TeraCloud Storage Framework™ Mainframe User Guide

Version 2.1

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TSFPRMxx Definitions

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FIGURES

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OVERVIEW

TeraCloud Storage Framework (TSF) v2.1 is a comprehensive application that delivers fast, flexible reporting and storage management for the Enterprise. TSF includes the following fully integrated components:

- Pools/Volumes – Storage management reporting from a single point of reference, with comprehensive online analysis and both *ad hoc* and batch reporting for DASD volumes, device types, dataset names and organizations, storage groups, storage classes, management classes, data classes, and other allocation attributes.
- Datasets – Complete, interactive storage-reporting and storage-modeling tool for planning, implementing, and managing the DFSMS environment. Datasets reports on DFSMS usage by storage group, storage class, data class, and management class. In addition, it identifies inhibitors and unsupported datasets that prevent DFSMS migration.
- Tape – Provides tape usage evaluation within the enterprise for volumes, datasets, HSM, and logical pools.
- DFSMShsm Mgmt – Models and reports DFSMShsm savings and activity, including MCDS, BCDS, and SMF records created by DFHSM. This component makes dataset associations with HMIG datasets, including small-dataset packing options. DFSMShsm Mgmt reports on DFHSM activity such as recall rate; migration and backup failures; and activity by dataset, application, or user. A real-time component allows you to monitor DFHSM activity as it occurs.
- Automation Wizard – Processes automation IF statements against data collected within the z/OS environment to determine whether further actions are deemed necessary. Handles automation on any field in any record created by TSF.
- Utilities – Provides additional components, including the following:
  - Compare – Report on the growth of datasets, group, volumes, and other objects over a period of time
  - Catalog – Identify catalog problems and other critical information relative to defined catalogs with a complete catalog-management tool
  - Unix – Analyze Unix file systems that reside within MVS
  - Diagnostics – View information about the CPU and the TSF Settings table
  - Task log – View task log entries
- Settings – Lets you change your environment variables in one place, whenever it becomes necessary.

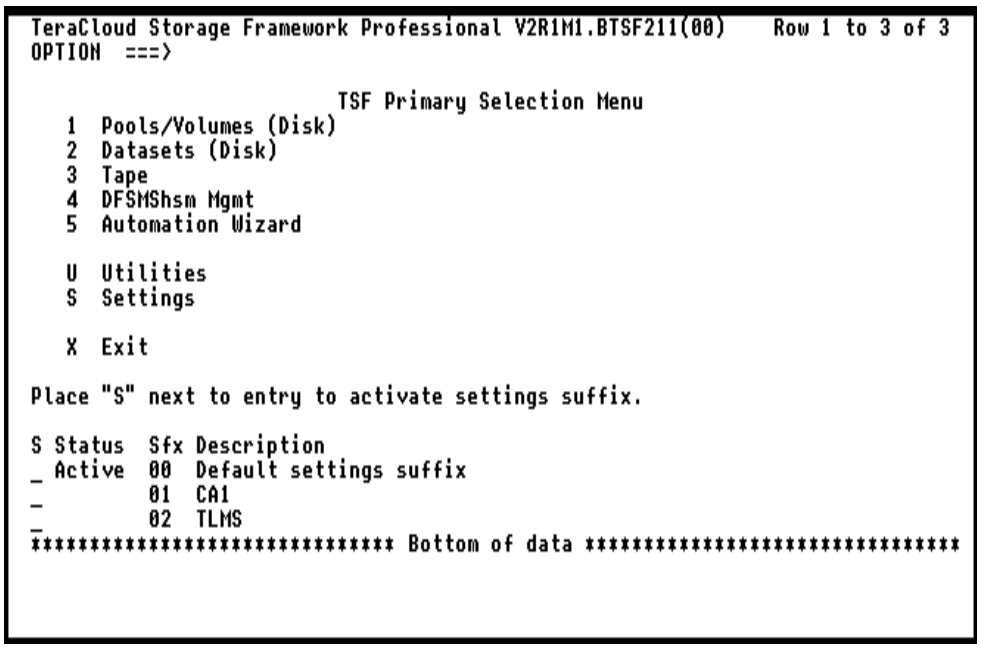

Figure 1. TSF Primary Selection Menu

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CHAPTER

1

INTERFACE

The power of TeraCloud Storage Framework (TSF) lies in the ability to filter (query) data attributes across the enterprise according to the information that you need to review. You can mine data with the powerful filters that are available or you can type a command-line expression of your own.

Each tool in TSF has a specific set of filters but the arrangement of these filters on the page and the display options are generally similar throughout the application. The page layout in TSF is similar for each tool, with some differences to accommodate filter and view needs.

As an example, in Figure 1–1 (default view for Pools/Volumes Search/Filter option), the page layout is similar to the default display when you select the Datasets Search/Filter option. You can select your display settings just below the command line, and filters are typed at the right of the prompt (===>) next to the filter name.

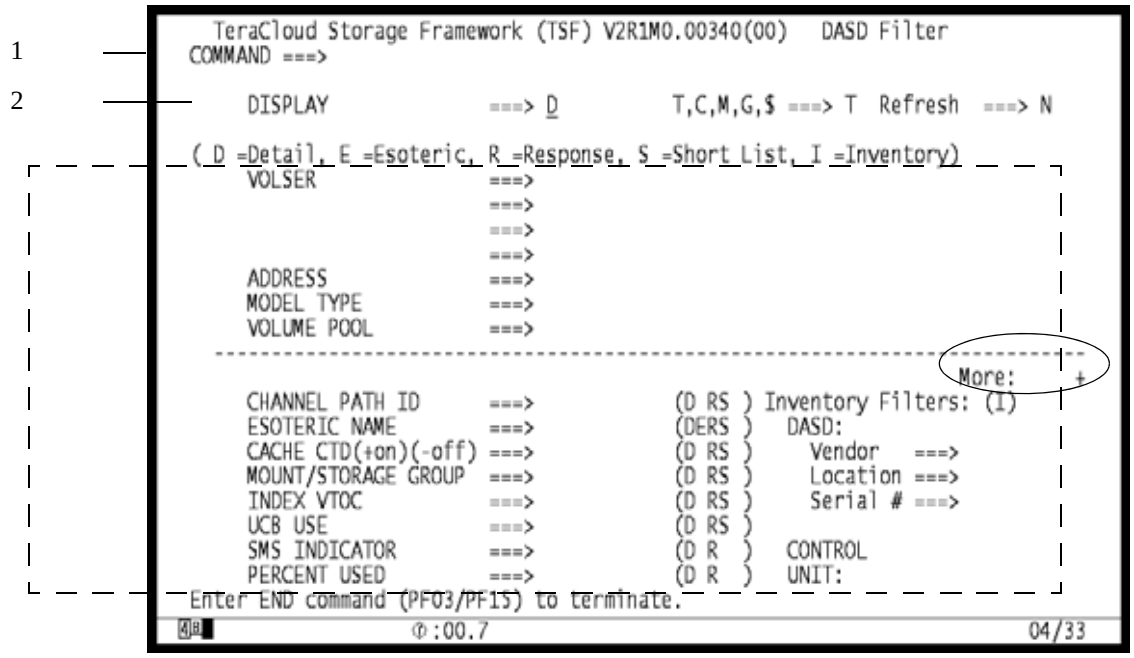

Figure 1–1. Pools/Volumes Search/Filter page layout. **1,** Command line; **2**, Display-option selection group; **dotted-line rectangle**, filters; **circle**, more data available indicator (scroll up or down)

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Online Help

Wherever you are in TSF, online help is always available for the command line and for each filter.

Note: Some filters have multiple parameters. When navigating filters, the tab stops at each filter parameter. Online help is available for each part.

To display online help:

- With the cursor positioned in position 1 in the command line or at a tab stop for the selected filter, press PF1.

  The online help panel displays (Figure 1–2); information is specific to the filter or the panel (command-line) that you are currently in.

  Note: The online help panel has focus until you press PF3 to exit and return to your place in the application.

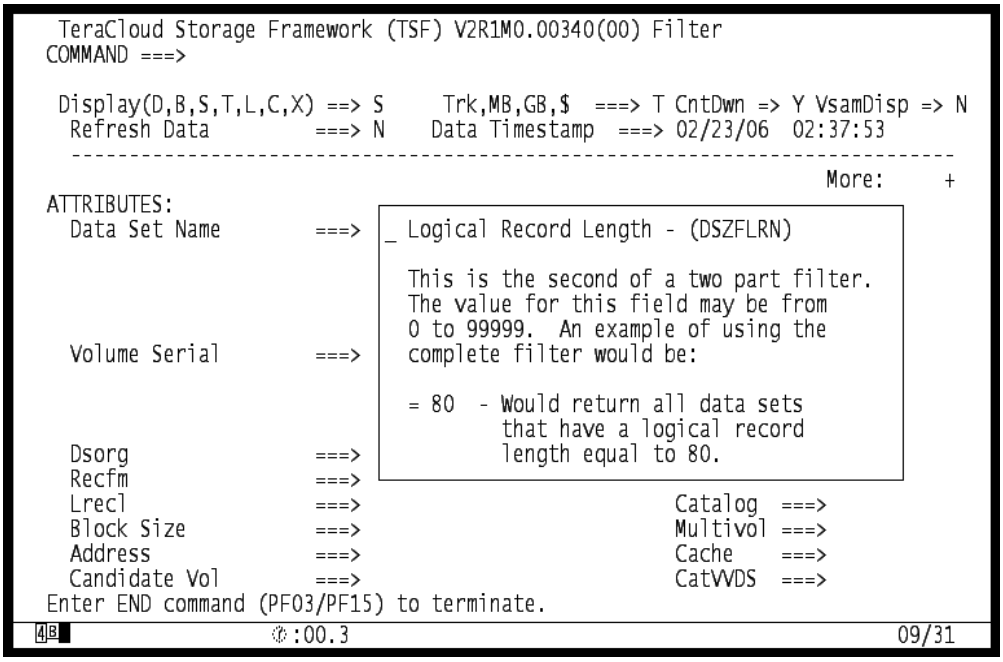

Figure 1–2. Online help example

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Page Navigation

Filters that are available and result-set data are not always visible on one panel. On-screen indicators let you know that all fields or data are not displayed.

For example, the text and symbols highlighted in Figure 1–3 indicate that more filters are available both **above** (minus symbol) and **below** (plus symbol) those that are visible.

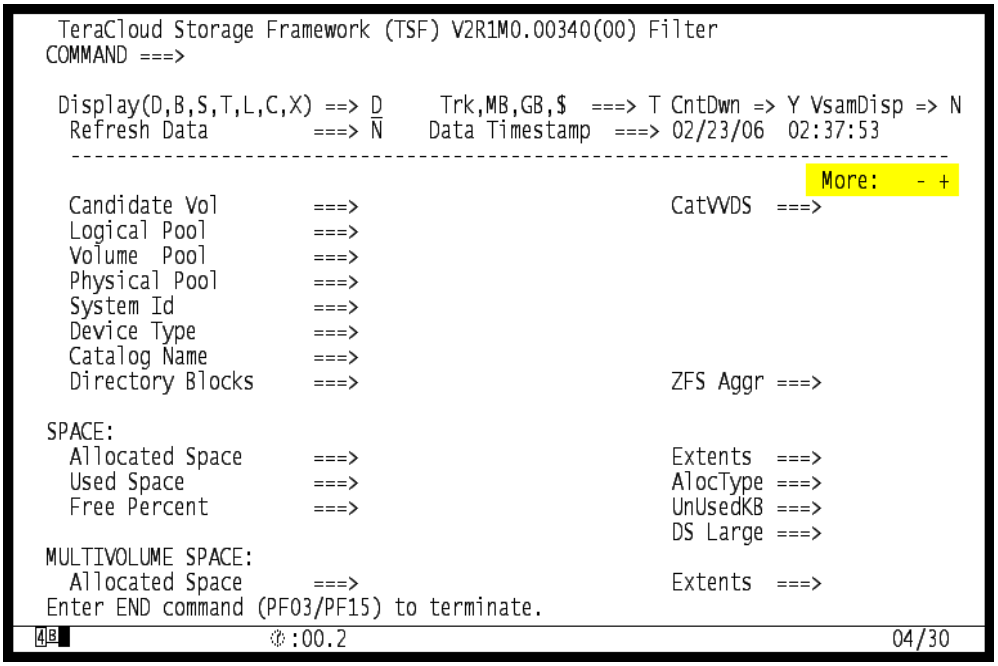

Figure 1–3. More data available indicator, up or down

Result sets from a filter execution often return more information than it is possible to display in one panel in a meaningful format. When this occurs, the indicator is similar to the text and symbols highlighted in Figure 1–4.

More information is available to the right and to the left (see Table 1–1 on page 1-7), indicated by the arrows, and the current panel number displays between them (2).

Note: When scrolling right, when you reach the last panel and press the function key to continue right, the display returns to panel 1, where you began.

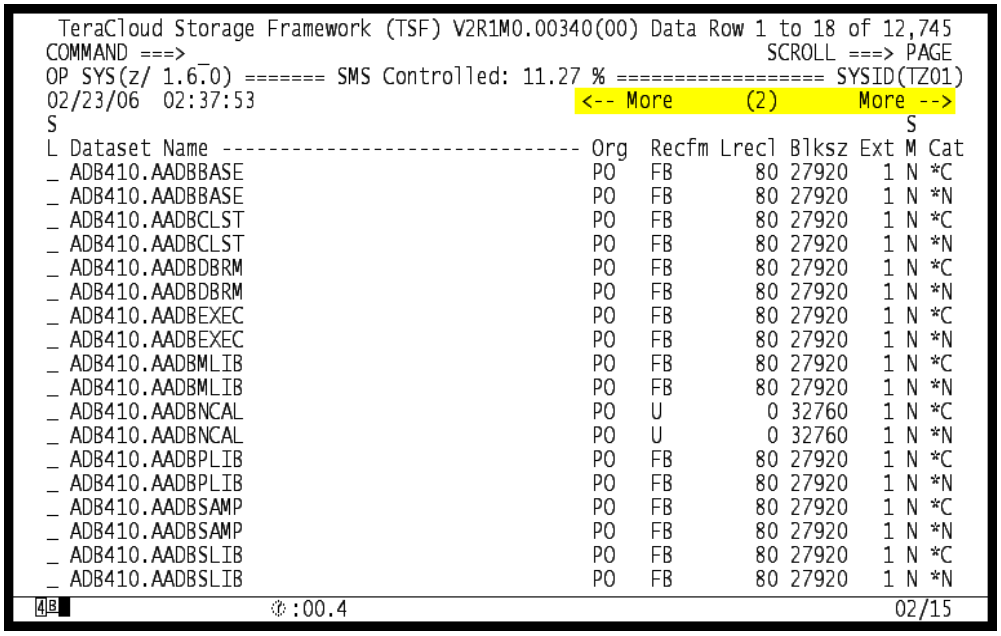

Figure 1–4. More data available indicator, right or left

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Navigation Keys

When the online indicators are displayed (see Figure 1–3 and Figure 1–4), use function keys to display the additional information (Table 1–1).

Table 1–1. Standard Function Key Assignments[a]

Standard Key	Function
PF2	Split the screen
PF7	Scroll up
PF8	Scroll down
PF10	Scroll left
PF11	Scroll right

a. Consult your system administrator to determine whether these functions have been assigned to differently numbered function keys.

GO-TO PAGE(N)

To determine the number of additional information pages available by scrolling, place the cursor in the first position at the command line and press PF1. the highest *P* number listed indicates the number of data pages returned in this result set—for example, the text below indicates that there are 8 additional information pages available (P8).

P1 - scroll directly to **P(*n*)** detail panel (P1 P2 P3 P4 P5 P6 P7 P8 are available)

At the command line, type **P(*n*)** to immediately jump to a specific page: for example, type **P7** to move immediately to information-page 7.

In addition, at the command line you can type **Panel Default P(*n*)** to set the initial panel display default for each user.

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Defining and Executing Filters

Each component of TSF has a specific set of filters. These filters allow you to filter (query) attributes across the enterprise according to the information that you need to review—by nearly every imaginable combination—from which you can produce reports to analyze the health of your environment.

The arrangement of these filters on the page and the display options are generally similar throughout the application. Filter parameters are defined and executed in the same manner throughout the application. As you become more familiar with TSF and your data, you will be able to refine your filter parameters to narrow your result set.

TSF also ships with predefined filters that have been created according to storage-resource management Best Practices. For more information, see Appendix C, Predefined Filters. Filters are also used to define parameters for proactive measures to maintain the health of your environment (Chapter 12, Proactivity).

Filters are executed from a filter panel that is specific to the component that you selected from the TSF menu. For example, to filter dataset attributes, select the Datasets component and then the Search/Filter option to display the filter panel that enables you to query dataset information (or select Logical Pools at the submenu to filter user-defined logical pools).

To execute a filter, you must:

- Navigate to the filter panel for the selected tool.
- Select your display options, when applicable. See Chapter 3, Display Selection Options.
- Type parameters for the filters that you want to use to query the data.
- Review the result set.

As you learn to filter, remember these points:

Refine filter parameters. When 'hits' for a filter—the result set—are so numerous that response time will be affected, you are prompted whether to continue before executing the filter. You can then refine your filter parameters to narrow the search.

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option D for datasets. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (30,000) for the maximum number of datasets can be changed or overridden with the Max Table Size variable. See HSM Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

Be alert to multiple-part filters. Some filters have multiple parts. Use the TAB key to move between filter fields. The cursor stops at each part of the filter.

Use the context-sensitive help panel. Descriptions and valid parameters for each dataset filter can be displayed by tabbing the cursor to the filter and pressing PF1 to display online help.

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Using Wildcard Characters

Wildcard characters (standard IBM masking) can be used when providing filter values.The wildcard characters include the following:

- < - positional placeholder for any alpha character
- > - positional placeholder for any numeric character For example, TLS<>.** results in any 5-character HLQ that begins with TLS, has an alpha character in position 4, and has a numeric character in position 5.
- ¬ - logical NOT (Shift-6 adds the 'exclude' symbol to the filter field)
- **%** - positional placeholder for any single alpha or numeric character
- * - any single alpha or numeric character from this position onward without extending beyond qualifiers
- **** - any string of zero or more characters from this position onward across qualifiers

General Example

TLS<>.** results in any 5-character HLQ that begins with TLS, has an alpha character in position 4, and has a numeric character in position 5.

Example for a VOLSER

PROD01 - Show volume serial PROD01

PRO* - Show all volumes that begin with PRO

P*,SY* - Show all volumes that begin with P and SY

¬P* - Show all volumes except those that begin with P

¬P*,SYS* - show all volumes except those that begin with P or SYS

Example for ADDRESS

F130 - show address - F130

0120 - show address - 0120

1AF - show address - 1AF

1A* - show all devices that begin with address 1A

¬1* - show all devices that do not begin with 1

Example for CHANNEL PATH ID

1A - Returns devices that are on CHPID 1A

1* - Returns devices that are on CHPIDs that begin with 1

¬1A * - Returns all devices except those that are on CHPID 1A

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Filtering Example

Throughout this user guide, real-world examples are provided for finding information, which you can extrapolate to fit your environment. The following steps describe how to display all datasets that were allocated in tracks and are using fewer than 15 tracks.

To display all datasets allocated in tracks using < 15 trks:

1. From the TSF Primary Selection Screen, type **2** (Datasets) in the **Selection** field. The Datasets Selection panel appears.
2. From the Datasets Selection panel, type **1 (Search/Filter)** at the Selection prompt. The Filter panel appears to let you filter and view individual dataset information (Figure 1–5).
3. In the Dataset Filter panel area for Display Option selections, type the values in bold for the following prompts to select Detail and Tracks:

   Display (D,B,S,T,L,C,X) ===> **D**

   Trk,MB,GB, $===> **T**
4. Press PF8 twice to page down, locate and tab the cursor to the prompt at the right of the **Allocated Space** filter:

   Type **< 15** at this prompt to query allocated space less than 16 tracks (*tracks* was selected above).
5. Locate and tab the cursor to the prompt at the right of the **AlocType** filter:

   Type **T** at this prompt to query allocation type of tracks.
6. When your criteria is complete, press ENTER. The result set appears with the details of your filter criteria (Figure 1–6).

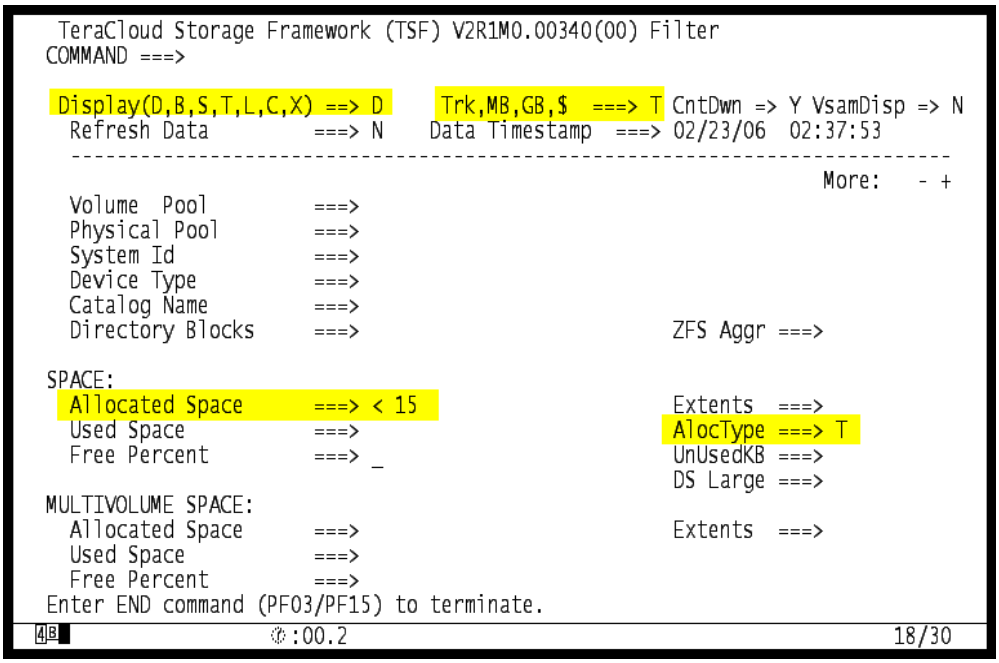

Figure 1–5. Filter example with criteria

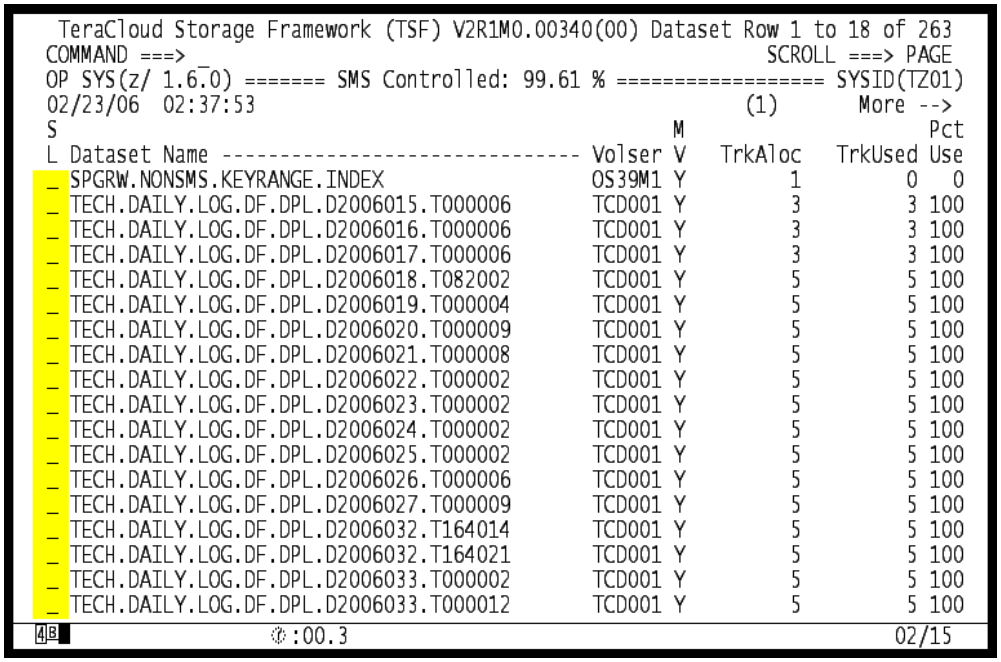

Figure 1–6. Filter result set example (Detail) with drill-down information available

Reviewing the Filter Result Set

Result sets can be viewed several ways—for example, by:

- typing a command-line option (See Chapter 2, Command Line Options)
- typing the SW (switch) command-line option to view both detail and summary information
- selecting a dataset (drill down) to view dataset-specific information.

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DISPLAYING DETAIL AND SUMMARY INFORMATION

Detail and summary information can be displayed in the same panel.

To review both summary and detail information for the result set:

1. Review the detailed result set generated from the preceding instructions (*Filtering Example, page 1-11*).
2. Position the cursor at the command line and type **SW** to view both detail and summary information in a split-panel view.
3. Type the desired command-line option at the command line.

   Use PF11 and PF10 to scroll right and left, respectively, to view additional results details. Use PF8 and PF7 to page down and page up, respectively.

   To display available command line options, position the cursor at the command line and press PF1.

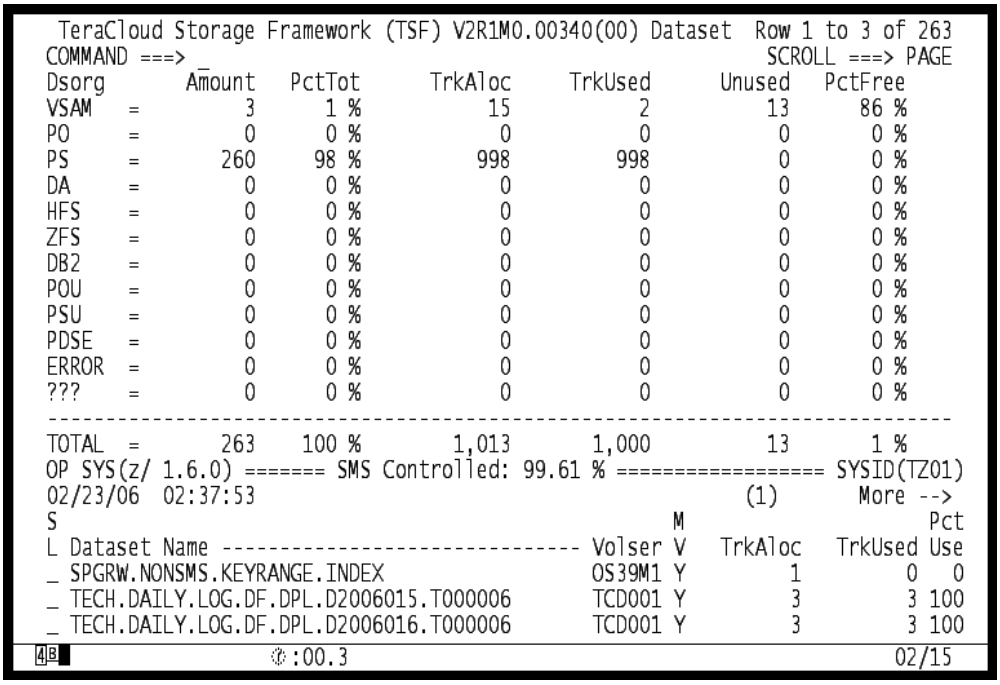

Figure 1–7. Detail and Summary information, **SW** view

DISPLAYING ITEM-SPECIFIC INFORMATION (DRILL-DOWN)

Using the same result set, you can use the drill-down method to view information about a selected dataset. A blank line at the left of a line item in a result set indicates that more information is available by typing a valid drill-down option on that line.

To drill-down to item-specific information:

1. Review the detailed result set generated from the preceding instructions (see *Filtering Example, page 1-11*).

   Use PF11 and PF10 to scroll right and left (respectively) and use PF8 and PF7 to page down and page up (respectively) to view all results in this set.

2. Type the desired option on the line at the left of the selected member (*Figure 1–6*); not all options are available for all result sets. Position the cursor on the line at the left of the member and type PF1 to display valid options.

   D - Show all detail records for the selected item.

   F - Display a filter panel that allows you to show all detail records for the selected item.

   S - Select to display pool information.

   H - Display the History Retrieval panel that allows you to show all historical data for the selected item.

   / - Display an Action Menu that allows you to perform various actions for the selected item. The Action Menu is not always available.

3. Detailed information about the selected item appears (*Figure 1–8*).

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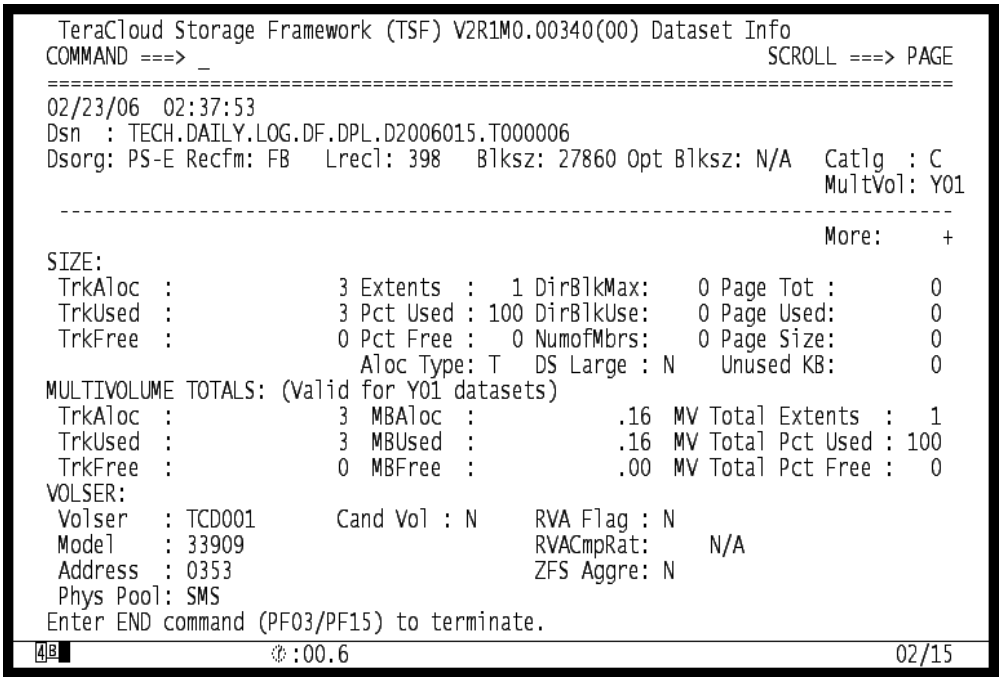

Figure 1–8. Drill-down result **(S)** view

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CHAPTER

2

COMMAND LINE OPTIONS

Throughout TSF, the command line is available as a navigation tool. Traditional usage places the command line at the top of the panel, but this is a personal preference. The command line for your ISPF session might appear at the bottom of the display. You can return to the previous filter panel by typing END. For Help, you can press F1 to display valid context appropriate command line options for viewing and reporting data. For example, depending on where you are in the application, the following options may be valid.

Table 2–1. Valid Command Line Options

Command	Description
DC	Display all DFSMS Data Class information
END	Return to the previous panel.
ERD	Display a panel containing Error Detail information
ERS	Display a panel containing Error Summary information
GETDB	Select a saved database
GETQ	Retrieve a saved filter
L *xxx*	Locate a specific dataset name or pool name on the panel where *xxx* are the initial three characters of the dataset or pool name
MC	Display all DFSMS Management Class information
P1	Scroll directly to P(*n*) detail panel (P1 P2 P3 P4 P5 P6 P7 P8 are available) Note: the highest *P* number listed indicates the number of data pages returned in this result set.
PANEL DEFAULT P1	Set the initial detail panel display default for each individual user (P1 P2 P3 P4 P5 P6 P7 P8 are available)
REPORT	Create a hardcopy report of all summary and detail results
RMM or MEDIA	*For Tape component only.* Access the RMM Media Information panel to display the media types found in RMM.
SAVEDB	Add a new database

Table 2–1. Valid Command Line Options

Command	Description
SAVEQ	Save filter in a special library for retrieval
SC	Display all DFSMS Storage Class information
SG	Display all DFSMS Storage Group information
SORT	Launch panel to define sort order
SW	Switch between the Detail and Summary screens without having to reload the ISPF table. Lets you summarize and total many of the fields in the Detail report currently being displayed.
VP	Display all Volume Pool information
ZTSO *xxx*	Implement Proactivity (Chapter 12, Proactivity)

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Using the Command Line Options

Follow these steps to use a valid command-line option:

1. Position the cursor at the first position of the command-line and press PF1 to display options that are valid for your context (*Figure 2–1*).
2. Type the desired command-line option at the command line.
3. Press ENTER to accept the command.
4. View the result set from the command (for example, SG, *Figure 2–2*)

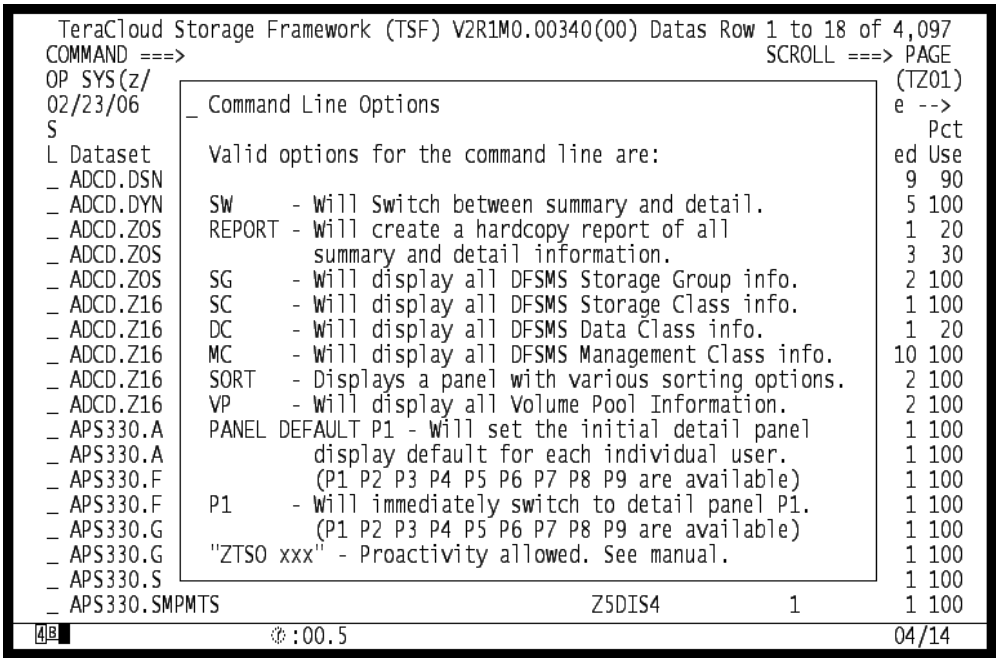

Figure 2–1. Valid command line options (example)

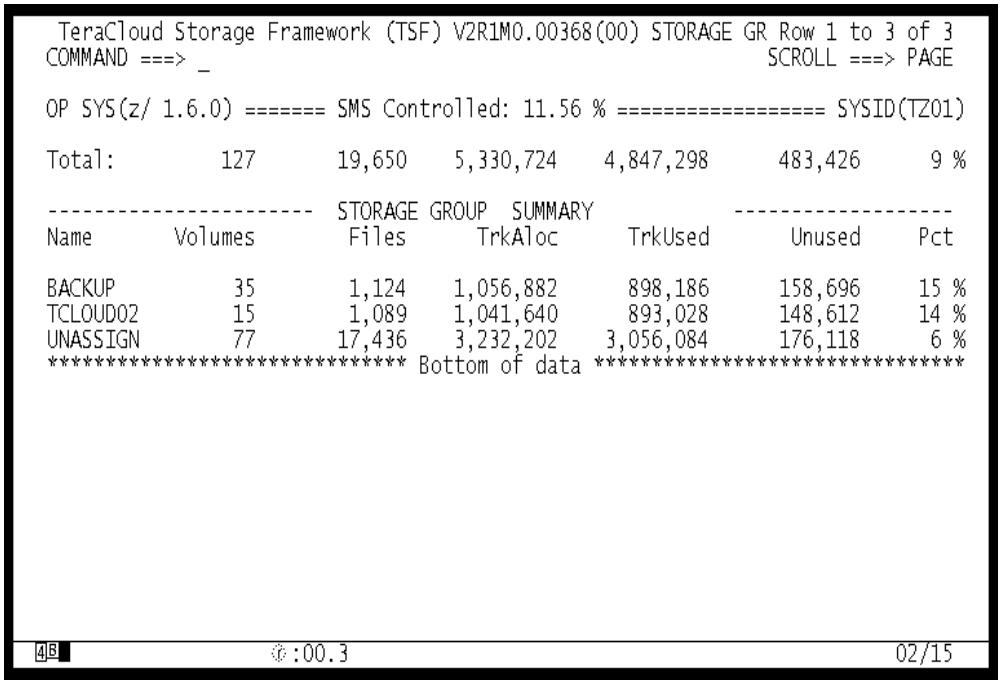

Figure 2–2. Detail result set, **SG** view

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Error Detail (ERD)

The Migration Error Detail panel can be accessed from the Migration Summary or Migration Detail panels in DFSMShsm Mgmt (option 4 from TSF Main selection panel). This panel features more information about migration errors. The Migration Error Detail panel is accessed from the Migration Summary or Migration Detail panels. Follow these steps to access the Migration Error Detail panel:

1. Type **ERD** in the command line of the Migration Summary or Migration Detail panel.
2. Press ENTER and the Migration Error Detail panel (Figure 2–3) appears showing the result set.
3. Review the results that appear in this panel.

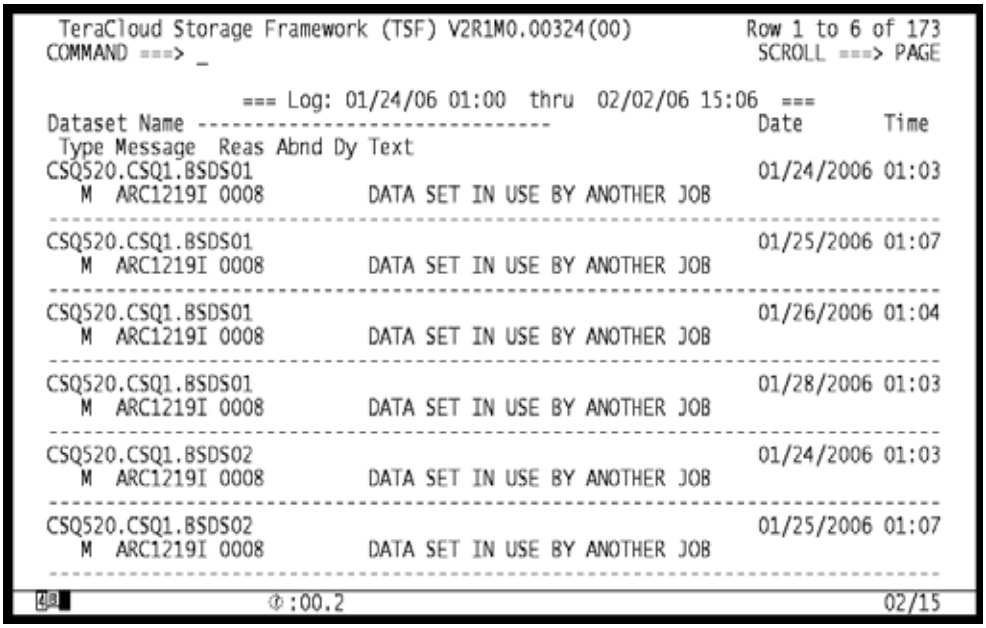

Figure 2–3. Migration Error Detail panel with a result set

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Error Summary (ERS)

The Migration Error Summary panel can be accessed from the Migration Summary or Migration Detail panels in DFSMShsm Mgmt (option 4 from TSF Main selection panel). This panel shows summary information about DFHSM errors. This is useful for obtaining an overview of the DFHSM activity and problems. Error information is displayed for Recall and Migration errors. Follow these steps to access the Migration Error Summary panel:

1. Type **ERS** in the command line of the Migration Summary or Migration Detail panel.
2. Press ENTER and the Migration Error Summary panel (Figure 2–4) appears with a result set.
3. Review the results that appear in this panel.

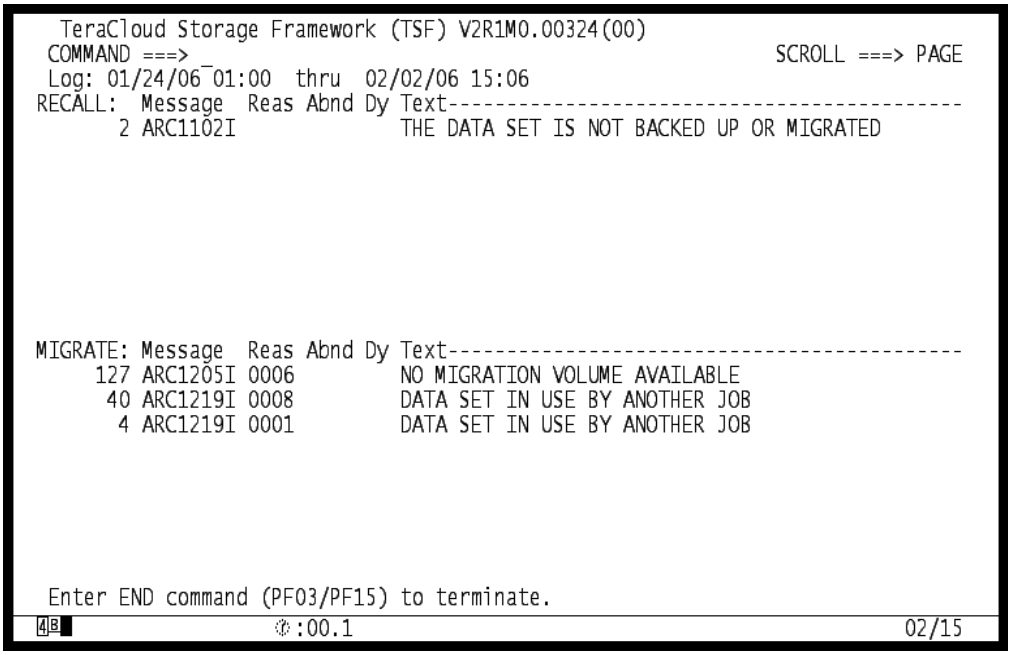

Figure 2–4. Migration Error Summary panel with a result set

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Get Database (GETDB)

The GETDB command lets you select a saved database. Follow these steps to use the GETDB command:

1 Type GETDB <*databaseName*> on the command line of the Datasets Filter Panel.

Alternatively, if you do not know the name of the database that you want to select, type GETDB to display the Saved Database Selection panel.

Select the database to be used (type **S** next to that database name).

2 Press ENTER to complete selection of that database.

A message displays that confirms your database selection (Figure 2–5).

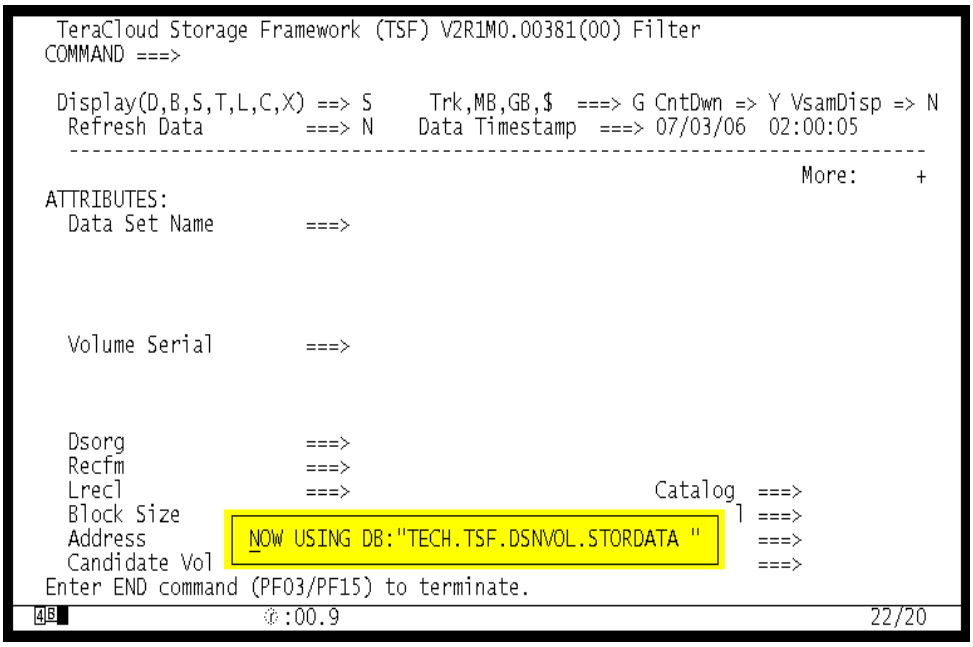

Figure 2–5. Database-selection confirmation message (**highlighted**).

Edit a Saved Database

Follow these steps to edit a saved database by using the GETDB command.

1. In the Datasets Filter Panel, type GETB <*databaseName*> on the command line.

   Alternatively, if you do not know the name of the database that you want to select, type GETB to display the Saved Database Selection panel.

2. Type **E** on the selection line by the database that you want to edit and press ENTER.

   Name, Description, and DSN field display in a Saved Database Edit panel (Figure 2–6).

3. Make your changes to this database at the appropriate prompts.

4. Press ENTER to save these changes.

   If the database DSN is new, a message displays that it is not found, in which case it must be defined using SFWDEFIN in <HLQ>.TSFxxx.CNTL as an example.

5. If necessary, type the filter criteria (for example, a subset of volsers) and type **Y** at the **Refresh Data** prompt to refresh this database.

   As an alternative, you can configure and submit <HLQ>.TSFxxx.CNTL(TSFDSNCT) to populate your database.

6. The edited database appears in the GETDB list and can be selected.

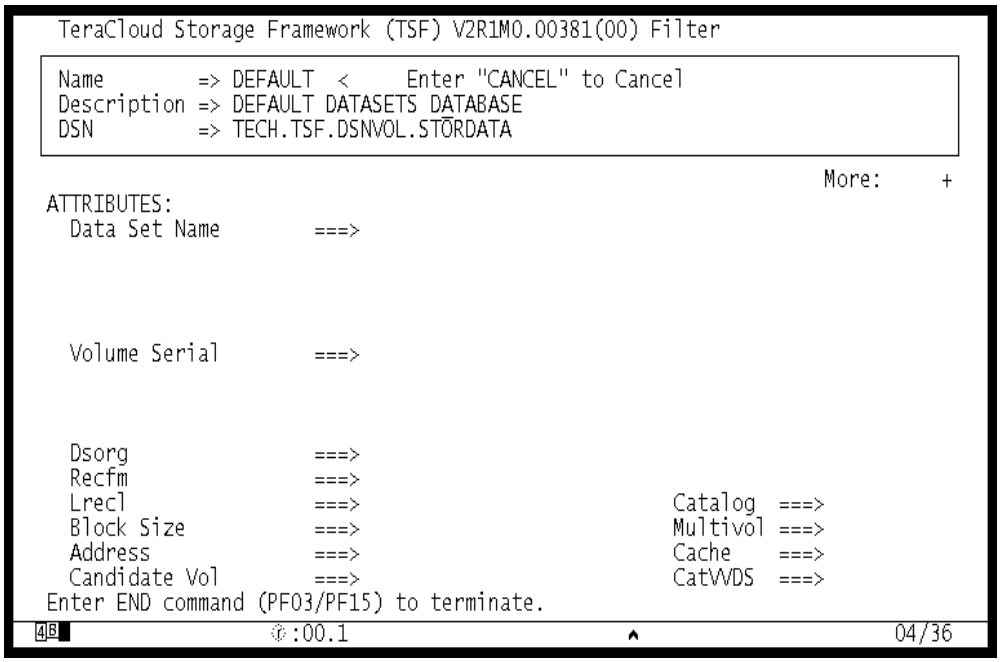

Figure 2–6. Saved Database Edit panel.

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Get Query (GETQ)

The GETQ command lets you repeatedly retrieve stored queries to save time. Follow these steps to retrieve a previously stored query using the GETQ command:

1. Type `GETQ` in the Command line of the primary filter panel.
2. Press ENTER and TSF accesses a panel that displays a list of saved queries that can either be selected or deleted (Figure 2–7). The cursor blinks on the first query in the table.
3. Tab to the desired query name on the list.
4. Type an **S** in the field next to the query name and press ENTER to select the query. The GETQ command automatically fills in the filter panel with the desired filter criterion. Below the command line, a prompt is displayed: QUERY RESTORED.
5. Change the filters as necessary, or if the existing filter information is satisfactory, press ENTER to display the results on the detail panel.

