8
3	RECORG	CRECORG	character	6
4	RECFM	CRECFM	character	5
5	LRECL	CLRECL	character	5
6	KEYLEN	CKEYLEN	character	6
7	KEYOFF	CKEYOFF	character	6
8	AVGREC	CAVGREC	character	6
9	AVG VALUE	CAVGVALU	character	5
10	SPACE PRIMARY	CSPCPRIM	character	7
11	SPACE SECONDARY	CSPCSEC	character	9
12	SPACE DIRECTORY	CSPCDIR	character	9
13	RETPD OR EXPDT	CRETEXP	character	10
14	VOLUME COUNT	CVOLCNT	character	6
15	IMBED	CIMBED	character	5
16	REPLICATE	CREPLICA	character	9
17	CISIZE DATA	CCISIZE	character	6
18	% FREE SPACE CA	CSPACECA	character	8
19	% FREE SPACE CI	CSPACECI	character	8
20	SHARE XREGION	CXREGION	character	7
21	SHARE XSYSTEM	CXSYSTEM	character	7
22	LAST MOD USERID	CLUSERID	character	8
23	LAST DATE MODIFIED	CLDATE	character	10
24	LAST TIME MODIFIED	CLTIME	character	9

Figure 151. Variable Names, Attributes, and Lengths for the Storage Class List

Column Tag	Column Name	Variable Name	Attribute	Length
	CDS NAME (OUTPUT)	FMUVCDSN	character	44
1	LINE OPERATOR	CLINEOP	character	10
2	STORCLAS NAME	COBJ	character	8
3	DIRRESP (MSEC)	CDIRRESP	character	8
4	DIR BIAS	CDIRBIAS	character	1
5	SEQ RESP (MSEC)	CSEQRESP	character	8
6	SEQ BIAS	CSEQBIAS	character	1
7	AVAILABILITY	CAVAIL	character	10
8	GUARANTEED SPACE	CGUARSP	character	3
9	LAST MOD USERID	CLUSERID	character	8
10	LAST DATE MODIFIED	CLDATE	character	10
11	LAST TIME MODIFIED	CLTIME	character	8

The first character of the special symbols used to represent errors in the data columns (--------, ????????, > > > > > > > >, and < < < < < < < <) is replaced with the hexadecimal value listed in Figure 152.

Figure 152. Characters for Special Symbols that Represent Errors

Symbol	First Character
-	X'13'
?	X'11'
>	X'FB'
<	X'14'

Variables That Supply Information about Selection Criteria

The shared variable pool contains variables that allow your CLIST to access the selection criteria information. There is a variable assigned to each of the data entry fields on the selection panels for every application. The selection variables resolve to the value entered in the field. You can use these variables in your CLIST to supply this information.

- Figure 153 lists the variables for the data entry fields on page 1 of the Data Set Selection Panel.
- Figure 154 on page 189 lists the variables for the data entry fields on page 2 of the Data Set Selection Panel.
- Figure 155 on page 190 lists the variables for the data entry fields on page 3 of the Data Set Selection Panel.
- Figure 156 on page 191 lists the variables for the data entry fields on page 1 of the Volume Selection Panel.
- Figure 157 on page 192 lists the variables for the data entry fields on page 2 of the Volume Selection Panel.
- Figure 158 on page 193 lists the variables for the data entry fields on page 3 of the Volume Selection Panel.
- Figure 159 on page 194 lists the variables for the data entry fields on the Management Class Selection Panel.
- Figure 160 on page 194 lists the variables for the data entry fields on the Data Class Selection Panel.
- Figure 161 on page 194 lists the variables for the data entry fields on the Storage Class Selection Panel.