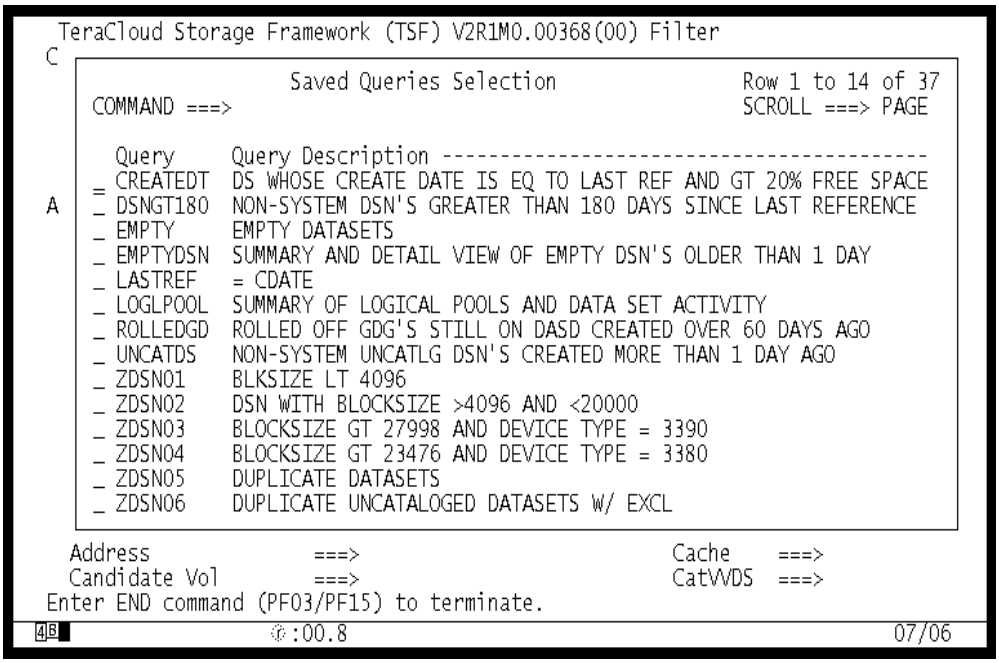

Figure 2–7. Saved Queries Selection Panel (GETQ)

Example: Datasets With Block Size Less Than 4096

A commonly used filter is one that filters for dataset block size limits. Follow these steps to retrieve and execute a filter for datasets with block size less than 4096:

Note: The filter retrieved in this example is a predefined filter that ships with TSF (see Appendix C, Predefined Filters).

1. Navigate to the TSF Primary Selection Menu.
2. At the prompt, type **2** to select **Datasets** and press ENTER.
3. From the Datasets Selection panel, type **1 (Search/Filter)** at the Selection prompt and press ENTER**.**
4. Position the cursor at the command line, type `GETQ`, and press ENTER. A list of saved filters displays (Figure 2–7).
5. Position the cursor on the line at the left of query **ZDSN01 (BLKSIZE LT 4096)** and type **S** to select that filter. A message displays confirming that the filter was restored.
6. Press ENTER to execute the retrieved filter.

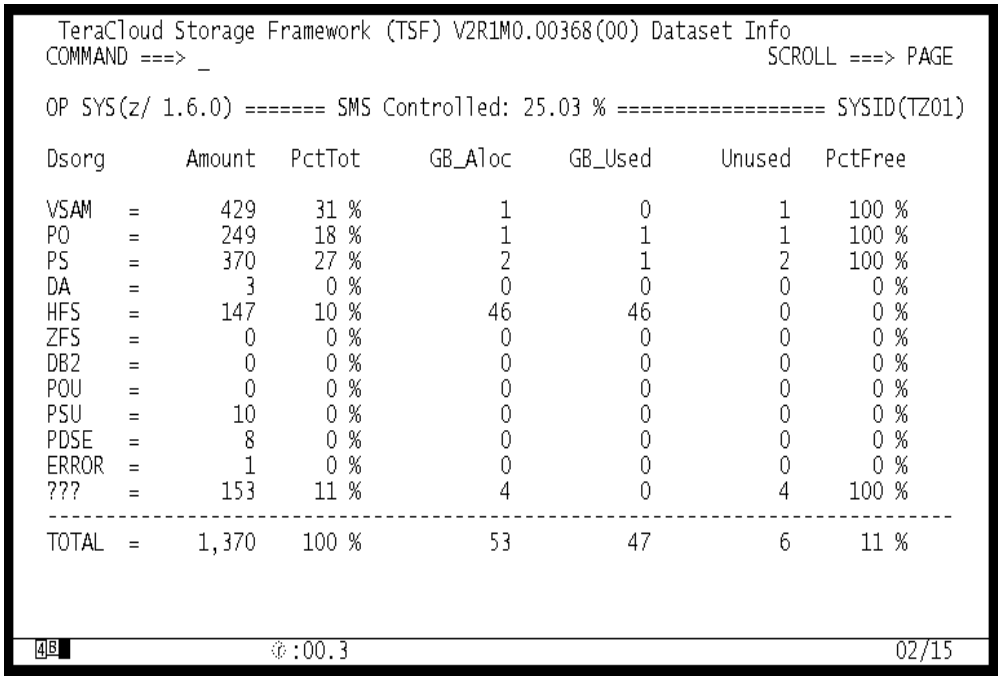

Figure 2–8. Executed filter ZDSN01, retrieved with GETQ command

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Deleting a Saved Filter

Saved filters can be deleted. Follow these steps to access a saved filter with the GETQ command and delete it.

1. Type `GETQ` in the Command line of the primary filter panel.
2. Press ENTER and TSF accesses a panel that displays a list of saved queries that can either be selected or deleted (Figure 2–7). The cursor blinks on the first query in the table.
3. Tab to the desired query name on the list.
4. Type a **D** in the field next to the query name and press ENTER to delete the query. The GETQ command automatically deletes the query.
5. A message displays confirming that the filter was deleted. Press ENTER to return to the primary filter panel.

WARNING: Be careful when deleting predefined filters that ship with the TSF application. If a deletion occurs erroneously, the library must be restored, a process that will overwrite filters that were created and saved using the SAVEQ command after the library was created at installation.

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Locate (L *xxx*)

The Locate command is used to find and display the next occurrence of a specific dataset name or pool name in the result set. It can be abbreviated to L. The basic Locate command looks like this:

Command ===> L xxx

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Create a Report (REPORT)

The REPORT command provides the ability to generate a hardcopy report to be sent to the printer or the capability to save the output to a dataset. Reports can also be generated on a scheduled batch basis. See Chapter 13, Batch Jobs, for more information.

A variety of hardcopy reports can be created. To determine whether a result set can be printed or saved as a report, position the cursor at the command line and press PF1. Valid options for the result set that you are currently viewing will display. Follow these steps to create a result-set report:

1. Execute a filter (for more information, see Chapter 1, Interface).
2. At the command line of the result set, type **REPORT** and press ENTER.

   The Report panel displays.
3. Type a descriptive title for this report at the **Title** prompt.

   Note: A descriptive report name is provided for the predefined filters provided with TSF and executed using GETQ.
4. Type destination information—dataset name, printer device, or SYSOUT class.

   Note: To save the report output to a dataset, change the Sysout DD option to `dsn=xx.xx.xx,` if the dataset is a new dataset then disp,unit,dcb and space attributes will need to be provided.
5. If necessary, type or edit job card details.

   Note: Job card information is necessary the first time that this function is used. This information is provided during the updating of settings. See JCL Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.
6. Press ENTER.

   The report is submitted as a job.
7. If desired, re-sort the information and repeat these steps to produce additional reports.

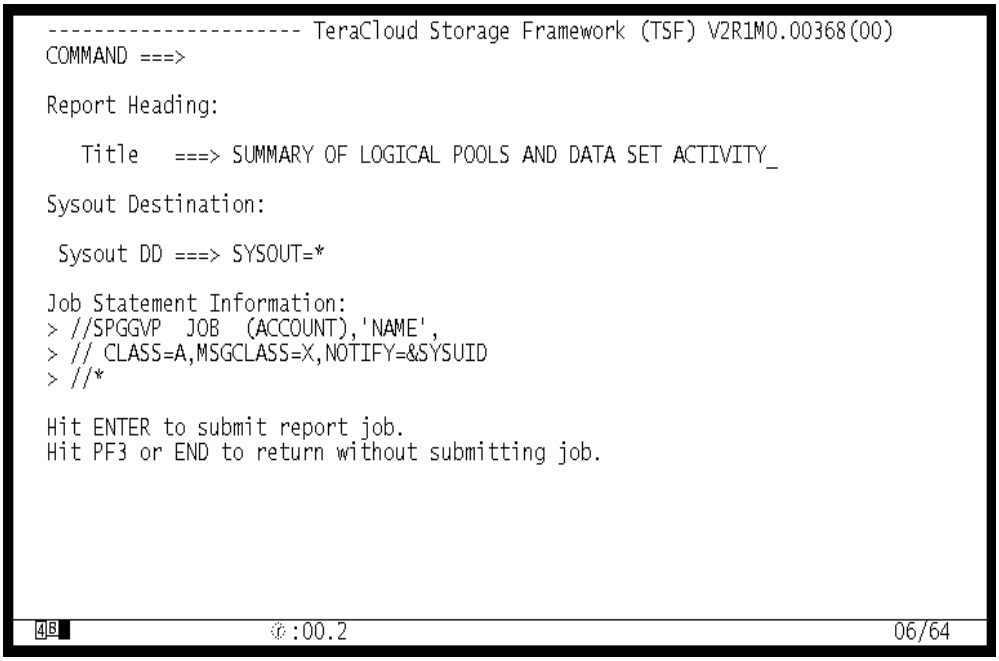

Figure 2–9. Report definition panel

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Display RMM Media Information (RMM or MEDIA)

The RMM Media Information panel only appears if you are using RMM. This panel allows you to view specific information about the media types that are associated with your RMM tape system. The media type information includes:

- RMM media type
- Total tapes for each media type
- Total number of scratch for each media type
- Total number of files for each media type
- Total number of each media type with an outcode
- Total number of each media type using a robot
- Total megabytes for each media type

In addition to the information for each media type, the RMM Media Information panel shows all RMM media type totals in these categories. Follow these steps to access the RMM Media Information panel:

8 From the RMM Information panel, type either **MEDIA** or **RMM** in the command line and press ENTER. The RMM Media Information panel appears (Figure 2–10).

9 Review the results set that displays on the RMM Media Information panel. If desired, use the appropriate command-line options that are listed in this chapter, for example ERD or ERS.

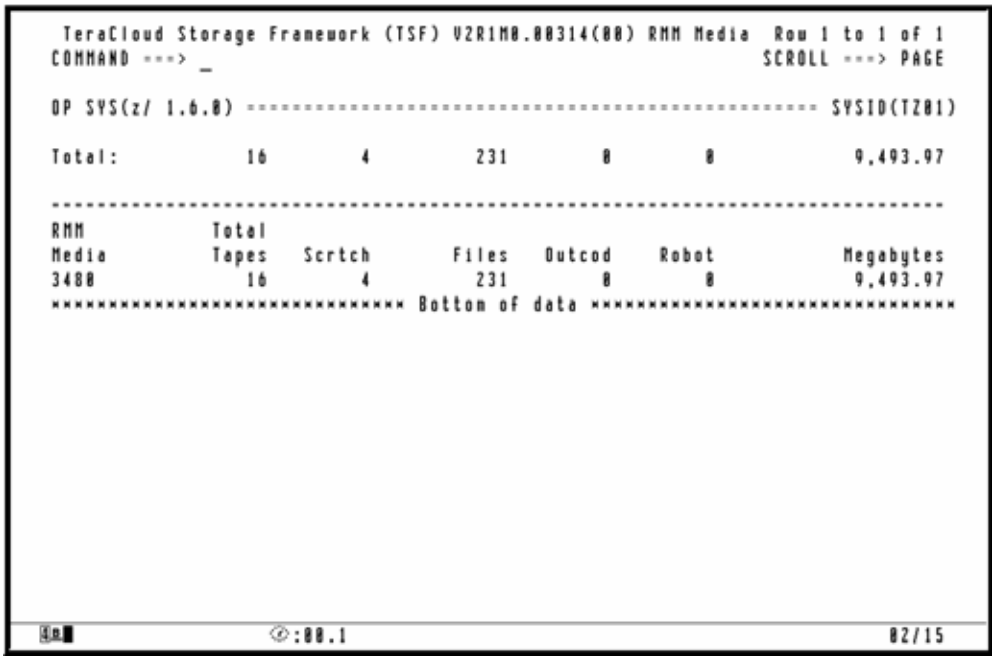

Figure 2–10. Tape RMM Media Information panel

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Save a Named Database (SAVEDB)

The SAVEDB command lets you add a new database. Follow these steps to use the SAVEDB command:

1. In the Datasets Filter Panel, type SAVEDB <*newdbase*> on the command line and press ENTER.

   Where <*newdbase*> is the name that identifies this database, up to 8 characters.

   Name, Description, and DSN field display for defining the database (Figure 2–11).

2. Type a description for this database at the **Description** prompt.
3. Type the DSN that is to be used for this database.
4. Press ENTER to save these entries.

   If the database DSN is new, a message displays that it is not found, in which case it must be defined using SFWDEFIN in <HLQ>.TSFxxx.CNTL as an example.

5. Type the filter criteria (for example, a subset of volsers) and type **Y** at the **Refresh Data** prompt to refresh this database.

   As an alternative, you can configure and submit <HLQ>.TSFxxx.CNTL(TSFDSNCT) to populate your database.

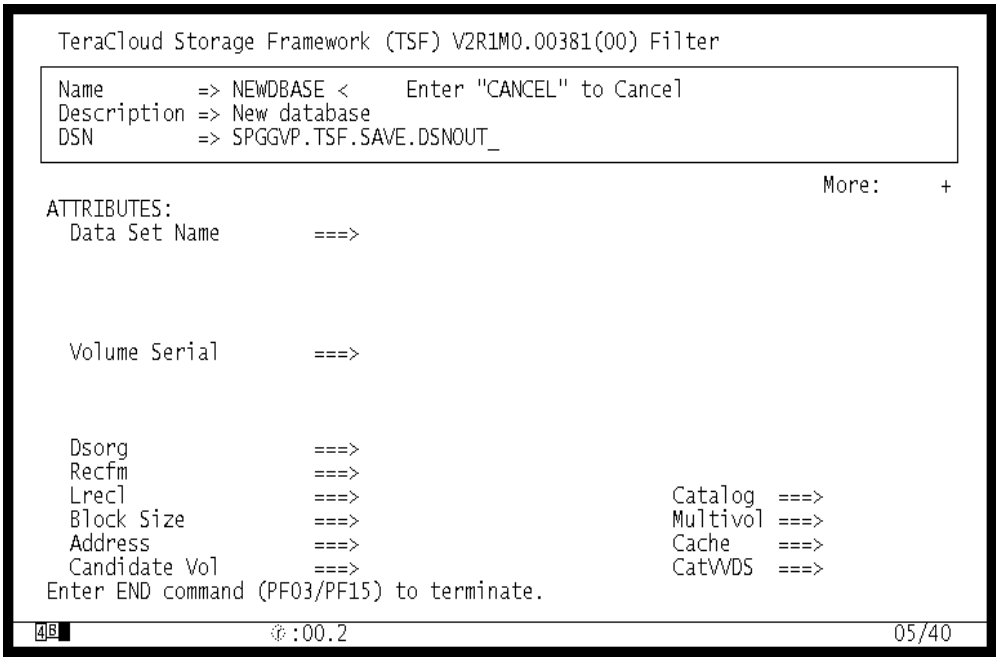

Figure 2–11. Definition panel for new saved database.

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Save Query (SAVEQ)

It is not necessary to type parameters over and over again for an often-used filter. Frequently used filters can be saved, as can generic filters, to be recalled and refined before execution. Filters are saved using the SAVEQ command, which saves filters in a special library. Saved filters are retrieved from the library using the GETQ command. Saved queries can then be displayed and reused. Follow these steps to use the SAVEQ command:

1. Navigate to the TSF Primary Selection Menu.
2. At the prompt, type the menu option for the TSF component that you want to use and press ENTER.
3. From the selection panel, type the menu option that you want to use for executing a filter and press ENTER.
4. Select your display options. See Chapter 3, Display Selection Options.
5. Type the desired filter parameters and execute the filter.
6. Press PF3 to return to the filter panel.
7. Position the cursor at the command line, type **SAVEQ <FilterName>**, where *FilterName* is a unique 8-character name for this filter.
8. Press ENTER and type a description for this filter in the panel that displays.
9. Press ENTER. A message confirms that the saved filter (query) has been added to the library.

Example: Volumes More Than 80% Capacity

A commonly used filter is one that filters for volumes that are allocated over a specific percentage. Follow these steps to save a filter for volumes more than 80% capacity:

1. Navigate to the TSF Primary Selection Menu.
2. At the prompt, type **1** to select **Pools/Volumes** and press ENTER.
3. From the Pools/Volumes Selection panel, type **1 (Search/Filter)** at the Selection prompt and press ENTER.
4. In the DASD Filter panel area for Display Option selections, type the values in bold for the following prompts to select Detail and Tracks:

   Display ===> **D**

   Trk,MB,GB, $===> **T**
5. Tab the cursor to the prompt at the right of the **Percent Used** filter, or use the scroll down key (F8).
6. Type **> 80** at this prompt to query volumes that are more than 80% allocated.
7. Position the cursor at the command line, type **SAVEQ VGT80** and press ENTER.
8. At the Description prompt, type Display all volumes > 80% capacity and press ENTER.

   A message confirms that the saved filter (query) has been added to the library.
9. Press ENTER to execute this query while the parameters are still displayed after saving it or use the GETQ command to retrieve and execute the filter (page 2–11).

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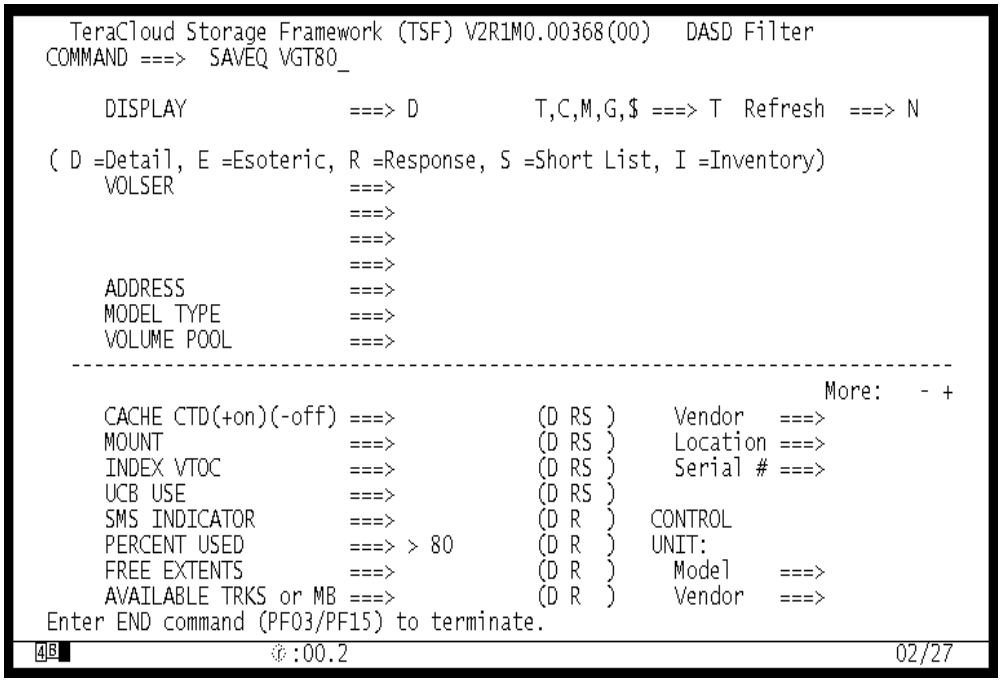

Figure 2–12. Filter saved as VGT80

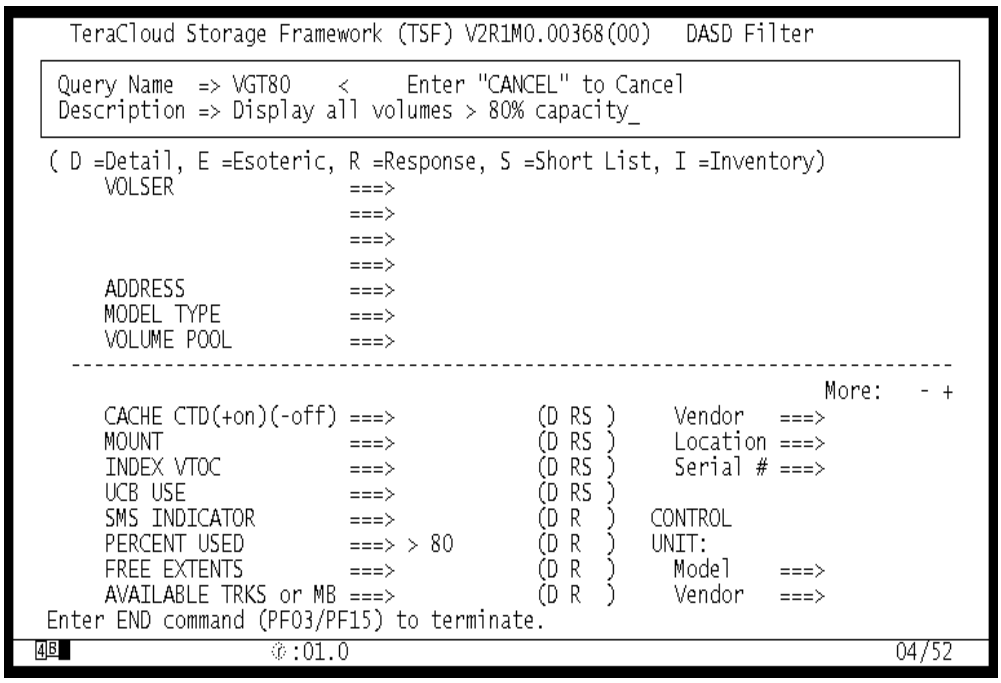

Figure 2–13. Description for saved filter VGT80

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Sort a Result Set (SORT)

The SORT command provides the ability to sort online lists or hardcopy reports. You can sort in ascending or descending order on up to five columns. Sort order can be defined for up to five columns at one time. Columns can be sorted in ascending (**A**) or descending (**D**) order.

To determine whether a result set can be sorted, position the cursor at the command line and press PF1. Valid options for the result set that you are currently viewing will display. Follow these steps to sort a result set:

1. Execute a filter (for more information, see Chapter 1, Interface).
2. At the command line of the result set, type **SORT** and press ENTER. The Sort panel displays.
3. You can sort up to 5 columns. At the prompt for each column, type a number from 1 to 5 in the first field to define the sort order.
4. Type **A** (ascending) or **D** (descending) in the second field to refine the sort order.

   For example, 1 A indicates that the column will be sorted in ascending order, 2 D indicates that the column will be sorted in descending order secondary to the first (1) column selected (Figure 2–14).
5. Press ENTER to display the data in the defined sort order (Figure 2–15).

   Note that the sorted information displays using the units selected (tracks or mb) selected on the primary filter panel. This information can be resorted, printed as a hardcopy report, or saved as a dataset.

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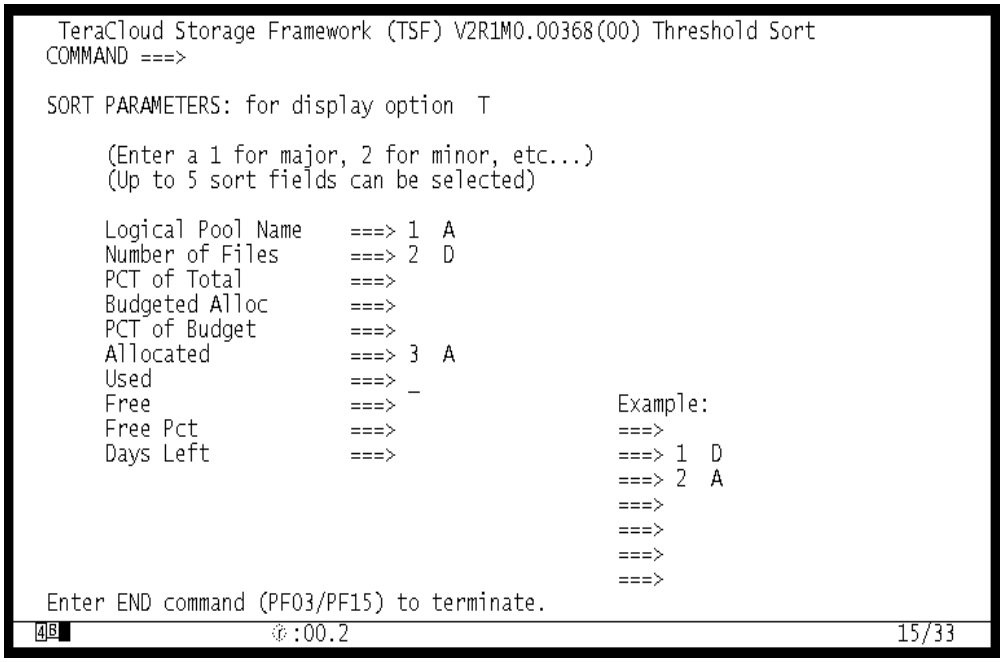

Figure 2–14. Sort parameters for three columns

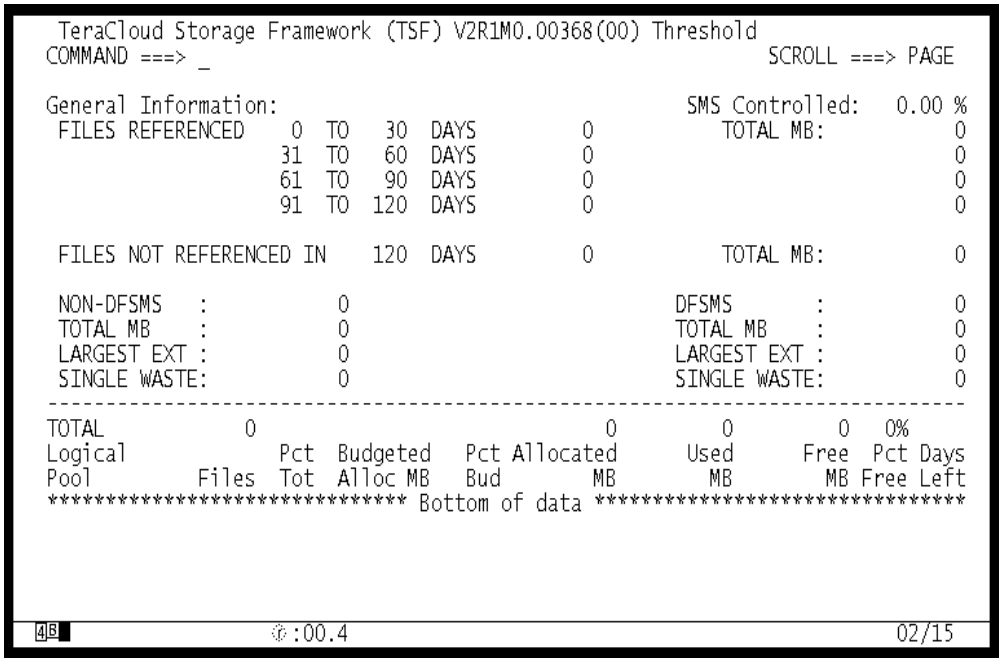

Figure 2–15. Sorted result set

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CHAPTER

3

DISPLAY SELECTION OPTIONS

Located at the top of each filter panel is the **Display** field. Below the **Display** field are the display option selections that can be used to access subsequent result panels that show you specific views. Display selection options are extremely valuable in looking over committed resources, space availability, and quickly identifying space pool availability. This information is very useful for making decisions about storage attributes.

Pools/Volumes

The primary purpose of the Pools/Volumes DASD Filter Panel is to make display option selections on how volume information is to appear. The display option selections listed in Table 3–1 let you access a subsequent panel that lists the volume information from their selection on the Pools/Volumes DASD Filter Panel.

In addition to the display option selections listed here, a variety of filters are also featured on the Pools/Volumes DASD Filter Panel. These filters work in conjunction with some of the display option selections, thus allowing you to obtain even more detailed information about specific types of volumes. See Chapter 4, Pools/Volumes for a description of the filters and valid parameters.

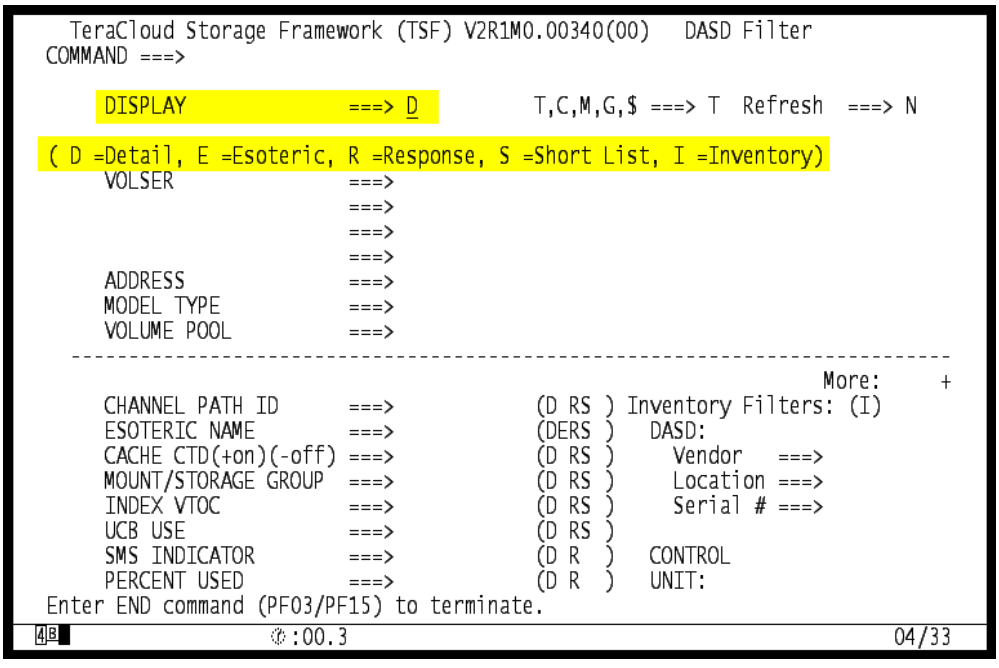

Figure 3–1. DASD Filter panel for Pools/Volumes, primary display options

Table 3–1 lists the primary display selection options for the Pools/Volumes DASD Filter Panel.

Table 3–1. Display Selection Options, Pools/Volumes DASD Filter Panel

Display Option	Description
D	Accesses the DASD Detail Information panel that lists both summary information and in depth information about volumes.
E	Accesses the Esoteric panel that lists information about esoteric names associated with a device address, device model type, or volume serial number.
R	Accesses the Response Time panel that shows device response times with regard to TeraCloud Storage Framework (TSF).
S	Accesses the Short List panel that features a brief list of the current configuration of a storage environment.
I	Accesses the Inventory List panel that shows specific information regarding a device located behind a (IBM 3990 or IBM 3990 compatible controller) or the storage systems configuration.
V	Accesses the RVAFinder DASD Filter panel that allows you to create a filtered view showing the exact physical storage availability behind RVA devices.
X	Resets all variables entered in the TSF DASD Filter panel to blank.

ADDITIONAL DISPLAY OPTIONS FOR POOLS/VOLUMES

The Pools/Volumes DASD Filter Panel features additional options for displaying information on subsequent result panels. These three options, listed in Table 3–2, are located at the top of the Pools/Volumes DASD Filter Panel just to the right of the **Display** field. They help you to further refine specific information that appears on the result panels.

Table 3–2. Additional Options, Pools/Volumes DASD Filter Panel

Display Option	Description
T,C,M,G,$	Allows you to select the unit to be used for summary and detail filter results: • T – Tracks (default) • C – Cylinders • M – Megabytes • G – Display Detail information in MB; display Summary information in GB • $ – Display Detail information in MB; display Summary information as cost per megabyte
Refresh	Offers the choice of either updating or not updating the volume records in the VSAM database. If the volume records are updated that information will be displayed. Options: • N - Do not update the volume records in the VSAM database. This is the default. • Y - Update the volume records in the VSAM database and display the information.

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Controllers

Located at the top of the Controller Filter Panel is the **Display** field. Below the **Display** field are the display option selections that can be used to access subsequent result panels that show you specific views of controllers.

In addition to the display option selections listed here, a variety of filters are also featured on the Controller Filter Panel. These filters work in conjunction with some of the display option selections, thus allowing you to obtain even more detailed information about specific types of devices. See Chapter 4, Pools/Volumes, Controller Filter Panel, page 4-37 for a description of the filters and valid parameters.

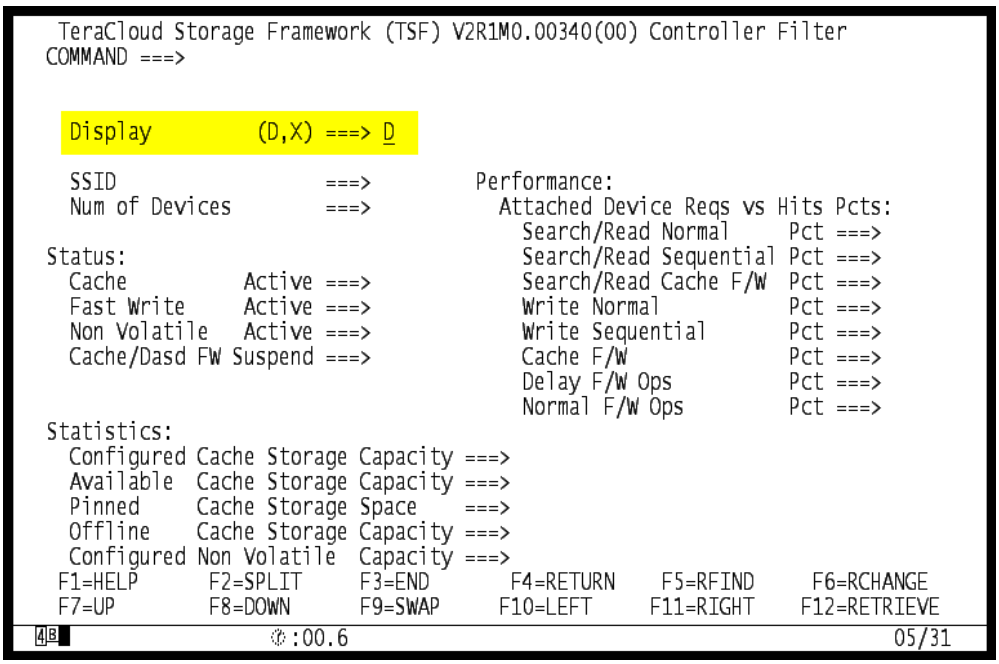

Figure 3–2. Filter panel for Controllers, primary display options

The display option selections for this panel are listed in Table 3–3.

Table 3–3. Display Selection Options, Controller Filter Panel

Display Option	Description
D	Accesses the Controller Detail Information panel that lists both summary information and in depth information about controllers.
X	Resets all variables entered in the TeraCloud Storage Framework (TSF) Controller Filter Panel to blank.

ADDITIONAL DISPLAY OPTIONS FOR CONTROLLERS

The Controller Filter Panel features additional options for displaying information on subsequent result panels. These options help you to further refine specific information that appears on these result panels. These options are listed in Table 3–4. These two options are located at the top of the Controller Filter Panel immediately below the **Display** field.

Table 3–4. Additional Options, Controller Filter Panel

Display Option	Description
SSID	Allows you to display information by the Controller SubSystem ID. Example: • 0001 Display all controllers with SSID = 0001. • 1* Display all controllers with SSID starting with a 1.
Num of Devices	Allows you to display information by the controller device count. This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.

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Datasets

The primary purpose of the Datasets Filter Panel is to make display option selections on how datasets information is to appear. The display option selections listed in Table 3–5 let you access a subsequent panel that lists the datasets information from their selection on the filter panel.

In addition to the display option selections listed here, a variety of filters are also featured on the Datasets Filter Panel. See Chapter 5, Datasets Selection for a description and valid parameters for each of these filters.

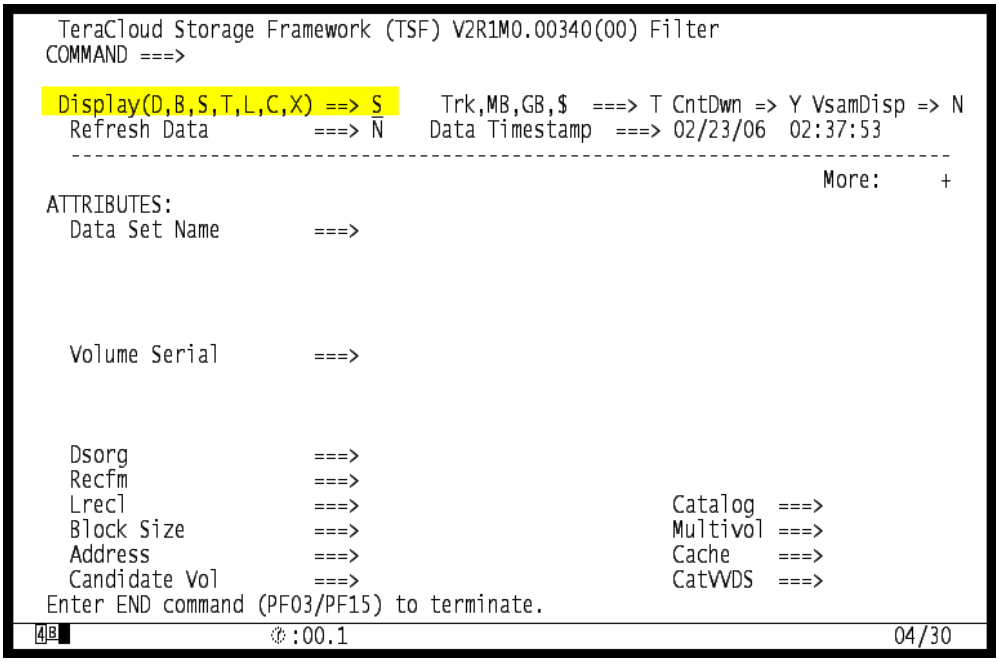

Figure 3–3. Filter panel for Datasets, display options

Table 3–5 lists the display selection options for the Datasets Filter Panel.

Table 3–5. Display Selection Options, Datasets Filter Panel

Display Option	Description
D	Displays detail information for a dataset.
B	Displays both summary and detail information for a dataset.
S	Displays summary information for a dataset (default setting).
T	Displays threshold and budget information only. Before you can view budget information the Budget Table (BUDGETAB) must be updated. The updating of this table is explained in Updating the Budget Table, page 5-38.
L	Displays all logical pools assigned to a dataset.
C	Displays candidate volume information on all non-SMS datasets. After you choose this option, a prompt appears stating that it may take some time to process unless a Volser is also entered. You can either type a Volser in the Volume Serial filter or press ENTER again, however the process may take awhile to finish.
X	Resets all variables entered in the TeraCloud Storage Framework (TSF) Datasets Filter Panel to blank.

ADDITIONAL DISPLAY OPTIONS FOR DATASETS

The Datasets Filter Panel features additional options for displaying information on subsequent result panels. These options, listed in Table 3–6, are located at the top of the Datasets Filter Panel just to the right of and below the **Display** field. They help you to further refine specific information that appears on the result panels.

Table 3–6. Additional Options, Datasets Filter Panel

Display Option	Description
Trk, MB,GB,$	Allows you to select the unit to be used for summary and detail filter results: • T – Tracks (default) • M – Megabytes • G – Display Detail information in MB; display Summary information in GB • $ – Display Detail information in MB; display Summary information as cost per megabyte
CntDwn	Provides a visual display to indicate filter execution progress. • N – Do not display Countdown panel • Y – Display Countdown panel
VsamDisp	Activates VSAM-specific set of panels (Summary panel changes also). **Note:** Setting is persistent throughout Datasets. • N – (Default) Displays standard columns (8 panels) • Y – Displays additional VSAM-specific columns (12 panels)
Refresh Data	Provides the ability to create or refresh the VSAM database online. Refresh the database for a single or multiple volumes by entering a volser or volser mask in the Volume Serial filter; the existing database is replaced by this action. Note: Refreshing the database in this manner can take an hour or more. For more than 300 volumes, the batch database method is recommended. • Y – Refresh the VSAM database • N – (default) Use the existing database (create date and timestamp are indicated)
Data Timestamp	Indicates the create date and timestamp of the current VSAM database. Information-only - cannot be altered.

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Tape Volumes

You can type in specific display options to view tape volume information from the Tape Volume Filter panel. The display option selections listed in Table 3–5 let you access a subsequent panel that lists the tape volume information from their selection on the filter panel.

In addition to the display option selections listed here, a variety of filters are also featured on the Tape Filter Panel. See Chapter 6, Tape Selection for a description and valid parameters for each of these filters.

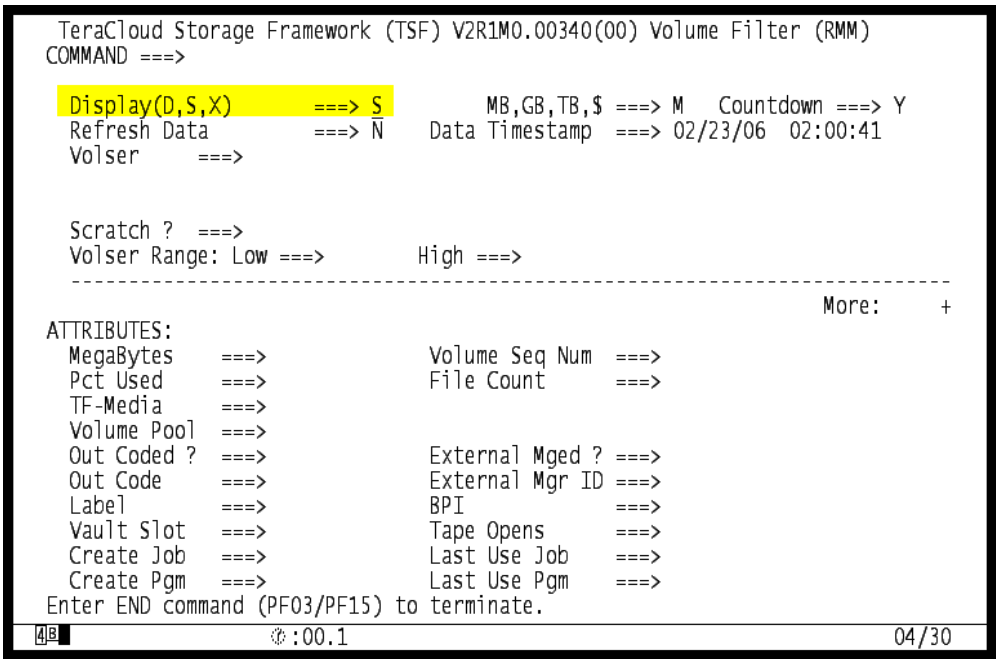

Figure 3–4. Filter panel for Tape Volumes, display options

Table 3–7 lists display selection options for the Tape Volume filter panel.

Table 3–7. Display Selection Options, Tape Volume Filter Panel

Display Option	Description
D	Accesses the Tape Volume Detail Information panel. The tape management system you are using also appears in the heading of this panel.
S	Accesses the Tape Volume Summary Information panel. This is the default setting.
X	Resets all variables entered in the TeraCloud Storage Framework (TSF) Tape Volume Filter Panel to blank.

ADDITIONAL DISPLAY OPTIONS FOR TAPE VOLUMES

The Tape Volumes Filter Panel features additional options for displaying information on subsequent result panels. These options, listed in Table 3–8, are located at the top of the filter panel just to the right of and below the **Display** field. They help you to further refine specific information that appears on the result panels.

Table 3–8. Additional Options, Tape Volumes Filter Panel

Display Option	Description
MB,GB, TB, $	Allows you to select the unit to be used for summary and detail filter results: • M – Megabytes • G – Display Detail information in MB; display Summary information in GB • T – Display Detail information in MB; display Summary information in TB • $ – Display Detail information in MB; display Summary information as cost per megabyte
Countdown	Provides a visual display to indicate filter execution progress. • N – Do not display Countdown panel • Y – Display Countdown panel
Refresh Data	Provides the ability to create or refresh the VSAM database online. Refresh the database for a single or multiple volumes by entering a volser or volser mask in the Volume Serial filter; the existing database is replaced by this action. Note: Refreshing the database in this manner can take an hour or more. For more than 300 volumes, the batch database method is recommended. • Y – Refresh the VSAM database • N – (default) Use the existing database (create date and timestamp are indicated)
Data Timestamp	Indicates the create date and timestamp of the current VSAM database. Information-only - cannot be altered.
Volser	Allows the user to display information by volume serial number. Enter a fully qualified volume serial number or use a wild card, or exclude logic in this field. For example: • 010123 – Display only information contained on volser 010123. • 01* – Display all information contained on all volsers that begin with 01. • ¬012* – Exclude information that is contained on any volser that begins with 012.
Scratch	Allows the user to display tapes that are in scratch status. Options: • Y - Show tapes in scratch status. • N - Show non-scratch tapes.
Volser Range	Allows the user to set a volume serial range for the display. When a Low/High range of Volsers is entered in this field, it is filtered before the normal Volser filter. For example: • Low: 010000 • High: 019999 The above example will create a set of tapes which have volsers between 010000 and 019999 (inclusive). Note: If a low value is entered, you must enter a high value.

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Tape Datasets

You can type in specific display options to view tape dataset information from the Tape Datasets Filter panel. The display option selections listed in Table 3–9 let you access a subsequent panel that lists the tape dataset information from their selection on the filter panel.

In addition to the display option selections listed here, a variety of filters are also featured on the Tape Filter Panel. See Chapter 6, Tape Selection for a description and valid parameters for each of these filters.

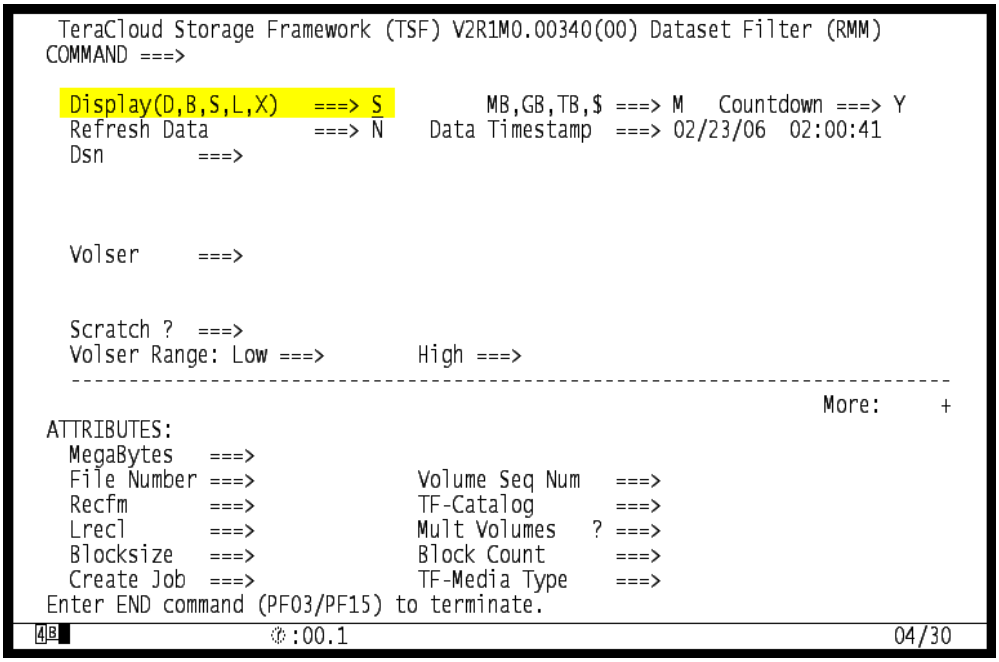

Figure 3–5. Filter panel for Tape Datasets, display options

Table 3–9 lists display selection options for the Tape Dataset filter panel.

Table 3–9. Display Selection Options, Tape Dataset Filter Panel

Display Option	Description
D	Accesses the Tape Dataset Detail Information panel. The tape management system you are using also appears in the heading of this panel.
S	Accesses the Tape Dataset Summary Information panel. This is the default setting. The tape management system you are using also appears in the heading of this panel.
B	Accesses both the Tape Dataset Summary and Detail panels and displays them in a split view. **Note**: When“B” is selected, the Summary screen remains stationary.
L	Displays logical pool information.
X	Resets all variables entered in the TeraCloud Storage Framework (TSF) Tape Dataset Filter Panel to blank.

ADDITIONAL DISPLAY OPTIONS FOR TAPE DATASETS

The Tape Datasets Filter Panel has additional options for displaying information on subsequent result panels. These options are the same as the additional display options for Tape Volumes listed in Table 3–8 on page 3-8, with one exception. You can set a dataset name (DSN) as the display option for Tape datasets. You can enter a fully qualified name in the DSN field, a partially qualified name, or a partially qualified name using include or ¬ exclude logic. For example:

- SYS1.PARMLIB – Displays all SYS1.PARMLIB data sets found.
- SYS1.** – Displays all datasets that begin with SYS1.
- SYS1.**,¬*.D*.** – Includes all data sets that begin with SYS1 except those (¬) that have a second level qualifier that contains a D.

Note: When using the exclude logic it is only necessary to use one logical NOT sign (^). Any dataset mask after this would be excluded. In the following example, all SYS1 datasets would appear in the list except for SYS1.PARMLIB and SYS1.VVDS.

```
sys1.**,^sys1.parmlib,sys1.vvds
```

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HSM Tape

The HSM options provide the ability to display and analyze all tapes from one product, even those owned by DFSMShsm. When you select the HSM option in Tape, the filter panel displays. The following display options can be selected from the HSM Tape Filter panel:

- **D** - Accesses the HSM Tape Volume Detail Information panel.
- **B** - Accesses the Summary and Detail Information panel.
  Note: When B is selected, the Summary screen remains stationary.
- **S** - Accesses the HSM Volume Summary Information panel. This is the default setting.
- **X** - Resets all variables entered in the TeraCloud Storage Framework (TSF) HSM Tape Filter Panel to blank.

In addition to the display option selections listed here, a variety of filters are also featured on the HSM Tape Filter Panel. See Chapter 7, DFSMShsm Management for a description and valid parameters for each of these filters.

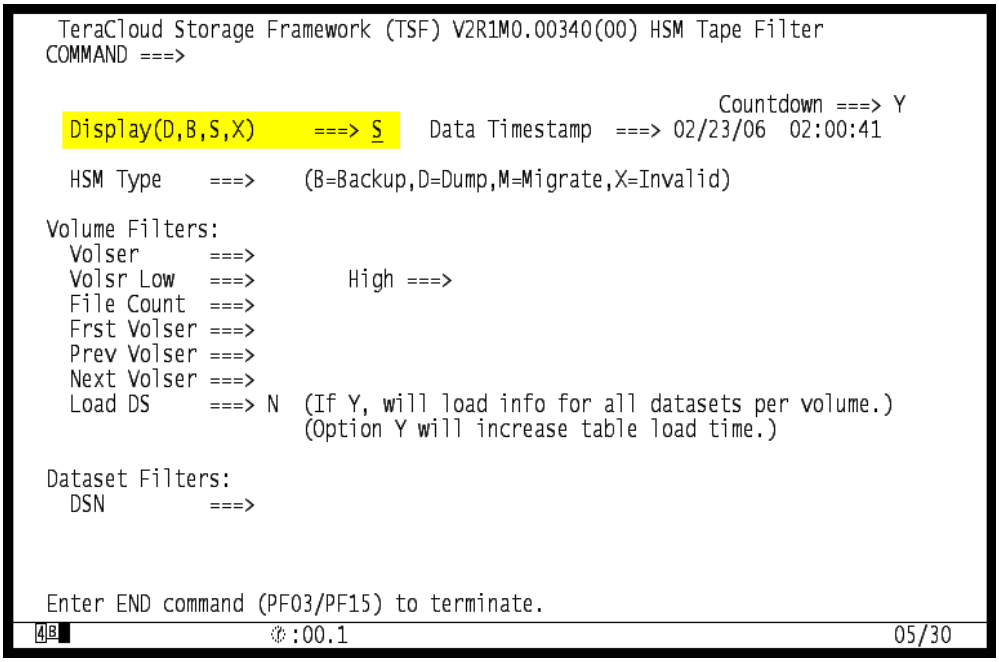

Figure 3–6. Filter panel for HSM Tape, display options

HSM Activity

The HSM Activity Zoom Limits filter panel allows you a choice of two options that you can type in the Starting Display field. The display options are located to the right of the Starting Display field and include:

- **D** - Displays daily HSM activity and is the default for the Starting Display field.
- **M** - Displays monthly HSM activity.

In addition to the display option selections listed here, a variety of filters are also featured on the HSM Activity, Zoom Limits Filter Panel. See Chapter 7, DFSMShsm Management for a description and valid parameters for each of these filters.

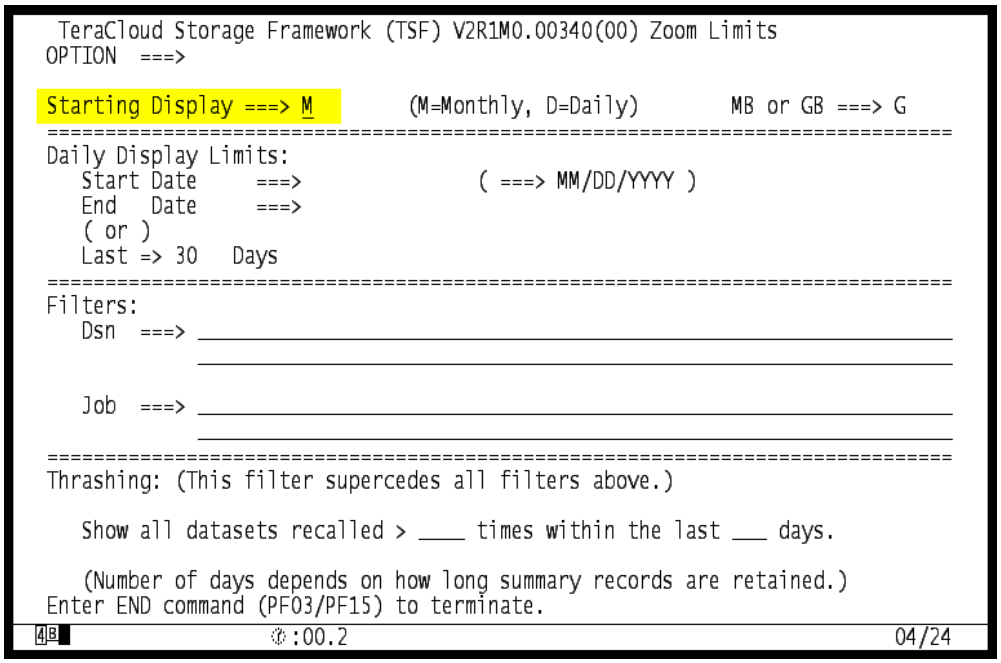

Figure 3–7. Filter panel for HSM Activity, Zoom display options

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HSM Dataset Detail

The HSM Dataset Detail panel allows you a choice of three display options for the Migrate/Recall Filter panel or the Backup Filter panel:

- **S** - Displays summary HSM activity information. This is the default option.
- **D** - Displays detailed HSM activity information.
- **X** - Resets filter fields to blank.

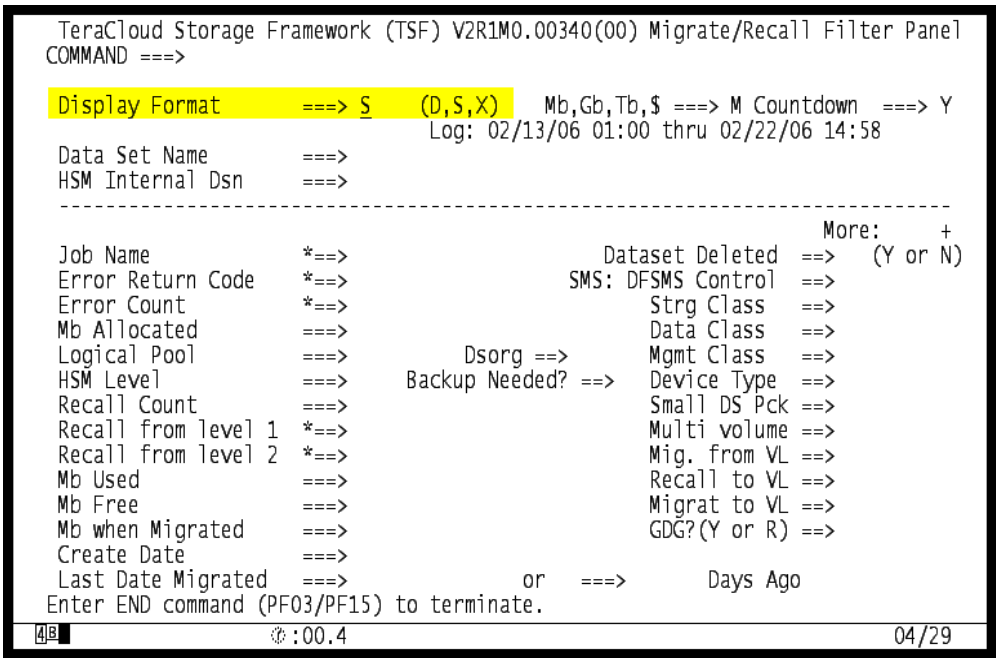

Figure 3–8. Filter panel for HSM Detail, Migrate/Recall display options

Note: The Detail options are used in combination. For example, detail backup, summary backup, detail migrate, summary migrate.

Logical Pools (Volumes)

Similar to the Pools/Volumes DASD Filter Panel, in which you can filter for specific information about a volume, the Logical Pool Filter Panel allows you to filter for specific information regarding pools. The primary purpose of the Logical Pool Filter Panel is to make display option selections on how pool information is to appear. Several selection options allow you to choose various views of pools.

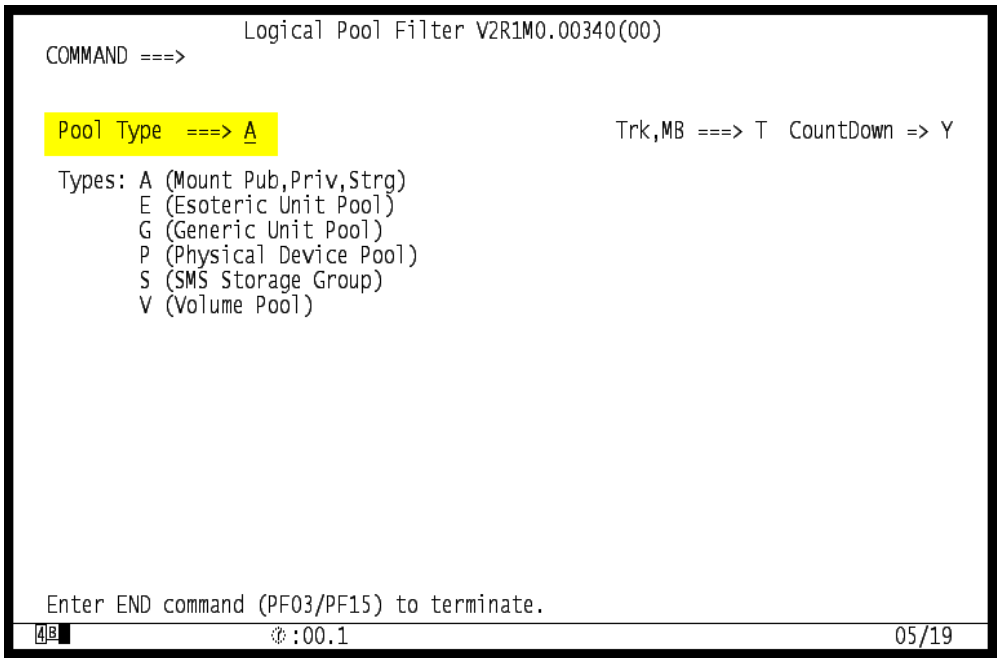

Figure 3–9. Filter panel for Volume Pools, display options

Table 3–10 lists display selection options for the **Pool Type field** on the Logical Pool filter panel (Volume Pools).

Table 3–10. Display Selection Options, Logical Pool Filter Panel for Volume Pool

Display Option	Description
A	Displays pool names that are associated with mount attributes that are public, private, storage, or SMS.
E	Displays esoteric unit pools.
G	Displays generic unit pools.
P	Displays physical device pools.
S	Displays SMS storage groups.
V	Displays volume pools.

ADDITIONAL DISPLAY OPTIONS FOR LOGICAL POOLS (VOLUMES)

In addition to the filter options on the Logical Pool Filter Panel, there is the **Trk**, **MB** option field. This option allows you to display the information in tracks (T) or megabytes (M). In addition, the **CountDown** option provides a visual display to indicate filter execution progress, for example, **N** – Do not display Countdown panel, or **Y** – Display Countdown panel.

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Logical Pools (Dataset)

The Logical Pools option provides the ability to view datasets from a logical-pool perspective. Datasets that are associated with logical pools can be accessed with the logical pools option from the Datasets Selection panel (Chapter 5, Datasets Selection), the Tape Selection panel (Chapter 6, Tape Selection), or the DFSMShsm Mgmt Selection panel (Chapter 7).

When you select the Logical Pools option, the Logical Pool Filter panel (Figure 3–10) appears. The display options that are listed in Table 3–11 can be selected and a specific Logical Pool Information panel appears. See Chapter 8, Logical Pool Information.

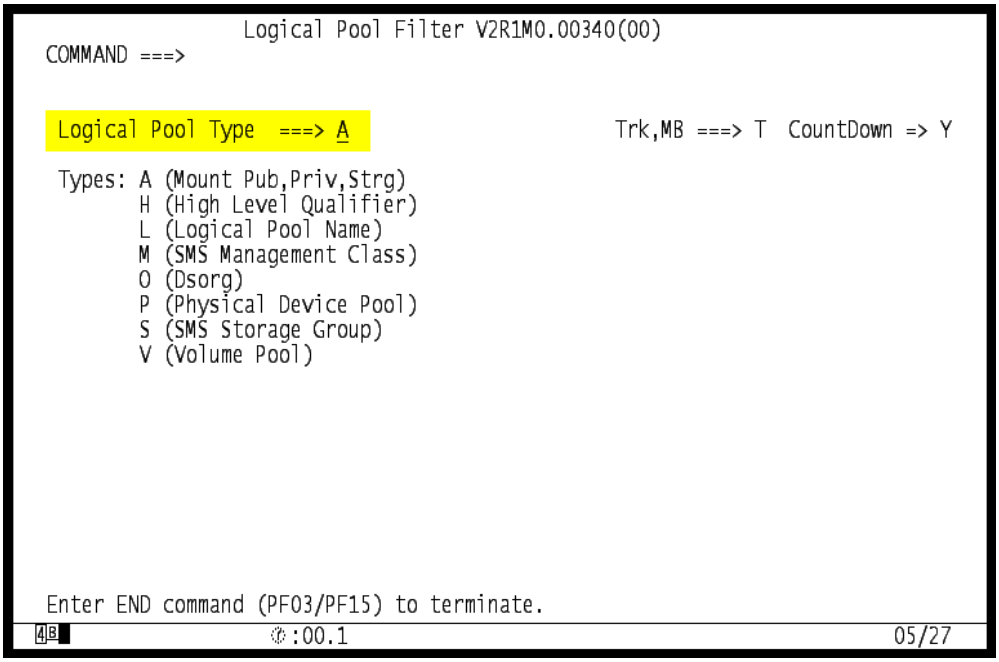

Figure 3–10. Filter panel for Logical Pools (Datasets), display options

Table 3–10 lists display selection options for the **Pool Type field** on the Logical Pool filter panel (Datasets).

Table 3–11. Display Selection Options, Logical Pool Filter Panel for Datasets

Display Option	Description
A	Mount Pub,Priv,Strg – Displays pools that are associated with mount attributes that are public, private, or storage
H	High-Level Qualifier – Displays pools by high-level qualifier
L	Logical Pool Name – Displays pools by user-defined logical pool name
M	SMS Management Class – Displays pools by SMS management class.
O	Dsorg – Displays pools by dataset organization type (for example, PDS).
P	Physical Device Pool – Displays pools by physical device assigned.
S	SMS Storage Group – Displays pools by SMS storage group.
V	Volume Pool – Displays pools by volume pool.

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ADDITIONAL DISPLAY OPTIONS FOR LOGICAL POOLS (DATASETS)

In addition to the filter options on the TSF Logical Pool Filter Panel, there is the **Trk**, **MB** option field. This option allows you to display the information in tracks (T) or megabytes (M). In addition, the **CountDown** option provides a visual display to indicate filter execution progress, for example, **N** – Do not display Countdown panel, or **Y** – Display Countdown panel.

Utilities (Base Compare)

Below the Timestamp section is the Display Options section. The fields located in this section allow you to choose how you want the database comparison to display on the next panel, the Compare Dataset Information. The Display Options section fields include the following:

Table 3–12. Base Compare Filter Display Options section fields

Display Option	Description
Display	Allows you to choose how you want the database comparison to display on the Compare Dataset Information panel. Options: • **S** - This is the default option and displays a summary view of the database comparison. • **D** - Displays a detailed view of the database comparison. • **B** - Displays both a summary and detail view of the database comparison. • **X** - Resets the options to their defaults.
Trk,MB.GB	Allows you to list the database comparison information for the Compare Dataset Information panel in tracks, megabytes, or gigabytes. Options: • **T** - Tracks • **M** - Megabytes • **G** - Gigabytes **Note**: Gigabytes only appear for a summary view of the database comparison. If a "G" is used in this field for a detail view, megabytes appears.
Countdown	Allows you to either display or hide the Countdown panel. The Countdown panel shows information as to the where the utility is in relation to the argument requested by you. Options: **Y** - Display the Countdown panel. **N** - Do not display the Countdown panel.

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Utilities (Catalog Scan)

Below the Timestamp section is the Display Options section. The fields located in this section allow you to choose how you want the database comparison to display on the next panel, the Compare Dataset Information. The Display Options section fields include the following:

Table 3–13. Base Compare Filter Display Options section fields

Display Option	Description
Display	Allows you to choose how you want the results of the catalog scan query to display on the Catalog Scan Volume Information panel. Options: • **S** - This is the default option and displays a summary view of the catalog information. • **D** - Displays a detailed view of the catalog information. • **B** - Displays both a summary and detail view of the catalog information. • **X** - Resets all filter fields to their defaults.
Countdown	Allows you to either display or hide the Countdown panel. The Countdown panel shows information as to the where the utility is in relation to the argument requested by you. Options: **Y** - Display the Countdown panel. **N** - Do not display the Countdown panel.
Refresh Data	Catalog Scan gives you the option to refresh the database online. If you enter a Y in this field, a message appears asking if you are sure that you really want to build the database online rather than in batch. If you are sure you want to build the database online, you can enter another Y in this field to continue. If a database is not found, then this field shows an N and a database is created online. **Note**: If you have a large catalog environment, you may want to consider running the batch database build job and then return to this panel to perform the analysis. The batch database build job is in the "CNTL" file in member CTBLDMST.
Data Timestamp	Indicates the date and time of when the database was captured. The format of the date displays in MM/DD/YY, whereas the format of the time displays in HH/MM/SS.

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CHAPTER

4

POOLS/VOLUMES SELECTION

The primary task of the Pools/Volumes component is to group DASD volumes by logical pool, physical pool, or SMS storage group. Once all the volumes are appropriately grouped, the Pools/Volumes component can report key storage information about volumes and volume pools. Through a series of selection panels, filter panels, and subsequent result panels, you can find a wealth of valuable information regarding volume storage in your system.

Information about volumes can be accessed from the TSF Primary Selection panel. This is accomplished by typing **1** (Pools/Volumes) in the **Option** field. After you enter this selection, the Pools/Volumes Selection panel appears (Figure 4–1). The options you can choose from this panel include:

- Search/Filter, to access the DASD Filter panel, which has display options and filters that let you see volume information in different ways.
- Logical Pools, to access the Logical Pool Filter panel, which lets you filter for specific pool type volumes. See Chapter 8, Logical Pool Information.
- Controllers, to access the Controller Filter panel, which displays each controller for disk storage subsystems in the environment and lets you view the cache statistics for each device attached to the controller.

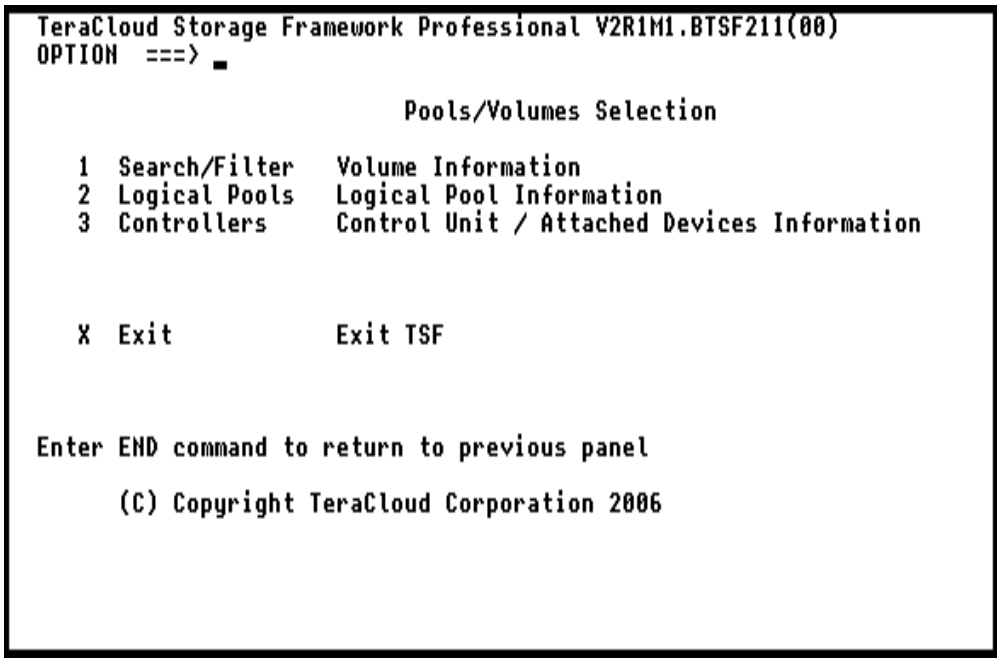

Figure 4–1. Pools/Volumes Selection panel

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Filters for Volume Information

DASD filters for volume information can be accessed from the Pools/Volumes Selection panel. This is accomplished by typing **1** (Search/Filter) in the **Option** field. After entering this selection, the DASD Filter panel appears (Figure 4–2). The primary purpose of this panel is to let you make display option selections on how volume information is to appear. See Pools/Volumes, page 3-1. A subsequent panel lists the volume information based on your selection from the DASD Filter panel.

```
  TeraCloud Storage Framework (TSF) V2R1M0.00381(00)   DASD Filter
COMMAND ===>

     DISPLAY              ===> D          T,C,M,G,$ ===> T  Refresh  ===> N

( D =Detail, E =Esoteric, R =Response, S =Short List, I =Inventory)
     VOLSER               ===>
                          ===>
                          ===>
                          ===>
     ADDRESS              ===>
     MODEL TYPE           ===>
     VOLUME POOL          ===>
  ---------------------------------------------------------------------------
                                                                More:     +
     CHANNEL PATH ID      ===>            (D RS ) Inventory Filters: (I)
     ESOTERIC NAME        ===>            (DERS )   DASD:
     CACHE CTD(+on)(-off) ===>            (D RS )     Vendor   ===>
     MOUNT                ===>            (D RS )     Location ===>
     INDEX VTOC           ===>            (D RS )     Serial # ===>
     UCB USE              ===>            (D RS )
     SMS INDICATOR        ===>            (D R  )   CONTROL
     PERCENT USED         ===>            (D R  )   UNIT:
Enter END command (PF03/PF15) to terminate.
4B                  :00.3                                          04/33
```

Figure 4–2. Pools/Volumes DASD Filter Panel

In addition to the display option selections, a variety of filters are also featured on the DASD Filter panel. These filters work in conjunction with some of the display option selections, thus allowing you to obtain even more detailed information about specific types of volumes.

There are four sets of filters listed below the display options. Some of the filters allow you to use wildcard characters and exclude symbols to refine the filter results. See Using Wildcard Characters, page 1-10.

Primary Filters

The first set of filters (through Volume Pool) works in conjunction with *all* of the display selection options to create a list of specific data. This set of filters is listed in Table 4–1.

Table 4–1. Filter Set 1, DASD Filter Panel

Filter Name	Description
VOLSER	Returns the volume serial number according to filter criteria. Wildcard characters and exclude symbols allowed.
ADDRESS	Identifies all volume serial numbers by individual address. Returns only those address that are online. Wildcard characters and exclude symbols allowed. If this is the only filter criterion selected, all volumes that are available to the operating system though the specified addresses are returned. Two-part field. Use the second address field with the first one to show a range of addresses. If you use both fields, wildcard symbol are not allowed.
MODEL TYPE	Lists volumes by device and model type. Wildcard characters and exclude symbols allowed. • 3390* - Show all 3390 devices • 33903 - Show all 3390-3 models
VOLUME POOL	Volume Pool name can be from 1 to 8 characters in length. **Note**: This field is created from the member POOLVOL, located in the PARMLIB library. • PAYROLL - Returns all volumes assigned to the PAYROLL system or application

Secondary Filters

The second set of filters in the DASD Filter Panel is listed in Table 4–2. These filters work in conjunction with only certain display options. See Pools/Volumes, page 3-1. Valid filters for a display option are designated by a D, E, R, or S that appears in parenthesis to the right of the filter name.

Some of the filters have two-part fields. Press Tab to advance. The first field is used for > (greater than), < (less than), or = (equal to), whereas the second field is used to show a numeric value or percentage value.

Table 4–2. Filter Set 2, DASD Filter Panel

Filter Name	Description
CHANNEL PATH ID	Identifies volume serial numbers by individual channel path or ID. Returns only paths that are online to the volume. Wildcard characters and exclude symbols allowed.
ESOTERIC NAME	Locates DASD pools by esoteric name. Wildcard characters and exclude symbols allowed. • SYSDA Returns information for all devices that can be obtained by specifying UNIT=SYSDA for allocation in JCL • SYS* Returns information for all devices that have an Esoteric name that begins with SYS

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Table 4–2. Filter Set 2, DASD Filter Panel

Filter Name	Description
CACHE CTD	Returns the caching status of the device. This field has three positions: • Position 1: CACHE FAST WRITE • Position 2: TRACK CACHING • Position 3: DASD FAST WRITE The symbols are positionally relevant and indicate the following: • + = ON • - = OFF • % = placeholder Example: • +++ - Returns all devices that have all caching features on (all positions are ON) • %%- - Returns all devices with DASD FAST WRITE turned off (position 3), regardless of whether Cache Fast Write or Tack Caching are on or off
MOUNT/STORAGE GROUP	Returns information by device mount attribute or SMS storage group. Wildcard characters and exclude symbols allowed. • PRI* - Returns all devices mounted as PRIVATE • STO* - Returns all devices mounted as STORAGE • PUB* - Returns all devices mounted as PUBLIC • SMS - Returns all devices defined to SMS
INDEX VTOC	Lists volumes by VTOC status indicators: indexed or not-indexed VTOCs, depending on selected criterion. • Y - Returns VTOCs where the index is enabled • N - Returns VTOCs where the index is disabled or where one does not exist • Blank - All indexed and non-indexed volumes are displayed
UCB USE	Lists only those volumes that have special-use attributes. • Allocated Only (A) - Returns all devices that are currently allocated • Online, Unallocated (O) -Returns all devices that are online but not allocated • Current IPL Volume (S) - Returns the current IPL volume • Active Page Volumes (P) -Returns all active page volumes
SMS INDICATOR	Returns DFSMS status of volumes. • Y - Returns all DFSMS controlled volumes • N - Returns only those volumes that are not controlled by DFSMS • I - Returns only those volumes that are considered in INIT status by DFSMS • Blank - Returns both DFSMS and non-DFSMS volumes (the default)
PERCENT USED	Lists volumes, pools, or storage groups with the allocated percentage. Two-part field; valid numeric entries for the second field are from 0 to 100 percent. To list all devices, leave *both* filter fields blank. • > 80 - Returns only those volume pools that are more than 80% allocated • < 30 - Returns only those volumes that are less than 30% used

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Table 4–2. Filter Set 2, DASD Filter Panel

Filter Name	Description
FREE EXTENTS	Indicates the number of free-space areas on a volume. A high number indicates that the volume is fragmented. The fragmentation index is used as a guide for locating volumes that are candidates for de-fragmentation. Two-part field; valid numeric entries for the second field are from 0 to 999. • > 200 Returns all volumes with more than 200 free-space extents
AVAILABLE TRKS or MB	Searches all volumes based on the available tracks or megabytes. You must select a T for tracks or an M for megabytes in the T,C,M,G,$ field. Two-part field; valid numeric entries for the second field are from 0 to 99999. • < 10000 Returns all devices with fewer than 10000 tracks
CONTIGUOUS TRKS or MB	Searches all volumes based on a contiguous track or MB filter. You must select a T for tracks or an M for megabytes in the T,C,M,G,$ field. Two-part field; valid numeric entries for the second field are from 0 to 99999. • < 5000 Returns all devices with fewer than 5000 contiguous tracks
CONTIGUOUS CYLINDERS	Searches all volumes based on a contiguous-cylinder filter. Two-part field; valid numeric entries for the second field are from 0 to 99999. • < 500 Returns all devices with fewer than 500 contiguous cylinders
DEVICE RESPONSE	Analyzes devices by response time, which is useful in determining the relative device performance or channel path when initiating I/O. This is also useful for allocating to a device with faster response time and the least amount of concurrent usage. Two-part field; valid numeric entries for the second field are from 0 to 999. **Note**: The returned milliseconds value is determined by checking system clocks, so the response time for any device changes from one observation to another. • = 7 Returns a list of devices whose response time was 7
OPEN DCBS	Searches all volumes based on the number of open files or DCBs. This filter is useful when allocating space and predetermining usage contention. Two-part field; valid numeric entries for the second field are from 0 to 999. • > 99 Returns all volumes that have more than 99 open files or DCBs
SHARED DASD	Identifies volumes by shared DASD status. Typing a **Y** in this filter field accesses a list of shared DASD units.
CAPACITY TRACKS	Returns the number of capacity tracks per volume, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 9999999. • > 20000 Returns all volumes with cap tracks more than 20000
CAPACITY CYLINDERS	Returns the number of capacity cylinders per volume, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 9999999. • > 5000 Returns all volumes with capacity cylinders of more than 5000
TRACKS PER CYL	Returns total number of tracks per cylinder according to the query criteria. Two-part field; valid numeric entries for the second field are from 0 to 999. • > 15 Returns all volumes with more than 15 tracks per cylinder
FREE DSCBS	Returns volumes with free DSCBs, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 9999999. • > 3000 Returns all volumes with more than 3000 free DSCBs

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Table 4–2. Filter Set 2, DASD Filter Panel

Filter Name	Description
FREE VIRS	Returns all volumes with free VIRs, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 9999999. • > 3000 - Returns all volumes with more than 3000 free VIRs
FRAGMENTATION INDEX	Returns the fragmentation index value for a volume. A lower number indicates less fragmentation. Two-part field; valid numeric entries for the second field are from 0 to 9999999. • > 300 - Returns volumes whose fragmentation index is more than 300
DIR BLOCKS PER TRACK	Returns the number of directory blocks per track, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 9999. • >45 - Returns all volumes that have more than 45 directory blocks per track
VTOC TRACKS	Returns volumes by number of VTOC tracks allocated, according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 99999. • >75 - Returns all volumes with VTOC tracks of more than 75
VTOC PERCENT USED	Returns volumes by VTOC percentage used according to filter criteria. Two-part field; valid numeric entries for the second field are from 0 to 999. • >75 - Returns all volumes with VTOC use of more than 75%
PAV DEVICE	• Y - Show PAV Units • N - Show Non-PAV Units
PAV COUNT	Two-part field; for example, to find all volumes with a PAV Count over 200, enter the following: • > - indicating a greater than value • 200 - Indicating over 200 PAV Count
STORAGE GROUP	Returns information by Storage Group assignment. • SCRATCH - Display all devices with Storage Group SCRATCH • LARG* - Display all devices with Storage Group LARGE

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Table 4–2. Filter Set 2, DASD Filter Panel

Filter Name	Description
STORAGE GROUP STATUS	Returns information about Storage Group Status for Volumes. • NOTDEFIN • ENABLED • DISABLED • QUIESCED • DISABNEW • QUIESNEW • CNFGDIFF
SMS STATUS	Returns information about SMS Status for Volumes. • NOTDEFIN • ENABLED • DISABLED • QUIESCED • DISABNEW • QUIESNEW • CNFGDIFF

Inventory Filters

The inventory filters, related to devices, are located at the bottom right of the DASD Filter Panel under the Heading title, *Inventory Filters*. The inventory filters are listed in Table 4–3.

Table 4–3. Inventory Filters, DASD Filter Panel

Filter Name	Description
Vendor	Returns all devices by vendor code, maximum of 4 characters. Wildcard characters and exclude symbols allowed. Example: • IBM - Displays only IBM devices • AMD - Displays only Amdahl devices • STK - Displays only STK devices • HTC - Displays only Hitachi devices • EMC - Displays only EMC devices
Location	Returns the two-digit vendor location code that indicates where the device was manufactured. Wildcard characters and exclude symbols allowed. Example: 13 - Returns devices whose internal location code is 13
Serial #	Returns volume serial number, and other attributes.Wildcard characters and exclude symbols allowed. Example: 00010B7A - Returns devices with this serial number

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Control Unit Filters

The control unit filters listed in Table 4–4 allow you to obtain detailed information about the make, model, vendor, and serial numbers of all devices that reside behind an IBM 3390 or 3390 compatible controller. The control unit filters are located at the bottom right of the DASD Filter Panel under the Heading title, *Control Unit*. A page down scroll may be necessary to view all of them on your screen.

Table 4–4. Control Unit Filters, DASD Filter Panel

Filter Name	Description
Model	Returns devices by controller type. Wildcard characters and exclude symbols allowed. Example: 3990* - Returns all devices associated with 3990 model 3 controllers
Vendor	Returns all devices by vendor code. Wildcard characters and exclude symbols allowed. Example: • IBM - Displays only IBM devices • AMD - Displays only Amdahl devices • STK - Displays only STK devices • HTC - Displays only Hitachi devices • EMC - Displays only EMC devices
Location	Returns the two-digit vendor location code that indicates where the controller was manufactured. Wildcard characters and exclude symbols allowed. Example: 02 - Returns devices whose internal vendor location microcode for the controller is 02
Serial #	Returns volume serial number, and other attributes about the controller. Wildcard characters and exclude symbols allowed.

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Displaying DASD Information

The DASD Information panel shows the results of the query that you made from the DASD Filter Panel. The on-line query facilities of TSF are extremely powerful and wide in range. The columns on this panel vary slightly according to the display selection, D (detail records), E (Esoteric names), R (device response times), S (short list of the current storage environment configuration), or I (inventory list). Follow these steps to access the DASD Information panel:

1. From the DASD Filter Panel, type **D**, **E**, **R**, **S**, or **I** in the **Display** field.
2. Type any *valid entries* in the filter fields that work in conjunction with your display selection option. These valid filters are designated by a **D, E, R, S,** or **I** that appears in parenthesis to the right of the filter name.
3. Press ENTER and the DASD Information panel appears. The Row field (highlighted) at the upper right of the DASD Information panel shows the approximate position of TSF in viewing the selected list.

Detail Records

The top part of the DASD Information panel for detail records contains a summary of the DASD allocation for a particular query. This summary is extremely important when you are pre-determining the impact of space requests on the total environment. Columns in the summary are cross-referenced with specific DASD allocation information located to the far left side of the columns. See Table 4–5 and Table 4–6.

See Table 4–7 for a list of the columns that can be displayed in the detail section of the DASD Information panel.

```
  TeraCloud Storage Framework (TSF) V2R1M0.00314(00)   DASD  Row 1 to 14 of 17
COMMAND ===>                                                 SCROLL ===> PAGE
=== TRACKS ===    PRIVATE          PUBLIC         STORAGE          TOTAL       PCT
ALLOCATED         567,958               0         289,747        777,705       91%
FREE               33,862               0          40,678         73,748        9%
TOTAL             601,820               0         250,425        851,445      100%
OP SYS(z/ 1.6.0) === CPU SERIAL(C10F) === SMS CONTROL: 29.41 %  === SYSID(TZ01)
01/09/06 16:53:19                                              More ----->
S DEV  VOLUME MODEL   CTD          INDX  PCT   AVAL FREE   CNTG  CNTG S  UCB OPN
L ADDR  NAME          FCF MOUNT    VTOC USED   TRKS EXTS   TRKS  CYLS M  USE DCB
_ 0300 SARES1 33903   +++ PRIVATE  ENA  87%  6328    4   6315   421 N   D     0
_ 0302 TCD005 33903   +++ SMS      ENA  83%  8387   22   3705   247 Y   A     1
_ 0303 TCD007 33903   +++ SMS      ENA  83%  8447   19   3957   263 Y   A     1
_ 0304 TCD006 33903   +++ SMS      ENA  82%  9814   22   3375   225 Y   A     0
_ 0305 TCD010 33903   +++ SMS      ENA  85%  7062   14   2209   147 Y   A     0
_ 0307 TCD009 33903   +++ SMS      ENA  84%  7768   21   2244   149 Y   A     0
_ 0310 S6RES1 33903   +++ PRIVATE  ENA  98%   670    5    540    36 N   S   111
_ 0311 S6RES2 33903   +++ PRIVATE  ENA  96%  1558    6   1275    85 N   A    79
_ 0315 S6DIS1 33903   +++ PRIVATE  ENA  92%  3710    6   3679   245 N   D     0
_ 031C S6D881 33903   +++ PRIVATE  ENA  91%  4458    1   4458   297 N   A     0
_ 0320 Z5RES1 33903   +++ PRIVATE  ENA  95%  2125    2   2115   141 N   D     0
_ 0321 Z5RES2 33903   +++ PRIVATE  ENA  95%  2423   17   1665   111 N   D     0
_ 0322 OS39M2 33903   +++ PRIVATE  ENA  96%  1919    8   1425    95 N   A    19
_ 0325 Z5DIS1 33903   +++ PRIVATE  ENA  97%  1142    2   1137    75 N   D     0
_
4=                          :00.8                                      02/15
```

Figure 4–3. DASD Information panel for detail records with allocation summary

.

Table 4–5. DASD Allocation Summary Columns

Column Name	Description
(Tracks, Cyls, MBytes, GBytes, Cost/MB)	Depends on your selection for the T,C,M,G,$ option field from the DASD Filter Panel. A column can appear for tracks, cylinders, megabytes, gigabytes, and cost per megabyte.
PRIVATE	Summary of all volumes that have the PRIVATE mount attribute. Can be displayed in tracks, cylinders, MB, GB, or dollars.
PUBLIC	Summary of all volumes that have the PUBLIC mount attribute.
STORAGE	Summary of all volumes with the STORAGE mount attributes.
TOTAL	Summary of allocated, free, and total for all DASD MB available or used online. Can be displayed in tracks, MB, GB, or dollars.
PCT	Information from the Total column, in percentage.

Table 4–6. DASD Allocation Summary, Cross-Referenced Columns

Information	Description
ALLOCATED	Number of tracks, cylinders, megabytes, or gigabytes currently allocated for PRIVATE, PUBLIC, or STORAGE mount attribute.
FREE	Total number of tracks, cylinders, megabytes, or gigabytes available for allocation
TOTAL	Column total for each DASD pool

Located below the DASD Allocation Summary is the DASD Allocation Detail section of the panel. The information located in this section is associated with the system TSF was running on and is listed in Table 4–7.

Useful Tip. You must scroll to the right to view some of the system information on the DASD Information panel. Or, you can type an **S** in the Selection (SL) column to access the Detail Volume panel, which lists the same information on a single panel.

Table 4–7. DASD Allocation Detail Information

Column Name	Description
AVAL (TRKS or MB)	Displays the available tracks or megabytes associated with the volume. Depends on your selection for the T,C,M,G,$ option field from the DASD Filter Panel.
CAP CYLS	Displays the total number of cylinders for this device.
CAP TRKS	Displays the total number of tracks.
CHPIDS	Identifies the volume serial numbers by individual channel path or ID. Lists only paths that are online to the volume.
CNTG (TRKS or MB)	The largest contiguous tracks or megabytes available for allocation. Depends on your selection for the T,C,M,G,$ option field from the DASD Filter Panel.
CNTG CYLS	Indicates the largest contiguous cylinders available for allocation.
CPU SERIAL	CPU serial number of the computer

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Table 4–7. DASD Allocation Detail Information

Column Name	Description
CTD FCF	The cache status of a specific device. • + (plus) - In the first position indicates Cache Fast Write is enabled • + (plus) - In the second position signifies Track Cache is enabled • + (plus) - In the third position means all DASD Fast Write is enabled • - (minus) - Indicates devices are not cached
DEV ADDR	Device address of each volume that meets the selection criterion
DEV RSP	Shows the device response time in milliseconds. Column is only used with **R** display option, Response Time Detail. **Note**: The response time value is not an average response time but represents the exact time plus the instruction length for a store clock instruction of the responsiveness to an I/O request.
DIR BLKS	Displays the number of directory blocks.
FRAG INDX	Contains the fragmentation index of the DASD.
FREE DSCBS	Displays the number of free dataset control blocks.
FREE EXTS	Number of free extents located on the volume.
FREE VIRS	Lists the number of free VSAM index records in the VTOC index.
INDX VTOC	Indicates whether the volume VTOC is indexed or not. This field also indicates whether the index VTOC is disabled.
MODEL	Type, model, and box where the address is located
MOUNT/STORGRP	Mount attribute for non-SMS controlled volumes. If the volume is SMS controlled, the field represents the controlling storage group for which the volume is currently assigned.
NUMBER USERS	The number of users currently using a specific device.
OP SYS	Operating system level where TSF was run
OPN DCB	Number of open files that displayed when the snap shot was taken.
PAV COUNT	Displays the total number of parallel access volume (PAV) devices
PAV DEV	Identifies whether or not the DASD has parallel access volume (PAV) devices. • Y - DASD has PAV. • N - DASD does not have PAV.
PCT USED	Percent of the volume that is currently allocated.
SHR DSD	Identifies whether the DASD is shared or not. • Y - DASD is shared. • N - DASD is not shared.
SL	See “Selecting a Volume” on page 4-21.

Table 4–7. DASD Allocation Detail Information

Column Name	Description
SM	Indicates whether the volume is SMS controlled or not. • Y - Indicates an SMS controlled volume. • N - Designates a non-SMS controlled volume.
SMS CONTROL	Percentage of DFSMS controlled volumes
SMS STATUS	Indicates the SMS status of a volume. • ENABLED - SMS has the status of enabled. The system can allocate and access datasets in the storage group and the volume. • DISABLED - SMS has the status of disabled, which prevents the system from allocating or accessing datasets in the storage group or on the volume. • DISABNEW - SMS has the status of disable new, which prevents the system from allocating new datasets in the storage group or on the volume. • QUIESCED - SMS has the status of quiesced. • QUIESNEW - SMS has the status of quiesce new, which prevents the system from scheduling jobs that allocate or access data sets in that storage group or on that volume. • NOTDEFIN - Will be the status if none of the above are found.
STORGRP	Shows the DFSMS Storage Group assigned to a volume.
STORGRP STATUS	Indicates the storage group status that is assigned to a volume. • ENABLED - Storage group has the status of enabled • DISABLED - Storage group assigned to a volume has the status of disabled • DISABNEW - Storage group has the status of disable new • QUIESCED - Storage group has the status of quiesced • QUIESNEW - Storage group has the status of quiesce new • NOTDEFIN - Will be the status if none of the above are found
SYSID	SMF ID of the system
TRK/CYL	Lists the number of tracks per cylinders.
UCB USE	Indicates the specific use of a device. • A - Volume is currently allocated • O - Volume is currently not in use • P - Volume is used as a page device • S - System volume from which the IPL occurred
UU	Indicates the specific use of a device. Column is only used with **R** display option, Response Time Detail. • A - The volume is currently allocated • O - The volume is currently not in use • P - The volume is used as a page device • S - The system volume from which the IPL occurred
VOLUME NAME	Volume serial number of the address

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Table 4–7. DASD Allocation Detail Information

Column Name	Description
VOLUME POOL	Shows the volume pool you created. The volume pool is created from the member POOLVOL located in the PARMLIB library.
VOLUME STATUS	The current volume status. Column is only used with S display option, Short List (Detail Model information). • RSDNT - A resident volume • REMOVE - A removed volume • RSRVD - A reserved volume
VTOC PCTU	Displays the percentage used of the VTOC.
VTOC TRKS	Lists the number of tracks per VTOC.

Esoteric Names

The DASD Information panel for esoteric names lists all esoteric names associated with a device address, volume serial number, or device model type. This information is important if you move a volume serial number to a different address. The DASD Information panel for esoteric names looks similar to Figure 4–4. The Row field that is located at the upper right of the panel shows the approximate position of TSF in viewing the selected list.

The model summary section (listed as Mdls) at the top of the panel below the Command prompt shows all esoteric device model numbers. Located to the left of each device model number is the quantity.

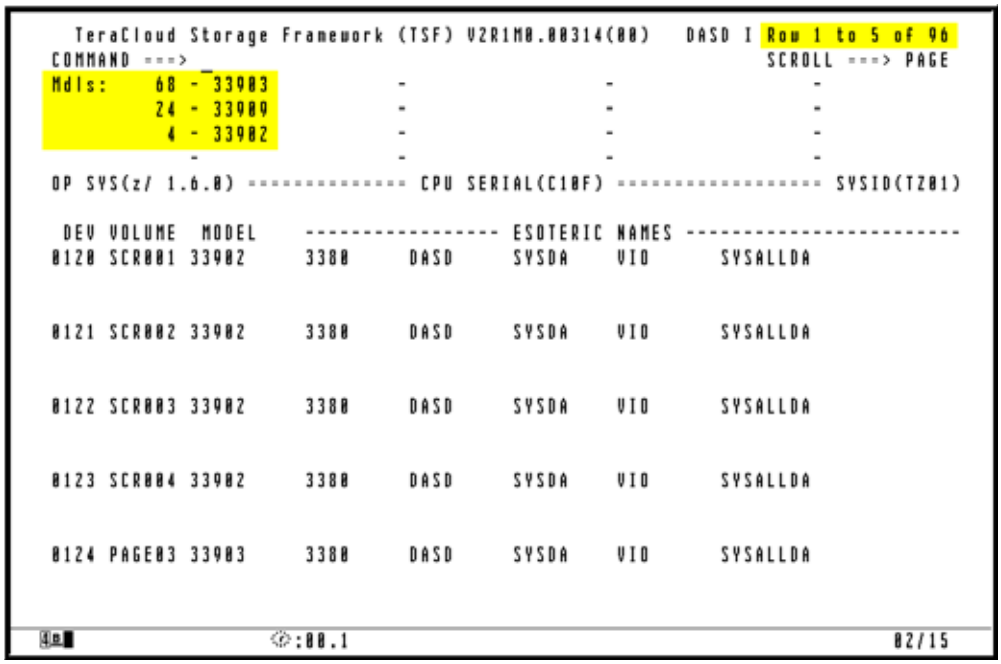

Figure 4–4. DASD Information panel for esoteric names with model summary

DETAIL INFORMATION

Located below the model summary section is the detail information section which lists esoteric names by model. The information is described in Table 4–8.

Table 4–8. Esoteric Model Detail Information

Column Name	Description
CPU Serial	The CPU serial number of the computer.
Dev	The device address.
Esoteric Names	The first 12 esoteric names that may access the device. If the device has more than 12 esoteric names, an * (asterisk) appears in the last column of the second row.
Model	The type, model, and volume serial number.
Op Sys	The operating system level where TSF was run.

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Table 4–8. Esoteric Model Detail Information

Column Name	Description
SysID	The SMF ID of the system.
Volume	The volume serial number (also called the Volser).

Response Time Detail

The DASD Information panel for response time detail displays the response time of I/O. The Row field that is highlighted at the upper right of the panel shows the approximate position of TSF in viewing the selected list. See Table 4–7 for a description of the columns associated with this panel. The **DEV RSP** column shows the device response time in milliseconds.

Note: The response time value is not an average response time but represents the exact time plus the instruction length for a store clock instruction of the responsiveness to an I/O request.

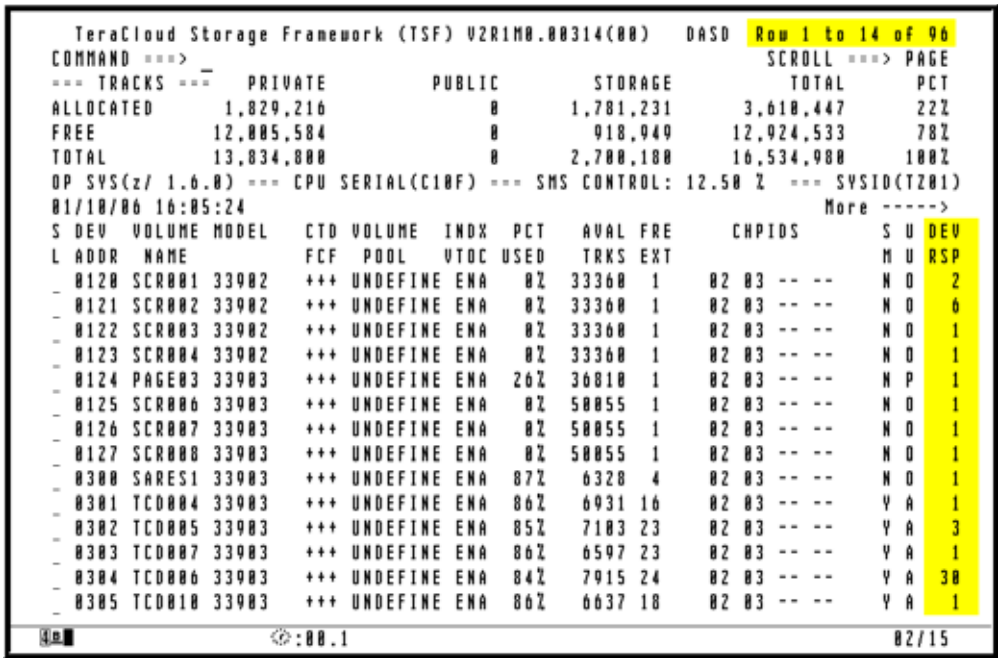

Figure 4–5. DASD Information panel for response time detail

Short List

The model summary section (listed as Mdls) located at the top of the DASD Information panel for short list shows all device model numbers. Located to the left of each device model number is the quantity.