Figure 153. Variable Names, Attributes, and Lengths for Page 1 of the Data Set Selection Panel

Selection Criteria	Variable Name	Attribute	Length
DATA SET NAME	FDDSDSNM	character	46
SOURCE OF GENERATED LIST	FDDSSSGL	character	1
LIST FROM VTOC VOLUME SERIAL NUMBER	FDDSVSN1	character	6
CATALOG NAME	FDDSCTLN	character	44
CATALOG PASSWORD	FDDSCTLP	character	8
VOLUME SERIAL NUMBER UNDER CTLG	FDDSVSN2	character	6
ACQUIRE DATA FROM VOLUME	FDDSADFV	character	1
ACQUIRE DATA IF DFHSM MIGRATED	FDDSADHM	character	1

Figure 154 (Page 1 of 2). Variable Names, Attributes, and Lengths for Page 2 of the Data Set Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
ALLOCATED SPACE	REL OP 1	FDDSASR1	character	2
	VALUE 1	FDDSASV1	character	10
	CONNECTOR	FDDSI1	character	3
	REL OP 2	FDDSASR2	character	2
	VALUE 2	FDDSASV2	character	10
BLOCK/CI SIZE	REL OP 1	FDDSBSR1	character	2
	VALUE 1	FDDSBSV1	character	10
	CONNECTOR	FDDSI2	character	3
	REL OP 2	FDDSBSR2	character	2
	VALUE 2	FDDSBSV2	character	10
BLOCK UNUSED	REL OP 1	FDDSBUR1	character	2
	VALUE 1	FDDSBUV1	character	10
	CONNECTOR	FDDSI3	character	3
	REL OP 2	FDDSBUR2	character	2
	VALUE 2	FDDSBUV2	character	10
CREATION DATE	REL OP 1	FDDSCDR1	character	2
	VALUE 1	FDDSCDV1	character	10
	CONNECTOR	FDDSI4	character	3
	REL OP 2	FDDSCDR2	character	2
	VALUE 2	FDDSCDV2	character	10
EXPIRATION DATE	REL OP 1	FDDSEDR1	character	2
	VALUE 1	FDDSEDV1	character	10
	CONNECTOR	FDDSI5	character	3
	REL OP 2	FDDSEDR2	character	2
	VALUE 2	FDDSEDV2	character	10
LAST BACKUP DATE	REL OP 1	FDDSBDR1	character	2
	VALUE 1	FDDSBDV1	character	10
	CONNECTOR	FDDSID	character	3
	REL OP 2	FDDSBDR2	character	2
	VALUE 2	FDDSBDV2	character	10
LAST REFERENCE DATE	REL OP 1	FDDSLDR1	character	2
	VALUE 1	FDDSLDV1	character	10
	CONNECTOR	FDDSI6	character	3
	REL OP 2	FDDSLDR2	character	2
	VALUE 2	FDDSLDV2	character	10
NUMBER OF EXTENTS	REL OP 1	FDDSNER1	character	2
	VALUE 1	FDDSNEV1	character	10
	CONNECTOR	FDDSI7	character	3
	REL OP 2	FDDSNER2	character	2
	VALUE 2	FDDSNEV2	character	10
OPTIMAL BLOCK/CI SIZE	REL OP 1	FDDSOSR1	character	2
	VALUE 1	FDDSOSV1	character	10
	CONNECTOR	FDDSI8	character	3
	REL OP 2	FDDSOSR2	character	2
	VALUE 2	FDDSOSV2	character	10
PERCENT SPACE NOT USED	REL OP 1	FDDSPSR1	character	2
	VALUE 1	FDDSPSV1	character	10
	CONNECTOR	FDDSI9	character	3
	REL OP 2	FDDSPSR2	character	2
	VALUE 2	FDDSPSV2	character	10
RECORD LENGTH	REL OP 1	FDDSRLR1	character	2
	VALUE 1	FDDSRLV1	character	10
	CONNECTOR	FDDSIA	character	3
	REL OP 2	FDDSRLR2	character	2
	VALUE 2	FDDSRLV2	character	10
SECONDARY ALLOCATION	REL OP 1	FDDSSAR1	character	2
	VALUE 1	FDDSSAV1	character	10
	CONNECTOR	FDDSIB	character	3
	REL OP 2	FDDSSAR2	character	2
	VALUE 2	FDDSSAV2	character	10

Figure 154 (Page 2 of 2). Variable Names, Attributes, and Lengths for Page 2 of the Data Set Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
USED SPACE	REL OP 1	FDDSUSR1	character	2
	VALUE 1	FDDSUSV1	character	10
	CONNECTOR	FDDSIC	character	3
	REL OP 2	FDDSUSR2	character	2
	VALUE 2	FDDSUSV2	character	10