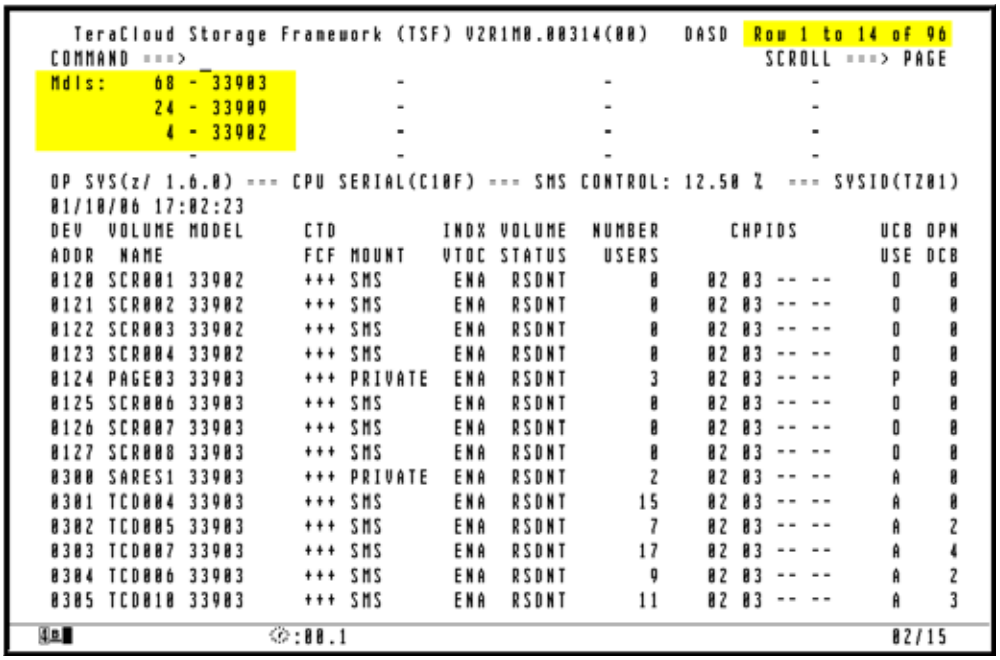

Figure 4–6. DASD Information panel for short list with device model summary

Inventory List

The DASD Information panel for inventory list shows your system inventory and a variety of information about each inventory component. This list is very helpful in obtaining information about a specific device (located behind an IBM 3990 or IBM 3990-compatible controller) or the storage system configuration.

Note: The Inventory List panel shows only the model and type for the IBM 3390.

See Table 4–9 for a list of the inventory information that is displayed for device types behind an IBM 3390 (including RMAC and other RAID device types).

The Row field that is located at the upper right of the panel shows the approximate position of TSF in viewing the selected list. The model summary section (listed as Mdls) at the top of the panel below the command line contains the quantity of each device, manufacturer, model number, as well as the extended model number.

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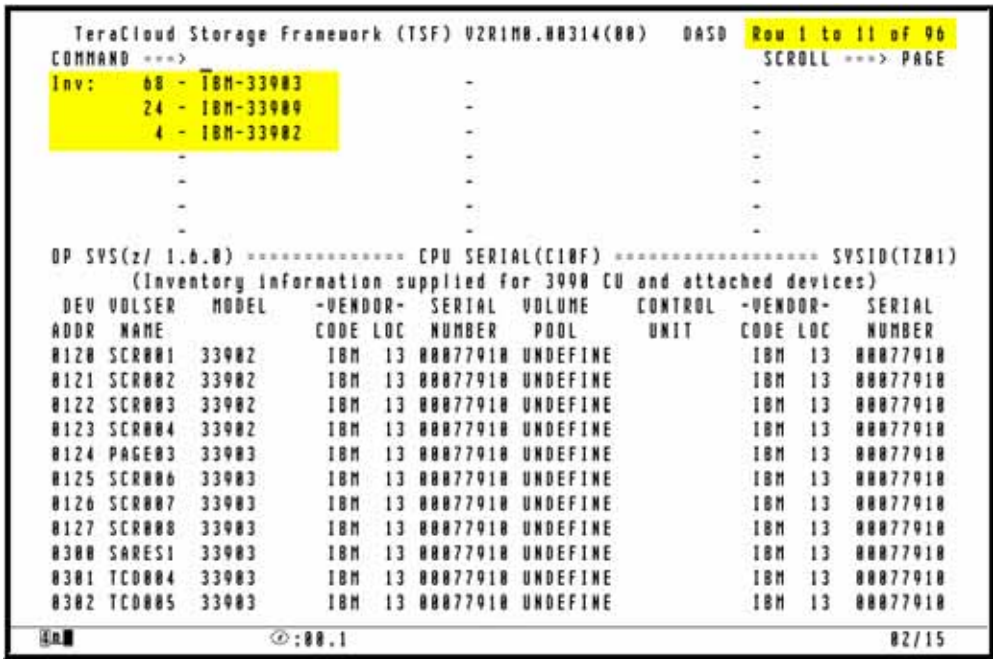

Figure 4–7. DASD Information panel for Inventory List with device model summary

DETAIL INFORMATION

Located below the model summary view is the inventory detail information section. This information features a variety of columns with specific information, listed in Table 4–9.

Table 4–9. Inventory Detail Information

Column Name	Description
Control Unit	A code that identifies the control unit.
CPU Serial	The CPU serial number of the computer.
Model	The model number as well as the extended model number.
Op Sys	The operating system level where TSF was run.
Serial Number	The vendor serial number for the device.
Serial Number	The vendor serial number of the control unit.
SysID	The SMF ID of the system.
Vendor Code/Loc	The vendor code and the vendor location code for the device. Example: • IBM - Displays IBM devices • AMD - Displays Amdahl devices • STK - Displays STK devices • HTC - Displays Hitachi devices • EMC - Displays EMC devices

Table 4–9. Inventory Detail Information

Column Name	Description
Vendor Code/Loc	The vendor code and the vendor location code for the control unit. Example: • IBM - Displays IBM devices • AMD - Displays Amdahl devices • STK - Displays STK devices • HTC - Displays Hitachi devices • EMC - Displays EMC devices
Volser name	The volume serial number (also called the Volser).
Volume Pool	Displays the user-defined volume pool associated with the dataset.

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Selecting a Volume

The selection column (SL) on the DASD Information panel lets you select a specific volume to view in various ways or to take an action. Follow these steps to select a specific volume from the DASD Information Panel:

1. Move the cursor in the **SL** column next to a specific volume.
2. Type an **S**, **D**, **F, G** (for SMS volumes only), **H, P, /**, or **=** in the **SL** column. See Table 4–10 for a description of the selection options.
3. Press **Enter** and Volume Detail Information, Dataset Information, Dataset Filter, History Retrieval, or Volume Action Menu panel appears.

Table 4–10. SL Field Selection Options, Volume

Selection Option	Description
S	Accesses the Volume Detail Information panel. This panel shows the same column information for a specific volume as it appears on the DASD Detail Information panel. However, unlike the DASD Detail Information panel where you have to scroll to the right to see all columns, all information appears on a single panel.
D	Accesses the Dataset Information panel where all datasets on the volume appear.
F	Accesses the Dataset Filter Panel. This panel allows you to filter for specific information.
G	Accesses the SMS Plex Status panel. This panel shows the SMS status of a volume across the sysplex (not applicable for a non-SMS volume).
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular volume or volumes. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
P	Accesses the PAV Detail panel for this volume serial, which also has a selection column. The following options are available: D/S – Show a one panel summary of the PAV volume.
/	Accesses the Volume Action Menu (for non-SMS volumes) or the SMS Volume Action Menu. From these menus you can perform actions to a specific volume or volumes. For more information see the Volume Action Menu, page 4-21 and the SMS Volume Action Menu, page 4-22.
=	Allows you to repeat an action.

VOLUME ACTION MENU

The Volume Action Menu allows you to perform specific actions to a selected non-SMS volume or volumes that appear in the DASD Detail Filter panel. Follow these steps to access the Volume Action Menu:

1. Move the cursor in the **SL** column next to a specific non-SMS volume.
2. Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several volumes, type a **/** in the SL column next to the first volume. Then move the cursor to each subsequent volume and type **=** (an equal sign).
3. Press **Enter** and the Volume Action Menu appears.

4 Type the option you want in the **Option** field. See Table 4–11 for a description of the selection options.

5 Press **Enter** and the option executes.

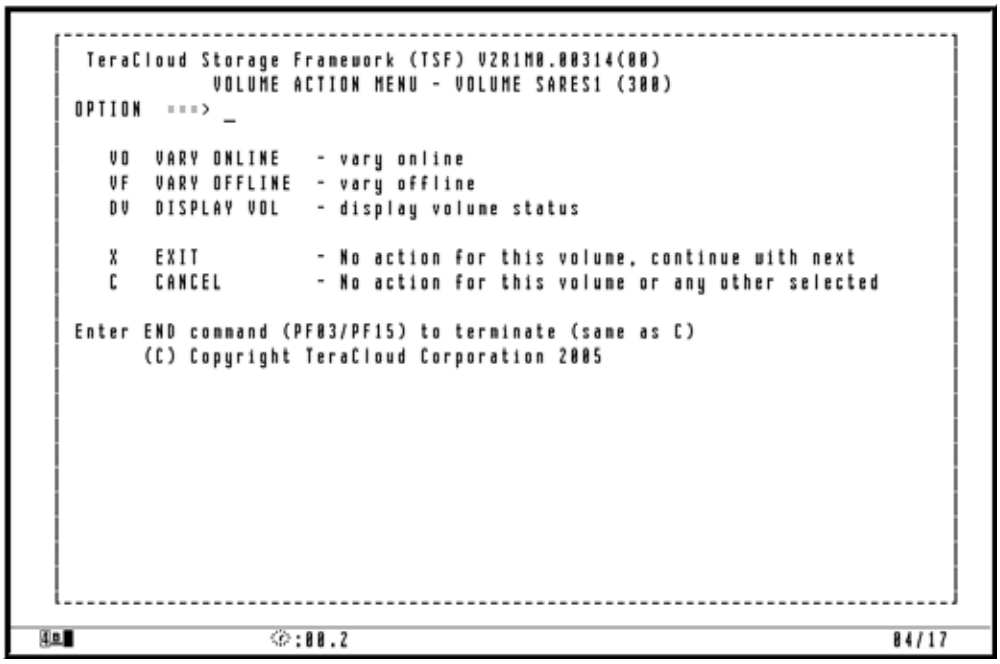

Figure 4–8. Volume Action Menu

The selection options for the SMS Volume Action Menu are listed in Table 4–11

Table 4–11. Volume Action Menu selection options.

Selection Option	Description
VO	Makes a non-SMS volume accessible.
VF	Makes a non-SMS volume inaccessible.
DV	Displays the current MVS status of the device. This includes information such as unit, type, status, Volser, and Volser state.
X	Passes over the action for the current volume and proceeds to the next volume.
C	Cancels the operation.

SMS VOLUME ACTION MENU

The SMS Volume Action Menu allows you to perform specific actions to a selected SMS volume or volumes that appear in the DASD Detail Filter panel. Follow these steps to access the SMS Volume Action menu:

1 Move the cursor in the **SL** column next to a specific SMS volume.

2 Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several volumes, type a **/** in the SL column next to the first volume. Then move the cursor to each subsequent volume and type **=** (an equal sign).

3 Press **Enter** and the SMS Volume Action Menu appears.

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4 Type the option you want in the **Option** field. See Table 4–12 for a description of the selection options.

5 Press **Enter** and the option executes.

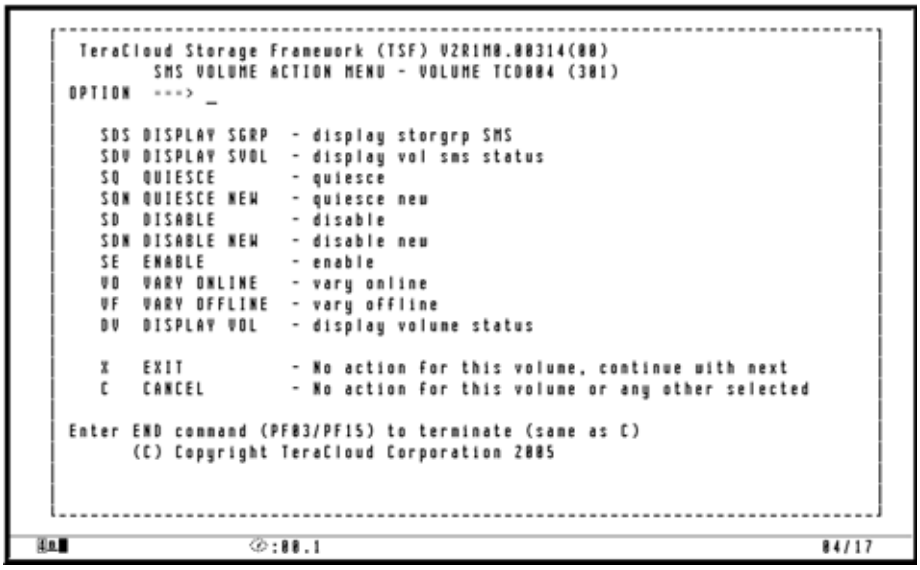

Figure 4–9. SMS Volume Action Menu

The selection options for the SMS Volume Action Menu are listed in Table 4–12.

Table 4–12. SMS Volume Action Menu selection options.

Selection Option	Description
SDS	Displays the storage group of the selected volume.
SDV	Displays the current status of the selected SMS volume.
SQ	Places the selected SMS volume into quiesce status.
SQN	Places the selected SMS volume into quiesce new status.
SD	Places the selected SMS volume into disable status.
SDN	Places the selected SMS volume into disable new status.
SE	Makes the selected SMS volume immediately available for existing and new datasets.
VO	Makes an SMS volume accessible.
VF	Makes an SMS volume inaccessible.
DV	Displays the current MVS status of the device. This includes information such as unit, type, status, Volser, and Volser state.
X	Passes over the action for the current volume and proceeds to the next volume.
C	Cancels the operation.

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RVA Devices

The RVAFinder DASD Filter Panel allows you to create a filtered view showing the exact physical storage availability behind RVA devices. Follow these steps to access the RVAFinder DASD Filter Panel:

1. From the DASD Filter Panel, type **V** in the **Display** field.
2. Type in any additional options or filters that work in conjunction with the V selection option.
3. Press **Enter** and the RVAFinder DASD Filter Panel appears.

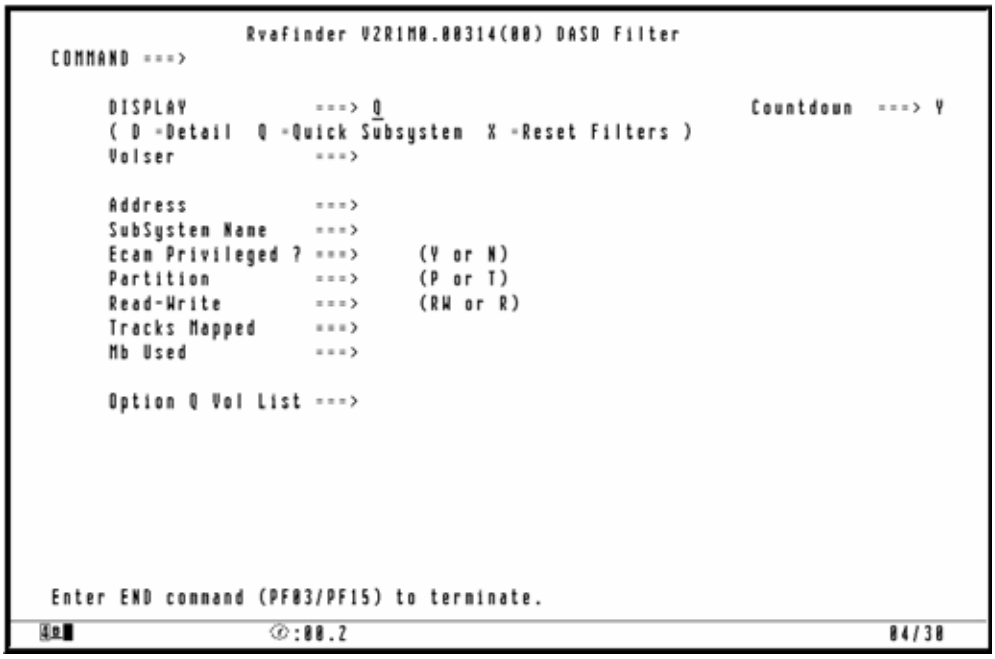

Figure 4–10. DASD filter panel for RVA devices

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Filters for Controllers

The Controller Filter Panel allows you to filter for specific information regarding devices. The primary purpose of the TSF Controller Filter Panel is to depict each controller for disk storage subsystems in the environment with drill-down capabilities showing cache statistics for each device attached to the controller.

Gathering and understanding controller configuration information as well as the usage of the controller's configured cache is vital for maintaining performance for today's storage subsystems. Configured cache may be analyzed for determination of under-configured subsystems. Cache hits/misses for reads and writes are also shown at the device level.

Follow these steps to perform a search for controller information:

1. From the TSF Primary Selection Screen, type **1** (Pools/Volumes) in the **Option** field. The Pools/Volumes Selection panel appears.
2. From the Pools/Volumes Selection panel, type **3** (Controllers) in the **Selection** field. The Controller Filter panel appears (Figure 4–11).

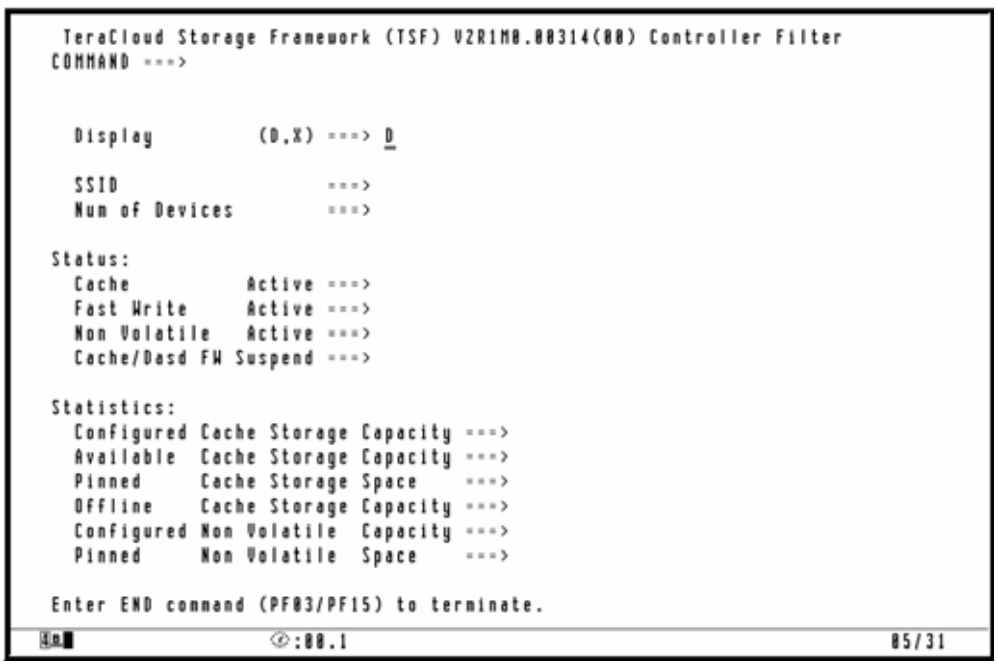

Figure 4–11. Controller Filter Panel

STATUS FILTERS

The status filters are located at the middle of the Controller Filter Panel under the Heading title, *Status Filters*. The status filters are listed in Table 4–13.

Table 4–13. Status Filters, Controller Filter Panel

Filter	Description
Cache Active	Will display or not display controllers with cache active flag set. Example: • Y - Displays all controllers with cache active flag Y. • N - Displays all controllers with cache active flag N. • E - Displays all controllers with cache internal subsystem error.
Fast Write Active	Will display or not display controllers with fast write active flag set. Example: • Y - Displays all controllers with fast write flag Y. • N - Displays all controllers with fast write flag N. • E - Displays all controllers with write inhibit error.
Non Volatile Active	Will display or not display controllers with non volatile active flag set. Example: • Y - Displays all controllers with non volatile flag Y. • N - Displays all controllers with non volatile flag N. • E - Displays all controllers with internal subsystem error. • U - Displays all controllers with non volatile unavailable. • P - Displays all controllers with non volatile pending. • M - Displays all controllers with non volatile maintenance.
Cache/Dasd FW Suspend	Will display or not display controllers with fast write suspend flag set. Example: • Y - Displays all controllers with fast write suspend flag Y. • N - Displays all controllers with fast write suspend N.

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STATISTICS FILTERS

The statistics filters are located at the bottom left of the Controller Filter Panel under the Heading title, *Statistics*. The statistics filters are listed in Table 4–14.

Table 4–14. Statistics Filters, Controller Filter Panel

Filter	Description
Configured Cache Storage Capacity	Controller Configured Cache - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.
Available Cache Storage Capacity	Controller Available Cache - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.
Pinned Cache Storage Space	Controller Pinned Cache - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.
Offline Cache Storage Capacity	Controller Offline Cache - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.
Configured Non Volatile Capacity	Controller Non Volatile - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.
Pinned Non Volatile Space	Controller Pinned Non Volatile - This is a 2 position filter. The first field is either a greater than symbol (>), a less than symbol (<), or an equal symbol (=). The second field is the numerical value to compare against.

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Examples

These best practices can help you to determine the overall health of your storage environment and better manage your DASD.

List Volumes with More than 80% Allocated

1. From the DASD Filter panel, type **D** in the **Display** field.
2. Type **> 80** in the **Percent Used** field.
3. Press ENTER to execute the filter and the DASD Information Detail panel appears. The **Pct Used** column lists all volumes that are more than 80% allocated.

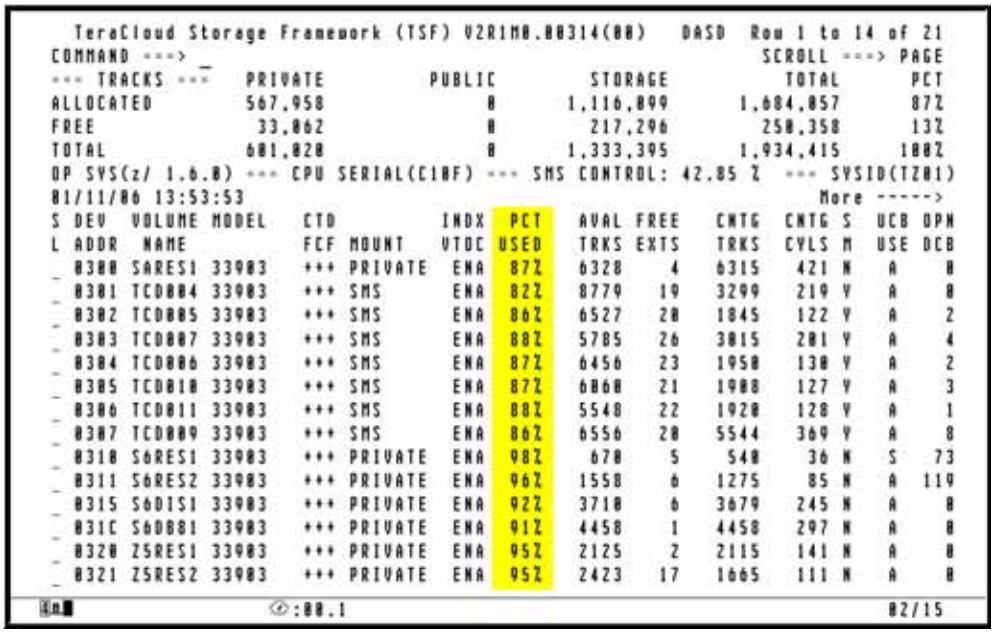

Figure 4–12. Volumes that are more than 80% allocated

List Volumes over 90% Allocated and under 5000 Contiguous Tracks

1. From the DASD Filter panel, type **D** in the **Display** field.
2. Type **> 90** in the **Percent Used** field.
3. Press **F8** to scroll down to the **Contiguous Track or MB** field.
4. Type **< 5000** in the **Contiguous Track or MB** field.
5. Press ENTER to execute the filter and the DASD Information Detail panel appears. The **Pct Used** column lists all volumes that are more than 90% allocated and the **Cntg Trks** column lists all volumes that have fewer than 5,000 contiguous tracks.

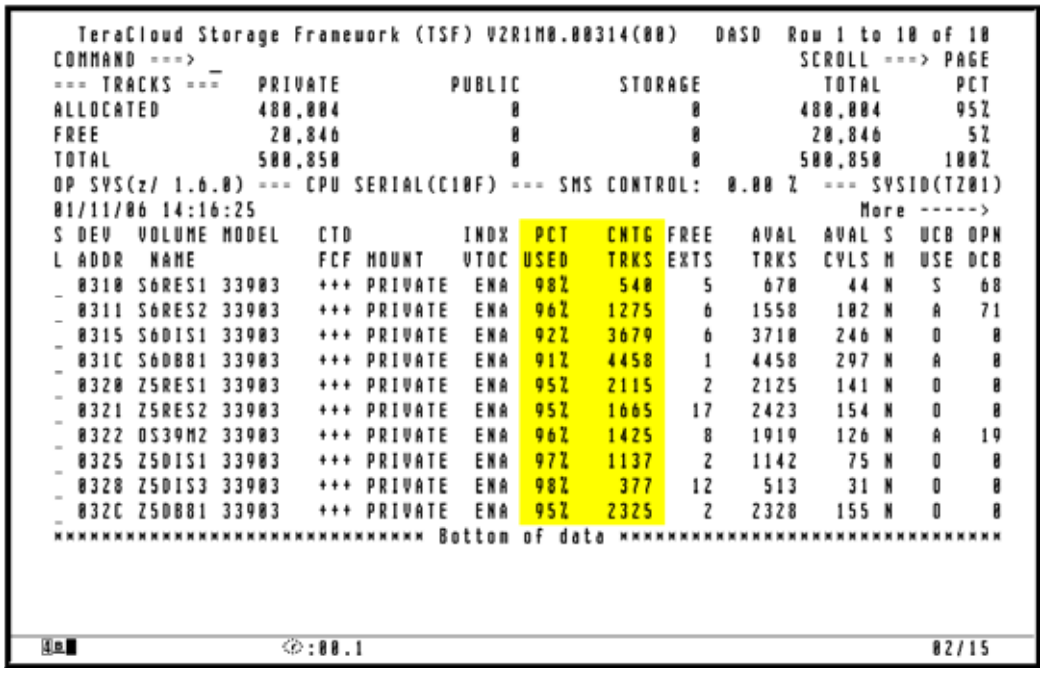

Figure 4–13. Volumes more than 90% allocated and under 5000 contiguous tracks

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CHAPTER

5

DATASETS SELECTION

The Datasets component of TSF is designed to analyze the entire environment and provide views at a summary and detail level about the status of all datasets in the environment. Using Datasets, you can evaluate, sort, and report different views for all datasets or for specific datasets and their logical groups. You can also “drill down” to detail information–for example, you can find datasets that are comprised within a specified logical pool–with the unique Zoom capability provided by TSF.

You can determine whether duplicate dataset names exist and if so, determine whether the dataset is a true multivolume dataset or a duplicate dataset. You can then interrogate the catalog to determine which datasets are cataloged and which datasets are not.

Datasets selection is available from the TSF Primary Selection panel. Type **2** (Datasets) in the **Option** field. The Datasets Selection panel is displayed (Figure 5–1). Options that you can select from this panel include:

- Search/Filter, to filter on individual dataset attributes
- Logical Pools, to view datasets from a logical-pool perspective. See Chapter 8, Logical Pool Information.

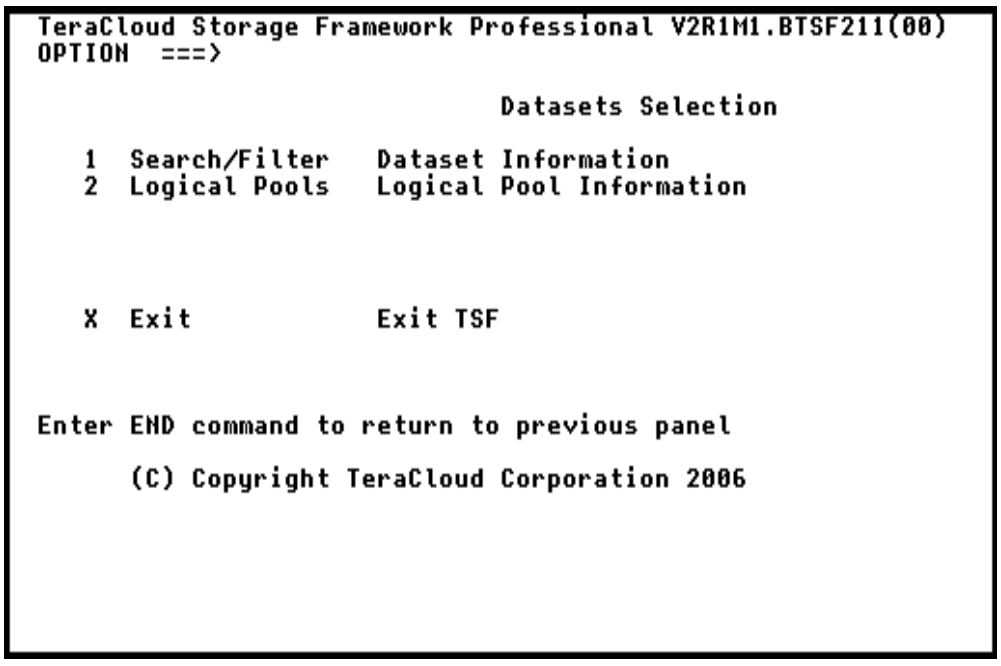

Figure 5–1. Datasets Selection panel

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Filters for Dataset Information

Dataset information filters are available from the Datasets Selection panel. Type **1** (Search/Filter) in the **Option** field. The Filter panel is displayed (Figure 5–2).

Note: If your installation is configured to support multiple databases (*Multiple Database Option, page 5-27*), you will be prompted to select the database to use when you select option 1. To select a database, type **S** next to the database name and press ENTER.

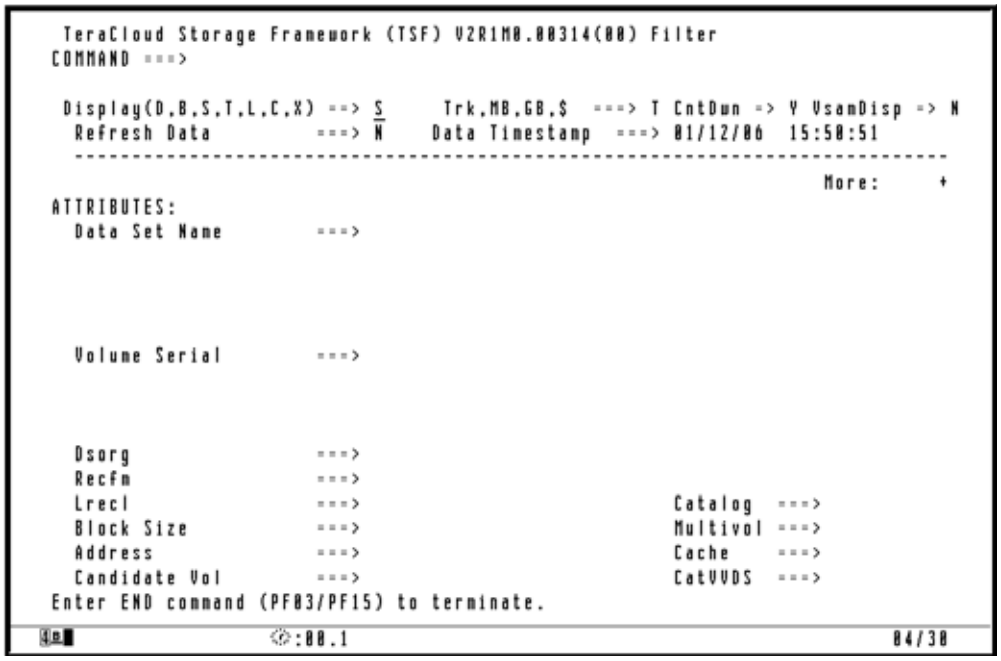

Figure 5–2. Datasets Filter panel

The primary purpose of this panel is to let you make display option selections on how the dataset information is to appear. See Chapter 3, Display Selection Options. A subsequent panel lists the dataset information based on your selection from the Filter panel.

In addition to the display option selections, a variety of detail filters on this panel allow you to further manipulate data that can appear on a subsequent result panel. There are four sets of filters located below the display options. Some of the filters allow you to use wildcard characters and exclude symbols to refine the filter results. See Using Wildcard Characters, page 1-10.

Useful Tip. Some of the filters have two-part fields. Press TAB to advance. The first field is used for > (greater than), < (less than), or = (equal to), whereas the second field is used to show a numeric value or percentage value. Press PF1 to access online help for each field.

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Attributes

The first set of filters (through Datasets) works in conjunction with all of the display selection options to create a list of specific data. This set of filters is listed in Table 5–1 along with examples

Table 5–1. Attributes Filters

Filter Name	Description
Address	Identifies all datasets residing on volumes designated by individual address. Returns only those addresses that are online. Wildcard characters and exclude symbols allowed. • 1A* – Returns all datasets that reside between 1A0 and 1AF • 1AC – Returns all datasets that resided on 1AC at the time of the database build
Block Size	Returns datasets according to block-size parameters. • < 27746 – Returns all datasets that are less than a 27746 block size • > 27746 – Returns all datasets that are greater than a 27746 block size
Cache	Returns datasets according to cache criteria when database was created. • C – Returns those datasets controlled under Cache Fast Write • T – Returns those datasets controlled under Track Caching • D – Returns those datasets controlled under DASD Fast Write • N – Returns those datasets not controlled under a cache
Candidate Vol	Returns datasets that are or are not associated with a candidate volume (two-position field). • Y – Display all datasets that have an associated candidate volume • N – Do not display datasets that have an associated candidate volume
Catalog	Returns status–cataloged, not-cataloged, cataloged duplicates, not-cataloged duplicates. **Note:** options *E and NE are available only when using job BLDUCBMT to build the database; NC option is valid only if the catalog option was specified as Y in the batch database build job. VE returns all orphaned VVR entries found in the VVDS. • * – Returns all duplicate datasets • *N – Returns all duplicate uncataloged datasets • *C – Returns all duplicate cataloged datasets • NC – Returns all uncataloged datasets • C – Returns all cataloged datasets • CM – Returns all datasets which are cataloged and migrated • CMD – Returns all datasets which are cataloged and migrated to disk • CMT – Returns all datasets which are cataloged and migrated to tape • CO – Returns all datasets which have a catalog entry but no dataset on disk • *E – Returns all duplicate not cataloged datasets that have bad catalog entries • NE – Returns all not cataloged datasets that have bad catalog entries • VE – Returns all orphaned VVR entries found in the VVDS
Catalog Name	Returns the dataset name defined in the catalog, according to query criteria. • CATALOG.VPROD01 – Displays all datasets cataloged in the CATALOG.VPROD01 catalog • CAT*.** – Displays all datasets cataloged in catalogues starting with CAT

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Table 5–1. Attributes Filters

Filter Name	Description
CatVVDS	Returns cataloged datasets whose catalog name in the VVDS differs from the actual cataloged name of the dataset. **Note:** This option is effective only if the database was built using the CATALOG(Y) option and is effective for all SMS controlled datasets. If datasets are not SMS, only VSAM datasets display. • Y – Displays all cataloged datasets that have a catalog name that is different than the catalog name in the VVDS
Data Set Name	Returns dataset names according to query criteria. A dataset name can be up to 44 characters in length. • SYS1.PARMLIB – Displays all SYS1.PARMLIB datasets • SYS1.** – Displays all datasets that begin with SYS1 • SYS1.**,¬*.D*.** – Includes all datasets that begin with SYS1 except (¬) those that have a second-level qualifier that begins with D
Dsorg	Returns datasets by organization type • PO – Partitioned datasets (PDS) • PS – Physical Sequential datasets • VSAM – VSAM datasets • ??? – Unknown dataset structures • ERROR – Datasets that have an invalid format “1 DSCB” • ICF – ICF catalogs • DA – Direct access datasets • HFS – Hierarchical File Structure datasets • PDSE – Partitioned datasets (Extended) • *U – Unmovable datasets (note the use of a wildcard)
Device Type	Reports on datasets by device type. • 3390-3***** – Shows all datasets on 3390 model 3s
Logical Pool	Returns datasets by user-defined logical pools. • PAYROLL – Returns all datasets that have been assigned to the PAYROLL system or application
Lrecl	Returns datasets by logical record length. • = 80 – Evaluate and analyze the impact of all datasets that contain a logical record length of 80 bytes
Multivol	Returns datasets stored across multiple volumes. • Y – Display only multi-volume datasets • N – Exclude all multi-volume datasets • MV (special filter) – Summarize all multi-volume datasets–when used, all space filters and extents will reflect one total amount for all components of each multi-volume dataset • Y01 – Display the first file of a multi-volume dataset • Y02 – Display the second file of a multi-volume dataset

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Table 5–1. Attributes Filters

Filter Name	Description
Physical Pool	Returns information by device mount attribute. • PRIV – Displays all datasets on devices mounted as PRIVATE • STRG – Displays all datasets on devices mounted as STORAGE • PUB – Displays all datasets on devices mounted as PUBLIC
Recfm	Returns datasets by record format criteria. • FB – Fixed Blocked • F – Fixed • V – Variable • VB – Variable Blocked
System ID	Lets you merge databases from different systems. When this is done, you can select any given system by typing the SMF system ID in this field. It is user-dependent. • Default = Includes all systems • Blank – Combines all data centers into a common pool
Volume Pool	Lets you report on various volumes using the volume pool filter. Volume Pool name can be from 1 to 8 characters in length. **Note:** This field is user-created from the member POOLVOL, located in the PARMLIB library. • PAYROLL – Returns all volsers that have been assigned to the PAYROLL system or application.
Volume Serial	Lets you report by volume serial. • TEST01 – Displays information contained on volume TEST01 only • T* – Displays all information contained on those volumes that begin with T • ¬T* – Excludes information that is contained on those volumes that begin with T • Blank – Displays all volumes based on other selection filters

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Space

Table 5–2 lists the Space filters, which are located on the Datasets Filter Panel under the Heading title, *Space*.

Table 5–2. Space Filters

Filter Name	Description
Allocated Space	Let you organize datasets by size and range, according to space allocated. This can be extremely useful in determining SMS storage group sizes. **Note:** To see total space allocated across all components of multivolume datasets, use this filter in conjunction with the Multivolume Space filter. • > 10 < 100 – Analyze all datasets that are greater than 10 tracks or MB (according to unit selected) but less than 100 tracks or MB.
AllocType	Lets you select datasets based on the allocation type, according to query criteria. • T – Displays all datasets that were allocated in tracks • C – Displays all datasets that were allocated in cylinders • B – Displays all datasets that were allocated in blocks
Extents	Returns the number of extents that a dataset is in, according to query parameters. • > 100 – Locate all datasets that are in 101 extents or more
Free Space	Lets you organize volumes or datasets by size and range according to space not used. This is a four-part filter. This can be useful in determining DFSMS Storage Group sizes. **Note:** This filter becomes Percent Free when the variable PCTFILT(Y) is the default in the DFINDER CLIST. • > 10 < 100 – Locate all datasets that are greater than 10 tracks or MB (according to unit selected) but less than 100 tracks or MB
UnUsedKB	Lets you query datasets based on bad block size versus optimum block size. **Note:** To obtain the optimum block size and calculate waste, a PARM has been added to BLDUCBMT called UnusedKB=. The default value for this PARM is N and must be set to Y. • > 150 – Return all datasets that have unused space in Kilobytes (K=1024) greater that 150k
Used Space	Lets you organize volumes or datasets by size and range according to space used. • > 15 < 150 – Analyze all datasets that are greater than 15 tracks or MB (according to unit selected) but less than 150 tracks or MB.

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MultiVolume Space

Table 5–3 lists the multivolume space filters, which are located on the Datasets Filter Panel under the Heading title, *Multivolume Space*.

Table 5–3. MultiVolume Space Filters

Filter Name	Description
Allocated Space	Lets you organize datasets by size and range, according to space allocated. This can be extremely useful in determining SMS storage group sizes. • > 10 < 100 – Analyze all datasets that are greater than 10 tracks or MB (according to unit selected) but less than 100 tracks or MB
Extents	Returns the number of extents that a dataset is in, according to query parameters. • > 100 – Locates all datasets that are in 101 extents or more
Free Space	Lets you organize volumes or datasets by size and range according to space not used. This is a four-part filter. This can be useful in determining DFSMS Storage Group sizes. **Note:** This filter becomes Percent Free when the variable PCTFILT(Y) is the default in the DFINDER CLIST. • > 10 < 100 – Locate all datasets that are greater than 10 tracks or MB (according to unit selected) but less than 100 tracks or MB
Used Space	Lets you organize volumes or datasets by size and range according to space used. • > 15 < 150 – Analyze all datasets that are greater than 15 tracks or MB (according to unit selected) but less than 150 tracks or MB.

GDG

Table 5–4 lists the GDG filters, which are located on the Datasets Filter Panel under the Heading title, *GDG*.

Table 5–4. GDG Filters

Filter Name	Description
GDG	Returns all datasets by GDG, rolled-off GDG, or deferred GDG. Three drop-down lists are provided for this filter type. • Y – Returns all GDG datasets • R – Returns all GDG datasets that are in Rolled-Off status • D – Returns all GDG datasets that are in Deferred Status
Relative Gen Num	Returns GDG datasets according the generation-number query criteria. • > 1 – Locates all GDG datasets that have more than 1 relative generation on DASD

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RVA

Table 5–5 lists the RVA filters. A page down scroll may be necessary to view them on your screen.

Table 5–5. RVA Filters

Filter Name	Description
RVA Compress Ratio	Lets you determine the amount of space reclaimed by compression on RVA DASD versus that which the dataset would occupy if it were on a non-RVA device. Returns the RVA compression ratio for datasets on RVA devices, according to query criteria. • > 20 – Show all datasets that save 20% or more
RVA	Returns indicator of whether or not that dataset is on an RVA device. • Y – Returns only those datasets that are behind RVA controllers • N – Excludes all datasets that are under RVA control

Dates

Table 5–6 lists the Date filters. A page down scroll may be necessary to view them on your screen. Date format is mm/dd/yyyy but in some fields the date value is expressed in days, for example, 180 days represents 6 months.

Table 5–6. Date Filters

Filter Name	Description
Backup Date or ===> Days Ago	Lets you evaluate datasets by backup date or number of days since backup. • < 01/ 01/2006 – Analyze all datasets that were backed up before January 1, 2006
Creation Date or ===> Days Ago	Lets you evaluate datasets by creation date or number of days since created. Field can also be RDATE, XDATE. • < 180 – List all datasets that were created in the last 180 days • = RDATE – Show all files whose Create Date is equal to Refer Date • = XDATE – Show all files whose Create Date is equal to Expire Date
Expiration Date or ===> Days Ago	Lets you evaluate datasets by expiration date or number of days until expiration. To evaluate by a future expiration date, use the greater than sign (>) and select the current date or a future date. Field can also be CDATE, RDATE. • < 01/ 01/2006 – Analyze all datasets that will expire before January 1, 2006 • < 180 – Find all datasets that will expire in the next 6 months • = CDATE – Show all files whose Expire Date is equal to Create Date • = RDATE – Show all files whose Expire Date is equal to Refer Date
Last Referenced or ===> Days Ago	Lets you evaluate datasets by last referenced date or numbers of days since last reference. Field can also be CDATE, XDATE. • < 06/01/2006 – Analyze all datasets referenced before June 1, 2006 • = 01/15/2006 – Find all datasets referenced on January 15, 2006 • > 180 – Find all datasets not accessed in the last six months • = CDATE – Show all files whose Refer Date is equal to Create Date • = XDATE – Show all files whose Refer Date is equal to Expire Date

SMS

Table 5–7 lists the SMS filters. A page down scroll may be necessary to view them on your screen.

Table 5–7. SMS Filters

Filter Name	Description
Controlled	Returns detail and summary information of all datasets by DFSMS-controlled status. • Y – Returns only those datasets that are under the control of SMS • E – Returns only SMS Extended format datasets • C – Returns only SMS Compressed Extended format datasets • N – Returns those datasets that are not under the control of SMS • Blank – Returns all datasets, non-SMS and SMS
Data Class	Returns detail and summary information for datasets by data class, according to query criteria. • DAY90 – Displays all SMS datasets that are assigned a data class of DAY90 • D* – Displays all SMS datasets that have a data class assigned that begins with D • UNASSIGN – Displays all SMS controlled datasets that have not been assigned a data class • Blank – Displays all SMS controlled datasets that have not been assigned a data class
Management Class	Returns detail and summary information for datasets by management class, according to query criteria. • MIG90 – Displays all SMS datasets that are assigned a management class of MIG90 • A* – Displays all SMS datasets that have a management class that begins with A • UNASSIGN – Displays all SMS datasets that have not been assigned a management class • Blank – Displays all SMS controlled datasets that have not been assigned a management class
Storage Class	Returns detail and summary information for datasets by storage class, according to query criteria. • TSOSM – Displays all datasets in the TSOSM storage class • T* – Displays all datasets in a storage class that begins with T • Blank – Displays all storage classes
Storage Group	Returns detail and summary of datasets by storage group, according to query criteria. • LARGE – Displays all datasets in the LARGE storage group • L* – Displays all datasets in a storage group that begins with L

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VSAM Filters

Table 5–8 lists the VSAM filters. A page down scroll may be necessary to view them on your screen.

Table 5–8. VSAM Filters

Filter Name	Descriptions
Alt Index	Returns VSAM datasets that contain an alternate index. • Blank – Includes all datasets • Y – Includes only datasets that contain an alternate index • ¬ – Excludes all datasets that contain an alternate index
Average Lrecl	Returns datasets having a logical record length that corresponds to the filter criteria (greater than, less than, equal to, and so on). • > 2870 – Locate all datasets that have an average record length of more than 2870 bytes
CA Splits	Returns control-area splits information, according to query criteria. • > 50 – Find all VSAM datasets with control area splits greater than 50
CI Splits	Returns control interval split information for VSAM datasets that are above a selected range. • > 1000 – Find all VSAM datasets with control interval splits greater than 1000
CI Size	Returns control-interval size in bytes, according to filter criteria. • > 100 – Locate all datasets that contain a control interval size of over 100 bytes
CI/CA	Returns the number of control intervals per control area, according to filter criteria. • > 8 – Locate all datasets that contain over 8 control intervals per control area
Cluster Name	Returns valid VSAM cluster names. • SYS1.** – Returns all VSAM datasets that begin with SYS1 • ¬SYS1.** – Excludes all VSAM datasets that begin with SYS1
Deleted	Returns the number of records deleted in the VSAM dataset. • > 1000000 – Locate all datasets that have deleted more than 1 million records
Erase	Returns all VSAM datasets that were created with the ERASE option specified. • Blank – Includes all datasets • Y – Includes only datasets that were created with the ERASE option • ¬ – Excludes all datasets that were created with the ERASE option
EXCPs	Provides the ability to find and analyze datasets by the total number of EXCPs. • > 1000000 – Locate all datasets that contain more than 1 million EXCPs
Free CA Pct	Returns all datasets as a percentage of control area free space, according to query criteria. • > 10 – Locate all datasets that contain a control area size with 10% free space or more

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Table 5–8. VSAM Filters

Filter Name	Descriptions
Free CI Pct	Returns all datasets as a percentage of control interval free space, according to query criteria. • > 10 – Locate all datasets that contain a control interval free space of 10% or more
Imbed	Allows you to select all VSAM datasets that were created with imbedded keys. • Blank – Includes all datasets • Y – Includes only datasets that contain Imbedded keys • ¬ – Excludes all datasets that contain Imbedded keys
Index	Returns all VSAM datasets that are index components. • Blank – Includes all datasets • Y – Includes only datasets that are indexes • ¬ – Excludes all datasets that are indexes
Inserted	Returns the number of records inserted in the VSAM dataset. • > 1000000 – Locate all datasets that have inserted more than 1 million records
Maximum Lrecl	Lets you find and analyze datasets by maximum record length. • > 2870 – Locate all datasets that have a maximum record length of more than 2870 bytes
Open When DB Built	Identifies VSAM datasets that were open at the time the database was built. • Blank – Includes all datasets • Y – Includes only datasets that were open at DB build time • ¬ – Excludes all datasets that were open at DB build time
Primary Alloc	Returns information on VSAM datasets by primary allocation, according to query criteria. • > 1500 – Find all VSAM datasets that have a primary allocation unit that is greater than 100 cylinders
Replicate	Returns all VSAM datasets that were defined with REPLICATE. • Blank – Includes all datasets • Y – Includes only files that contain replicated keys • ¬ – Excludes all datasets that contain replicated keys
Retrieved	Returns the number of records retrieved in the VSAM dataset. • > 1000000 – Locate all datasets that have retrieved more than 1 million records
Reuse	Lists all VSAM datasets that were created with the REUSE option specified. • Blank – Includes all datasets • Y – Includes only datasets that were specified with the REUSE Option • ¬ – Excludes all datasets that were specified with the REUSE Option
Secondary Alloc	Returns information on VSAM datasets by secondary allocation, according to query criteria.