Figure 155 (Page 1 of 2). Variable Names, Attributes, and Lengths for Page 3 of the Data Set Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
ALLOCATION UNIT	REL OP	FDDSAUR1	character	2
	VALUE 1	FDDSAUV1	character	8
	VALUE 2	FDDSAUV2	character	8
	VALUE 3	FDDSAUV3	character	8
	VALUE 4	FDDSAUV4	character	8
CHANGE INDICATOR	REL OP	FDDSCIR1	character	2
	VALUE 1	FDDSCIV1	character	8
	VALUE 2	FDDSCIV2	character	8
	VALUE 3	FDDSCIV3	character	8
	VALUE 4	FDDSCIV4	character	8
DATA CLASS NAME	REL OP	FDDSDCR1	character	2
	VALUE 1	FDDSDCV1	character	8
	VALUE 2	FDDSDCV2	character	8
	VALUE 3	FDDSDCV3	character	8
	VALUE 4	FDDSDCV4	character	8
DATA SET ORGANIZATION	REL OP	FDDSDOR1	character	2
	VALUE 1	FDDSDOV1	character	8
	VALUE 2	FDDSDOV2	character	8
	VALUE 3	FDDSDOV3	character	8
	VALUE 4	FDDSDOV4	character	8
	VALUE 5	FDDSDOV5	character	8
	VALUE 6	FDDSDOV6	character	8
	VALUE 7	FDDSDOV7	character	8
	VALUE 8	FDDSDOV8	character	8
DEVICE TYPE	REL OP	FDDSDTR1	character	2
	VALUE 1	FDDSDTV1	character	8
	VALUE 2	FDDSDTV2	character	8
	VALUE 3	FDDSDTV3	character	8
	VALUE 4	FDDSDTV4	character	8
	VALUE 5	FDDSDTV5	character	8
	VALUE 6	FDDSDTV6	character	8
	VALUE 7	FDDSDTV7	character	8
	VALUE 8	FDDSDTV8	character	8
MANAGEMENT CLASS NAME	REL OP	FDDSMCR1	character	2
	VALUE 1	FDDSMCV1	character	8
	VALUE 2	FDDSMCV2	character	8
	VALUE 3	FDDSMCV3	character	8
	VALUE 4	FDDSMCV4	character	8
MULTI-VOLUME DATA SET	REL OP	FDDSMVR1	character	2
	VALUE 1	FDDSMVV1	character	8
	VALUE 2	FDDSMVV2	character	8
	VALUE 3	FDDSMVV3	character	8
	VALUE 4	FDDSMVV4	character	8
OWNER	REL OP	FDDSOWR1	character	2
	VALUE 1	FDDSOWV1	character	8
	VALUE 2	FDDSOWV2	character	8
	VALUE 3	FDDSOWV3	character	8
	VALUE 4	FDDSOWV4	character	8

Figure 155 (Page 2 of 2). Variable Names, Attributes, and Lengths for Page 3 of the Data Set Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
RECORD FORMAT	REL OP	FDDSRFR1	character	2
	VALUE 1	FDDSRFV1	character	8
	VALUE 2	FDDSRFV2	character	8
	VALUE 3	FDDSRFV3	character	8
	VALUE 4	FDDSRFV4	character	8
	VALUE 5	FDDSRFV5	character	8
	VALUE 6	FDDSRFV6	character	8
	VALUE 7	FDDSRFV7	character	8
	VALUE 8	FDDSRFV8	character	8
STORAGE CLASS NAME	REL OP	FDDSSCR1	character	2
	VALUE 1	FDDSSCV1	character	8
	VALUE 2	FDDSSCV2	character	8
	VALUE 3	FDDSSCV3	character	8
	VALUE 4	FDDSSCV4	character	8

Figure 156. Variable Names, Attributes, and Lengths for Page 1 of the Volume Selection Panel

Selection Criteria	Variable Name	Attribute	Length
SELECT SOURCE TO GENERATE VOLUME LIST	FVVASSLG	character	1
LIST NAME	FVVALTNM	character	8
SPECIFY SOURCE OF THE NEW LIST	FVVASSNL	character	1
TYPE OF VOLUME LIST	FVVATOVL	character	1
VOLUME SERIAL NUMBER	FVVAVMSN	character	6
DEVICE TYPE	FVVADVTP	character	8
DEVICE NUMBER (first)	FVVADVN1	character	3
DEVICE NUMBER (second)	FVVADVN2	character	3
ACQUIRE PHYSICAL DATA	FVVAPHDA	character	1
ACQUIRE SPACE DATA	FVVASPDA	character	1
STORAGE GROUP NAME	FVVASTGP	character	8
CDS NAME	FVVACDSN	character	46

Figure 157. Variable Names, Attributes, and Lengths for Page 2 of the Volume Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
ALLOCATED SPACE	REL OP 1	FVVAASR1	character	2
	VALUE 1	FVVAASV1	character	8
	CONNECTOR	FVVAJ1	character	3
	REL OP 2	FVVAASR2	character	2
	VALUE 2	FVVAASV2	character	8
FRAGMENTATION INDEX	REL OP 1	FVVAFIR1	character	2
	VALUE 1	FVVAFIV1	character	8
	CONNECTOR	FVVAJ2	character	3
	REL OP 2	FVVAFIR2	character	2
	VALUE 2	FVVAFIV2	character	8
FREE DSCBS	REL OP 1	FVVAFDR1	character	2
	VALUE 1	FVVAFDV1	character	8
	CONNECTOR	FVVAJ3	character	3
	REL OP 2	FVVAFDR2	character	2
	VALUE 2	FVVAFDV2	character	8
FREE EXTENTS	REL OP 1	FVVAFER1	character	2
	VALUE 1	FVVAFEV1	character	8
	CONNECTOR	FVVAJ4	character	3
	REL OP 2	FVVAFER2	character	2
	VALUE 2	FVVAFEV2	character	8
FREE SPACE	REL OP 1	FVVAFSR1	character	2
	VALUE 1	FVVAFSV1	character	8
	CONNECTOR	FVVAJ5	character	3
	REL OP 2	FVVAFSR2	character	2
	VALUE 2	FVVAFSV2	character	8
FREE VIRS	REL OP 1	FVVAFVR1	character	2
	VALUE 1	FVVAFVV1	character	8
	CONNECTOR	FVVAJ6	character	3
	REL OP 2	FVVAFVR2	character	2
	VALUE 2	FVVAFVV2	character	8
LARGEST EXTENT	REL OP 1	FVVALER1	character	2
	VALUE 1	FVVALEV1	character	8
	CONNECTOR	FVVAJ7	character	3
	REL OP 2	FVVALER2	character	2
	VALUE 2	FVVALEV2	character	8
OTHER DEVICE	REL OP 1	FVVASER1	character	2
	VALUE 1	FVVASEV1	character	8
	CONNECTOR	FVVAJ9	character	3
	REL OP 2	FVVASER2	character	2
	VALUE 2	FVVASEV2	character	8
PERCENT FREE SPACE	REL OP 1	FVVAPFR1	character	2
	VALUE 1	FVVAPFV1	character	8
	CONNECTOR	FVVAJ8	character	3
	REL OP 2	FVVAPFR2	character	2
	VALUE 2	FVVAPFV2	character	8
SUBSYSTEM IDENTIFIER	REL OP 1	FVVASIR1	character	2
	VALUE 1	FVVASIV1	character	8
	CONNECTOR	FVVAJ10	character	3
	REL OP 2	FVVASIR2	character	2
	VALUE 2	FVVASIV2	character	8

Figure 158. Variable Names, Attributes, and Lengths for Page 3 of the Volume Selection Panel