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Table 5–8. VSAM Filters

Filter Name	Descriptions
Share Options	Provides the ability to locate datasets by Cross Region Share option. Valid values: 1,2,3,4 • 3 = Filter and list only type 3 sharing VSAM DS
Spanned	Returns all VSAM datasets that were created with the SPANNED option specified. • Blank – Includes all datasets • Y – Includes only datasets that were specified with the SPANNED Option • ¬ – Excludes all datasets that were specified with the SPANNED Option
Speed	Returns datasets that were created with the SPEED option specified. • Blank – Includes all datasets • Y – Includes only datasets that were specified with the SPEED Option • ¬ – Excludes all datasets that were specified with the SPEED Option
Sync	Returns all datasets that have had a synchronization error since the last close of the dataset. • Y – Lists only those datasets that have had an error • ¬ – Excludes all datasets that have had an error
Total Records	Returns total number of records in a dataset according the query criteria. • > 1000000 – Locate all datasets that contain more than 1 million records
Updated	Returns the number of records updated in the VSAM dataset. • > 1000000 – Locate all datasets that have updated more than 1 million records
Verify Required	Returns all datasets that require that a VERIFY be run before the dataset can be opened. • Y – Lists only those datasets that require verification • ¬ – Excludes all datasets that require verification
VSAM Type	Returns datasets by VSAM type. • KSDS – Returns only keyed VSAM datasets • ESDS – Returns only entry sequence datasets • RRDS – Returns all relative record datasets • LVDS – Returns all linear VSAM datasets (DB2)
Write Check	Returns all VSAM datasets that were created with the WRITE CHECK option specified. • Blank – Includes all datasets • Y – Includes only datasets that were specified with the WRITE CHECK Option • ¬ – Excludes all datasets that were specified with the WRITE CHECK Option

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Displaying Detail Information

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option D. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (30,000) for the maximum number of datasets can be changed or overridden with the Max Table Size variable. See HSM Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

The Detail Information panel for datasets shows the results of the query that you made from the filter panel. The columns on this panel vary slightly according to the display selection, D (detail records), B (both summary and detail information), or S (summary information). Follow these steps to access the Dataset Detail Information panel:

1. From the Dataset Filter Panel, type **D**, **B**, or **S** in the **Display** field (change other display values as desired).
2. Type any *valid entries* in the filter fields that work in conjunction with your display selection option.
3. Press ENTER and the Dataset Detail Information panel appears with the result set.
4. Review the detailed result set that displays. See Table 5–9 for a list of the columns that can be displayed.

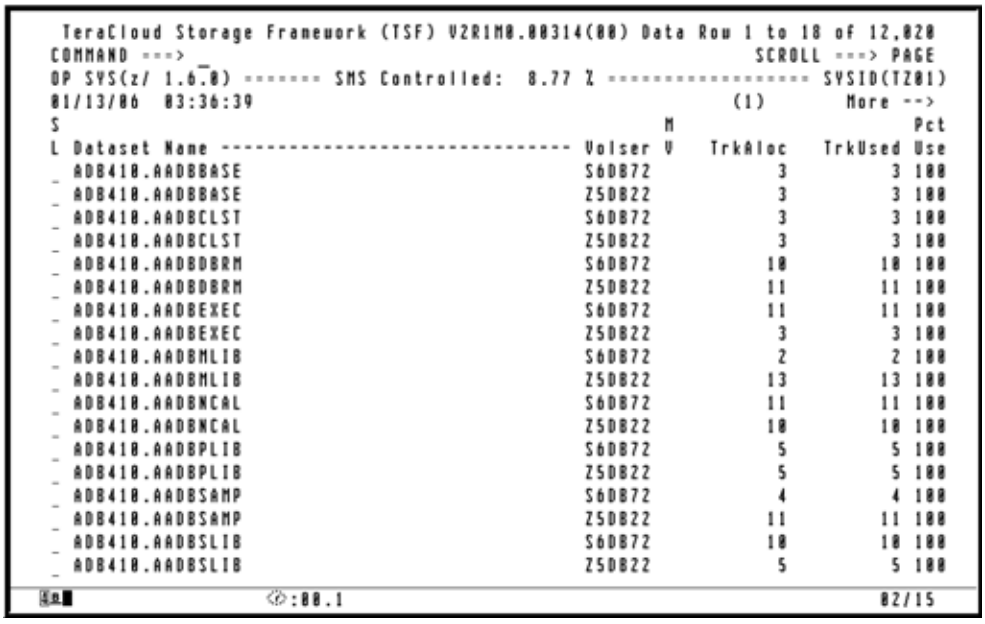

Figure 5–3. Dataset Detail Information panel (display option D)

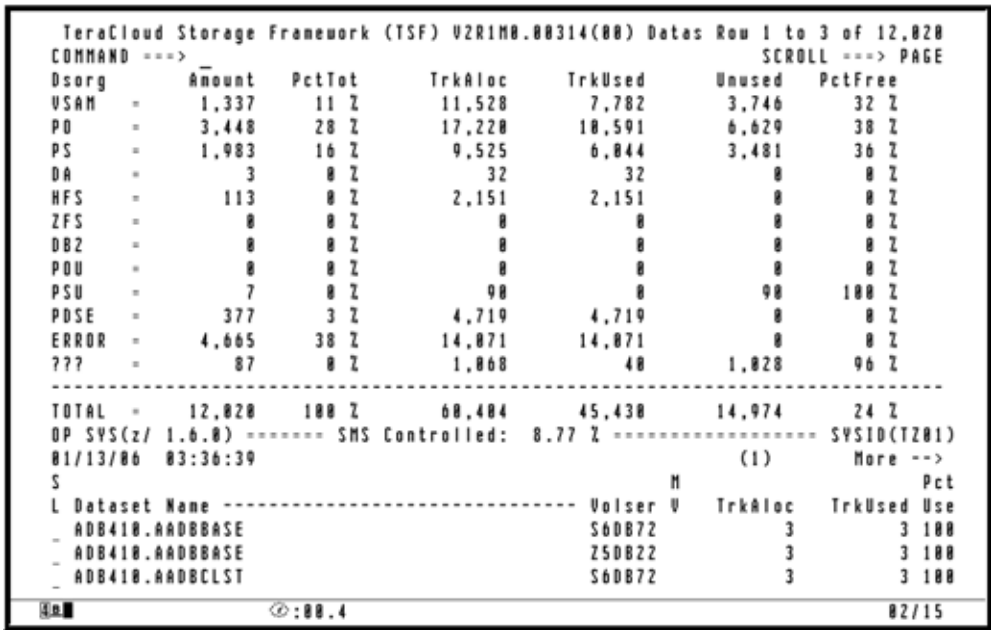

Figure 5–4. Dataset Summary and Detail Information panel (display option B)

Note: The Dataset Summary and Detail Information panel is split with summary information appearing at the top, while detail information appears at the bottom.

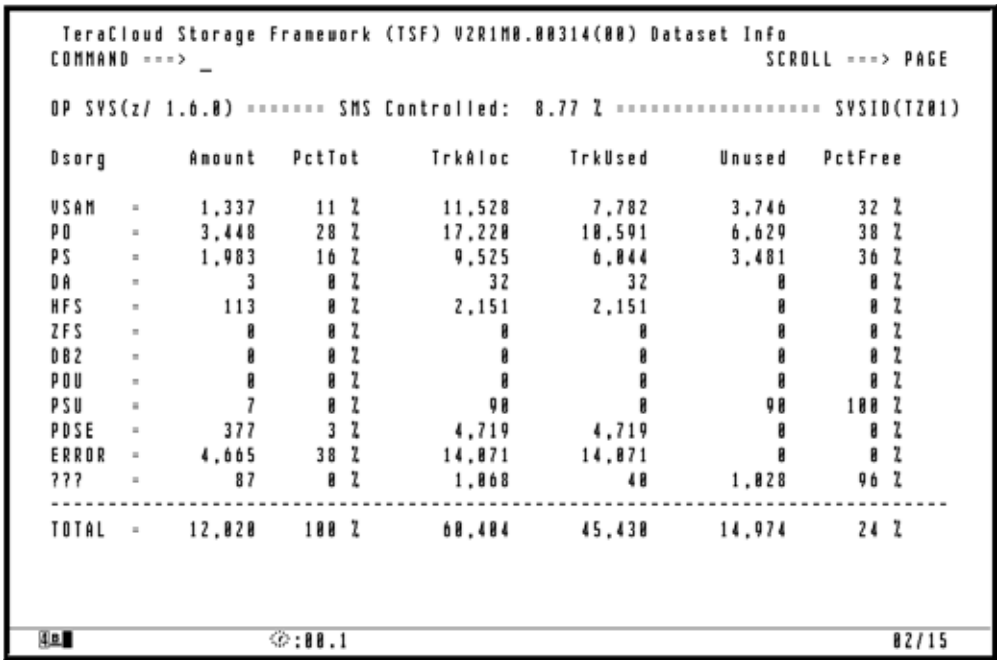

Figure 5–5. Dataset Summary Information panel (display option S)

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General Results Columns

Table 5–9. Dataset Detail Panel General Columns

Column Name	Description
<unit>_Aloc	Total available tracks, megabytes, or gigabytes on the volume, depending on Units selection.
<unit>_Used	Identifies the number of used megabytes, gigabytes, or tracks, depending on unit selected.
Amount	Displays the number of datasets in this category.
Dsorg	Identifies the dataset organization.
Files	Lists the number of files in this category.
PctFree or Pct	Displays the percentage of free space for an associated dataset.When displayed in the Summary tab, it shows the free space within the category (free space divided by total space).
PctTot	The percentage of dataset organization-type totals across the enterprise
Total	The summaries of allocated, free, and total of all DASD MB available or used online.This information can be displayed in tracks, cylinders, megabytes, logical volume pools, DFSMS storage groups, or dollars.
Unused	The difference between space allocated and space used (free).
Volumes	The number of volumes in the pool (displays with VP command-line option).

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Selecting a Dataset

The selection column (SL) on the Dataset Detail Information panel lets you select a specific dataset to view in various ways or to take an action. Follow these steps to select a specific dataset from the Detail Information Panel:

1. Move the cursor in the **SL** column next to a specific dataset.
2. Type an **S**, **H,** or **/** in the **SL** column. See Table 5–10 for a description of the selection options.
3. Press ENTER and depending on the selection you made, the Dataset Information panel, History Retrieval panel, or SMS Dataset Action Menu appears.

Table 5–10. SL Field Selection Options, Dataset

Selection Option	Description
S	Accesses the Dataset Information panel for information about a selected dataset.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular dataset or datasets. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Depending on the dataset selected, accesses the Non-SMS Dataset Action Menu or the SMS Dataset Action Menu. From these menus you can perform actions to a specific dataset or datasets.
=	Allows you to repeat an action.

NON-SMS DATASET ACTION MENU

The Non-SMS Dataset Action Menu allows you to perform specific actions to a selected non-SMS dataset or datasets that appear in the Datasets Detail Information panel. Follow these steps to access the Non-SMS Dataset Action Menu:

1. Move the cursor in the **SL** column next to a specific non-SMS dataset.
2. Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several non-SMS datasets, type a **/** in the SL column next to the first dataset. Then move the cursor to each subsequent dataset and type **=** (an equal sign).
3. Press ENTER and the Non-SMS Dataset Action Menu appears (Figure 5–6).
4. Type the option you want in the Option field. See Table 5–11 for a description of the selection options.
5. Press ENTER and the option executes.

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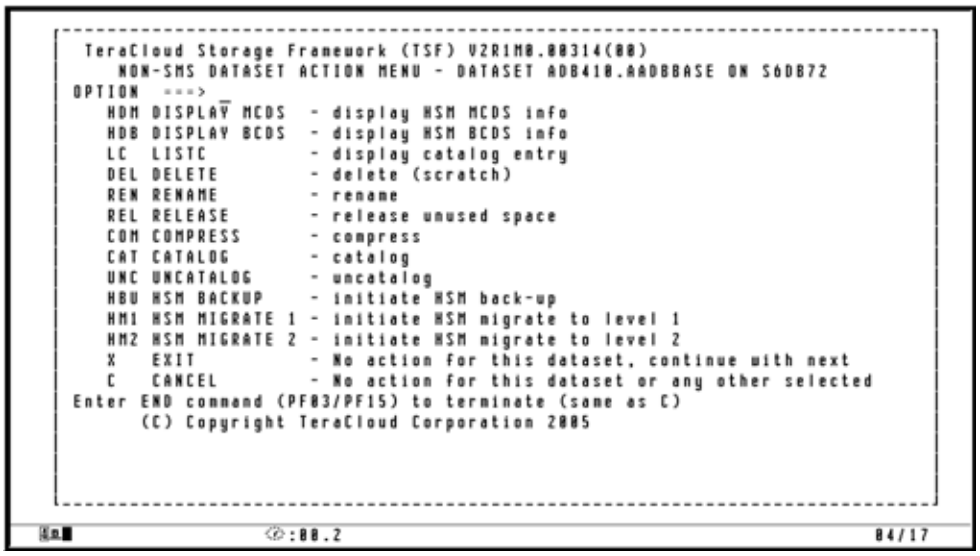

Figure 5–6. Non-SMS Dataset Action Menu

The selection options for the Non-SMS Dataset Action Menu are listed in Table 5–11.

Table 5–11. Non-SMS Dataset Action Menu selection options

Option	Description
HDM	Displays migration information about the selected dataset.
HDB	Displays migration information about the selected dataset backup.
LC	Displays catalog information about the selected dataset.
DEL	Deletes the selected dataset.
REN	Renames the selected dataset.
REL	Disposes of any unused part of the selected dataset.
COM	Compresses a partitioned dataset.
CAT	Writes a catalog entry for the selected dataset.
UNC	Deletes a catalog entry for the selected dataset.
HBU	Initiates an HSM back up of the selected dataset.
HM1	Initiates an HSM migration of the selected dataset to level 1.
HM2	Initiates an HSM migration of the selected dataset to level 2.
X	Passes over the action for the current dataset and proceeds to the next dataset.
C	Cancels the operation.

SMS DATASET ACTION MENU

The SMS Dataset Action Menu allows you to perform specific actions to a selected dataset or datasets that appear in the Datasets Detail Information panel. Follow these steps to access the SMS Dataset Action Menu:

1. Move the cursor in the **SL** column next to a specific dataset.
2. Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several datasets, type a **/** in the SL column next to the first dataset. Then move the cursor to each subsequent dataset and type **=** (an equal sign).
3. Press ENTER and the SMS Dataset Action Menu appears (Figure 5–7).
4. Type the option you want in the **Option** field. See Table 5–12 for a description of the selection options.
5. Press ENTER and the option executes.

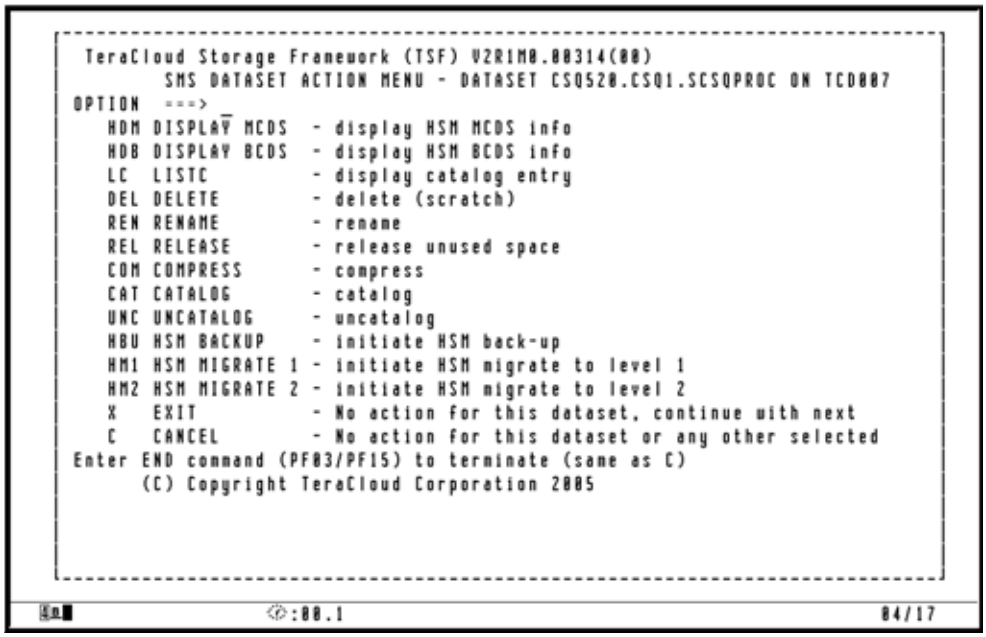

Figure 5–7. SMS Dataset Action Menu

The selection options for the SMS Dataset Action Menu are listed in Table 5–12.

Table 5–12. SMS Dataset Action Menu selection options

Option	Description
HDM	Displays migration information about the selected dataset.
HDB	Displays migration information about the selected dataset backup
LC	Displays catalog information about the selected dataset.
DEL	Deletes the selected dataset.
REN	Renames the selected dataset.
REL	Disposes of any unused part of the selected dataset

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Table 5–12. SMS Dataset Action Menu selection options

Option	Description
COM	Compresses a partitioned dataset.
CAT	Writes a catalog entry for the selected dataset.
UNC	Deletes a catalog entry for the selected dataset.
HBU	Initiates an HSM back up of the selected dataset.
HM1	Initiates an HSM migration of the selected dataset to level 1.
HM2	Initiates an HSM migration of the selected dataset to level 2.
X	Passes over the action for the current dataset and proceeds to the next dataset.
C	Cancels the operation.

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Threshold Information

The Threshold panel lets you view logical pool and budget information according to thresholds defined in the Budget table. The threshold information that appears in this panel can be printed as a hardcopy report or displayed in summary groups:

- General (includes SMS information)
- Storage Group
- Storage Class
- Data Class
- Management Class
- Volume Pool

UPDATING THE BUDGET TABLE

Before you view the Threshold panel, the Budget table must be updated so that information will appear. To update the budget table, edit the member BUDGETAB located in <*HLQ*>.<*MLQ*>.PARMLIB. There are four fields that need to be entered. Table 5–13 lists these fields.

Table 5–13. Budget Table Fields

Field Name	Description
NAME	Logical Pool Name, between 1 to 8 characters in length, describes the logical pool name defined in the POOLTABL member of the PARMLIB.
BUDGETAMT	Budgeted Amount of DASD Space. The field begins in column 10 and continues to column 18. This field is entered in megabytes. Commas and decimal points are not allowed in this field.
BUDSTARTDT	Start Date of the Budget Cycle. The date should be typed in MM/DD/YYYY format. You can begin with any date.
BUDGETENDT	End Date of Budget Cycle. The date should be typed in MM/DD/YYYY format. This field can be any date so long as the date is greater than the budget begin date. Note that the budget begin date and the budget end date may vary within each logical pool. For example, accounts payable (ACCTPAY) may have a different budget begin and budget end date than CICS.

SUMMARY

Once you have defined the budgets associated with a logical pool you should saved the edited member. TeraCloud Storage Framework (TSF) groups all datasets defined to a logical pool, summarizes the total amount of space used by each logical pool, associates the budget amount for the logical pool, and produces a report indicating planned versus actual space used. Follow these steps to view the Threshold panel:

1. In the Datasets Filter Panel, type **T** in the Display field (change other display values as desired).
2. Press ENTER and the Threshold panel appears with the result set (Figure 5–8).
3. Review the result set that displays.

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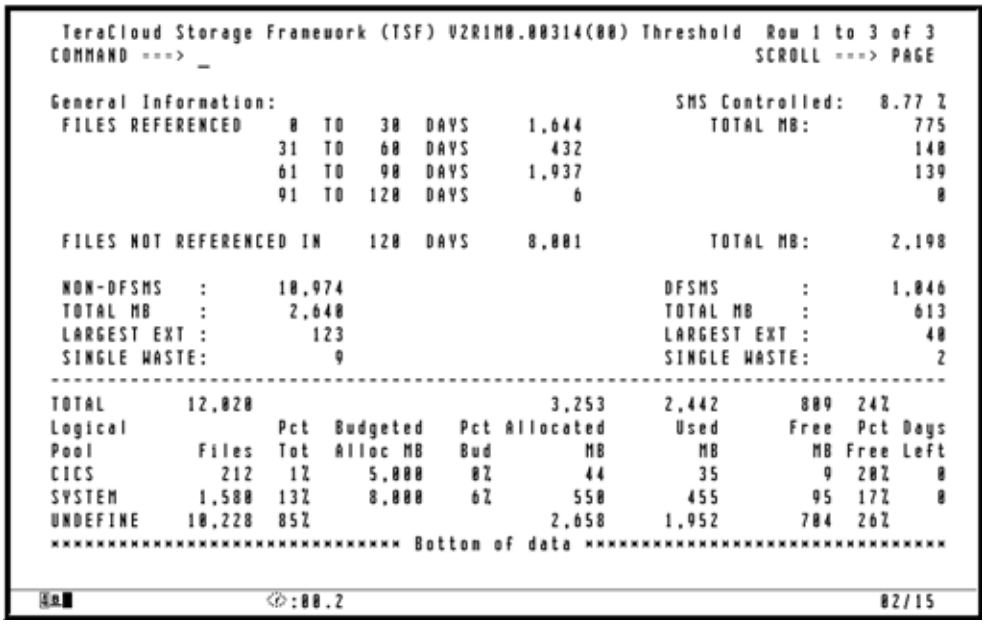

Figure 5–8. Datasets Threshold panel with a result set

Logical Pool Information

The Logical Pool panel can be used to find and review logical pool groupings and review pool-group member datasets. Datasets Logical Pool Summary information can be printed as a hardcopy report, sorted, or displayed in summary groups:

- General
- Storage Group
- Storage Class
- Data Class
- Management Class
- Volume Pool

Follow these steps to view the Logical Pool panel:

1. In the Datasets Filter Panel, type **L** in the Display field (change other display values as desired).
2. Press ENTER and the Logical Pool panel appears with the result set (Figure 5–9).
3. Review the result set that displays.

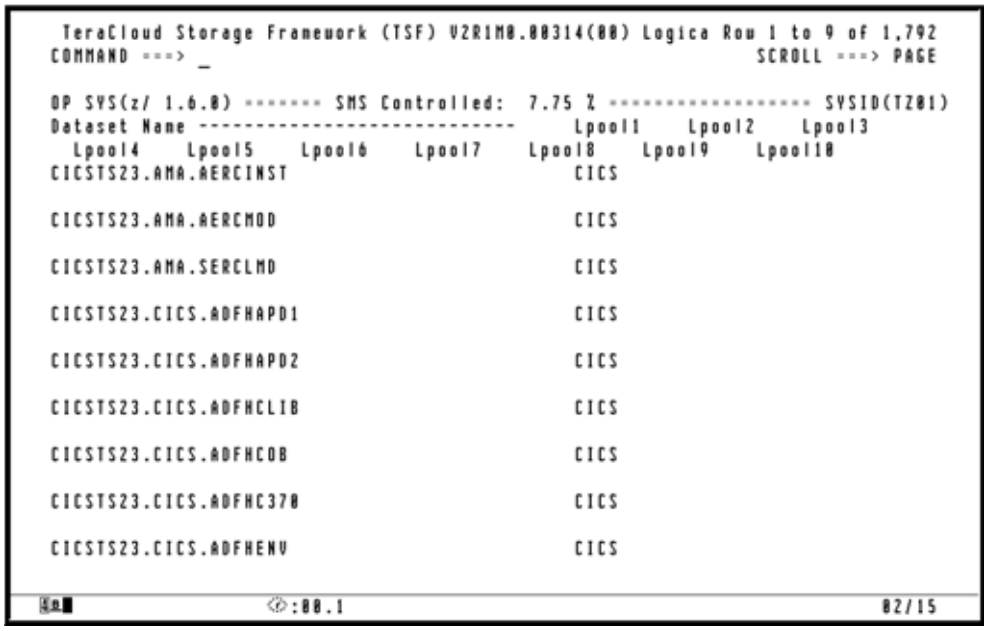

Figure 5–9. Logical Pool panel with a result set

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Candidate Volume Information

The Candidate Volume Information panel can be used to identify the potential candidate volumes associated with a non-SMS dataset but not yet allocated. Candidate information can be printed as a hardcopy report or displayed in summary groups:

- General (includes SMS information)
- Storage Group
- Storage Class
- Data Class
- Management Class
- Volume Pool

Follow these steps to view the Candidate Volume Information panel:

1. In the Datasets Filter Panel, type **C** in the Display field (change other display values as desired).

   Note: Because this display goes to the catalog to check for candidate volume status, it is recommended that a volser or at least a volser mask is used when using the C display option.

2. Press ENTER and the Candidate Volume Information panel appears with the result set (Figure 5–10).

3. Review the result set that displays.

   Note: See *Multiple Database Option, page 5-27* for information about multiple database setup.

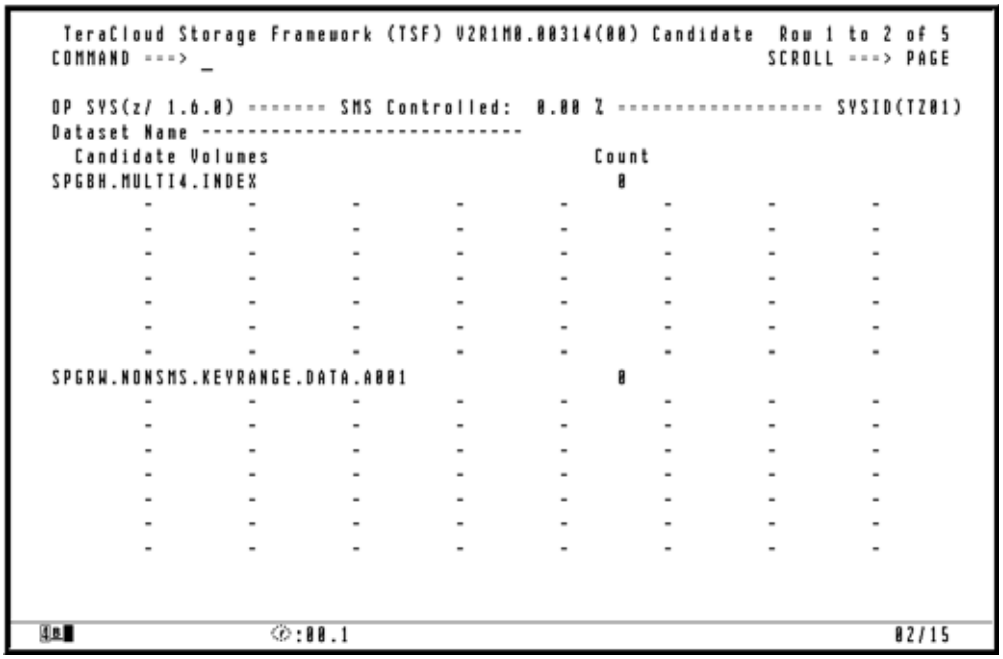

Figure 5–10. Candidate Volume Information with a result set

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Datasets Administration

When TSF is configured for the multiple database option, you are prompted to select the database to be used each time you access Datasets option 1 (Search/Filter).

Multiple Database Option

You have the ability to select the database that you want to use when filtering datasets. This is accomplished by using the SAVEDB and GETDB commands from the command line. See Chapter 2, Command Line Options.

The default database that you use when filtering is the one that was populated during installation. By default, that database name is typically

<*HLQ*>.TSF.STORDATA

Existing Multiple Databases

- To use an existing database, use the GETDB command.
- To add a new database to those already defined, use the SAVEDB command.

New Installations

For a new installation, three steps are involved when using the multiple database option. You must:

- Modify the Use Multiple DB variable on the TSF Settings panel.
- Name the new database (SAVEDB).
- Point to the database to be filtered (GETDB).

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MODIFY MULTIPLE DATABASE VARIABLE

The first time the multiple database option is used, you must verify or change the value in the Use Multiple DB variable on the TSF Settings panel, UCBSCAN Settings.

After this variable is modified, you are prompted to select the database to be used each time you access Datasets option 1 (Search/Filter).

To point to a different database:

1. Navigate to the TSF Primary Selection Menu and access the Settings panel (option S).
2. Type **E** (Edit Settings) in the **Sel** field and press ENTER.
3. Type **12** (UCB Scan Settings) in the **Option** field and press ENTER.
4. Locate **Use Multiple DB** on the UCBSCAN Settings panel (You must scroll down to view some of the information on this panel).
5. Change the NO to YES, if necessary (Figure 5–11).
6. Type END on the Command line to save the change. TSF generates PARMLIB and CNTL members.

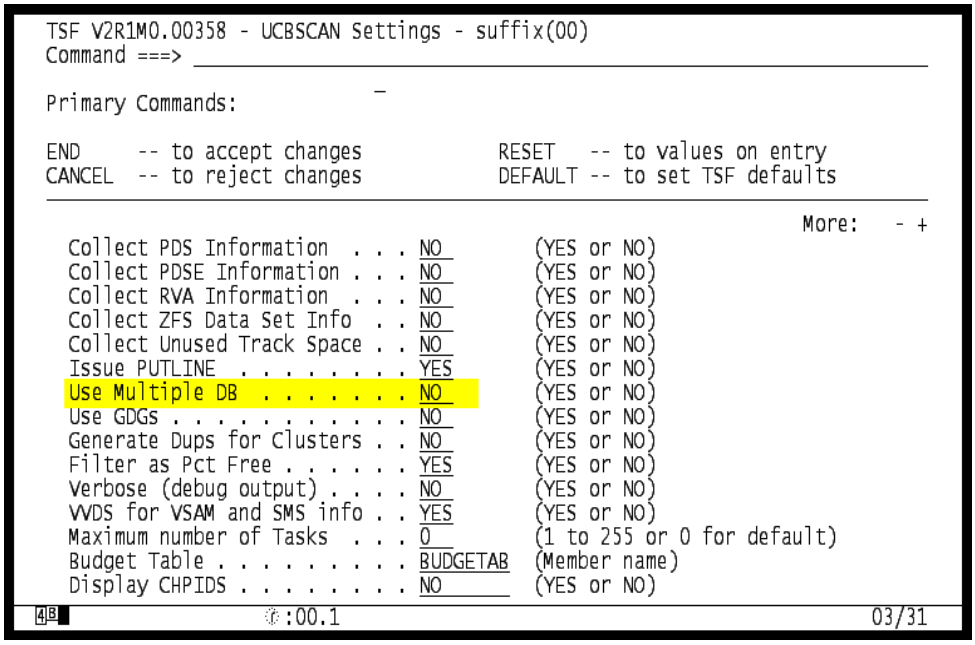

Figure 5–11. Use Multiple DB option on UCBSCAN Settings panel

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Creating a Logical Pool

Assigning datasets to a logical pool or pools is accomplished by editing the Logical Pool Table option on the TSF Settings panel, CATSCAN Settings.

Creating a logical pool is a 2-step process:

- Modify the Logical Pool Table option on the TSF Settings panel to reflect a new member name
- Submit TSFDSNCT to build the database.

MODIFY LOGICAL POOL OPTION

To specify a new member for the Logical Pool Option:

1. Navigate to the TSF Primary Selection Menu and access the Settings panel (option **S**).
2. Type **E** (Edit Settings) in the **Sel** field and press ENTER.
3. Type **5** (Catalog Scan Settings) in the **Option** field and press ENTER.
4. Locate **Use Logical/Volume Pools** on the CATSCAN Settings panel (You must scroll down to view some of the information on this panel).
5. Change the NO to YES, if necessary (Figure 5–12).
6. Locate **Logical Pool Table** on the CATSCAN Settings panel.
7. Replace the member name (default is POOLTABL) with the new logical pool name.
8. Add new logical pools, following the rules listed in the POOLTABL member.
9. Type END on the Command line to save the modified member. TSF generates PARMLIB and CNTL members.

.

```
TSF V2R1M0.00359 - CATSCAN Settings - suffix(00)
Command ===> ____________________________________________________________

Primary Commands:

END     -- to accept changes            RESET   -- to values on entry
CANCEL  -- to reject changes            DEFAULT -- to set TSF defaults
____________________________________________________________________________
                                                                  More:   -

  Check for DASD Data Sets . . . YES       (YES or NO)
  Check for Tape Data Sets . . . YES       (YES or NO)
  Resolve Indirect Catalog . . . YES       (YES or NO)
  Include Migrated Data Sets . . NO        (YES or NO)
  Issue PUTLINE  . . . . . . . . YES       (YES or NO)

  Sort work size . . . . . . . . 500000    (Estimate for Internal Sort)

  Use Logical/Volume Pools . . . YES       (YES or NO)
  Logical Pool Table . . . . . . POOLTABL  (Member name)
  Volume Pool Table  . . . . . . POOLVOL   (Member name)

  Take SVCDUMP . . . . . . . . . NO        (YES or NO)
  SYSMDUMP Dataset Name  . . . . QA.X359.TSF.SYSMDUMP
____________________________________________________________________________
4B                  :00.5                                          20/35
```

Figure 5–12. Logical pool definition on CATSCAN settings panel

SUBMIT TSFDSNCT

The database must be rebuilt to include the new logical pool.

Note: You can also automatically populate a database by using the Collector Scheduler. See Chapter 7, “Collection Statements” in the *TeraCloud Storage Framework (TSF) Installation Guide*.

To submit TSFDSNCT to build the database:

1. Navigate to the ISPF Primary Option menu and access the Data Set List Utility (ISPF option 3.4).
2. In <*HLQ*>.TSF.CNTL, locate and open for edit TSFDSNCT.

   where <*HLQ*> is replaced with the naming convention used during installation–for example, <*HLQ*>.TSF.CNTL(TSFDSNCT).
3. Submit TSFDSNCT.
4. Success is indicated by a zero return code.

```
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
 ------------------------------------------------------------------------------
 VIEW       TECH.TSFX379.CNTL(TSFDSNCT) - 01.00            Columns 00001 00072
 Command ===> ____________________________________________ Scroll ===> PAGE
 ****** ***************************** Top of Data ******************************
 ==MSG> -Warning- The UNDO command is not available until you change
 ==MSG>           your edit profile using the command RECOVERY ON.
 000001 //TECHXXX9 JOB  (ACCOUNT),'NAME',
 000002 // CLASS=A,MSGCLASS=X,NOTIFY=&SYSUID
 000003 /*JOBPARM SYSAFF=TZ01
 000004 //*
 000005 //      JCLLIB ORDER=TECH.TSFX379.CNTL
 000006 //*
 000007 //*    DASD DATASET DATABASE BUILD
 000008 //*
 000009 //STEP1   EXEC TSFEXEC,
 000010 //             PROG=TSFUCBMT,
 000011 //             PARM=(MEMBER(TSFPRM00),
 000012 //             VERBOSE(N))
 ****** **************************** Bottom of Data ****************************

 4B                  :00.2                                          04/15
```

Figure 5–13. TSFDSNCT job that is used to build the database

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DataSets Batch Jobs

See Chapter 13, Batch Jobs, for a list of dataset-specific batch jobs and processes.

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Examples

These best practices can help you identify areas of wasted space and areas where performance improvements can be achieved.

List All Uncataloged Datasets

Follow these steps to list all uncataloged datasets:

1. From the Datasets Filter panel, type **D** in the **Display** field.
2. Type **¬SYS*.**** in the **Data Set Name** field
3. Type **¬HSM*** in the **Volume Serial** field.
4. Type **NC** in the **Catalog** field.
5. Press ENTER to execute the filter and the Dataset Information Detail panel appears. Scroll to the right and the Cat column lists all uncataloged datasets indicated by NC.

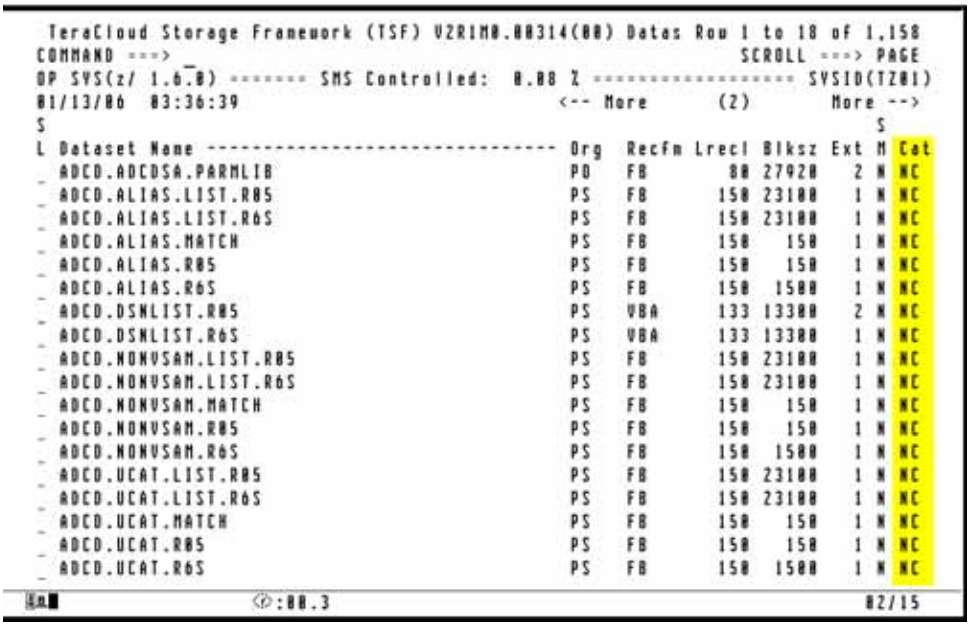
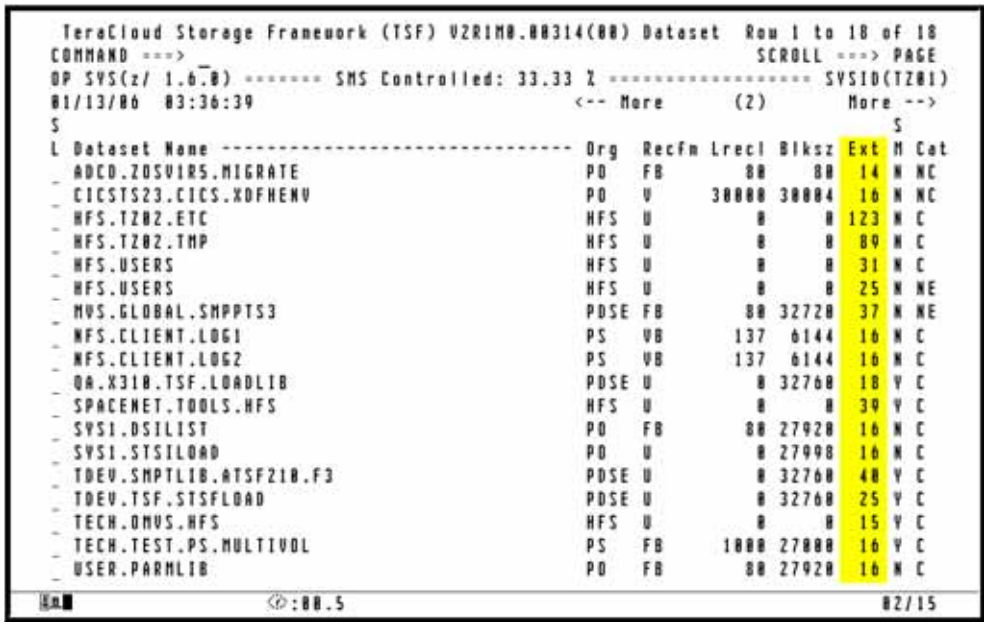


Figure 5–14. Uncataloged datasets

List All Non-VSAM Datasets With More Than 13 Extents

Follow these steps to identify all non-VSAM datasets with more than 13 extents:

1. From the Datasets Filter panel, type **D** in the **Display** field.
2. Type **¬VS*** in the **Dsorg** field.
3. Scroll down the Datasets Filter panel and type **> 13** in the **Extents** field.
4. Press ENTER to execute the filter and the Dataset Information Detail panel appears. Scroll to the right and the Ext column lists all non-VSAM datasets with more than 13 extents.



```
 TeraCloud Storage Framework (TSF) V2R1M0.00314(00) Dataset  Row 1 to 18 of 18
COMMAND ===>                                                  SCROLL ===> PAGE
OP SYS(z/ 1.6.0) ======= SMS Controlled: 33.33 % ================== SYSID(TZ01)
01/13/06  03:36:39                          <-- More      (2)       More -->
S                                                                          S
L Dataset Name ------------------------------- Org  Recfm Lrecl Blksz Ext M Cat
_ ADCD.ZOSV1R5.MIGRATE                         PO   FB       80    80  14 N NC
_ CICSTS23.CICS.XDFHENV                        PO   V     30000 30004  16 N NC
_ HFS.TZ02.ETC                                 HFS  U         0     0 123 N C
_ HFS.TZ02.TMP                                 HFS  U         0     0  89 N C
_ HFS.USERS                                    HFS  U         0     0  31 N C
_ HFS.USERS                                    HFS  U         0     0  25 N NE
_ MVS.GLOBAL.SMPPTS3                           PDSE FB       80 32720  37 N NE
_ NFS.CLIENT.LOG1                              PS   VB      137  6144  16 N C
_ NFS.CLIENT.LOG2                              PS   VB      137  6144  16 N C
_ QA.X310.TSF.LOADLIB                          PDSE U         0 32760  18 Y C
_ SPACENET.TOOLS.HFS                           HFS  U         0     0  39 Y C
_ SYS1.DSILIST                                 PO   FB       80 27920  16 N C
_ SYS1.STSILOAD                                PO   U         0 27998  16 N C
_ TDEV.SMPTLIB.ATSF210.F3                      PDSE U         0 32760  40 Y C
_ TDEV.TSF.STSFLOAD                            PDSE U         0 32760  25 Y C
_ TECH.OMVS.HFS                                HFS  U         0     0  15 Y C
_ TECH.TEST.PS.MULTIVOL                        PS   FB     1000 27000  16 Y C
_ USER.PARMLIB                                 PO   FB       80 27920  16 N C
En                  :00.5                                                02/15
```

Figure 5–15. Non-VSAM datasets with more than 13 extents

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List All Non-System Datasets on Non-System Volumes Not Referenced since June 1, 2005

Follow these steps to identify all non-system datasets and non-HSM volumes not referenced since June 1, 2005:

1. From the Datasets Filter panel, type **D** in the **Display** field.
2. Type ¬ **SYS*.**,HSM.**** in the **Data Set Name** field.
3. Type ¬ **MVS*,SY*,RES*** in the **Volume Serial** field.
4. Scroll down the Datasets Filter panel and type **> 06/01/2005** in the **Last Referenced** field.
5. Press ENTER to execute the filter and the Dataset Information Detail panel appears. Scroll to the right and the Last Reference column lists all non-system datasets and non-HSM volumes not referenced since June 1, 2005.

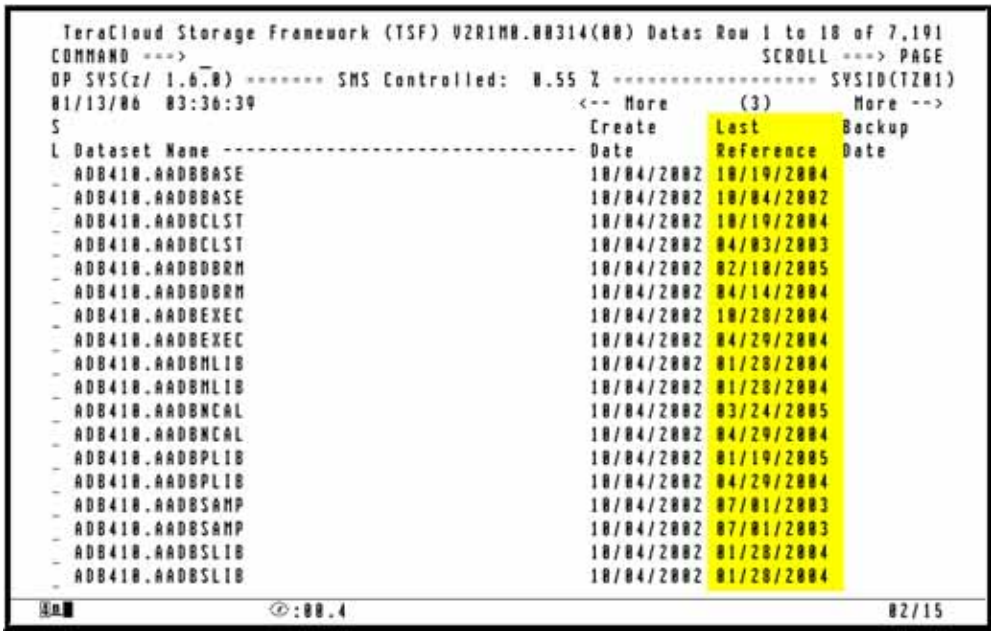

Figure 5–16. Non-system datasets and non-HSM volumes not referenced since June 1, 2005

List All VSAM Datasets With CA Splits Greater Than 100

Follow these steps to list all VSAM datasets with CA splits greater than 100:

1. From the Datasets Filter panel, type **D** in the **Display** field.
2. Scroll down the Datasets Filter panel and type **> 100** in the **CA Splits** field.
3. Press ENTER to execute the filter and the Dataset Information Detail panel appears listing all VSAM datasets with CA splits greater than 100.

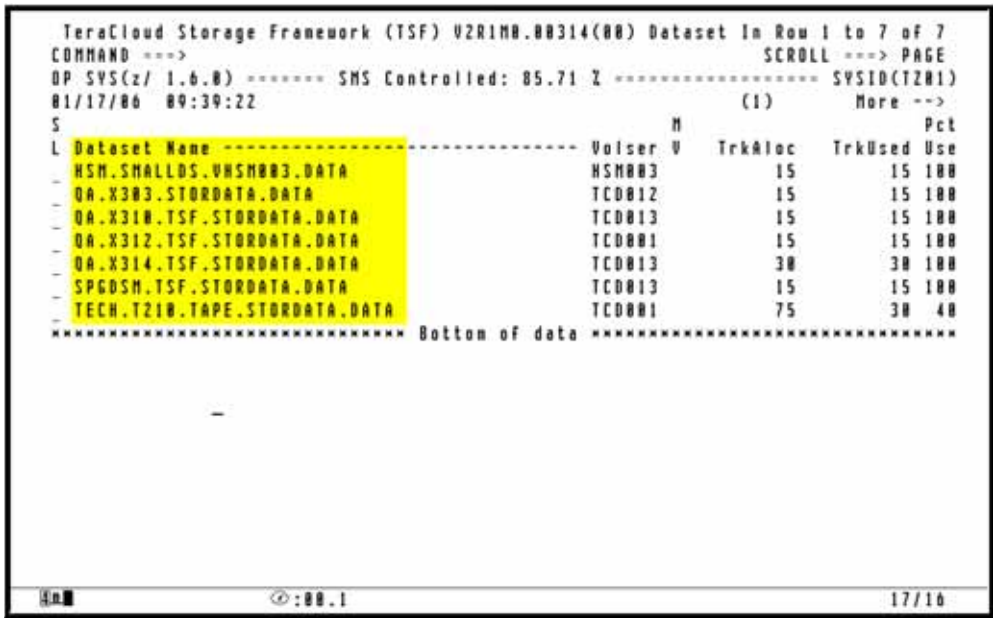

Figure 5–17. VSAM datasets with CA Splits greater than 100

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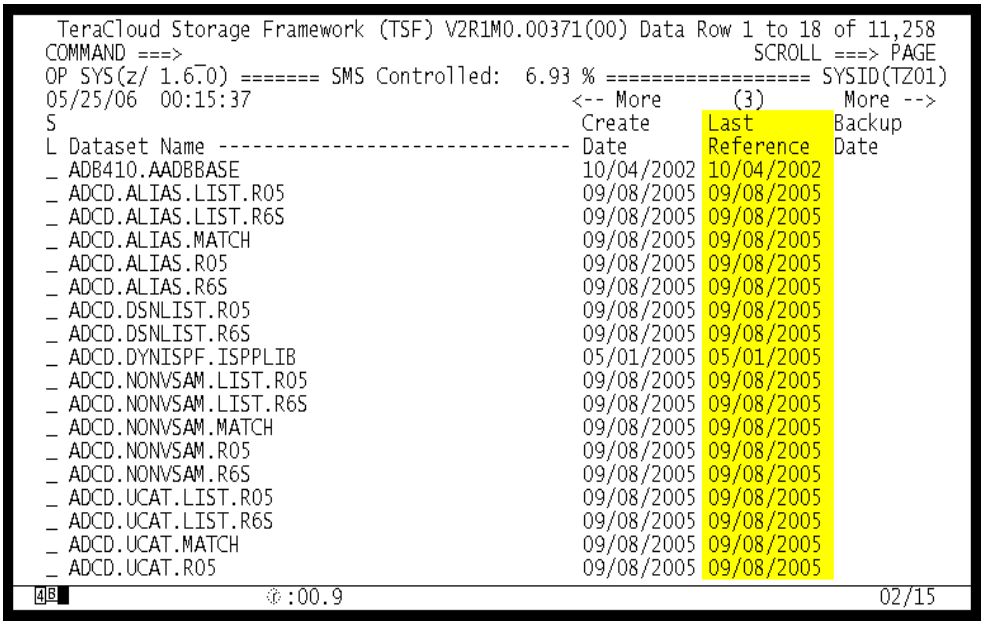
List All Datasets Created More Than a Year Ago and Never Referenced

Follow these steps to identify all datasets created more than a year ago and never referenced:

1. From the Datasets Filter panel, type **D** in the **Display** field.
2. Scroll down the Datasets Filter panel and type **= RDATE** in the **Creation Date** field
3. Press ENTER to execute the filter and the Dataset Information Detail panel appears. Scroll to the right and in the Last Reference column the dates for all datasets created more than a year ago and never referenced are listed.



```
 TeraCloud Storage Framework (TSF) V2R1M0.00371(00) Data Row 1 to 18 of 11,258
COMMAND ===>                                                  SCROLL ===> PAGE
OP SYS(z/ 1.6.0) ======= SMS Controlled:  6.93 % ================== SYSID(TZ01)
05/25/06  00:15:37                              <-- More      (3)       More -->
S                                                Create     Last       Backup
L Dataset Name ------------------------------- Date       Reference  Date
_ ADB410.AADBBASE                                10/04/2002 10/04/2002
_ ADCD.ALIAS.LIST.R05                            09/08/2005 09/08/2005
_ ADCD.ALIAS.LIST.R6S                            09/08/2005 09/08/2005
_ ADCD.ALIAS.MATCH                               09/08/2005 09/08/2005
_ ADCD.ALIAS.R05                                 09/08/2005 09/08/2005
_ ADCD.ALIAS.R6S                                 09/08/2005 09/08/2005
_ ADCD.DSNLIST.R05                               09/08/2005 09/08/2005
_ ADCD.DSNLIST.R6S                               09/08/2005 09/08/2005
_ ADCD.DYNISPF.ISPPLIB                           05/01/2005 05/01/2005
_ ADCD.NONVSAM.LIST.R05                          09/08/2005 09/08/2005
_ ADCD.NONVSAM.LIST.R6S                          09/08/2005 09/08/2005
_ ADCD.NONVSAM.MATCH                             09/08/2005 09/08/2005
_ ADCD.NONVSAM.R05                               09/08/2005 09/08/2005
_ ADCD.NONVSAM.R6S                               09/08/2005 09/08/2005
_ ADCD.UCAT.LIST.R05                             09/08/2005 09/08/2005
_ ADCD.UCAT.LIST.R6S                             09/08/2005 09/08/2005
_ ADCD.UCAT.MATCH                                09/08/2005 09/08/2005
_ ADCD.UCAT.R05                                  09/08/2005 09/08/2005
4B                  :00.9                                          02/15
```

Figure 5–18. Datasets created more than a year ago and never referenced

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CHAPTER
6

TAPE SELECTION

The Tape component lets you evaluate tape usage within the enterprise environment. TSF provides support for RMM, CA-1, or TLMS tape subsystems with four levels of tape reporting: Volume, Dataset, HSM, and logical pools.