Selection Criteria	Field	Variable Name	Attribute	Length
CACHE FAST WRITE STATUS	REL OP	FVVACFR1	character	2
	VALUE 1	FVVACFV1	character	8
	VALUE 2	FVVACFV2	character	8
	VALUE 3	FVVACFV3	character	8
	VALUE 4	FVVACFV4	character	8
DASD FAST WRITE STATUS	REL OP	FVVADFR1	character	2
	VALUE 1	FVVADFV1	character	8
	VALUE 2	FVVADFV2	character	8
	VALUE 3	FVVADFV3	character	8
	VALUE 4	FVVADFV4	character	8
DUPLEX STATUS	REL OP	FVVADSR1	character	2
	VALUE 1	FVVADSV1	character	8
	VALUE 2	FVVADSV2	character	8
	VALUE 3	FVVADSV3	character	8
	VALUE 4	FVVADSV4	character	8
INDEX STATUS	REL OP	FVVAISR1	character	2
	VALUE 1	FVVAISV1	character	8
	VALUE 2	FVVAISV2	character	8
	VALUE 3	FVVAISV3	character	8
	VALUE 4	FVVAISV4	character	8
PHYSICAL STATUS	REL OP	FVVAPSR1	character	2
	VALUE 1	FVVAPSV1	character	8
	VALUE 2	FVVAPSV2	character	8
	VALUE 3	FVVAPSV3	character	8
	VALUE 2	FVVAPSV4	character	8
READ CACHE STATUS	REL OP	FVVACSR1	character	2
	VALUE 1	FVVACSV1	character	8
	VALUE 2	FVVACSV2	character	8
	VALUE 3	FVVACSV3	character	8
	VALUE 4	FVVACSV4	character	8
SHARED DASD	REL OP	FVVASDR1	character	2
	VALUE 1	FVVASDV1	character	8
	VALUE 2	FVVASDV2	character	8
	VALUE 3	FVVASDV3	character	8
	VALUE 4	FVVASDV4	character	8
USE ATTRIBUTES	REL OP	FVVAUAR1	character	2
	VALUE 1	FVVAUAV1	character	8
	VALUE 2	FVVAUAV2	character	8
	VALUE 3	FVVAUAV3	character	8
	VALUE 4	FVVAUAV4	character	8

Figure 159. Variable Names, Attributes, and Lengths for the Management Class Selection Panel

Selection Criteria	Variable Name	Attribute	Length
CDS NAME (with quotes)	FMUVCDSQ	character	46
CDS NAME (with user ID)	FMUVCDSN	character	44
MANAGEMENT CLASS NAME	FCMCSCN	character	8
SELECT ONE OF THE FOLLOWING OPTIONS	FCMCSLOP	character	1
RESPECIFY SORT CRITERIA	FCMCSORT	character	1

Figure 160. Variable Names, Attributes, and Lengths for the Data Class Selection Panel

Selection Criteria	Variable Name	Attribute	Length
CDS NAME (with quotes)	FMUVCDSQ	character	46
CDS NAME (with user ID)	FMUVCDSN	character	44
DATA CLASS NAME	FCDCDCN	character	8
SELECT ONE OF THE FOLLOWING OPTIONS	FCDCSLOP	character	1
RESPECIFY SORT CRITERIA	FCDCSORT	character	1

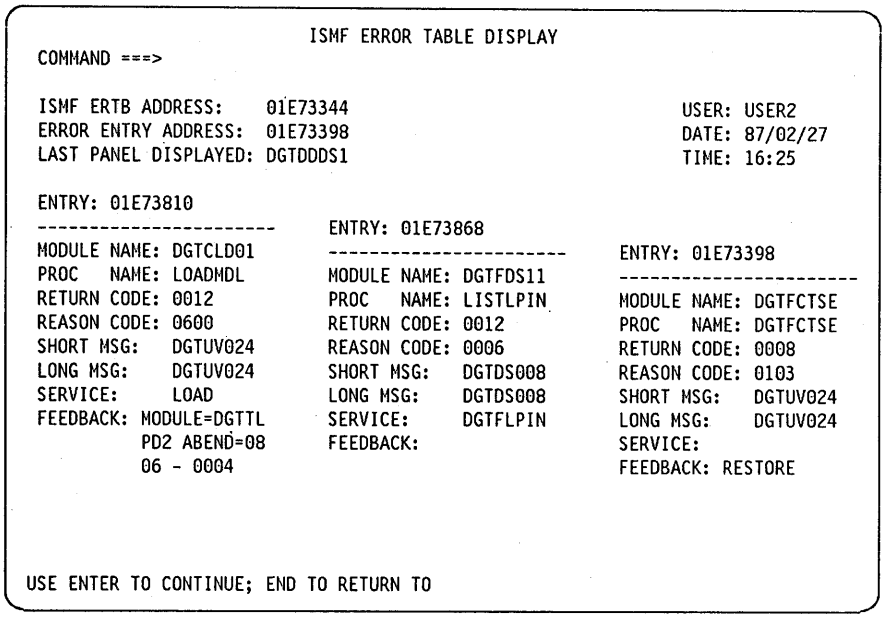
Figure 161. Variable Names, Attributes, and Lengths for the Storage Class Selection Panel

Selection Criteria	Variable Name	Attribute	Length
CDS NAME (with quotes)	FMUVCDSQ	character	46
CDS NAME (with user ID)	FMUVCDSN	character	44
STORAGE CLASS NAME	FCSCSCN	character	8
SELECT ONE OF THE FOLLOWING OPTIONS	FCSCSLOP	character	1
RESPECIFY SORT CRITERIA	FCSCSORT	character	1

Appendix D. ISMF Track and Cylinder Conversion to Bytes

Device	Tracks per Cylinder	Bytes per Track	Bytes per Cylinder
3380	15	47,968	719,520
3375	12	36,000	432,000
3350	30	19,254	577,620
3340	12	8,535	102,420
3330	19	13,165	250,135

Appendix E. Examples of Entries in the ISMF Error Table and ISPF Log



```
                              ISMF ERROR TABLE DISPLAY
COMMAND ===>

ISMF ERTB ADDRESS:    01E73344                                  USER: USER2
ERROR ENTRY ADDRESS:  01E73398                                  DATE: 87/02/27
LAST PANEL DISPLAYED: DGTDDDS1                                  TIME: 16:25

ENTRY: 01E73810
----------------------     ENTRY: 01E73868
MODULE NAME: DGTCLD01      ----------------------     ENTRY: 01E73398
PROC   NAME: LOADMDL       MODULE NAME: DGTFDS11      ----------------------
RETURN CODE: 0012          PROC   NAME: LISTLPIN      MODULE NAME: DGTFCTSE
REASON CODE: 0600          RETURN CODE: 0012          PROC   NAME: DGTFCTSE
SHORT MSG:   DGTUV024      REASON CODE: 0006          RETURN CODE: 0008
LONG MSG:    DGTUV024      SHORT MSG:   DGTDS008      REASON CODE: 0103
SERVICE:     LOAD          LONG MSG:    DGTDS008      SHORT MSG:   DGTUV024
FEEDBACK: MODULE=DGTTL     SERVICE:     DGTFLPIN      LONG MSG:    DGTUV024
          PD2 ABEND=08     FEEDBACK:                  SERVICE:
          06 - 0004                                   FEEDBACK: RESTORE



USE ENTER TO CONTINUE; END TO RETURN TO
```

Figure 162. An Example Error Table (ERTB) Display

To invoke the ERTB Display, simply enter ERTB from an ISMF command line. You can scroll UP and DOWN through entries using PF Keys 7 and 8.

```
14:59   *****  ISMF ERROR  ***** - APPLICATION(DGT1 - DATA SET); FUNCTION(DISPLIST)
14:59                           - RETURN CODE(0008); REASON CODE(0102)
14:59                           - MODULE(DGTFCTCK); PROCEDURE(DGTFCTCK)
14:59                           - MESSAGE ID(DGTCT001 - DGTCT001); LAST PANEL(DGTLDDS1)
14:59                           - SERVICE(NONE); FEEDBACK(PROFIEL)
15:00   *****  ISMF ERROR  ***** - APPLICATION(DGT2 - VOLUME); FUNCTION  (DISPLIST)
15:00                           - RETURN CODE(0008); REASON CODE(0102)
15:00                           - MODULE(DGTFCTCK); PROCEDURE(DGTFCTCK)
15:00                           - MESSAGE ID(DGTCT001 - DGTCT001); LAST PANEL(DGTLVVA1)
15:00                           - SERVICE(NONE); FEEDBACK(PROFIEL)
15:01   *****  ISMF ERROR  ***** - APPLICATION(DGT1 - DATA SET); FUNCTION(DISPLIST)
15:01                           - RETURN CODE(0008); REASON CODE(0102)
15:01                           - MODULE(DGTFCTCK); PROCEDURE(DGTFCTCK)
15:01                           - MESSAGE ID(DGTCT001 - DGTCT001); LAST PANEL(DGTLDDS1)
15:01                           - SERVICE(NONE); FEEDBACK(EDIT)
15:02      EDIT    - SAVE       - USER20.LOG.EXAMPLES - DATASET SAVED
15:02      ISMF    - EDIT       - USER20.LOG.EXAMPLES; APPLICATION(DGT1 - ISR)
15:02                           - COMPLETED
```