Tape selection is available from the TSF Primary Selection panel. Type **3** (Tape) in the **Option** field. The Tape Selection panel is displayed (Figure 6–1) with tape subsystem listed in each option description. This changes based on the tape subsystem installed at your site and specified on an installation settings panel. See Chapter 11, Settings. Options that you can select from this panel include:

Volume. Find specific information about tape volumes, for example:

- Summary by media type
- Total number of tapes by media class
- Total number of available scratch tapes by media class
- Total number of files by media class
- Total number of compressed tapes versus non-compressed tapes
- Total number of tapes offsite by class
- Total number of tapes controlled by robots
- Total megabytes by device class
- Summary by DFSMS classes
- Summary by user or application profile

Dataset. Find specific information about tape datasets, for example:

- Total number of datasets
- Total number of tapes occupied
- Total number of datasets cataloged versus uncataloged
- Total number of megabytes occupied
- Name and size of the largest dataset
- Name and size of the smallest dataset

HSM. Display and analyze all tapes from one product, even those owned by DFSMShsm. Find detail information on HSM-owned tapes, such as:

- Backup tapes
- Dump tapes
- Migrated tapes

- Invalid tapes

Logical Pools. View pool information for the following:

- Mounted Pubic, Private, and Storage
- High Level Qualifier
- Logical Pool Name
- SMS Management Class
- Data Organization
- Physical Device
- SMS Storage Group
- Volume

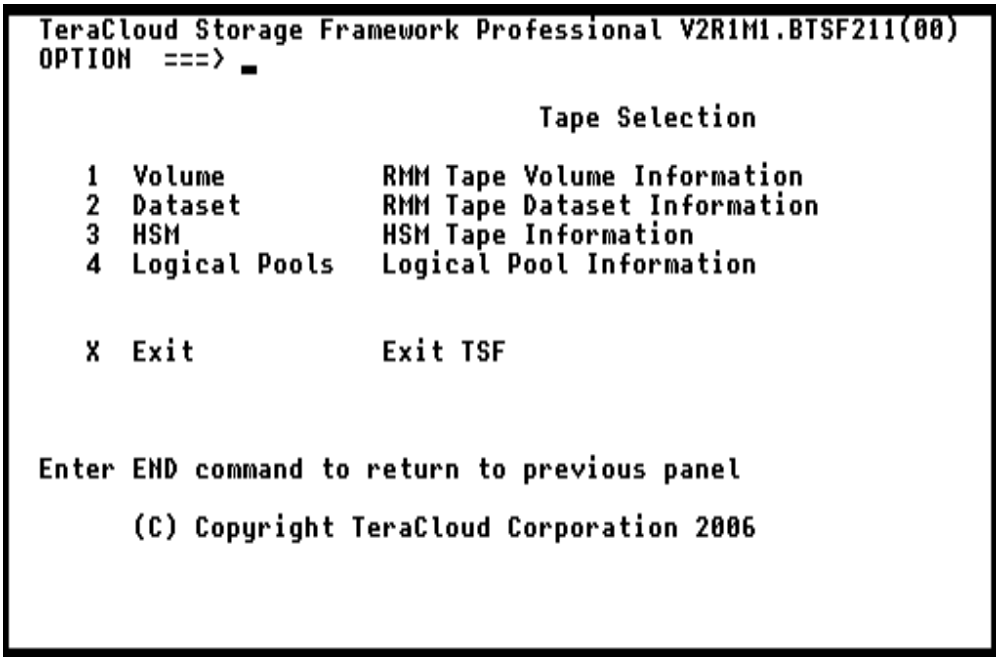

Figure 6–1. Tape Selection panel

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Tape Volume Information Filters

Tape volume information filters are available from the Tape Selection panel. Type **1** (Volume) in the **Option** field. The Volume Filter panel is displayed (Figure 6–2) with the tape subsystem listed in parenthesis on the panel heading line. This panel provides display option selections to refine query results and determine how volume information will display on subsequent panels. See Tape Volumes, page 3-7.

In addition to the display option selections, a variety of filters are also featured on the Volume Filter panel. The filters are grouped by category, including Attributes, Dates, RMM, Yes or No, and Errors.

Note: The RMM filters only appear if you are using an RMM tape management system. The Errors filters are divided into two types. These are Last Cleaned and Last Initialized.

Some of the filters allow you to use wildcard characters and exclude symbols to refine the filter results. See Using Wildcard Characters, page 1-10.

Important: The Tape database is built using the batch job TSFXXXCT—where xxx is CA1, RMM, or TLM, depending on the tape management system installed—located in <HLQ>.TSF.CNTL. This job should be run before using Tape.

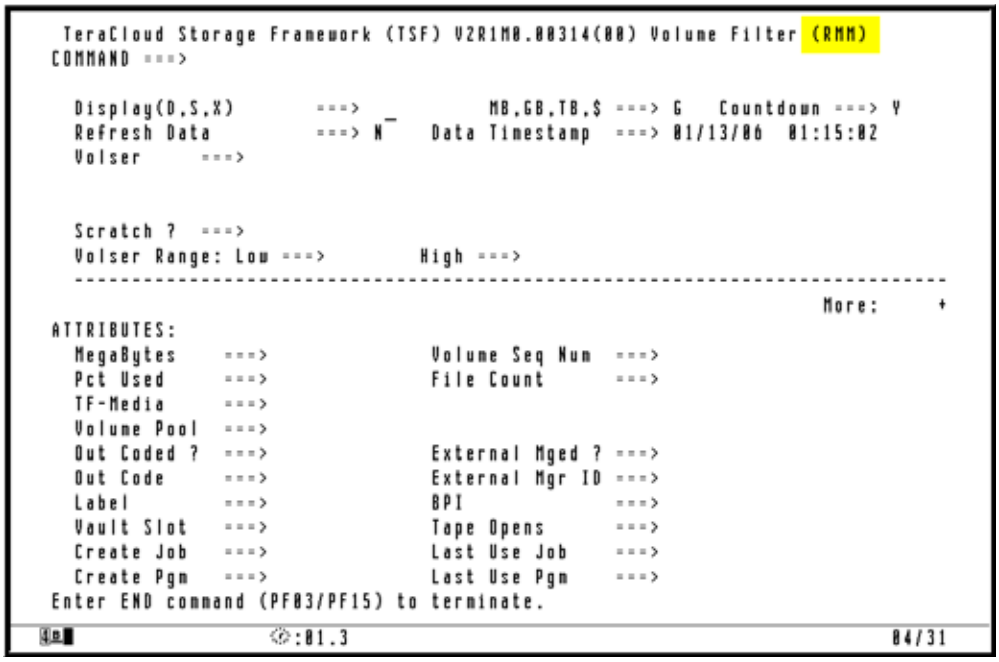

Figure 6–2. Tape Volume Filter Panel for the RMM tape management system

Attributes

The first set of filters (through Tape Volumes) works in conjunction with all of the display selection options to create a list of specific data. This set of filters is listed in Table 6–1 along with examples:

Table 6–1. Tape Volume Attribute Filters

Filter Name	Description
BPI	Bytes Per Inch (BPI) number. Wildcards allowed. Some valid BPIs include: 800, 1600, 6250, 38K, and CMPRS. • 6250 – Display only information contained on tapes with a BPI of 6250
Create Job	Create job name. Wildcards allowed. • PAY* – Show tapes that were created with a job name beginning with PAY
Create Pgm	Create program name. • PJB001 – Show tapes that were created with a program name of PJB001
Create Time	Create time. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is military time, *nn:nn*. • > 23:00 – Show all tapes that were created after 11 p.m.
Create Unit	Tapes created on a certain unit.
External Aged?	• Y = Show tapes Externally Managed • N = Show tapes not Externally Managed
External Mgr ID	External tape manager ID. Wildcards allowed. • HSM3 – Display only Volsers that are externally managed with a tape manager ID of HSM3 • HSM* – Display only volsers that are externally managed with a tape manager ID that begins with HSM
File Count	File count on tape. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 99999.
First Volser	Tapes that have a first volume Volser. • 012345 – Show all tapes that have a first volume Volser of 012345
Label	Tape label • SL – Show tapes with standard labels
Last Use Job	Tapes that were last used by a specific job name. Wildcards allowed. • PAY* – Show tapes that were last used with a job name beginning with PAY
Last Use Pgm	Tapes that were last used by a specific program name. Wildcards allowed. • PAY* – Show tapes that were last used with a program name beginning with PAY
Last Use Unit	Tapes last used on a certain unit.
MegaBytes	Total megabytes used. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999999.
Next Volser	Tapes that have a next volume Volser. • 012345 – Show all tapes that have a next volume Volser of 012345

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Table 6–1. Tape Volume Attribute Filters

Filter Name	Description
Out Code	Specific out code name. Wildcards allowed. • VLT* – Show tapes that begin with an out code name of VLT
Out Coded?	• Y – Tape is out coded • N – Non-outcoded tape
Pct Used	Total percentage of tape used. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 9999.
Prev Volser	Tapes that have a previous volume Volser. • 012345 – Show all tapes that have a previous volume volser of 012345
Tape Opens	Number of times a tape has been opened. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 99999.
TF-Media	Media type. Fully qualified name or wildcards allowed. Some valid media types include: REEL, 3480, 3490, 3490E, 3590T128, 3590T256, 3590E128, 3590E256, 9840, RDWD12, RDWD25, RDWD50, and OTHER. • REEL – Show information contained only on the media type REEL • 34* – Show all information contained on all tapes that are 3480, 3490, and so on
Times Cleaned	Number of times the tape has been cleaned. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999.
Vault Slot	Vault slot number. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 9999999.
Vendor Name	Vendor name for tape, maximum of 9 characters.
Volume Pool	User-created field from PARMLIB. You can assign an 8 character volume pool name based on a Volser naming convention. You can then report on various volumes using the volume pool filter. The volume pool name can be from 1 to 8 characters in length. • PAYROLL – Return all Volsers that have been assigned to the PAYROLL system or application
Volume Seq Num	Volume sequence number. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999.

Dates

Table 6–2 lists the Date filters. A page-down scroll may be necessary to view them on your screen. Date format is *mm/dd/yyyy* but in some fields the date value is expressed in number of days, for example, 180 days represents six months.

Table 6–2. Tape Volume Date Filters

Filter Name	Description
Birth	Birth date. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format.
Create or ===> Days Ago	File creation date or the number of days since file creation. Both of these filters have two fields. The first value is greater than, less than, or equal to (<, >, =), the second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). • < 180 – List all files that were created in the last 180 days

Table 6–2. Tape Volume Date Filters

Filter Name	Description
Expire or ===> Days Ago	Expiration date or the number of days since expiration. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, CDATE, or LDATE, or a number from 0 to 999 (for Days Ago). • < 12/31/2004 – Show all files that expire before 12/31/2004 • = CDATE – Show all files with the Expire Date equal to Create Date • = LDATE – Show all files with the Expire Date equal to the Last Used Date
Int Expire	Internal expiration date. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is date in year and number of days. • < 05365 – Show all tapes that had an internal expiration date before January 1, 2006
Last Cleaned	Last cleaned date. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format.
LastUse or ===> Days Ago	Last use date or the numbers of days since the file was last used. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, CDATE, or XDATE, or a number from 0 to 999 (for Days Ago). • < 12/31/2004 – Show all files that were last used before 12/31/2004 • = CDATE – Show all files that were last used equal to Create Date • = XDATE – Show all files that Last Used is equal to Expire Date
Out Code	Out code date. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format.

RMM

Table 6–3 lists the RMM filters. The RMM filters only appear if you are using an RMM tape management system. A page-down scroll may be necessary to view them on your screen.

Table 6–3. Tape Volume RMM Filters (displays for RMM only)

Filter Name	Description
Accounting Info	Accounting information
Create System ID	Tapes sorted by the system ID where they were created.
Create User ID	Tapes sorted by the user ID of the person who created them.
Date Stored or ===> Days Ago	Date that a tape was stored or how many days ago the tape was put in storage. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, or a number from 0 to 999 (for Days Ago).
Date Volume Last Written or ===> Days Ago	Date when the last volume was written or how many days ago the tape had a last volume written to it. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, or a number from 0 to 999 (for Days Ago).
Description	Tapes that have a specific description., for example, RACF – Shows tapes that have been assigned a description of RACF.

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Table 6–3. Tape Volume RMM Filters (displays for RMM only)

Filter Name	Description
Desired Location	Desired location name
Destination Bin Media Name	Destination bin media name
Destination Bin Number	Destination bin number
Destination Name	Destination name
DSN of 1st File	Dataset name of the first file
DSN of Last File	Dataset name of the last file
Expire Date Ignored (Y/N)	• Y – Expiration date ignored • N – Expiration date not ignored
Home Location Name	Home location of the tape
Last Chg Date or ===> Days Ago	Last date that the tape was changed or the number of days since it was last changed. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago).
Last Chg System ID	System ID where the tape was last changed.
Last Chg User ID	User ID of the person who made the last change to the tape.
Last User Chg Date or ===> Days Ago	Last date the tape was changed by a user or the number of days since it was last changed by a user. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago).
Loan Location	Loan location name
Location	Location code for a tape, for example, SHELF – Show tapes that have an assigned location code of SHELF.
Location Name	Specific location name where a tape resides
Old Bin Media Name	Old bin media name of the tape
Old Bin Number	Old bin number of the tape. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is number from 0 to 999999999.
Old Loan Location	Old loan location name
Old Previous Volume	Previous volume number
Previous Loc Name	Previous location name where a tape resided
Rack Number	Rack number for tape volume
Record Create CDS ID	Tape sorted by the CDS ID
Retention Date or ===> Days Ago	Retention date or how many days ago there was a retention date for a tape. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, or a number from 0 to 999 (for Days Ago).

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Table 6–3. Tape Volume RMM Filters (displays for RMM only)

Filter Name	Description
RMM Media Name	Tapes that have an alternate media type, for example, HCAP – Show tapes that have an alternate media type of high capacity (HCAP).
Scratch Immediate (Y/N)	• Y – Tape is immediate scratch • N – Tape is not being designated for immediate scratch
Shelf Managed Store Bin Number	Shelf managed store bin number of the tape. Numeric value from 0 to 999999999.
Storage Group Name	Storage group name
Store Bin Number	Stored bin number of the tape. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is number from 0 to 999999999.
Store Status (1-9)	Storage status level, number from 1 to 9.
System ID	System ID for tape creation, wildcards allowed, for example, PRO* – Show tapes that were created on a computer with a system ID starting with PRO.
Tape Compaction (0-2)	Level of tape compaction, numeric value from 0 to 2.
User Description	User description
Volume Capacity (MB)	Total volume capacity in megabytes
Volume Owner User ID	Volume owner's user ID
Volume Type (0 - 2)	Volume type, number from 0 to 2.

Yes or No

Table 6–4 lists the Yes or No filters. A page-down scroll may be necessary to view them on your screen.

Table 6–4. Tape Volume Yes or No Filters

Filter Name	Description
Bad Tape	• Y – Show tapes marked as Bad Tape, No Scratch Mount • N – Show tapes not marked Bad
Closed by Abend	• Y – Show tapes marked as closed by abend • N – Show tapes not closed by abend
Closed By TMS	• Y – Show tapes that closed by TMS • N – Show tapes that are not closed by TMS
Cycle Controlled	• Y – Show tapes that are cycle controlled • N – Show tapes that are not cycle controlled
Default Expire	• Y – Show tapes using the default expire • N – Show tapes not using the default expire
Delete Status	• Y – Show tapes marked as deleted • N – Show tapes not marked as deleted

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Table 6–4. Tape Volume Yes or No Filters

Filter Name	Description
Expired by TMS	• Y – Show tapes expired by TMS • N – Show tapes that have not expired by TMS
Expired SMS	• Y – Show tapes expired by SMS • N – Show tapes not expired by SMS
Freq Cntrl?	• Y – Show tapes that are frequency controlled • N – Show tapes that are not frequency controlled
In Robot?	• Y – Show tapes marked in a robot device • N – Show tapes not in a robot device
Mult Files?	• Y – Show multiple file tapes • N – Show single file tapes
Mult Tapes?	• Y – Show multiple tapes • N – Show non-multiple tapes
Open Output?	• Y – Show tapes last opened as output • N – Show tapes last used as input
Rel by Vlt Mgr	• Y – Show tapes that have been released by the external vault manager • N – Show tapes not released by external vault manager
To be Cleaned?	• Y – Show tapes marked to be cleaned • N – Show tapes not marked to be cleaned

Errors

Table 6–5 lists the Volume Error filters. The Error filters are divided into two types: Since Cleaned and Since Initialized.

Table 6–5. Tape Volume Errors Filters (Since Cleaned and Since Initialized)

Filter Name	Description
Perm Read	Permanent read error. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999
Perm Write	Permanent write error. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999.
Temp Read	Temporary read error. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999.
Temp Write	Temporary write error. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999.

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Displaying Tape Volume Information

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option D. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (12,000) for the maximum number of volumes can be changed or overridden with the Max Table Size variable. See Tape Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

The Tape Volume Information panel lists specific information about tape volumes including: Volser, whether the tape is scratch, the media type, volume sequence, file count, label, and so on.

The columns on this panel vary slightly according to the display selection, D (Detail records) or S (Summary information without detail). The Tape Volume Summary Information panel shows a summarization of the entire tape library by:

Follow these steps to access the Tape Volume Information panel:

1. From the Tape Volume Filter panel, type **D** or **S** in the **Display** field.
2. In the **MB, GB, TB, $** field, type a value.
3. Type any *valid entries* in the filter fields that work in conjunction with your display selection criteria.
4. Press ENTER and the Tape Volume Information panel appears with a result set for RMM volume detail records, display option D (Figure 6–3) or RMM volume summary records, display option S (Figure 6–4).
5. Review the detailed result set that displays on the Tape Volume Information panel. See Volume Information Columns, page 6-13 for descriptions of the columns.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00314(00) RMM Volu Row 1 to 16 of 16
COMMAND ===>                                                  SCROLL ===> PAGE
OP SYS(z/ 1.6.0) ================================================== SYSID(TZ01)
01/13/06  01:15:02                                (1)                  More -->

          S                                                                Degaus
          C              Expire      Create  Create   Cre  Create   Create Secure
  Volser  R RMMmedia     Date    LBL Date    Job      Unit User     Sysid  Erase
_ K01000    3480         2003237 SL  1999219 K9292ZAP      PK9292   P090
_ K01001    3480         2003236 SL  1999219 F5337DDP 1569 PRODBA   P090
_ K01003    3480         2003237 SL  1999219 E0787P7P 1563 PRODBA   P090
_ K01004    3480         2003236 SL  1999219 CDBPD99P 1576 PK0874   P090
_ K01009    3480         2003243 SL  1999219 F5337D6P 156F PRODBA   P090
_ K01014  Y 3480         0       SL  1999219 K9292ZBP 1563 PK9292   P090
_ K01017  Y 3480         0       SL  1999219 F5337DCP      PRODBA   P090
_ K01020    3480         2003240 SL  1999219 CDBPD10P 1577 PK0874   P090
_ K01022  Y 3480         0       SL  1999219 K9292CAP 1579 PK9292   P090
_ K01030  Y 3480         0       SL  1999219 K9292BAP 1573 PK9292   P090
_ K01031    3480         2003236 SL  1999219 F5337DCP      PRODBA   P090
_ K01032    3480         2003233 SL  1999219 CDBPB19P 156D PK0874   P090
_ K01033    3480         2003245 SL  1999219 F5337D6P      PRODBA   P090
_ K01036    3480         2003238 SL  1999219 F5337DCP      PRODBA   P090
_ K01038    3480         2003235 SL  1999219 F3316C7P 157C IOP      P090
_ K01040    3480         2000365 SL  1999219 F5337TCC 158B F5337TC  P090

                    :00.1                                                02/15
```

Figure 6–3. Volume Information panel for RMM volume detail records

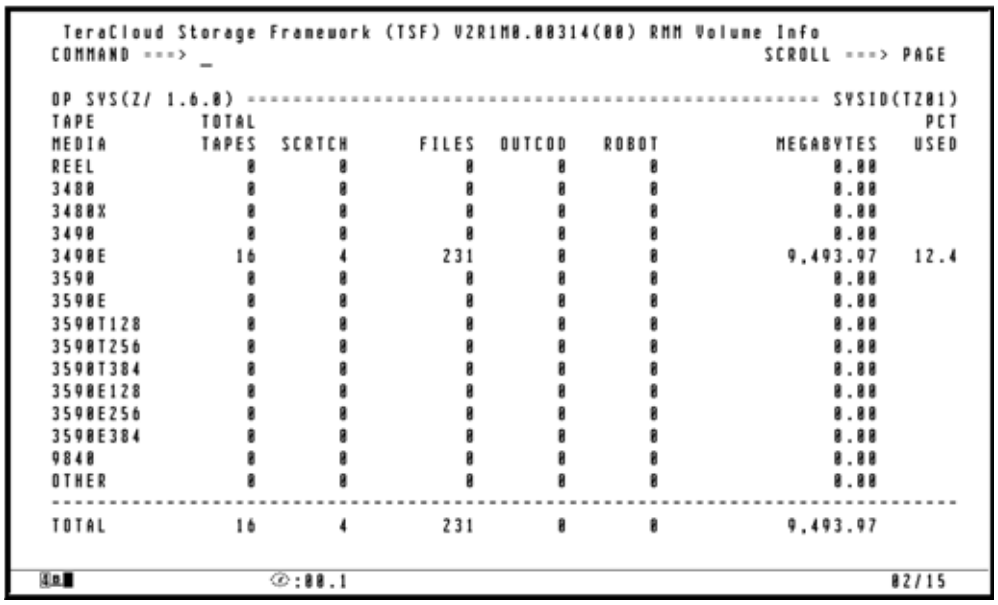

Figure 6–4. Volume Information panel for RMM volume summary records

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Volume Information Columns

Table 6–6 describes the columns that are displayed on the Tape Volume Information panel.

Useful Tip. You must scroll to the right to view some of the columns on the Tape Volume Information panel. Or, you can type an **S** in the Selection (SL) column to access the Detail Volume panel, which lists the same information on a single panel.

Table 6–6. Tape Volume Information panel columns

Column Name	Description
Proc by Satl	Indicates the select process is done by satellite if Y
18 track read only	Indicates the tape has an 18 track read only format if Y
Abend in OCEOV	Indicates an abend in an open and close, end of volume procedure if Y
Abend Proc When DsClos	Indicates abend procedure when a dataset closes if Y
Accounting Information	Accounting information that is associated with the tape
Allow TSO Add	Indicates dummy record is allowed for a TSO add if Y
Assigned Date	Date when the tape was assigned to a library or to storage
Assigned Time	Time when the tape was assigned to a library or to storage
Auth UserID	Authorized user IDs for the tape (not more 8 user IDs)
Bin Media Name	Bin media name associated with the tape
Compacted	Indicates tape is compacted if Y
Compaction Unknown	Indicates tape compaction is unknown if Y
Container	Container number associated with the tape.
Create CDS ID	Create CDS ID for tape
Create Date	Creation date for tape
Create Jobname	Name of the job that created the tape
Create SysID	System ID for system that created tape
Create Time	Creation time for tape
Create UserID	User ID for whomever created the tape
Date Stored	Date when the tape was stored
Deflt RetPD Used	Indicates default return PD used if Y
Degaus Secure Erase	Indicates tape should be securely erased by degaussing if Y
Density	Indicates Bytes Per Inch (BPI) for tape if Y as follows: 1600 BPI, 6250 BPI, 3480, 3480 Comp IDRC, and Undefined
Desired Location Name	Desired location where the tape should be stored

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Table 6–6. Tape Volume Information panel columns

Column Name	Description
Dest Bin Media Name	Destination bin name of the tape
Dest Bin No	Destination bin number of the tape
Dest Name	Destination name where the tape will reside
Distant Store to TapeLib	Indicates tape goes from distant storage to a tape library if Y
DSN Used 3480 IDRC	Indicates data set name used 3480 IDRC density if Y
Errors	Number of errors. Categories include: Temporary Read Errors, Temporary Write Errors, Permanent Read Errors, and Permanent Write Errors.
ExMgID	Indicates tape is externally managed if Y
Expire Date	Expiration date in year and day of year format
Expire Date Ignored	Indicates expiration for a tape is ignored if Y
Expire Date Original	Original expiration date in year and day of year format
Feat Code	Feature code
File Count	Total file count
First Dataset Name	Name of the first dataset located on the tape
Force Suppl	Indicates force has been supplied if Y
Gdg	Indicates dataset is marked as GDG if Y
Home Location Code	Name of the home location code
Init Reqst ATL Vol	Indicates initial request to automatically taped load a volume if Y
Label	Label name
Last Change Date	Last change date of the tape
Last Change Sys ID	System ID where the tape was last changed
Last Change Time	Last change time of the tape
Last Change User id	User ID of the person who made the last change
Last File End Media	Last file number that ends the media
Last Used Device	Device number where the tape was last used
Last Used Job	Last used job
Last User Change Date	Date when a user made the last change to a tape
Last User Change Time	Time when a user made the last change to a tape
Last Write BLP	Indicates last write on the tape is a BLP if Y
Lbl AL	Indicates automatic load labeled (AL) tape if Y

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Table 6–6. Tape Volume Information panel columns

Column Name	Description
Lbl NL	Non-loaded labeled (NL) tape if Y
Lbl Num 1st File	Label number of the first file on the tape
Lbl SL	Scratch label (SL) tape if Y
Lbl Vers Curr Binry	Label version of the tape is currently in binary if Y
Lbl Vers Reqd Binry	Label version of the tape is required in binary if Y
Loan Location	Tape has a loan location if Y
Local Store to Distant	Tape goes from local storage to distant storage if Y
Local Store to TapeLib	Tape goes from local storage to a tape library if Y
Location Name	Name of the location where the tape currently resides
Logical Vol	Y – Tape is a logical volume
Media Type	Media Type. Categories include: Non-cartridge, CST, ECCST, HPCT, and EHPCT.
Megabytes	Total megabytes for a specific Volser
More than 1 File	More than 1 file exists for a Volser if Y
Mult Tapes	Multiple tapes exist if Y
New Store Location	Newest location of the tape
Next Volser	Next volume serial
No Cmpr	No compression if Y
No Special Attr	No special attributes if Y
Not Compacted	Indicates tape is not compacted if Y
Notify Owner	Indicates owner should be notified if Y
Number of Files	Total number of files on the tape
Old Bin Media Name	Old bin media name associated with the tape
Old Bin No	Old storage bin number of the tape
Old Container	Old container number associated with the tape
Old Prev Volser	Old previous Volser
Only 1st DS Recrd	Indicates only first dataset has been recorded if Y
Out Code	Out code number for the tape
Out Coded	Indicates tape is out coded if Y
Owner Alt Volume	Indicates owner can alter the volume on the tape if Y

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Table 6–6. Tape Volume Information panel columns

Column Name	Description
Owner Read Volume	Indicates owner can read the volume on the tape if Y
Owner Updt Volume	Indicates owner can update the volume on the tape if Y
Pending Requests	Indicates pending requests. Categories include: Return to Scratch, Replicate on Release, Re-Initiate, Degaus for a Secure Erase, Return to Owner, and Notify Owner.
Percent Used	Total percentage of tape used by a specific Volser
Phys Vol	Indicates tape is a physical volume if Y
Prev Volser	Previous Volser
Previous Location Name	Previous location name for the tape
Prog Prod Tape	Indicates program produced the tape if Y
Program Product Number	Program product number
Rack Number	Rack number where the tape is located.
Rcd Del	Indicates record has been deleted from the tape if Y
Read Only	Indicates tape is for read only if Y
Record Level Number	Record level number
Recording Format	Indicates the recording format of the tape including: Non-cartridge, 18 track, 36 track, 128 track, 256 track, and 384 track.
Re-Init	Indicates tape should be re-initialized if Y
Rel Gdg	Relative GDG number
Remote Store to TapeLib	Indicates tape goes from remote storage to a tape library if Y
Replc Tape on Rlse	Indicates tape should be replicated upon its release if Y
Required Location Priority	Required location priority number
Retain by Set	Volume is retained as a set if Y
Retained by Set	Tape is retained by a set if Y
Retention Date	Retention date of the tape in year and day of year format (YYYYDDD)
Return to Owner	Tape should return to its owner if Y
Return to Scratch Pool	Tape has returned to the scratch pool if Y
RMM Media	RMM Media type (only displays if the tape system management is RMM)
SC	Indicates tape is classified as scratch if Y
Scratch Immed	Indicates tape is marked for immediate scratch if Y
Scratch Vol Init Pending	Indicates scratch volume is pending initialization if Y

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Table 6–6. Tape Volume Information panel columns

Column Name	Description
Scratch Vol Never Init	Indicates scratch volume has never been initialized if Y
Scratch Vol Via Get Vol	Indicates scratch volume came from a GET volume if Y
ScrVol Wait Enter ATL	Indicates scratch volume is waiting to enter an automatic tape load if Y
Security Classification Level	Security classification level for the tape
Selection	Allows you to type a selection option. See “Selecting a Tape Volume” on page 19.
Shelf Manage Bin No	Shelf managed bin number associated with the tape
Shelf Manage Old Bin No	Old shelf managed bin number associated with the tape
Stacked Vol	Indicates tape is a stacked volume if Y
Storage Group Name	Storage group name for the tape
Store Bin No	Storage bin number for the tape
Store Location	Store location for the tape
Store Location Valid	Indicates storage location is valid if Y
Tape on Loan	Indicates tape is on loan if Y
Tape Open Not Clos	Indicates tape status is currently open and not closed if Y
TapeLib to Distant Store	Indicates tape goes from the tape library to distant storage if Y
TapeLib to Local Store	Indicates tape goes from the tape library to local storage if Y
TapeLib to Remote Store	Indicates tape goes from the tape library to remote storage if Y
Updt Prot	Indicates protection has been updated if Y
Use on MVS	Indicates tape is associated with MVS if Y
Use on VM	Indicates tape is associated with VM if Y
User Description	User description of the volume
User Lbl	Indicates user supplied label if Y
User Tape	Indicates user tape if Y
Vers Rel Mod	Version release model number
Vital Rcd No Rel	Indicates volume contains a vital record and is not pending release if Y
Vol is Mast	Indicates volume on the tape is the master volume if Y
Vol Last Read Date	Date when the volume on tape was last read
Vol Last Write Date	Date when the volume on tape was last written

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Table 6–6. Tape Volume Information panel columns

Column Name	Description
Vol Pend Rel	Indicates volume is pending a release if Y
Vol Rec by OCEOV	Indicates tape volume has recorded an open and close, end of volume (OCEOV) procedure if Y
Vol Seq	Volume sequence number for a specific Volser
Vol Use Count	Usage of the volume
Volser	Name of the Volser that is on tape
Volume Capacity in Mbytes	Volume capacity of the tape in megabytes
Volume Owner User ID	Volume owner's user ID
Volume UserID	User ID for whomever owns the volume that is on the tape

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Selecting a Tape Volume

The selection column (SL) on the Tape Volume Information panel lets you select a specific volume to view in various ways or to take an action. Follow these steps to select a specific volume from the Tape Volume Information Panel:

1 Move the cursor in the **SL** column next to a specific volume.

2 Type a **D**, **S**, **F**, **H,** or **/** in the **SL** column. See Table 6–7 for a description of the selection options.

Press ENTER and depending on the selection you made, the Tape Volser Detail Information panel, Tape File Detail Information panel, History Retrieval panel, or Tape Volume Action Menu appears.

Table 6–7. Selection Options, Tape Volume

Selection Option	Description
D or S	Accesses the Tape Volser Detail information panel. This allows you to view the detailed Volser information on a single panel.
F	Accesses the Tape File Detail Information panel where you can view specific file information associated with a selected Volser.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular pool or pools. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Accesses the Tape Volume Action Menu where you can perform a specific action to a selected tape volume.
=	Allows you to repeat an action.

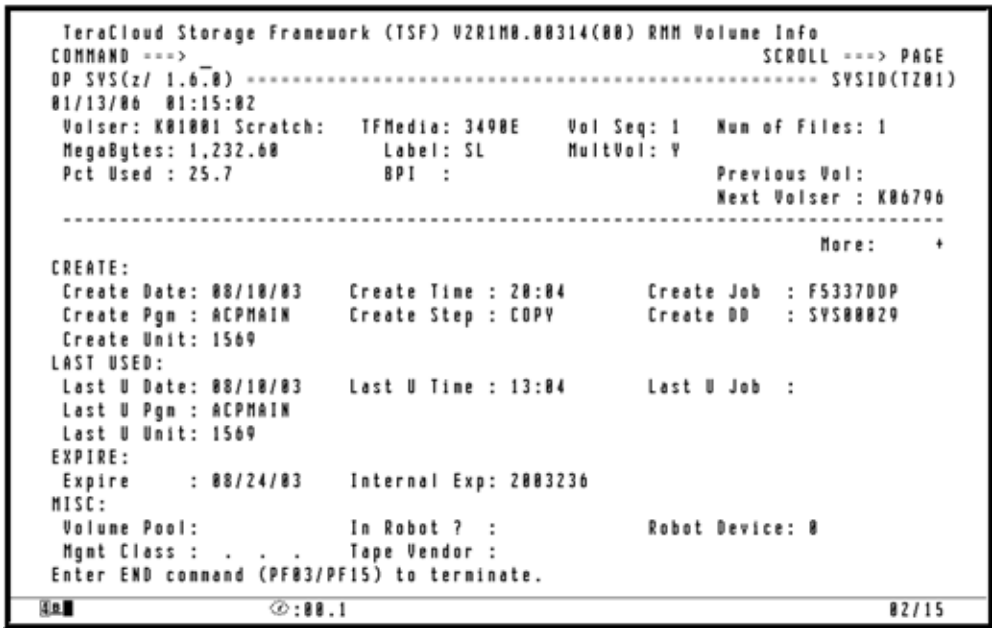

Figure 6–5. Tape Volser Detail Information panel for RMM with a result set

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Tape Dataset Information Filters

You can access these filters from the Tape Selection panel. Type **2** (Dataset) in the **Selection** field. When the Dataset Filter panel appears (Figure 6–6), note that the tape management system type is displayed in parenthesis along with the Dataset Filter panel heading.

Important: The Tape database is populated using the batch job `TSFXXXCT`—where xxx is CA1, RMM, or TLM, depending on the tape management system installed—located in <HLQ>.TSF.CNTL. This job should be run before using Tape.

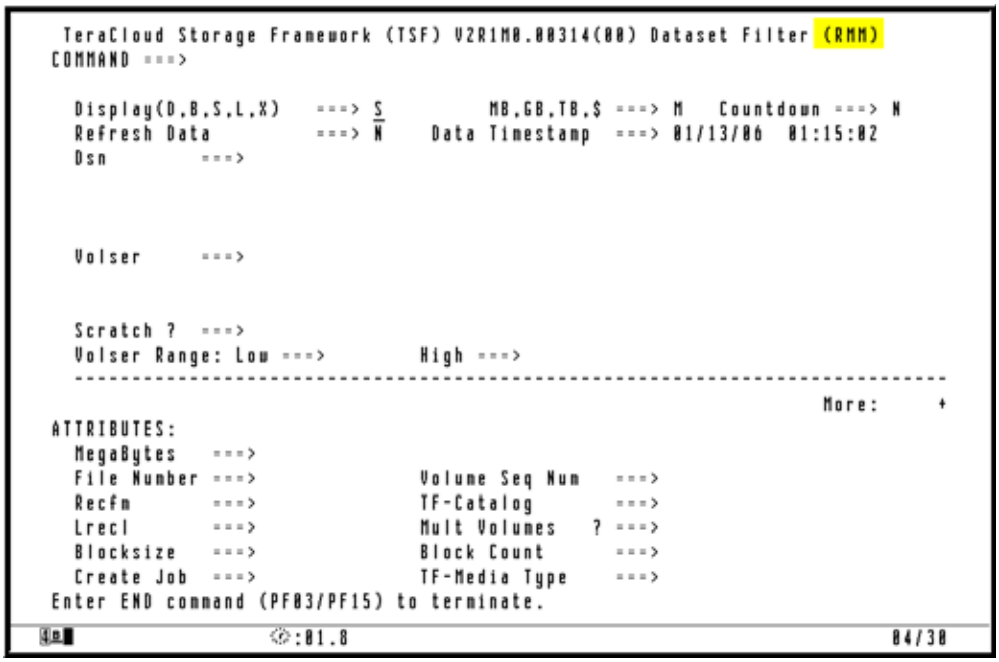

Figure 6–6. Dataset Filter Panel for the RMM tape management system

The filters are located at the bottom of this panel. You can see all of them by scrolling down. Filters in this section are grouped by category including Attributes, Dates, and RMM (only if the RMM tape management is used).

Attributes

Table 6–8. Tape Dataset Attribute Filters

Filter Name	Description
Blocksize	Block size of datasets. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 99999.
Catalog	Files that are cataloged: • *N – Show files in which the DSN is cataloged, but not to this Volser • NC – Show non-cataloged files • C – Show cataloged files • Y* – Show multi-volume files
Create Job	Create job name. Wildcards allowed, for example, PAY* – Show datasets that were created with a job name beginning with PAY.
Create Pgm	Create program name, for example, PJB001 – Show datasets that were created with a program name of PJB001.
Create Step	Create step name, for example, PJB001 – Show datasets that were created with a step name of PJB001.
File Number	File number. Two part field; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 99999.
GDG?	• Y – Show GDG datasets • N – Show non-GDG datasets
Logical Pool	This field is created in the PARMLIB library. You can assign an 8 character logical pool name based on a dataset naming convention. You can then report on various data sets using the logical pool filter. The logical pool name can be from 1 to 8 characters in length. • PAYROLL - Return all files that have been assigned to the PAYROLL system or application.
Lrecl	Record length of datasets. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric entries from 0 to 99999.
MegaBytes	Total megabytes used. Two fields or four fields are available to show a dataset megabyte range. First value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 999999999. Third value is greater than, less than, or equal to (<, >, =), fourth value is numeric from 0 to 999999999.
Multiple Files?	• Y - Multiple files exist • N - Show single files
OutCode	Out code, wildcards allowed, for example, VLT* – Show tapes that have an out code beginning with VLT.
Recfm	Dataset record format: • FB – Fixed Blocked • F – Fixed • V – Variable • VB – Variable Blocked • U – Unblocked

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Table 6–8. Tape Dataset Attribute Filters

Filter Name	Description
Relative Gen Num	Relative generation number for GDG files. Two fields; first value is greater than, less than, or equal to (<, >, =), second field is numeric from 0 to 999. • > 3 – Show all GDG files that have a relative generation number greater than 3 • = 0 – Show all GDG files that have a relative generation number equal to the current generation
Tape in Robot?	• Y – Show tapes that are in a robot device • N – Show tapes that are not in a robot device
TF-Media Type	Fully-qualified media type. Valid media types include: REEL, 3480, 3490, 3490E, 3590T128, 3590T256, 3590E128, 3590E256, 9840, RDWD12, RDWD25, RDWD50, OTHER. Wildcards allowed. • REEL – Display only information contained on media type REEL • 34* – Display all information contained on all tapes that are 3480, 3490, and so on
Volume Pool	This field is user created in the PARMLIB library. You can assign an 8 character volume pool name based on a Volser naming convention. You can then report on various volumes using the volume pool filter. The volume pool name can be from 1 to 8 characters in length. • PAYROLL - Return all Volsers that have been assigned to the PAYROLL system or application

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Dates

Table 6–9. Tape Dataset Dates Filters

Filter Name	Description
Create or ===> Days Ago	File creation date or the number of days since file creation. Both of these filters have two fields. The first value is greater than, less than, or equal to (<, >, =), the second value is date in *mm/dd/yyyy* format, XDATE, or a number from 0 to 999 (for Days Ago). • < 12/31/2005 – Show all files that were created before 12/31/2005 • = XDATE – Show all files where the create date is equal to the expire date
Expire or ===> Days Ago	Expiration date or the number of days since expiration. Both of these filters have two fields. The first value is greater than, less than, or equal to (<, >, =), the second value is date in *mm/dd/yyyy* format, CDATE, or a number from 0 to 999 (for Days Ago). • < 12/31/2005 – Show all files that expire before 12/31/2005 • = CDATE – Show all files where the expire date is equal to the create date
Int Expire	Internal expiration date. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is date in year and number of days (YYYYDDD). • = 05365 – Show all files that have an internal expire date of 05365 • = 05003 – Show all files that have an internal expire date of 05003

RMM

Table 6–10. Tape Dataset RMM Filters (Displays for RMM only)

Filter Name	Description
Create Unit	Create unit. Wildcards allowed, for example, 018* - Show tapes that have a create unit starting with 018.
Dataset Owner	Dataset owner. Wildcards allowed, for example, PRO* – Filter tapes that have a dataset owner starting with PRO.
Description	Tape description, for example, RACF – Show tapes that have been assigned a description of RACF.
Last Change Sysid	System ID where the last change occurred. Wildcards allowed, for example, PRO* – Filter tapes that have a last change system ID starting with PRO.
Last Change User id	User ID for whomever made the last change. Wildcards allowed, for example, PRO* – Filter tapes that have a last change user ID starting with PRO.
Location	Tape location code, for example, SHELF – Show tapes that have an assigned location code of SHELF.
Matching VRS Type	Matching VRS Type: • D – Dataset • S – SMSMC • V – VRSMV • M – DSN/MV

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Table 6–10. Tape Dataset RMM Filters (Displays for RMM only)

Filter Name	Description
Record Deleted	Tape contains a record deleted flag. • Y - Yes • N - No
Retained by VRS	Tape is retained by a VRS flag. • Y - Yes • N - No
RMMmedia	Alternate media type for tape, for example, HCAP – Show tapes that have an alternate media type of high capacity (HCAP).
Security Class Lvl	Security class level. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric. • > 1 - Show tapes that have a security level of > 1
System ID	System ID where tape was created. Wildcards allowed, for example, PRO* – Show tapes that were created on a computer with a system ID that begins with PRO.

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Displaying Tape Dataset Information

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option D. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (12,000) for the maximum number of datasets can be changed or overridden with the Max Table Size variable. See Tape Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

The Dataset Information panel lists information about datasets that reside on tape, for example:

- Dataset name
- Volser
- File sequence
- Whether or not the tape is scratch
- Whether or not the dataset has been cataloged
- Volume sequence
- Total megabytes for each dataset

The columns on this panel vary slightly according to the display selection, D (Detail records) or S (Summary information). Follow these steps to access the Dataset Information panel:

1. In the Dataset Filter panel, type **D** or **S** in the **Display** field.
2. In the **MB, GB, TB, $** fiel d, type a value.
3. Type any *valid entries* in the filter fields to refine parameters for your query.
4. Press ENTER and the Dataset Information panel appears with detail records (Figure 6–7) or summary records (Figure 6–8).
5. Review the results. See Dataset Information Columns, page 6-29. Use

```
 TeraCloud Storage Framework (TSF) V2R1M0.00314(00) RMM  Row 1 to 15 of 12,893
COMMAND ===> _                                                SCROLL ===> PAGE

OP SYS(z/ 1.6.0) ========================================================= SYSID(TZ01)
01/13/06  01:15:02                                              (1)       More -->