Figure 163. ISMF Standard Entries and Detailed Error Entries in the ISPF Log

```
14:58   *****  ISMF ERROR  ***** - APPLICATION(DGT1 - DATA SET); FUNCTION(DISPLIST)
14:58                           - RETURN CODE(0008); REASON CODE(0102)
14:58                           - MODULE(DGTFCTCK); PROCEDURE(DGTFCTCK)
14:58                           - MESSAGE ID(DGTCT001 - DGTCT001); LAST PANEL(DGTLDDS1)
14:58                           - SERVICE(NONE); FEEDBACK(PROFIEL)
14:58      ISMF    - TRACE      - MODULE ID(DGTFDS21); REG 1(01C9D02E);  REG 11(01CE1374)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFDS18); REG 1(01C9C317);  REG 11(01CE1334)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFFOP1); REG 1(01CD01F6);  REG 11(01CE1324)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFCTSE); REG 1(01CC1216);  REG 11(01CE137C)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFFOX1); REG 1(01CDB64E);  REG 11(01CE1254)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFDS16); REG 1(01C9A8AB);  REG 11(01CE2264)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFFOQ1); REG 1(01CD6626);  REG 11(01CE1354)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFLPCK); REG 1(01CA27E6);  REG 11(01CE1354)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFFOG1); REG 1(01CC2136);  REG 11(01CE1234)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFCTCK); REG 1(01CC2606);  REG 11(01CE12B4)
14:58                           - TRACE DATA()
14:58      ISMF    - TRACE      - MODULE ID(DGTFLPPR); REG 1(01CA395F);  REG 11(01CE121C)
14:58                           - TRACE DATA()
```

Figure 164. ISPF Log with ISMF Inter-Module Trace Entries

```
ISMF    - TRACE      - POINT ID(DGTFCTFT); REG 1(01C8F720); REG 11(01CD5084)
                     - TRACE DATA(VGET SERVICE.....................)
```

Figure 165. ISPF Log with ISMF Trace-Point Entries

Glossary

The following terms and abbreviations are defined as they are used in this book. If you do not find the term you are looking for, refer to the index or to the *Dictionary of Computing*, SC20-1699.

A

abend. Abnormal end of task: termination of a task prior to its completion because of an error condition that cannot be resolved by recovery facilities while the task is executing.

ACS. See *automatic class selection.*

automatic class selection (ACS). A facility through which the system may determine a class (Data Class, Management Class, Storage Class) or group (Storage Group) to be associated with a data set based on other definitive information.

B

backup. The process of copying data and storing it for use in case the original data is somehow damaged or destroyed.

C

catalog. A data set that contains extensive information required to locate other data sets, to allocate and deallocate storage space, to verify the access authority of a program or operator, and to accumulate data set usage statistics.

class. One of the following: Data Class, Management Class, Storage Class.

CLIST. A sequential list of commands and control statements assigned a single name; when the name is invoked the commands in the list are executed in sequential order.

cluster. A data component and an index component in a VSAM key-sequenced data set; or a data component alone in a VSAM entry-sequenced data set.

compaction. In DFHSM, a method of compressing and encoding data during migration or backup to reduce storage space.

compression. A method for removing imbedded unused space from between members of a partitioned data set.

configuration. The arrangement of a computer system as defined by the characteristics of its functional units.

D

Data Class. A class that is used as a template for the allocation of a data set.

Data Facility Data Set Services (DFDSS). An IBM licensed program used to copy, move, dump and restore data sets and volumes.

Data Facility Hierarchical Storage Manager (DFHSM). An IBM licensed program used to back up, recover, and manage space on volumes.

Data Facility Product (DFP). An IBM licensed program used to manage programs, devices, and data in an MVS operating environment.

direct access storage device (DASD). A storage device in which the access time is effectively independent of the location of the data.

E

extent. A continuous space on a DASD volume occupied by a data set or portion of a data set.

G

generic name. A name assigned to a class of devices that is automatically derived from the UNIT, MODEL, and FEATURE parameters of the sysgen IODEVICE macro (for example, 3380).

I

interactive. Pertaining to an application in which each entry calls forth a response from the system or program, usually in the form of a conversational dialog with screens or menus.

Interactive System Productivity Facility (ISPF). An IBM licensed program used to develop, test, and run application programs interactively. ISPF is the interactive interface for all storage management functions.

J

job control language (JCL). A problem-oriented language used to express statements in a job that identify the job or describe its requirements to an operating system.

L

level 0 volume. A DASD volume not managed by DFHSM. See also *primary volume*.

level 1 migration volume. A volume managed by DFHSM as part of the storage hierarchy, containing data sets migrated from a primary or level 0 volume.

level 2 migration volume. A volume managed by DFHSM as part of the storage hierarchy, containing data sets migrated from a primary, level 0, or level 1 volume.

logical. With respect to data, the attributes that describe the data and its usage, as opposed to the physical location of the data.

M

Management Class. A class that is used to control the disposition of a data set.

master catalog. A catalog that points to user catalogs. See *catalog*.

migration. In DFHSM, the process of moving a cataloged data set from a primary or level 0 volume to a level 1 or level 2 migration volume in order to free up space on the primary volume.

MVS/ESA. An MVS operating system environment that supports 31-bit real and virtual storage addressing, increasing the size of addressable real and virtual storage from 16 megabytes to 2 gigabytes.

N

NVR. A non-VSAM data set volume record.

O

object code only (OCO). Licensed programs for which source materials are not made available to licensees.

OCO. See *object code only*.

online. Pertaining to equipment, devices, or data under the direct control of the processor.

P

partitioned data set (PDS). A data set in DASD storage that is divided into partitions, called *members*, each of which can contain a program, part of a program, or data.

primary volume. A volume under DFHSM control that contains data sets directly accessible to the user.

R

recall. The process of moving a migrated data set from a level 1 or level 2 migration volume back to a primary volume to make it available for use.

Resource Access Control Facility (RACF). An IBM program product that provides access control by identifying and verifying users to the system. RACF authorizes access to resources, logs unauthorized access attempts, and logs accesses to protected data sets.

S

secondary allocation. A predefined contiguous space on a DASD volume reserved for additions to a particular data set, and allocated only after the primary allocation space is full.

sequential data set. A data set whose records are organized on the basis of their successive physical positions, such as on magnetic tape.

SMS. See *Storage Management Subsystem*.

Storage Class. A list of DASD storage performance, security and availability service level requirements for an SMS-managed data set.

Storage Management Subsystem (SMS). An operating environment that helps automate and centralize the management of storage. To manage storage, SMS provides the storage administrator with control over Data Class, Management Class, Storage Group, and ACS routine definitions.

system-managed storage. An approach to storage management in which the system determines data placement and an automatic data manager handles data backup, movement, space and security.

system residence (SYSRES) volume. The volume on which the nucleus of the operating system and the master catalog are stored.

T

time sharing option (TSO). An optional configuration of the operating system that provides conversational time sharing from remote stations.

V

virtual storage access method (VSAM). An access method for direct or sequential processing of fixed and variable length records on DASD.

volume. A certain portion of data, together with its data carrier, that can be mounted on the system as a unit; for example, a tape reel or a disk pack. For DASD, a volume refers to the amount of space accessible by a single actuator.

volume serial number. An identification number in a volume label that is assigned when a volume is prepared for use on the system.

volume table of contents (VTOC). A table on a DASD device that describes each data set on the volume.

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Special Characters

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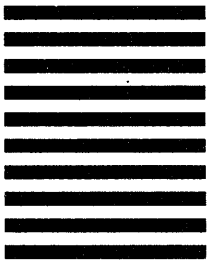

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