                                                        Vol  File      Expire
  Dataset Name ------------------------------- Volser  Seq   Seq Scr  Date
_ AA.PROD.CDS.REORG.CDACCT.G0976V00            P51167    1     1  Y
_ AA.PROD.CDS.REORG.CDACCT.G0984V00            P54020    1     1
_ AA.PROD.CDS.REORG.CDACCT.G0985V00            P55460    1     1
_ AA.PROD.CDS.REORG.CDACCT.G0987V00            P52755    1     1
_ AA.PROD.CDS.REORG.CDACCT.G0990V00            P56374    1     1
_ AA.PROD.CDS.REORG.CDCUT.G0975V00             P51167    1     2  Y
_ AA.PROD.CDS.REORG.CDCUT.G0983V00             P54020    1     2
_ AA.PROD.CDS.REORG.CDCUT.G0984V00             P55460    1     2
_ AA.PROD.CDS.REORG.CDCUT.G0986V00             P52755    1     2
_ AA.PROD.CDS.REORG.CDCUT.G0989V00             P56374    1     2
_ AA.PROD.CDS.REORG.CDPEND.G0976V00            P51167    1     3  Y
_ AA.PROD.CDS.REORG.CDPEND.G0984V00            P54020    1     3
_ AA.PROD.CDS.REORG.CDPEND.G0985V00            P55460    1     3
_ AA.PROD.CDS.REORG.CDPEND.G0987V00            P52755    1     3
_ AA.PROD.CDS.REORG.CDPEND.G0990V00            P56374    1     3
                  :00.1                                                  02/15
```

Figure 6–7. Dataset Information panel with a result set for detail records

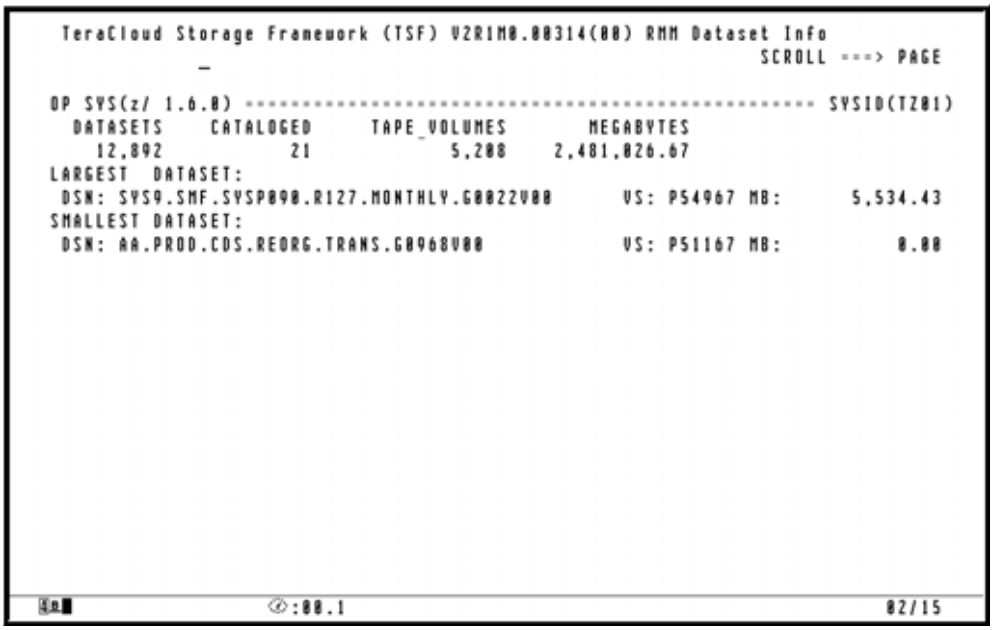

Figure 6–8. Dataset Information panel with a result set for summary records

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Dataset Information Columns

Table 6–11 describes the columns that are displayed on the Dataset Information panel for detail records.

Table 6–11. Dataset Information Panel Columns (Detail)

Column Name	Description
Addr	Address of the dataset
Allocated (Unit)	Shows a dataset allocated by specific unit (Tracks, MB, GB, $).
Backup Date	Date when the tape was backed up
Blksz	Block size of the dataset
Cache	Shows a Y or N if cache was used for the dataset.
Can Vol	Shows the Can volume.
Cat	A Y (Yes) appears if the dataset is cataloged.
Cmp Mtd	Dataset compression method
Cmprs Ratio	Dataset compression ratio
Create Date	Create date and time of the tape. The date is in MM/DD/YYYY format.
Data Class	Data class
Dataset Name	Name of a dataset
Expire Date	Expiration date of the tape
Ext	External manager ID
Ext Cmp	A Y (Yes) appears if this is an extended dataset that is compressed.
Ext Ds	A Y (Yes) appears if this is an extended dataset.
Gdg	A Y (Yes) appears if the dataset is marked as GDG.
Last Reference	Date when the tape was last referenced
Logical Pool	Logical pool associated with the dataset
Lrecl	Record length of the dataset
Management Class	Management class
Model	Model number
Mult Vol	A Y (Yes) appears if the dataset is associated with multiple volumes.
Opt Blksz	Optimized block size
Org	Dataset organization type
Pct Used	Percent of the dataset used
Recfm	Record format of the dataset

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Table 6–11. Dataset Information Panel Columns (Detail)

Column Name	Description
Rel Gdg	A Y (Yes) appears if the dataset is marked as relative GDG.
RVA	Shows a Y or N if RVA was associated with the dataset
Selection	Allows you to type a selection option. See “Selecting a Tape Dataset” on page 6–31.
SM	Shows whether the dataset is an SMS type or not. A Y shows SMS type, while an N designates it is not.
Storage Class	Storage class
Storage Group	Storage group
Stripe Count	Stripe count
Syid	System ID
Used (Unit)	Dataset used space by specific unit (Tracks, MB, GB, $)
Volser	Volume serial number (Volser) associated with the dataset
Volume Pool	Volume pool associated with the dataset

Table 6–12 describes the columns that are displayed on the Dataset Information panel for summary records.

Table 6–12. Dataset Information Panel Columns (Summary)

Column Name	Description
Cataloged	Total number of datasets cataloged
Datasets	Total number of datasets
Largest Dataset	Largest dataset occupied on tape with its volume serial number
Megabytes	Total number of megabytes or gigabytes occupied by tape datasets
Smallest Dataset	Smallest dataset occupied on tape with its volume serial number
Tape Volumes	Total number of tape volumes

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Selecting a Tape Dataset

The selection column (SL) on the Dataset Information panel lets you select a specific dataset to view in various ways or to take an action. Follow these steps to select a specific dataset from the Dataset Information panel:

1. Move the cursor in the **SL** column next to a specific dataset.
2. Type a **D**, **S**, **H**, or **/** in the SL column. See Table 6–13 for a description of the selection options.
3. Press ENTER and depending on the selection that you made, the Dataset Detail Information panel, History Retrieval panel, or Dataset Action menu appears.

Table 6–13. Selection Options, Tape Dataset

Selection Option	Description
D or S	Accesses the Tape Dataset Detail Information panel. This allows you to view all the detailed information for a dataset on a single panel.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular pool or pools. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Accesses the Tape Dataset Action Menu where you can perform a specific action to a selected tape dataset.
=	Allows you to repeat an action.

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HSM Tape Filters

HSM tape filters are available from the Tape Selection panel. Type **3** (HSM) in the **Option** field. The HSM Tape Filter is displayed (Figure 6–9).

Important: The Tape database is populated using the batch job TSFxxxCT, where xxx is RMM, CA1, TLM. HSMTAPE(YES) will include HSM tape information. This will also cause increased wall clock time with the TSFxxxCT.

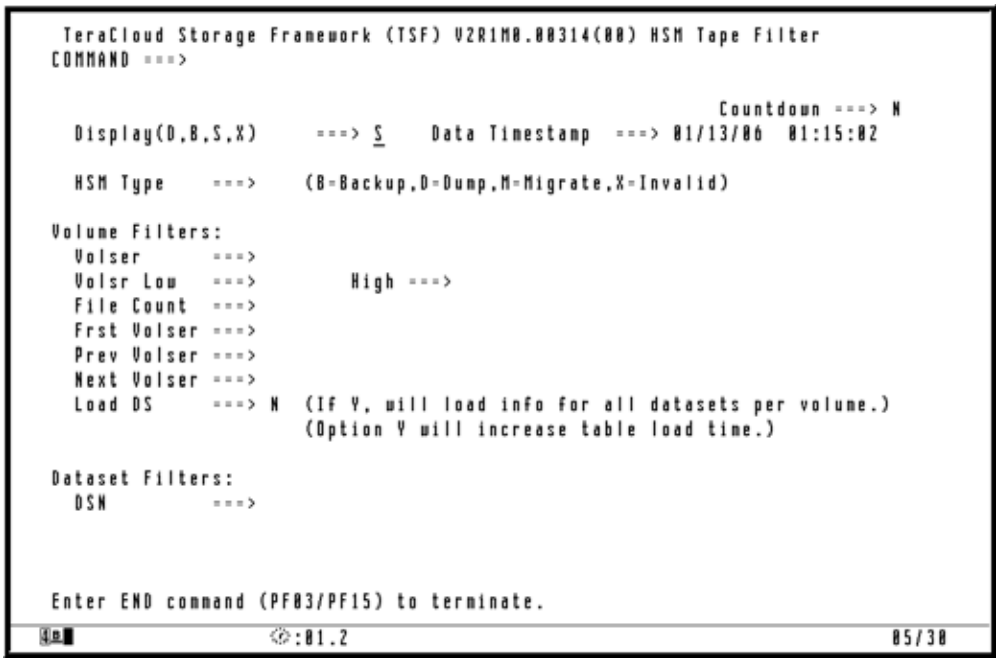

Figure 6–9. HSM Tape Filter Panel

Filters are located at the bottom of this panel. The filters are listed in the following table:

Table 6–14. HSM Tape Filters

Filter Name	Description
HSM Type	Options: • B - Backup • D - Dump • M - Migrate • X - Invalid
Volser	Fully qualified volume serial number. Wildcards and exclude logic allowed. • 010123 – Display only information contained on volser 010123 • 01* – Display all information contained on all volsers that begin with 01 • ¬012* – Exclude information that is contained on any volser that begins with 012

Table 6–14. HSM Tape Filters

Filter Name	Description
Volsr Low ===> High	Low/High range for volume serial numbers. If a low value is entered, you must enter a high value. When a Low/High range of Volsers is entered in this field, it is filtered before the Volser filter. • Volser Low: 010000 • High: 019999 Display a set of tapes that have Volser's between 010000 and 019999 (inclusive).
File Count	File count. Two fields; first value is greater than, less than, or equal to (<, >, =), second value is numeric from 0 to 99999.
First Volser	Tapes that have a first volume Volser. • 012345 – Display tapes that have a first volume Volser of 012345
Prev Volser	Tapes that have a previous volume Volser. • 012345 – Display tapes that have a previous volume volser of 012345
Next Volser	Tapes that have a next volume Volser. • 012345 – Display tapes that have a next volume volser of 012345
Load DS	Load file detail for every volume. • Y – Access the HSM Tape File Detail Information panel and display all file information for volumes • N – Access the HSM Tape Volume Detail Information panel and *do not* load file information (Default) **Note**: Option Y significantly increases the volume table load time. Ensure that you use other filters on this panel to decrease the number of volumes if you select option Y.
DSN	Fully qualified name, partially qualified name, or partially qualified name using include or ¬ exclude logic. Wildcards allowed. • SYS1.PARMLIB – Display all SYS1.PARMLIB datasets found • SYS1.** – Display all datasets that begin with SYS1 • SYS1.**,¬*.D*.** – Include all datasets that begin with SYS1 except those (¬) that have a second level qualifier that contains a D

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Displaying HSM Tape Volume Information

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option D. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (12,000) for the maximum number of volumes can be changed or overridden with the Max Table Size variable. See Tape Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

The HSM Tape Volume Information panel lets you view Volser, HSM type, number of files, dataset names, and so on. The columns on this panel vary slightly according to the display selection, D (Detail records) or S (Summary information). Follow these steps to access the HSM Tape Volume Information panel:

1. From the HSM Tape Filter panel, type **D** or **S** in the **Display** field.
2. Type any *valid entries* in the filter fields to refine the parameters for your filter criteria.
3. If you plan to view HSM Tape file information, type **Y** in the **Load DS** field. This loads the HSM Tape File Detail Information panel when the database is queried. Otherwise, ensure that **N** is typed in the **Load DS** field (N is the default).
4. Press ENTER and the HSM Tape Volume Information panel appears with a result set.
5. Review the detailed result set that displays on the Volume Detail Information panel. See HSM Tape Volume Information Columns, page 6-37.

   Note: The HSM Tape File Detail Information panel looks the same as the HSM Tape Volume Detail Information panel (*Figure 6–10*). However, you can use selection options for the HSM Tape File Detail Information where you cannot for the HSM Tape Volume Detail Information panel.

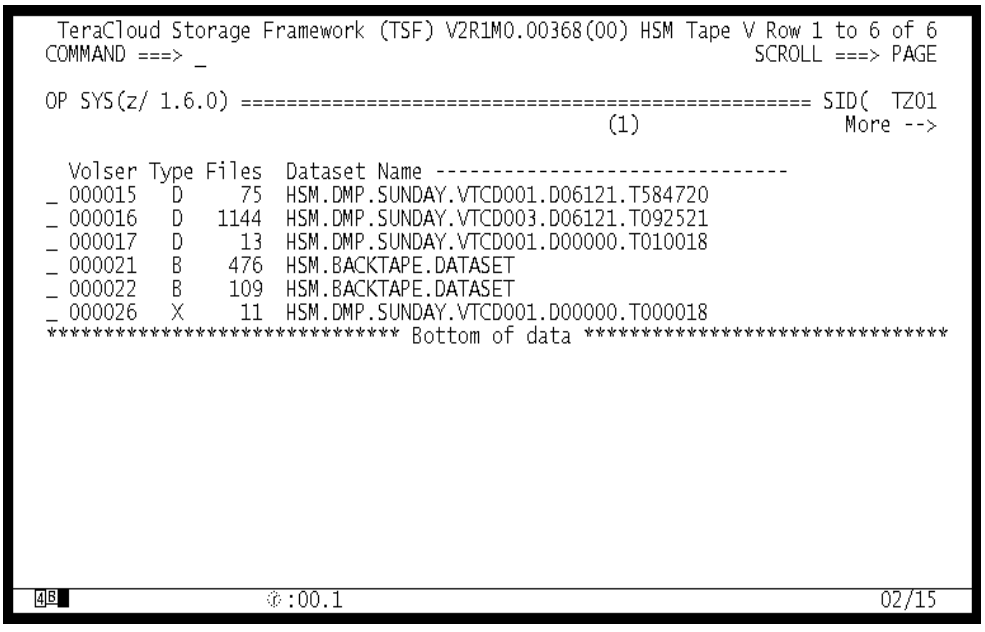

Figure 6–10. HSM Volume Information panel with detail record results

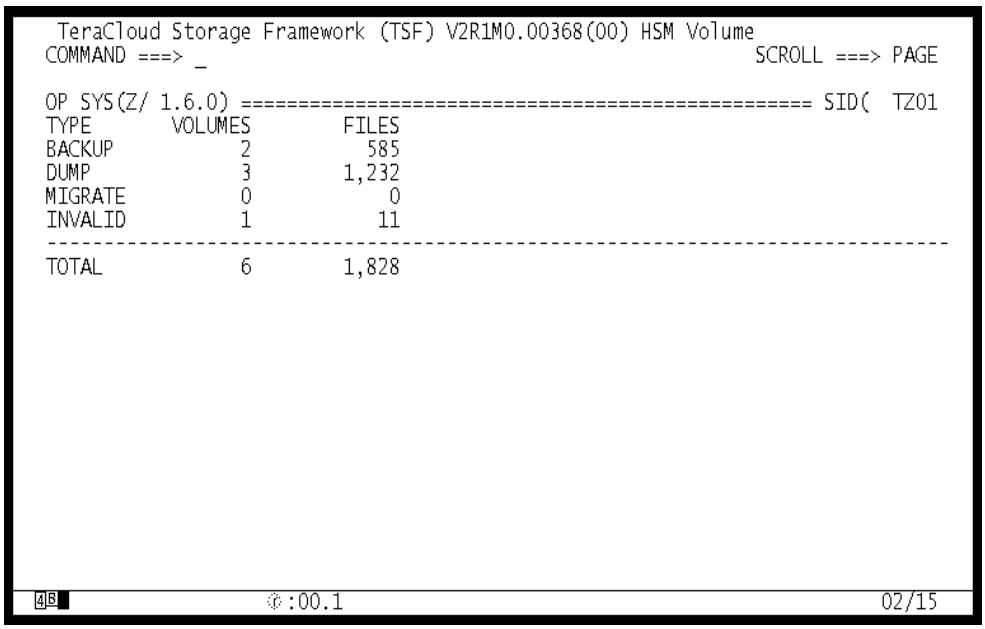

Figure 6–11. HSM Volume Information panel with summary record results

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HSM Tape Volume Information Columns

The HSM Tape Volume Detail Information panels columns are described in Table 6–15.

Table 6–15. HSM Tape Volume Detail Information Columns

Column Name	Description
Dataset Name	Dataset name associated with the Volser
Files	Total number of files
First Volser	First volume serial number
Next Volser	Next volume serial number
Prev Volser	Previous volume serial number
Type	Shows the HSM type as follows: • B - Backup • D - Dump • M - Migrate • X - Invalid
Volser	Volume serial number

The HSM Volume Summary Information panel gives you an abbreviated view of current HSM volume. The columns that appear in the HSM Volume Summary Information panel include the following:

Table 6–16. HSM Volume Summary Information Panel Columns

Column Name	Description
Type	Shows the HSM types that include: • Backup • Dump • Migrate • Invalid
Volumes	Number of volumes for each of the HSM types
Files	Number of files for each of the HSM types
Total	Total number of volumes and files for all HSM types

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Selecting HSM File Information

The selection column (SL) on the HSM Tape File Detail Information panel lets you select a specific Volser to view more detailed information about files. Follow these steps to select a specific Volser from the HSM Tape File Detail Information panel:

1. Move the cursor in the **SL** column next to a specific Volser.
2. Type a **F** or **S** in the SL column. See Table 6–17 for a description of the selection options.
3. Press ENTER and depending on the selection that you made, the HSM File Information panel, or HSM Tape Volume Action menu appears.

Table 6–17. Selection Options, Tape Dataset

Selection Option	Description
F or S	Accesses the HSM File Information panel which presents detailed information about files.
/	Accesses the HSM Tape Volume Action Menu where you can perform a specific action, for example, recycle a tape volume.
=	Allows you to repeat an action.

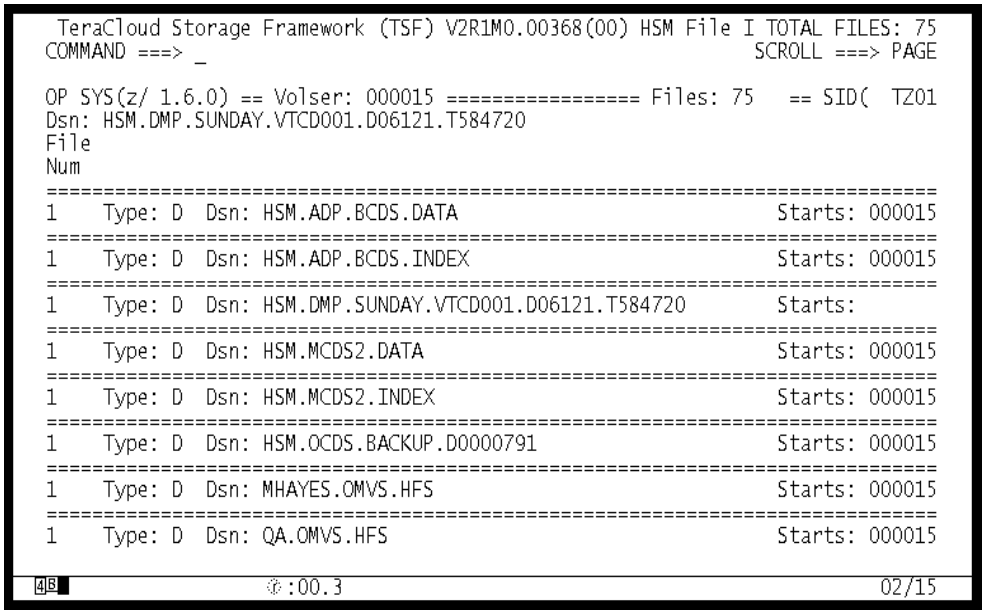

Figure 6–12. HSM File Information panel (selection option F)

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HSM FILE INFORMATION PANEL COLUMNS

The columns for the HSM File Information panel include the following:

Table 6–18. HSM File Information Panel Columns

Column Name	Description
Dsn	Dataset name
File Num	File number that is associated to a specific HSM tape
Starts	Starting point of a file located on a volume
Type	HSM type that is related to the file number

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Examples

The following examples show the best practices and will enable you to manage your tape environments more efficiently.

List Number of Non-Scratch Tapes with One File and Less than 5 MB

1. From the Tape Selection panel, type option **1** in the **Selection** field and press ENTER. The Tape Volume Filter panel appears.
2. From the Tape Volume Filter panel, type **S** in the **Display** field.
3. In the **Scratch** field, type **N**.
4. In the **Megabytes** field, type **< 5**.
5. In the **File Count** field, type **=1**.
6. Press ENTER to execute the filter. The Tape Volume Information panel (*Figure 6–13)* appears showing the results.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00368(00) RMM Volume Info
COMMAND ===> _                                              SCROLL ===> PAGE

OP SYS(Z/ 1.6.0) ================================================ SYSID(TZ01)
TAPE          TOTAL                                                      PCT
MEDIA         TAPES  SCRTCH      FILES  OUTCOD   ROBOT          MEGABYTES  USED
REEL            858       0        858       0     779               0.00
3480            278       0        278       0     272             167.49    .1
3480X             0       0          0       0       0               0.00
3490            836       0        836       0     836               5.09    .1
3490E         4,527       0      4,527       0      44          3,001.16    .1
3590              0       0          0       0       0               0.00
3590E             0       0          0       0       0               0.00
3590T128          1       0          1       0       0               0.19    .1
3590T256          1       0          1       0       0               0.00
3590T384         10       0         10       0       0        124,966.25    .1
3590E128          1       0          1       0       0               0.31    .1
3590E256          0       0          0       0       0               0.00
3590E384          0       0          0       0       0               0.00
9840              0       0          0       0       0               0.00
OTHER             0       0          0       0       0               0.00
-------------------------------------------------------------------------------
TOTAL         6,512       0      6,512       0   1,931         121,792.01

4B                        :00.3                                       02/15
```

Figure 6–13. List of all non-scratch tapes with one file and less than 5 MB

List Number of all Non-Scratch Tapes with Less than 1600 Megabytes

1. From the Tape Selection panel, type option **1** in the **Selection** field and press ENTER. The Volume Filter panel appears.
2. From the Volume Filter panel, type **S** in the **Display** field.
3. In the **Scratch?** field, type **N**.
4. In the **Megabytes** field, type **< 1600**.
5. Press ENTER to execute the filter. The Volume Information panel (*Figure 6–14)* appears showing the results.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00368(00) RMM Volume Info
COMMAND ===> _                                              SCROLL ===> PAGE

OP SYS(Z/ 1.6.0) ================================================ SYSID(TZ01)
TAPE          TOTAL                                                      PCT
MEDIA         TAPES  SCRTCH      FILES  OUTCOD   ROBOT          MEGABYTES  USED
REEL            858       0        858       0     779               0.00
3480          3,192       0      4,341       0   3,016         968,762.93  25.3
3480X             0       0          0       0       0               0.00
3490            858       0        876       0     855          11,526.00   .6
3490E        11,521       0     33,273       0     139       3,969,581.04  7.2
3590              0       0          0       0       0               0.00
3590E             0       0          0       0       0               0.00
3590T128         12       0      2,538       0       0           1,253.52   .3
3590T256          3       0         17       0       0               0.00
3590T384         27       0         83       0       0         121,864.52   .1
3590E128          1       0          1       0       0               0.31   .1
3590E256          0       0          0       0       0               0.00
3590E384          0       0          0       0       0               0.00
9840              0       0          0       0       0               0.00
OTHER             0       0          0       0       0               0.00
-------------------------------------------------------------------------------
TOTAL        16,472       0     41,987       0   4,789       4,829,259.28

4B                    :00.8                                          02/15
```

Figure 6–14. List of all non-scratch tapes with less than 1600 MB

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CHAPTER

7

DFSMSHSM MANAGEMENT

The DFSMShsm Mgmt component models and reports on savings and activity of DFHSM, including the MCDS, BCDS, and SMF records created by DFHSM. It makes dataset associations with HMIG datasets, including small dataset packing options. DFSMShsm Mgmt reports on DFHSM activity such as recall rate, migration and backup failures, and activity by dataset, application, or user.

DFSMShsm Mgmt selection is available from the TSF Primary Selection panel. Type **4** (DFSMShsm Mgmt) in the **Option** field. The DFSMShsm Mgmt Selection panel is displayed (Figure 7–1). Options that you can select from this panel include:

- **Activity –** Monitor HSM activity in real-time, using SMF data that are captured and stored.
- **Detail –** View composite MCDS and BCDS (historical) information–the two main databases used by DFSMShsm. In the Detail option, DFSMShsm Mgmt reads, summarizes, and builds parallel databases from the CDSs.
- **Logical Pools** – View logical pool information as well as cost figures.

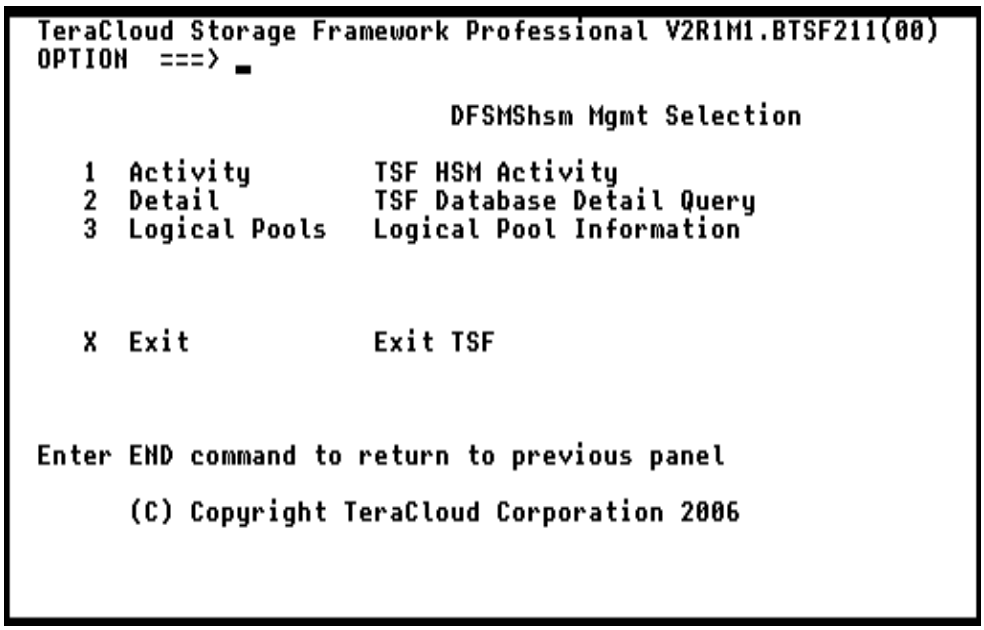

Figure 7–1. DFSMShsm Mgmt Selection panel

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HSM Activity Filters (Zoom Limits)

HSM activity filters are available from the DFSMShsm Mgmt Selection panel. Type **1** (Activity) in the **Option** field. The Zoom Limits filter panel is displayed (Figure 7–2). This panel provides display option selections to refine query results and determine how HSM activity information will display on subsequent panels.

You can monitor HSM activity in real-time with this panel. This ability to view real-time HSM activity is accomplished when the started task TSFRECRD intercepts SMF records created by HSM. The SMF records are fed into a data space and the data is then moved into a VSAM database (TSF.DATABASE) allowing you to view them.

Note: See Appendix D, TSF Console Commands for information about commands that can be used in conjunction with the started tasks to allow the process to run in Sysplex mode, collect specific record types, and purge unwanted records from the VSAM database.

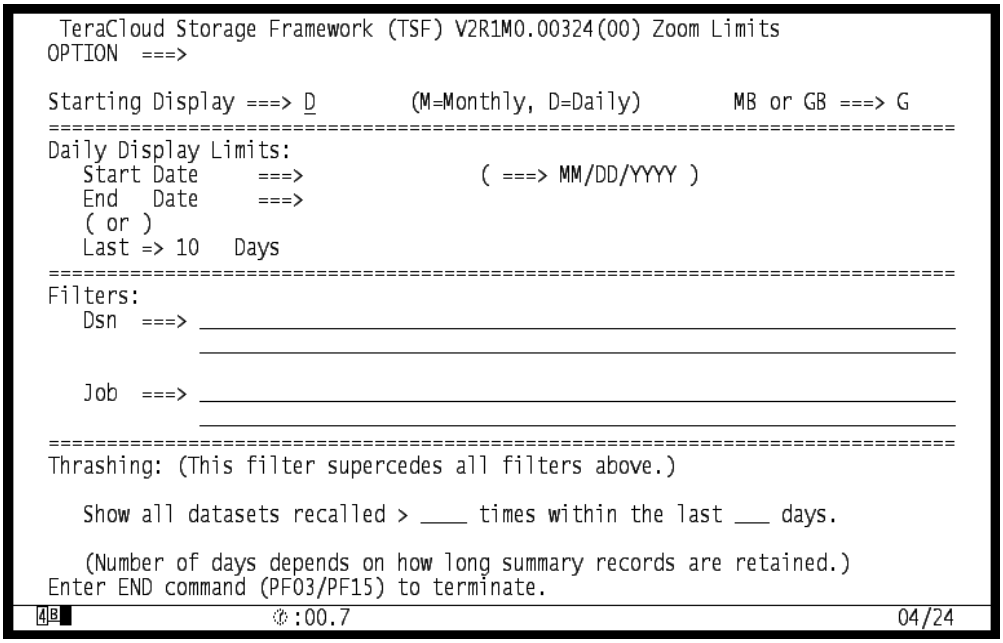

Figure 7–2. Zoom Limits filter panel

In addition to the display option selections, a variety of filters are also featured on the Zoom Limits panel. The header called “Daily Display Limits” indicates the beginning of these user-available filters for Display option **D** (daily).

The zoom limits filters allow you to further manipulate data that can appear on a subsequent result panel. There are four sets of filters located below the display options.

Table 7–1. Activity filters: Zoom Limits

Filter Name	Description
Start Date	Beginning date for viewing captured data, *mm/dd/yyyy* format. **Note**: If this field is left blank, the search will default to the “Last ==> Days” ago filter.
End date	End date for viewing captured data (when used in conjunction with the Start Date filter), mm/dd/yyyy format.

Table 7–1. Activity filters: Zoom Limits

Filter Name	Description
Last => Days	Number of previous days within which to view captured data. Numeric value, for example, Last => 180 Days. **Note:** Can be used instead of the "Start" or "End" date fields; if this field is left blank, the search will contain all captured data.
DSN	Dataset name to be used for filtering criteria; fully qualified, partially qualified (use IBM standard masking characters), or a group of dataset names. **Note**: If this filter is left blank, all data will be returned.
Job Masking Filter	Job or user name to be used in filtering criteria; for example, if a user initiated an HSM activity, type the Userid to review all activity for that user. Fully qualified, partially qualified (use IBM standard masking characters), or a group of dataset names • PAYROLL – Return the HSM activity for jobs that are PAYROLL • TSO123 – Return all HSM activity for a user whose TSO ID is TSO123 • PAY*,¬PAYXX.** – Return all jobs that begin with PAY except those that begin with PAYXX
Show all datasets recalled > *n* times within the last *n* days	Identifies all files that were recalled more than x number of times within x number of days. Numeric value, for example, Show all datasets recalled > ***3*** times within the last ***7*** days **Note:** When Thrashing Filter is used, all previous filters on the panel are ignored. Remember that Summary records must still be in the database to retrieve the dataset information. See the Purge command in Appendix D, TSF Console Commands for information about purging Summary and Detail records.

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Daily or Monthly Statistics

The Daily Stats panel lets you view daily HSM activity. It shows the results of migrations from Level 0 to Level 1, Level 1 to Level 2, and Level 0 to Level 2. Recalls are also listed: Level 1 to Level 0, and Level 2 to Level 0.

Similar to the Daily Stats panel, the Monthly Stats panel shows the results of DFSMShsm activity. The results are listed in months and year and reflect all activity during the month selected.

Some examples of information that is displayed on the statistics panel includes the following:

- Number of datasets deleted from the MCDS
- Number of daily backups
- Number of spill backups
- Number of datasets recovered
- Number of errors encountered
- Other HSM functions

Follow these steps to access the Daily or Monthly Stats panel:

1. From the Zoom Limits filter panel, type **D** (Daily) or **M** (Monthly) in the Starting Display prompt.
2. In the MB or GB field, keep the default value M (megabytes) or type a **G** (gigabytes).
3. Type a start date and end date at the respective prompts,

   or

   Specify the number of days at the **Last =>** prompt.
4. Define the filter parameters with your filter criteria.
5. Press ENTER and the Daily Stats panel (Figure 7–3) or the Monthly Stats panel (Figure 7–4) appears with a result set.
6. Review the detailed result set that displays. If desired, use the appropriate command-line options.

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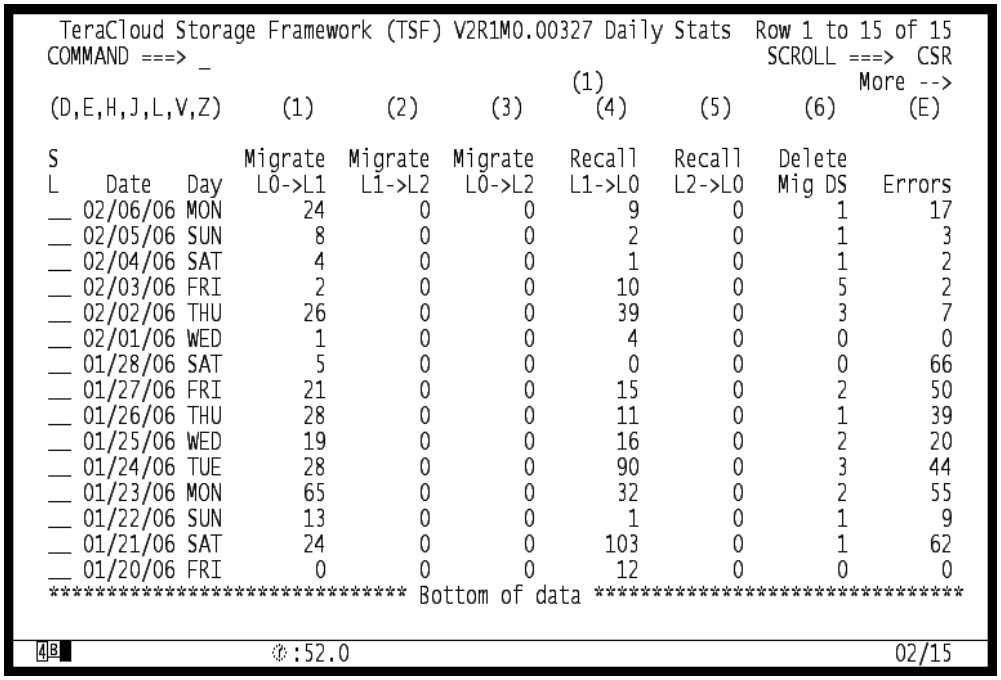
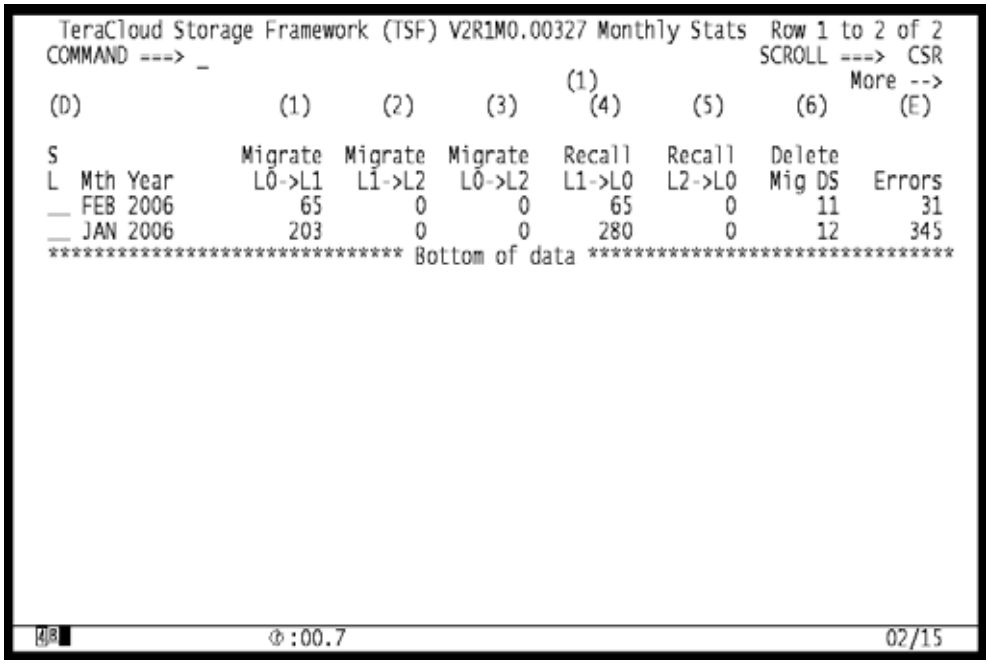


```
 TeraCloud Storage Framework (TSF) V2R1M0.00327 Daily Stats  Row 1 to 15 of 15
COMMAND ===> _                                                SCROLL ===>  CSR
                                                  (1)                   More -->
(D,E,H,J,L,V,Z)     (1)      (2)      (3)      (4)      (5)      (6)      (E)

S                Migrate  Migrate  Migrate   Recall   Recall   Delete
L    Date   Day   L0->L1   L1->L2   L0->L2   L1->L0   L2->L0   Mig DS   Errors
__ 02/06/06 MON       24        0        0        9        0        1       17
__ 02/05/06 SUN        8        0        0        2        0        1        3
__ 02/04/06 SAT        4        0        0        1        0        1        2
__ 02/03/06 FRI        2        0        0       10        0        5        2
__ 02/02/06 THU       26        0        0       39        0        3        7
__ 02/01/06 WED        1        0        0        4        0        0        0
__ 01/28/06 SAT        5        0        0        0        0        0       66
__ 01/27/06 FRI       21        0        0       15        0        2       50
__ 01/26/06 THU       28        0        0       11        0        1       39
__ 01/25/06 WED       19        0        0       16        0        2       20
__ 01/24/06 TUE       28        0        0       90        0        3       44
__ 01/23/06 MON       65        0        0       32        0        2       55
__ 01/22/06 SUN       13        0        0        1        0        1        9
__ 01/21/06 SAT       24        0        0      103        0        1       62
__ 01/20/06 FRI        0        0        0       12        0        0        0
******************************* Bottom of data ********************************

4B                  :52.0                                                02/15
```

Figure 7–3. Daily Stats panel with a result set



```
 TeraCloud Storage Framework (TSF) V2R1M0.00327 Monthly Stats  Row 1 to 2 of 2
COMMAND ===> _                                                SCROLL ===>  CSR
                                                  (1)                   More -->
(D)                 (1)      (2)      (3)      (4)      (5)      (6)      (E)

S                Migrate  Migrate  Migrate   Recall   Recall   Delete
L  Mth Year       L0->L1   L1->L2   L0->L2   L1->L0   L2->L0   Mig DS   Errors
__ FEB 2006           65        0        0       65        0       11       31
__ JAN 2006          203        0        0      280        0       12      345
******************************* Bottom of data ********************************

4B                  :00.7                                                02/15
```

Figure 7–4. Monthly Stats panel with a result set

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Daily Results

Table 7–2 describes the columns that are displayed on the Daily Stats panel. Heading for panels 4 through 6 are duplicates of those displayed in panels 1 through 3. They differ in that panels 1 through 3 lists the total records for each activity performed, whereas panels 4 through 6 display the total amount of space for each activity performed, according to the unit selected.

Table 7–2. Zoom results columns.

Column Name	Description
ABackup	Number of ABARS backup taken
ARecover	Number of ABARS recoveries performed
Daily Backup	Number of daily backups completed
Date	Date of this period (Daily option)
Day	Day of the week (Daily option)
Delete by Age	Number of datasets deleted by age
Delete Mig DS	Number of delete migrated datasets
Errors	Number of errors that occurred during this period
Expire IncrBack	Number of expired incremental backups
Expire Pri Mig	Expire datasets on primary migration volumes
FastRepl Backup	Number of fast replicate backups taken
FastRepl Recover	Number of fast replicate recoveries performed
FastRepl Delete	Number of fast replicate deletes performed
Full Vol Dmp	Number of full volume dumps taken
HBDELETE IncrBack	Number of incremental backups deleted by command
Migrate L0->L1	Number of times in that period migrated from **L0->L1**
Migrate L0->L2	Number of times in that period migrated from **L0->L2**
Migrate L1->L2	Number of times in that period migrated from **L1->L2**
Mth	Month in this period (Monthly option)
PartRel	Number of partial space release performed
Recall L1->L0	Number of times in that period recalled from **L1->L0**
Recall L2->L0	Number of times in that period recalled from **L2->L0**
Recover	Number of recoveries performed by HSM
Recycle Back VL	Number of recycles on backup volumes
Recycle Mig VL	Number of recycles on migration volumes

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Table 7–2. Zoom results columns.

Column Name	Description
SL	Allows you to type a selection option.
Spill Backup	Number of spill backups completed
Vol DS Restore	Number of dataset restores
Year	Year for this period (Monthly option)

Zoom Options (Daily Stats)

The selection column (SL) on the Daily Stats panel provides drill-down detail information with its "Zoom" function. Many levels of Zoom detail are available. Follow these steps to select a zoom option:

Note: You can display valid zooming options for a specific result set by positioning the cursor on the selection line and pressing PF1.

1. From the Daily Stats panel, position the cursor on the selection line (SL) next to a date.
2. Type **D**, **E**, **H**, **J**, **L**, **V**, **Z** or **1-20** and press ENTER
3. When the panel appears with the result details, review the results.
4. Repeat these steps to continue to drill-down through the various detail information panels.

Table 7–3. Selection Options, Daily Stats panel

Selection Option	Description
D	Accesses the Dataset panel allowing you to view more detailed dataset information.
E	Accesses the Error panel allowing you to view DFSMShsm errors.
H	Accesses the Daily Stats by Hour panel allowing you to view daily migration and recall statistics by a specific hour.
J	Accesses the Daily Stats by Job panel allowing you to view daily migration and recall statistics by a specific job name.
L	Accesses the Daily Stats by Logical Pool panel allowing you to view daily statistics by a specific logical pool.
V	Accesses the Volume Stats panel allowing you to view DFSMShsm activity by a specific volume.
Z	Accesses the HSM Daily Stats panel allowing you to view a variety of statistical information.
1-20	Accesses a specific panel that is associated with the column heading on the Total Daily Stats panel. For example, 1 is associated with the Migrate L0->L1 column and will access a panel showing migration for those levels.

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Zoom Options (Monthly Stats)

The selection column (SL) on the Monthly Stats panel provides drill-down detail information with its "Zoom" function. There are only two Zoom detail options available. Follow these steps to select a zoom option:

Note: You can display valid zooming options for a specific result set by positioning the cursor on the selection line and pressing PF1.

1. From the Monthly Stats panel, position the cursor on the selection line (SL) next to a month.
2. Type **D** or **S** and press ENTER
3. The HSM Daily Stats panel appears. Review the result details that appear on the panel.
4. Repeat these steps to continue to drill-down through the various detail information panels.

Table 7–4. Selection Options, Monthly Stats panel

Selection Option	Description
D or S	Accesses the HSM Daily Stats panel allowing you to view detailed daily activity information.

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HSM Dataset Detail

HSM dataset detail is available from the DFSMShsm Mgmt Selection panel. Type **2** (Detail) in the Option field and press ENTER. The Dataset Detail Selection panel (Figure 7–5) appears, which is used to access migration/ recall and backup information.

```
TeraCloud Storage Framework Professional V2R1M1.BTSF211(00)
OPTION  ===> _

                        TSF Dataset Detail Selection

   1  Migrate/Recall  TSF Migrate/Recall Information
   2  Backup          TSF Backup Information



   X  Exit            Exit TSF


Enter END command to return to previous panel

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```

Figure 7–5. Dataset Detail Selection panel

Depending on your selection from this panel, you can view:

- Migration Summary information
- Migration Detail information
- Backup Summary information
- Backup Detail information

Summary Information

The summary options provide an overall view of:

- Migration activity rate
- Recall activity rate
- Failure rates for either migration or recalls
- DFSMS versus non-DFSMS controlled dataset activity
- DFHSM recall history activity by week and month
- Total space occupied by Level 1 datasets
- Total space occupied by Level 2 datasets
- Model of total space saved by DFHSM
- Most-recalled dataset
- Largest recalled dataset

TSF combines information contained in the MCDS and SMF log data to create a database file. A separate database is built from information collected from the BCDS and merged with SMF log data for reporting on backup activity. It is important to understand where the data base information originates. The following information is obtained from the SMF data:

- Recall activity by job name
- Migration activity by job name
- DFHSM error information by dataset
- DFHSM error information by DFHSM function
- Recall activity by date and time
- Migration activity by date and time
- Backup activity by date and time

Detail Information

Whereas summary data is useful in sizing the work effort and benefits to be derived from a particular action or inquiry, the Detail display option provides the ability to list and manipulate detailed data. When it is known how many files are involved, detailed data can be loaded into an ISPF table.

WARNING: To ensure optimal performance, be sure to finely tune filter parameters when using display option **D** for datasets. The data load is sensitive to the number of datasets being loaded–from a performance rather than table size aspect. Although the table can contain more than 999,999 entries, loading that many datasets can affect performance.

The default (30,000) for the maximum number of datasets can be changed or overridden with the Max Table Size variable. See HSM Scan Settings Panel in the TeraCloud Storage Framework (TSF)™ Installation Guide.

The Detail option provides the ability to view the following information for each returned dataset:

- Dataset name
- Megabytes allocated, used, and free
- Times recalled from level 1
- Times recalled from level 2
- Migration error counts to levels 1 and 2
- Error reason codes
- Last two job names to reference the dataset

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- DFHSM pseudo name
- DSORG
- Multi-volume indicator
- Indicator if it was migrated without a backup
- Current HSM level
- Life recall count
- Member of a small dataset packing dataset
- Last migrated from volume
- DFSMS control indicator
- Device type last migrated from
- Dataset was last recalled to volume
- DFSMS storage class
- DFSMS data class
- DFSMS management class
- Indicator if it is a rolled-off GDG
- Indicator if it is a GDG
- Last referenced date
- Last migration date
- Last recall date
- Last backup date
- Number of bytes occupied by migration
- Percent of space saved by migration

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Migrate/Recall Filters

Migrate/Recall filters are available from the Dataset Detail Selection panel. Type **1** (Migrate/Recall) in the **Option** field and press ENTER. The Migrate/Recall Filter panel is displayed (Figure 7–6). This panel provides display option selections to refine query results and determine how migration information will display on subsequent panels.

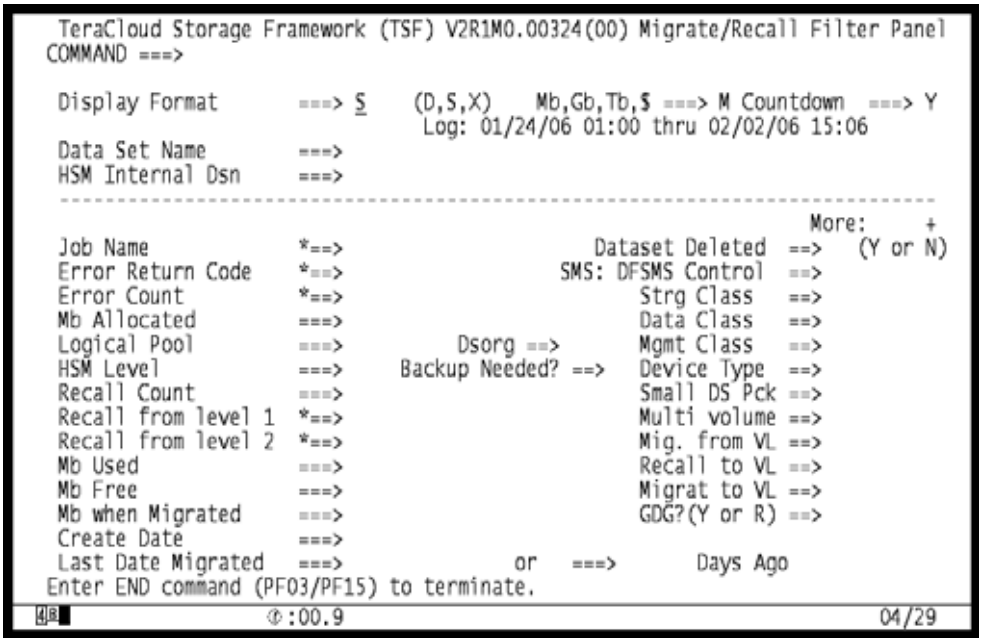

Figure 7–6. Migrate/Recall Filter panel

In addition to the display option selections, a variety of filters are also featured on this panel.

Table 7–5. Migrate/Recall filter options.

Filter Name	Description
Backup Needed?	Backup was needed at the time the dataset was migrated. • Y – Yes • N – No
MB Bytes Free	Amount of free space that is over allocated by each dataset. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric. • > 10000 – Return all datasets that have more than 10,000 bytes free
MB Bytes Used	Amount of allocated space that is actually being used for each dataset. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric. • > 10000 – Return all datasets that have more than 10,000 bytes used
Bytes when Migrated	Number of bytes the dataset occupies on either level 1 or level 2. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric. • > 10000 – Return all datasets that have a byte count greater than 10,000

Table 7–5. Migrate/Recall filter options.

Filter Name	Description
Create Date or ===> Days Ago	File creation date or the number of days since file creation. Both of these filters have two fields. The first value is greater than, less than, or equal to (<, >, =), the second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). < 180 – List all files that were created in the last 180 days
Data Class	Detail and summary information for a specific DFSMS data class
Device Type	Device type, wildcards allowed • 3390-3* – Show all datasets on 3390 model 3s • 3380* – Show all datasets except those that are on 3380s
DFSMS Control	• Y – Show only those datasets that are under the control of SMS. • N – Exclude all datasets under SMS control. Use this option if you only want to analyze the non-SMS pool If this field is left blank then all datasets will be analyzed.
Dsorg	Dataset organization of the dataset
Error Count	Number of errors encountered between the various migration levels. This field is limited to data within the LOG date time stamp.
Error Return Code	Error return code if one was encountered for all datasets migrated, recalled, or backed up. Valid entries for this field are any valid DFHSM error return codes. If no entry is specified for this field then all DFHSM errors encountered will be displayed. This field is limited to data within the LOG date time stamp.
Expiration Date or ===> Days Ago	Expiration date or the number of days since expiration. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format, or a number from 0 to 999 (for Days Ago). • < 01/ 01/2005 – Analyze all datasets that will expire before January 1, 2005 • < 180 – Find all datasets that will expire in the next 6 months. • = LDATE – Show all files with the Expire Date equal to the Last Used Date **Note:** To evaluate datasets by a future expiration date, use Greater Than and select the current or a future Date. Date format is mm/dd/yyyy.
GDG?(Y or R)	• Y – Dataset is a GDG • R – Dataset is a rolled-off GDG
HSM Level	Level of DFHSM **Note:** A blank in this field returns all level 0, level 1, and level 2 controlled datasets. • 0 – Return all DFHSM level 0 controlled datasets • 1 – Return all DFHSM level 1 controlled datasets • 2 – Return all DFHSM level 2 controlled datasets
Job Name	Job name that last referenced the dataset to either migrate or recall the file. DFSMShsm Mgmt retains the last 5 job names that have referenced the dataset for either migration or recall. Wildcards allowed. This field is limited to data within the LOG date time stamp.

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Table 7–5. Migrate/Recall filter options.

Filter Name	Description
Last Date Migrated or ===> Days Ago	Last migration date or the number of days since last migration. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). • < 12/31/2004 – Show all datasets that were migrated before 12/31/2004 • = 01/15/1996 – Find all datasets that were migrated on January 15, 1996
Last Date Recalled or ===> Days Ago	Last recall date or the number of days since last recall. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). • < 06/01/ 1996 – Analyze all datasets recalled before June 1, 1996 • = 01/15/1996 – Find all datasets that were recalled on January 15, 1996
Last Date Referenced or ===> Days Ago	Last referenced date or number of days since last reference. Both filters have two fields. First value is greater than, less than, or equal to (<, >, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). • < 06/01/ 1996 – Analyze all datasets referenced before June 1, 1996 • = 01/15/1996 – Find all datasets that were referenced on January 15, 1996 • > 180 – Find all datasets that have not been accessed in the last six months
Logical Pool	User-defined logical pool name • PAYROLL – Return all datasets that have been assigned to the PAYROLL system or application
Mgmt Class	Detail and summary information for datasets by management class. Wildcards allowed. • MIG90 – Display all SMS datasets that are assigned a management class of MIG90 • A* – Display all SMS datasets that have a management class that begins with A • UNASSIGN – Display all SMS datasets that have not been assigned a management class • Blank - Displays all datasets
Mig. from VL	Volser that the dataset was migrated from
Multi Volume	• Y – Dataset is multi-volume dataset • N – Dataset is single volume dataset
Recall Count	Recall activity for the life of the dataset as reflected in the MCDS. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric. • > 100 – Return all datasets that have a Life Recall count of more than 100
Recall from level 1	Number of times a dataset has been recalled from level one. This field is limited to data within the LOG date time stamp.

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Table 7–5. Migrate/Recall filter options.

Filter Name	Description
Recall from level 2	Number of times a dataset has been recalled from level two. This field is limited to data within the LOG date time stamp.
Recall to VL	Volser that the dataset was recalled to
Small DS Pack	Y – Dataset is part of a compressed DFHSM dataset N – Dataset is not part of a compressed dataset
Strg Class	Detail and summary information for datasets by storage class. Wildcards allowed. TSOSM – Display all datasets in the TSOSM storage class T* – Displays all datasets in a storage class that begin with T Blank - Display all storage classes

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Migration Information

The columns on this panel vary slightly according to the display selection, D (Detail records) or S (Summary information), which is the default. The Migration Summary panel shows an abbreviated view of migration activity, whereas the Migration Detail panel shows a specific view of migration activity. Follow these steps to display one of the migration information panels:

1. From the Migrate/Recall filter panel, type **D** or **S** in the **Display Format** field.
2. In the **MB, GB, TB, $** field, type a value.
3. Change the Countdown value, if desired.
4. Type the desired filter parameters (Table 7–5).
5. Press ENTER to execute the filter. The Migration Detail panel (Figure 7–7) or the Migration Summary panel shows the result set (Figure 7–8).
6. Review the result set (column descriptions are in Table 7–6, Table 7–6, and Table 7–8). Use command-line options. See Chapter 2, Command Line Options for more information.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00324(00)       Row 1 to 17 of 3,996
COMMAND ===> _                                                SCROLL ===> PAGE

OP SYS(z/ 1.6.0) === Log: 01/24/06 01:00  thru  02/02/06 15:06  === SYSID(TZ01)
                                                                (1)       More -->
S                                                          Mb            Mb  Hsm
L Dataset Name -------------------------------          Alloc          Used  Lvl
_ CAI.CL232C0.F2                                        10.15          7.56   1
_ CSQ520.CSQ1.BSDS01                                      .00           .00   0
_ CSQ520.CSQ1.BSDS02                                      .00           .00   0
_ CSQ520.CSQ1.LOGCOPY1.DS01                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY1.DS02                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY1.DS03                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY1.DS04                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY2.DS01                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY2.DS02                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY2.DS03                               .00           .00   0
_ CSQ520.CSQ1.LOGCOPY2.DS04                               .00           .00   0
_ CSQ520.ZOSV14W.SCSQAUTH                                 .05           .00   1
_ DEMO01.BRODCAST                                         .05           .00   1
_ DEMO01.ISPF.ISPPROF                                     .81           .03   1
_ DEMO01.SPFLOG1.LIST                                     .05           .00   1
_ DEMO012.BRODCAST                                        .05           .00   1
_ DEMO012.ISPF.ISPPROF                                    .81           .01   1
                    :00.1                                                02/15
```

Figure 7–7. Migration Detail panel with a result set

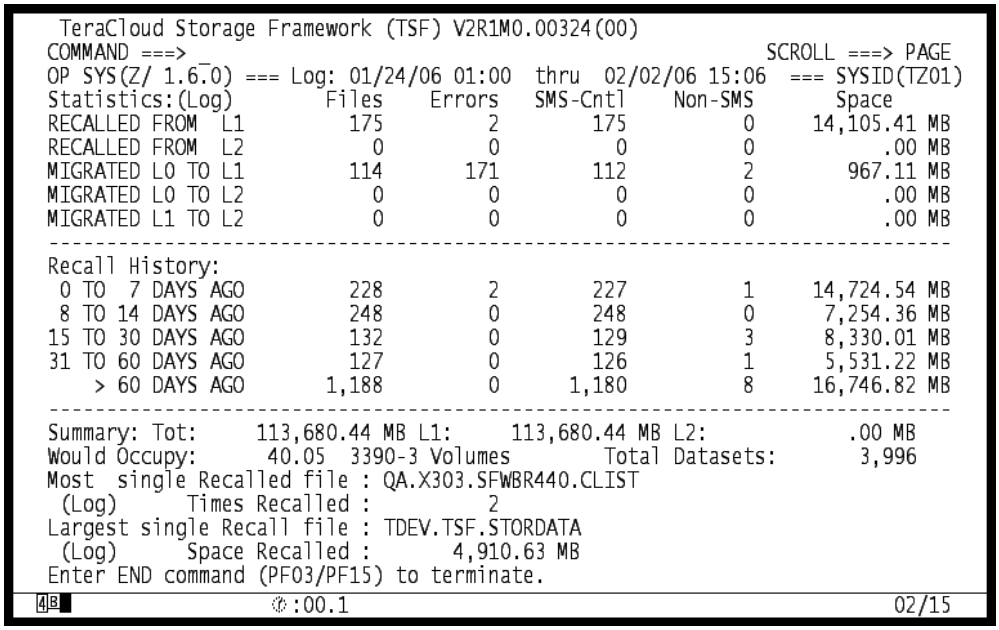

Figure 7–8. Migration Summary panel with a result set

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Detail Results

Useful Tip. You must scroll to the right to view some of the columns on the panel. Or, you can type an **S** in the Selection (SL) column to show all of the detail information for the selected dataset on a single panel.

Table 7–6. Migration detail results columns.

Column Name	Description
Abnd Code	Reason code for a failure. This information is limited to the Log date range.
Backup	Most recent date the current dataset was backed up if the dataset is controlled by DFSMS
Create	Date created
Data Class	Data class of the current dataset if it is controlled by SMS
Dataset Name	Dataset name
Dsorg	Dataset organization of the dataset
Error count (log) 0->L1 0->L2 L1->0 L2->0	Number of errors encountered for the current dataset for migrations and recalls. This information is limited to the Log date range.
Expire	Expiration date
From Devt	Device type that the current dataset was migrated from
Gdg	Dataset is a GDG if Y
Hsm Lvl	Dataset's current HSM level - 0, 1, or 2.
JobName (0)	First job name that migrated or recalled the dataset. The data base contains the last 5 job names that referenced the dataset. This information is limited to the Log date range.
JobName (-1)	Previous job to migrate or recall
JobName (-2)	Second previous job to migrate or recall
Last Refer	Date the current dataset was last referenced
Life Recall	Total number of times the current dataset has been recalled
Mb Alloc	Megabytes allocated for the current dataset being reported on. Megabytes appears if this was selected
Mb Free	Free space of the dataset in megabytes.
Mb Used	Megabytes used for the current dataset being reported on
Mgmt Class	Management class of the current dataset if it is controlled by SMS
Migrate	Date of the migration
Migrat FromVl	Volume serial number that the current dataset was migrated from
Migrated MB	Number of bytes occupied by the dataset on level 1 or level 2
Migrated (Log) 0->L1 0->L2 L1->L2	Number of datasets migrated during this period. This information is limited to the Log date range.

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Table 7–6. Migration detail results columns.

Column Name	Description
Mult Vol	Shows whether the current dataset is a true multi-volume dataset or not.
Need Bkup	Migrated dataset does not have a valid backup if Y
Pct Save	Percentage of space saved by DFHSM over the original dataset allocation
Reas Code	Reason code of a DFHSM failure for either migrate or recall. This information is limited to the Log date range.
Recall	Last recall date of the current dataset
Recall To Vol	Volume serial number that the current dataset was recalled to
Recalled (log) L1->0 L2->0	Number of times the current dataset has been recalled from each level. This information is limited to the Log date range.
Ret Code	Error return code for the last error encountered for the current dataset. This information is limited to the Log date range.
Rol Gdg	Dataset is a rolled-off GDG if Y
SL	Allows you to type a valid selection option.
Sml Dsp	Dataset is part of a compressed DFHSM dataset if Y
Sms	Current dataset is controlled by SMS if Y
Storage Class	Storage class of the current dataset if it is controlled by SMS

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Summary Results

Columns on this panel are cross-referenced with Statistics log and Recall History columns located on the far left side of the panel. The columns and the cross-referenced information are listed in Table 7–7 and Table 7–8.

Table 7–7. Migration Summary result columns.

Column Name	Description
OP SYS	Operating system level
Log	Date and time range within which the SMF(log) data was collected; only the Statistics portion of this report reflects the activity for this time period.
SYSID	SMF ID of the current system being queried
Statistics:(Log)	Information obtained from SMF(log) data
Files	Number of datasets encountered for recalls or migrations
Errors	Number of errors encountered for recalls or migrations
SMS-Cntl	DFSMS controlled datasets encountered for recalls and migrations
Non-SMS	Non-DFSMS controlled datasets encountered for recalls and migrations
Space	Total space used in megabytes for datasets that were recalled or migrated
Summary Bytes:	
• Tot:	Total megabytes used by DFHSM for dataset migration; this number reflects what was used for these migrated datasets when on primary
• Lvl1	Total megabytes used by DFHSM for Level 1 dataset migration
• Lvl2	Total megabytes used by DFHSM for Level 2 dataset migration
Would Occupy	Represents the space on level 0, in 3390-3 terminology, of all the datasets controlled by DFHSM if the datasets were to be recalled; this information is useful when combined with the filter information arguments
Most single Recalled file	Dataset name for the file that was recalled the most times for all datasets being reported on. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
(Log) Times Recalled	Number of times the above dataset was recalled. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
Largest single Recall file	Dataset name of the largest single file recalled in megabytes. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
(Log) Space Recalled	Size in megabytes of the largest single file recalled. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.

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Table 7–8. Migration Summary results, Cross-Referenced Columns

Information	Description
RECALLED FROM L1	Summary of all datasets in each category that were recalled from level one during the date range specified
RECALLED FROM L2	Summary of all datasets in each category that were recalled from level two during the date range specified
MIGRATED TO L1	Summary of all datasets in each category that were migrated to level one during the date range specified
MIGRATED TO L2	Summary of all datasets in each category that were migrated to level two during the date range specified.
Recall History	Summary of the number of datasets obtained from the MCDS that were encountered for each category. This information is subject to the availability of these records in the MCDS at the time of the database build
0 TO 7 DAYS AGO	Summary of the number of datasets encountered for each category that have been recalled in the last 0 to 7 days
8 TO 14 DAYS AGO	Summary of the number of datasets encountered for each category that have been recalled in the last 8 to 14 days
15 TO 30 DAYS AGO	Summary of the number of datasets encountered for each category that have been recalled in the last 15 to 30 days
31 TO 60 DAYS AGO	Summary of the number of datasets encountered for each category that have been recalled in the last 31 to 60 days
> 60 DAYS AGO	Summary of the number of datasets encountered for each category that have been recalled in more than 60 days

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Zoom Options

The selection column (SL) on the Migration Detail panel provides drill-down detail information with its "Zoom" function. Many levels of Zoom detail are available. Follow these steps to select a zoom option:

Note: You can display valid zooming options for a specific result set by positioning the cursor on the selection line and pressing PF1.

1. From the Migration Detail panel, position the cursor on the selection line (SL) next to a date.
2. Type **D**, **S**, **H**, or **/** and press ENTER
3. When the panel appears with the result details, review the results.
4. Repeat these steps to continue to drill-down through the various detail information panels.

Table 7–9. Selection Options, Migration Detail panel

Selection Option	Description
S or D	Shows all of the detail information for the selected dataset on a single panel.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular pool or pools. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Accesses the Migrated Dataset Action Menu where you can perform a specific action to a selected dataset.
=	Allows you to repeat an action.

MIGRATED DATASET ACTION MENU

The Migrated Dataset Action Menu allows you to perform specific actions related a selected dataset or datasets that appear in the Migration Detail panel. Follow these steps to access the Migrated Dataset Action Menu:

1. From the Migration Detail panel, move the cursor in the SL column next to a specific dataset.
2. Type a **/** (forward slash) in the SL column. If you want to perform a specific action to several datasets, type a **/** in the SL column next to the first dataset. Then move the cursor to each subsequent dataset and type **=** (an equal sign).
3. Press ENTER and the Migrated Dataset Action Menu appears.

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4 Type the option you want in the Option field. See Table 7–10 for a description of the selection options.

5 Press ENTER and the option executes.

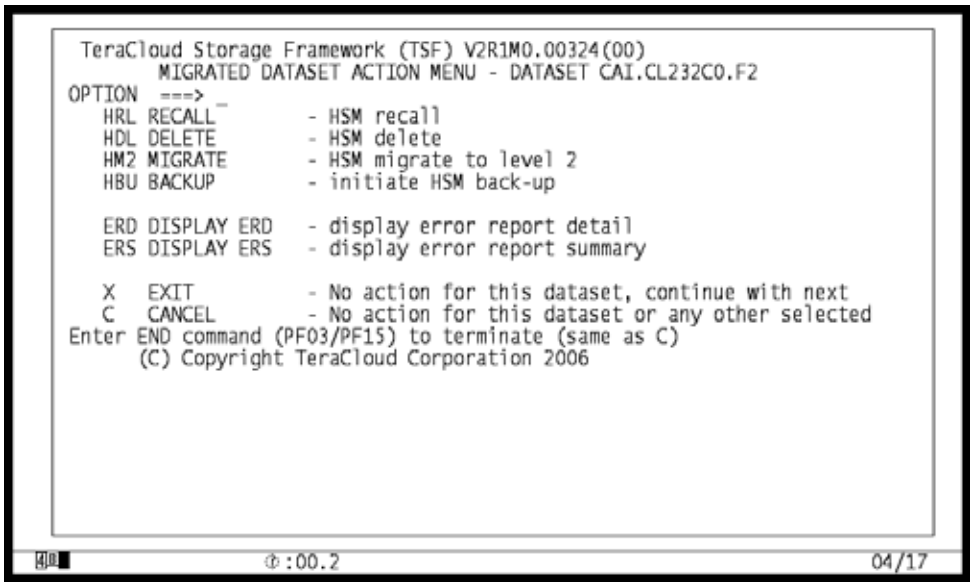

Figure 7–9. Migrated Dataset Action Menu

The selection options for the Migrated Dataset Action Menu are listed in Table 7–10.

Table 7–10. Migrated Dataset Action Menu selection options.

Selection Option	Description
HRL	Recalls the selected dataset that was previously migrated.
HDL	Deletes the selected dataset.
HM2	The selected level 1 dataset will be migrated to level 2.
HBU	Initiates an HSM backup for the selected dataset.
ERD	Accesses the Migration Error Detail panel.
ERS	Accesses the Migration Error Summary panel.
X	Passes over the action for the current dataset and proceeds to the next dataset.
C	Cancels the operation.

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Backup Filters

Backup filters are available from the Dataset Detail Selection panel. Type **2** (Backup) in the **Option** field and press ENTER. The Backup Filter panel is displayed (Figure 7–10). This panel provides display option selections to refine query results and determine how backup information will display on subsequent panels.

Figure 7–10. Backup Filter panel

Table 7–11. Backup option filters.

Filter Name	Description
All Versions (Display opt, D only)	Includes all versions, including the current version of DFHSM backup status. The filters in this category go against the active BCDS to retrieve requested information.
Backup completed?	Datasets that have either failed backup or have had the backup complete successfully. **Note**: A blank in this field displays all backups completed. • Y – Display all successful backups • N – Display only those backups that have failed
Backup Date or ===> Days Ago	Backup date or number of days since backup.Both filters have two fields. First value is greater than, less than, or equal to (>, <, =), second value is date in *mm/dd/yyyy* format or a number from 0 to 999 (for Days Ago). • < 01/ 01/2006 – Analyze all datasets that were backed up before January 1, 2006 • < 365 – Show all files that have been backed up within the last year
Backup From Volser	Datasets backed up from specified volser. Any valid DFHSM back up volume serial number is valid for this field.
Bytes Allocated	Amount of allocated space that was originally allocated for each dataset.

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Table 7–11. Backup option filters.

Filter Name	Description
Ctlgd on user vol?	Dataset was cataloged on the volume from which the backup was made. **Note**: A blank in this field displays all datasets. • Y – Display only those datasets that were cataloged to the volume being backed up • N – Display only those datasets that were not cataloged to the volume being backed up
Data Class	Detail and summary information for a specific DFSMS data class.
Data Set Name	Dataset name, up to 45 characters. Wildcards allowed. **Note:** Remember to enter all include logic first followed by all exclude logic with each field separated by a comma. • PTS.** – Show all datasets with a high level qualifier of PTS • PTS.**,PTB*.** – Show all datasets that have a high level qualifier and all datasets that begin with PTB • PTS.**,PTB*.**,¬*.GDG.** – Show all datasets that have a high level qualifier and all datasets that begin with PTB that do not have GDG as the second level qualifier
DFSMS Control	• Y – Show only those datasets that are under the control of SMS. • N – Exclude all datasets under SMS control. Use this option if you only want to analyze the non-SMS pool If this field is left blank all datasets will be analyzed.
Dsorg	Dataset organization
Error Count	Number of errors encountered between the various migration levels. This field is limited to data within the LOG date time stamp.
Error Return Code	Error return code if one was encountered for all datasets migrated, recalled, or backed up. Valid entries for this field are any valid DFHSM error return codes. If no entry is specified for this field then all DFHSM errors encountered will be displayed. This field is limited to data within the LOG date time stamp.
Frequency in days	Frequency of dataset backup. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric. If a user profile is not established for this dataset, second value is the system default. Otherwise, this field contains the backup frequency as requested by the user. The dataset will not be backed up automatically more frequently than this value.
HSM Backup Volser	Volser of the last backup for the specified dataset. A valid entry for this field is any DFHSM backup volume serial number.
Job Name	Job name that last referenced the dataset to either migrate or recall the file. TSF retains the last 5 job names that have referenced the dataset for migration or recall. Wildcards allowed. This field is limited to data within the LOG date time stamp.

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Table 7–11. Backup option filters.

Filter Name	Description
LOG, mm/dd/yy nn-nn thru mm/dd/yy nn-nn	Information only. Shows the time period for log data in the data base. This log data is acquired by reading HSM generated SMF records. • First date indicates the earliest SMF record found in the database and its associated time. • Last date indicates the last SMF record that was collected and merged with the history data base. This data is collected from the TSF database during the execution of batch job TSFHSMCT. The amount of SMF data collected, indicated by the date and time stamp, is controlled by the "daysago" parameter within this job.
Logical Pool	User-defined logical pool name • PAYROLL – Return all datasets that have been assigned to the PAYROLL system or application
Mgmt Class	Detail and summary information for datasets by management class • MIG90 – Display all SMS datasets that are assigned a management class of MIG90 • A* – Display all SMS datasets that have a management class that begins with A • UNASSIGN – Display all SMS datasets that have not been assigned a management class • Blank – Display all SMS controlled datasets that have not been assigned a management class
Profile exists?	You can only select backups that have a user profile defined. **Note**: A blank in this field displays all datasets. • Y – Display only those datasets that have a defined user profile • N – Display only those datasets that do not have a defined user profile
Resides on ML1?	Backup resides on DFHSM level 1. **Note**: A blank in this field displays all backups. • Y – Display only those datasets that reside on Level1 • N – Display only those datasets that do not reside on Level 1, regardless of where they exist
Resides on Tape?	You can only select backups that reside on tape or disk **Note**: A blank in this field displays both tape and disk backups. • Y – Display backups that reside on tape • N – Display only those backups that reside on disk
Retired dataset?	Display only datasets whose backups will be retired. **Note**: A blank in this field displays all backups completed. • Y – Display only those datasets that will be retired • N – Display only those datasets that have not been retired
Strg Class	Detail and summary information for datasets by storage class. Wildcards allowed. • TSOSM – Display all datasets in the TSOSM storage class • T* – Displays all datasets in a storage class that begin with T • Blank – Displays all storage classes

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Table 7–11. Backup option filters.

Filter Name	Description
Tot Num of Versions	Backups based on the total number of versions that exist. Two fields; first value is greater than, less than, or equal to (>, <, =), second value is numeric.
Version Valid?	Valid or invalid backup versions **Note**: A blank in this field displays all backups. • Y – Display only those datasets that have a valid backup • N – Display only those datasets that do not have a valid backup

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Backup Information

The columns on this panel vary slightly according to the display selection, D (Detail records) or S (Summary information), which is the default. The Backup Summary panel displays an abbreviated view of dataset backup statistics, backup history, most single backup file, and the largest single backup file.

The Backup Detail panel shows specific backup information about datasets. This information includes the version, whether there were any errors in the backup, whether it is SMS, whether it is on tape, whether it has been migrated to level 1, whether it has finished, and the backup date.

Follow these steps to display backup information:

1. From the Backup filter panel, type **D** or **S** in the **Display Format** field.
2. In the **MB, GB, TB, $** field, type a value.
3. Change the Countdown value, if desired.
4. Type the desired filter parameters (Table 7–11).
5. Press ENTER to execute the filter. The Backup Summary panel shows the result set for option S (Figure 7–11), whereas the Backup Detail panel shows the result set for option D (Figure 7–12).
6. Review the result set (column descriptions are in Table 7–12, Table 7–13, and Table 7–14). Use command-line options to drill down. See Chapter 2, Command Line Options for more information.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00324(00)
COMMAND ===> _                                                SCROLL ===> PAGE

OP SYS(Z/ 1.6.0) === Log: 01/24/06 01:00  thru  02/02/06 15:06  === SYSID(TZ01)
Statistics:              Files    Errors   SMS-Cntl    Non-SMS       Space
(For the log period)
NUMBER OF BACKUPS            0         0          0          0           .00 MB
-------------------------------------------------------------------------------
Backup History:

 0 TO  7 DAYS AGO            0         0          0          0           .00 MB
 8 TO 14 DAYS AGO            0         0          0          0           .00 MB
15 TO 30 DAYS AGO            7         0          7          0         47.80 MB
31 TO 60 DAYS AGO           21         0         21          0        330.91 MB
    > 60 DAYS AGO           49         0         48          1        357.81 MB
-------------------------------------------------------------------------------
Total Datasets  :           77
Most  single Backup   file :
 (Log)      Times Backup   :

Largest single Backup file :
 (Log)      Space Backup   :

Enter END command (PF03/PF15) to terminate.
                    ⏱:00.1                                              02/15
```

Figure 7–11. Backup Summary panel with a result set

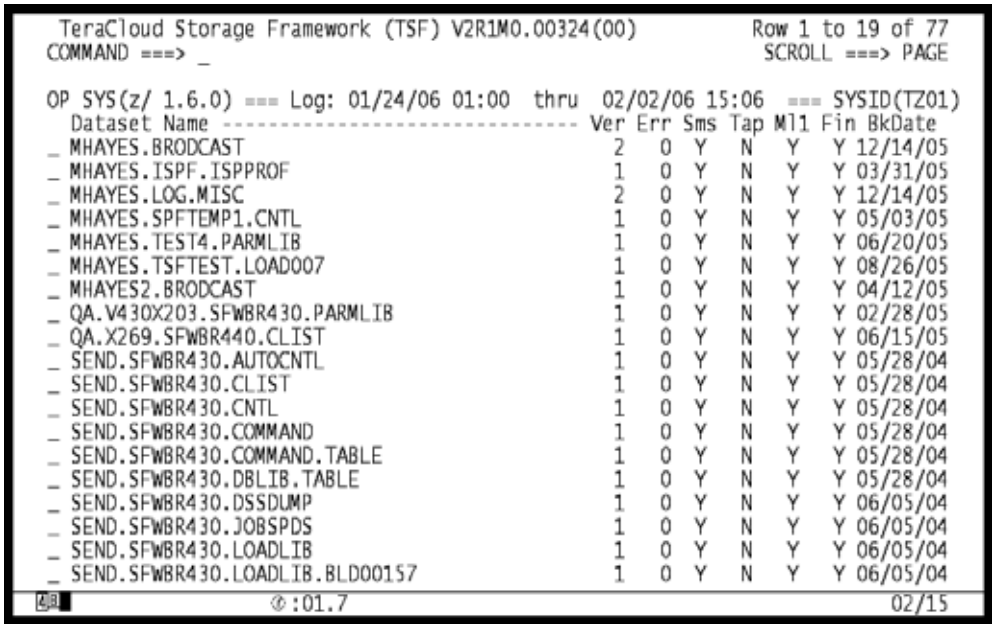

Figure 7–12. Backup Detail panel with a result set

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Summary Results

Columns on this panel are cross-referenced with Number of Backups and Backup History columns located on the far left side of the panel.

Table 7–12. Backup summary results columns.

Column Name	Description
OP SYS	Operating system level
Log	Date and time range within which the SMF(log) data was collected; only the Statistics portion of this report reflects the activity for this time period.
SYSID	SMF ID of the current system being queried
Statistics (For the log period)	Information obtained from SMF(log) data
• Files	Number of datasets encountered for backups
• Errors	Number of errors encountered for backups
• SMS-Cntl	Number of DFSMS controlled datasets encountered for backups
• Non-SMS	Number of Non-DFSMS controlled datasets encountered for backups
• Space	Total space used in megabytes for datasets that were backed up
Most single Backup file	Dataset name for the file that was backed up the most times for all datasets being reported on. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
(Log) Times Backup	Number of times the above dataset was backed up. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
Largest single Backup file	Dataset name of the largest single file backed up in megabytes. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.
(Log) Space Backup	Size in megabytes of the largest single file backed up. Notice that (Log) is displayed in this field. This indicates the information comes from the SMF (log) data and is subject to the date range specified for this database.

Table 7–13. Backup Summary results, Cross-Referenced Columns

Information	Description
NUMBER OF BACKUPS	Summary of all backups during the date range specified
Backup History	Summary of the number of datasets obtained from the BCDS that were encountered for each category. This information is subject to the availability of these records in the BCDS at the time of the database build
0 TO 7 DAYS AGO	Summary of the number of datasets encountered for each category that have been backed up in the last 0 to 7 days.

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Table 7–13. Backup Summary results, Cross-Referenced Columns

Information	Description
8 TO 14 DAYS AGO	Summary of the number of datasets encountered for each category that have been backed up in the last 8 to 14 days.
15 TO 30 DAYS AGO	Summary of the number of datasets encountered for each category that have been backed up in the last 15 to 30 days.
31 TO 60 DAYS AGO	Summary of the number of datasets encountered for each category that have been backed up in the last 31 to 60 days.
> 60 DAYS AGO	Summary of the number of datasets encountered for each category that have been backed up in more than 60 days.

Detail Results

Table 7–14. Backup Detail columns.

Column Name	Description
BkDate	Date backed up
Cat	Dataset is a cataloged on the volume being backed up if Y
Dataset Name	Dataset name, alphanumeric
Date	Date when the backup was accomplished for this generation.
Dss	Data mover being used was DFSMSdss if Y
Err	Number of errors
ERS	Dataset is erased upon the volume being scratched if Y
Fin	Backup finished processing if Y
FrmVol	Indicates the volume where the dataset resided when it was backed up.
Ml1	Backed up to ML1 if Y
PSE	Dataset is a PDSE if Y
SER	Dataset was backed up using standard serialization if Y
Sms	SMS-controlled if Y
Stp	Dataset was striped when backed up if Y
Tap	Backed up to tape if Y
Time	Time when the backup was accomplished for this generation in *hh:mm:ss* format
Tsd	Security is controlled by date protection if Y
Tsp	Security is controlled by a password if Y
Val	Valid or invalid backup versions if Y

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Table 7–14. Backup Detail columns.

Column Name	Description
Ver	Backup version number
Vsm	Dataset is a VSAM dataset if Y

Zoom Options

The selection column (SL) on the Backup Detail panel provides drill-down detail information with its "Zoom" function. Many levels of Zoom detail are available. Follow these steps to select a zoom option:

Note: You can display valid zooming options for a specific result set by positioning the cursor on the selection line and pressing PF1.

1. From the Backup Detail panel, position the cursor on the selection line (SL) next to a dataset name.
2. Type **D**, **S**, **E**, **H**, or **/** and press ENTER
3. When the panel appears with the result details, review the results.
4. Repeat these steps to continue to drill-down through the various detail information panels.

Table 7–15. Selection Options, Backup Detail panel

Selection Option	Description
S or D	Shows all of the detail information for the selected dataset on a single panel.
E	Shows any available error information.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular pool or pools. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Accesses the Backup Dataset Action Menu where you can perform a specific action to a selected dataset.
=	Allows you to repeat an action.

BACKUP DATASET ACTION MENU

The Backup Dataset Action Menu allows you to perform specific actions to a selected dataset or datasets that appear in the Backup Detail panel. Follow these steps to access the Backup Dataset Action Menu:

1. From the Backup Detail panel, move the cursor in the SL column next to a specific dataset.
2. Type a **/** (forward slash) in the SL column. If you want to perform a specific action to several datasets, type a **/** in the SL column next to the first dataset. Then move the cursor to each subsequent dataset and type **=** (an equal sign).
3. Press ENTER and the Backup Dataset Action Menu appears.

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4 Type the option you want in the Option field.

5 Press ENTER and the option executes.

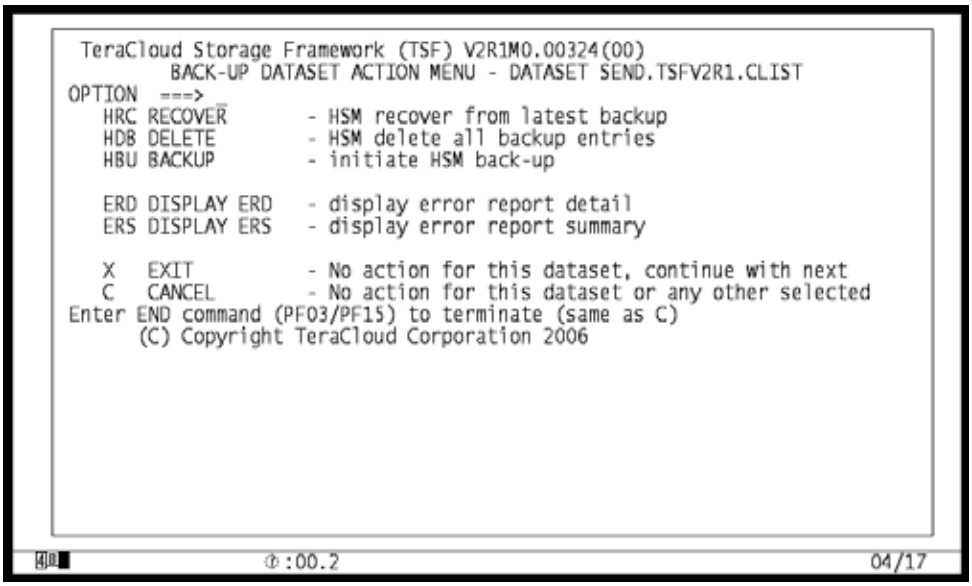

Figure 7–13. Backup Dataset Action Menu

The selection options for the Migrated Dataset Action Menu are listed in Table 7–16.

Table 7–16. Backup Dataset Action Menu selection options.

Option	Description
HRC	Recovers the selected dataset that previously resided in backup.
HDB	Deletes the selected backup dataset entries.
HBU	Initiates an HSM backup for the selected dataset.
ERD	Accesses the Migration Error Detail panel.
ERS	Accesses the Migration Error Summary panel.
X	Passes over the action for the current dataset and proceeds to the next dataset.
C	Cancels the operation.

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Batch Processes & Job Flow

The Zoom and Detail components of DFSMShsm Mgmt obtain different sources and it is important to understand how this process works.

Zoom

TSFSPACE and TSFRECRD are started tasks that intercept the SMF records that HSM creates. These are then fed into a data space, then into a VSAM database (TSF.DATABASE). This process is immediate, providing the ability to monitor HSM activity in real-time.

See Appendix D, TSF Console Commands, for various commands that can be used in conjunction with the started tasks. Among other things, these parameters allow the process to run in Sysplex mode, collect only certain record types, and perform maintenance on the VSAM database.

SYSPLEX MODE

To run TSFSPACE and TSFRECRD in a Sysplex mode, the following must be in place:

- SMF Scan settings panel, option 9 from the Edit Settings panel, must list the HSM Activity Data Base name, Group Name, and Primary System List. See the TeraCloud Storage Framework (TSF)™ Installation Guide for more information.
- TSFSPACE and TSFRECRD must run on each participating system in the Sysplex.

It is not necessary to be in full Sysplex mode for the tasks to communicate across systems. Generally, it should be sufficient if the processors are CTC-attached and can currently communicate with each other.

It is important to perform maintenance on a daily basis to clean up old records. This process is performed dynamically by using the Auto Command and Auto Command Time fields in the SMF SCAN Settings panel.

Detail

The Detail feature within DFSMShsm Mgmt allows the user to query a previously defined database. This database is created by TSFHSMCT either as a scheduled TSF collection or run as a batch job from the CNTL dataset. It gets input from the MCDS and BCDS. This is in addition to the TSF.DATABASE created by the TSF started tasks.

Two files are created within TSFHSMCT that the DFSMShsm Mgmt Detail component accesses:

- <HLQ>.TSINNN.MCDS.TRDBS
- <HLQ>.TSINNN.BCDS.TRDBS

These files should be re-created or at least updated on a daily basis.

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Examples

The following examples show best practices in using DFSMShsm Mgmt. These examples will show you how to manage your HSM environment more efficiently.

List the Total Number of MB for Level 1 Datasets Older than 1 Year and Never Recalled

1. From the DFSMShsm Mgmt Selection panel, type **2** (Detail) in the **Selection** field and press ENTER. The Dataset Detail Selection panel appears.
2. From the Dataset Detail Selection panel, type **1** (Migrate/Recall). The Migrate/Recall Filter panel appears.
3. Ensure that **M** is the selection option in the **Mb, Gb, Tb, $** field. If it is not, type **M** in this field**.**
4. Type **= 1** at the **HSM Level** field.
5. Type **= 0** at the **Recall Count** field.
6. Type **> 365** in the **==> Days Ago** part of the **Last Date Migrated or ==> Days Ago** field.
7. Press ENTER to execute the filter. The Migration Summary panel appears.
8. At the **Summary:** fields section (located at the bottom of the Migration Summary panel) you can view the total number of megabytes for level 1 datasets in the **L1:** field.

```
 TeraCloud Storage Framework (TSF) V2R1M0.00324(00)
COMMAND ===>                                                  SCROLL ===> PAGE
OP SYS(Z/ 1.6.0) === Log: 01/24/06 01:00  thru  02/02/06 15:06  === SYSID(TZ01)
Statistics:(Log)        Files    Errors   SMS-Cntl    Non-SMS       Space
RECALLED FROM  L1           0         0          0          0          .00 MB
RECALLED FROM  L2           0         0          0          0          .00 MB
MIGRATED L0 TO L1           0         0          0          0          .00 MB
MIGRATED L0 TO L2           0         0          0          0          .00 MB
MIGRATED L1 TO L2           0         0          0          0          .00 MB
-------------------------------------------------------------------------------
Recall History:
 0 TO  7 DAYS AGO           0         0          0          0          .00 MB
 8 TO 14 DAYS AGO           0         0          0          0          .00 MB
15 TO 30 DAYS AGO           0         0          0          0          .00 MB
31 TO 60 DAYS AGO           0         0          0          0          .00 MB
    > 60 DAYS AGO           0         0          0          0          .00 MB
-------------------------------------------------------------------------------
Summary: Tot:      10,635.03 MB L1:      10,635.03 MB L2:            .00 MB
Would Occupy:       3.74  3390-3 Volumes        Total Datasets:         591
Most  single Recalled file :
 (Log)      Times Recalled :
Largest single Recall file :
 (Log)      Space Recalled :            .00 MB
Enter END command (PF03/PF15) to terminate.
                    :00.2                                              02/15
```

Figure 7–14. Total number of megabytes for level 1 datasets

List the Datasets having more than One Backup Version

1. From the DFSMShsm Mgmt Selection panel, type **2** (Detail) in the **Selection** field and press ENTER. The Dataset Detail Selection panel appears.
2. From the Dataset Detail Selection panel, type **2** (Backup). The Backup Filter panel appears.
3. From the Backup Filter panel, ensure that **D** is the selection option in the **Display Format** field.
4. Type **> 1** in the **Tot Num of Versions** field.
5. Press ENTER to execute the filter. The Backup Detail panel appears.
6. In the Backup Detail panel, the dataset names are listed to the left under the **Dataset Name** heading. The column to the right with the **Ver** (Version) heading shows the datasets with more than one backup version.

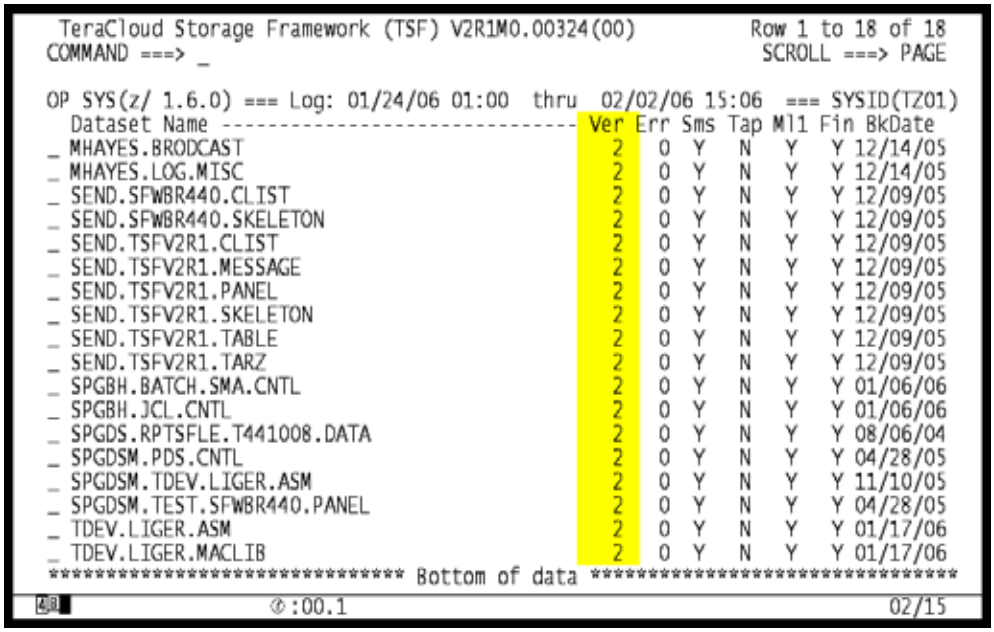

Figure 7–15. Backup Detail panel lists the datasets with more than one version

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List the Datasets Residing on Backup

1. From the DFSMShsm Mgmt Selection panel, type **2** (Detail) in the **Selection** field and press ENTER. The Dataset Detail Selection panel appears.
2. From the Dataset Detail Selection panel, type **2** (Backup). The Backup Filter panel appears.
3. From the Backup Filter panel, ensure that **D** is the selection option in the **Display Format** field**.**
4. Press ENTER to execute the filter. The Backup Detail panel appears.
5. In the Backup Detail panel, the dataset names are listed to the left under the **Dataset Name** heading.

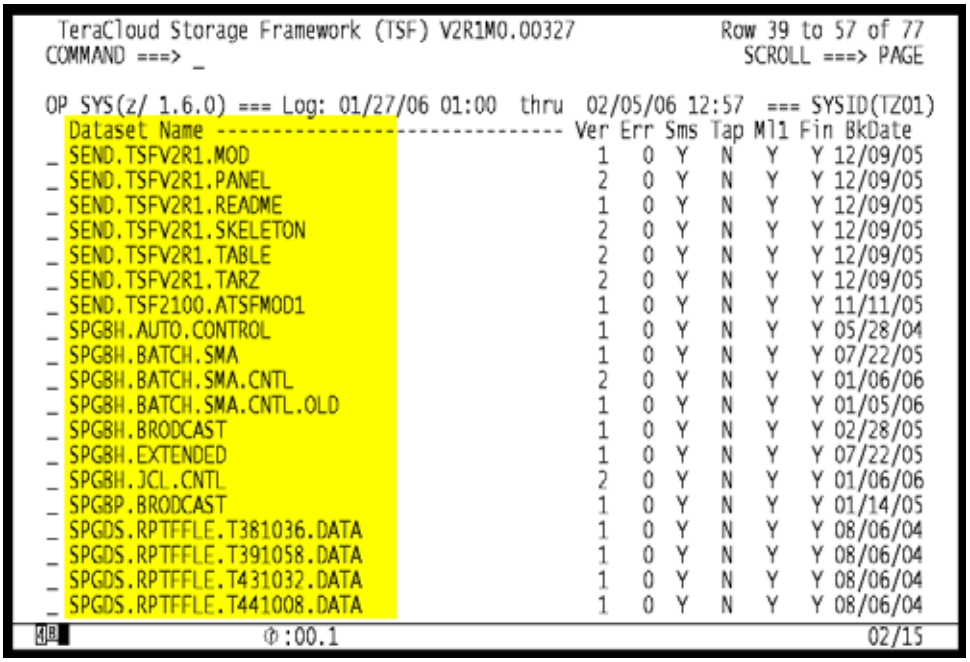

Figure 7–16. Backup Detail panel lists the datasets that reside in backup

List the Datasets Recalled More than Once within the Last 7 Days

1. From the DFSMShsm Mgmt Selection panel, type **1** (Activity) in the **Selection** field and press ENTER. The Zoom Limits filter panel appears.
2. From the Zoom Limits filter panel, ensure that **D** is the selection option in the **Starting Display** field. If it is not, type this selection option in the field**.**
3. Type **1** in the **Show all datasets recalled** field.
4. Type **7** in the **times within the last** field.
5. Press ENTER to execute the filter. The Thrashing panel appears.
6. In the Thrashing panel, the number of times a dataset has been recalled is listed to the left under the **Recall Count** heading. The column to the right with the **Dataset Name** heading shows the datasets associated with the recall count.

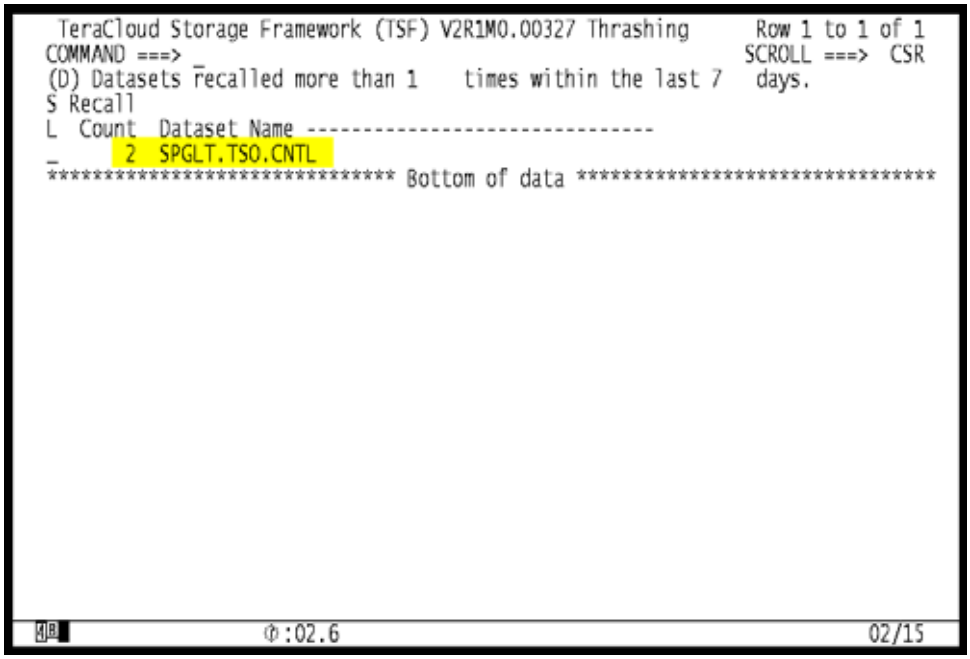

Figure 7–17. Datasets recalled more than once in the last 7 days

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List the Datasets Residing in Migration Level 1

1. From the DFSMShsm Mgmt Selection panel, type **2** (Detail) in the **Selection** field and press ENTER. The Dataset Detail Selection panel appears.
2. From the Dataset Detail Selection panel, type **1** (Migrate/Recall). The Migrate/Recall Filter panel appears.
3. From the Migrate/Recall Filter panel, ensure that **D** is the selection option in the **Display Format** field**.**
4. Type **= 1** in the **HSM Level** field.
5. Press ENTER to execute the filter. The Total Recall Migration Detail panel appears.
6. In the Migration Detail panel, the dataset names are listed to the left under the **Dataset Name** heading. The column to the right with the **HsmLvl** heading shows the datasets residing in migration level 1.

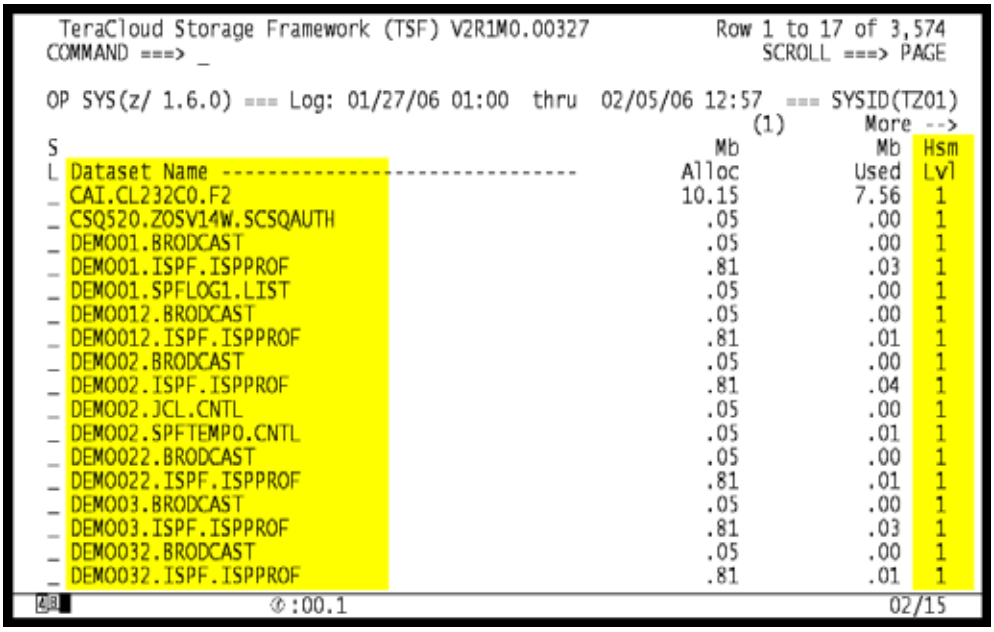

Figure 7–18. List of the dataset names that reside in migration level 1

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CHAPTER

8

LOGICAL POOL INFORMATION

The Logical Pools component lets you query user-defined volume pools, dataset logical pools, or volume pools and dataset logical pools that reside on tape. These panels have much information about logical pools as well as cost. Logical Pool information is available from the following TSF selection panels:

- Pools/Volumes or Datasets – type **2** in the **Option** field.
- Tape – type **4** in the **Option** field. From the TSF Pool Selection panel, type **1** for volume pools or **2** for dataset pools.
- DFSMShsm Mgmt, type **3** in the **Option** field.

Options that you can select from the Logical Pool filter panel will vary according to the TSF component that you selected. Executing a filter against a pool is similar to the filtering procedures used throughout TSF. Both Volume Pools and Logical Pools can be filtered by type. The primary purpose of the Logical Pool Filter Panel is to make display option selections on how pool information is to appear. Several selection options allow you to choose various views of pools.

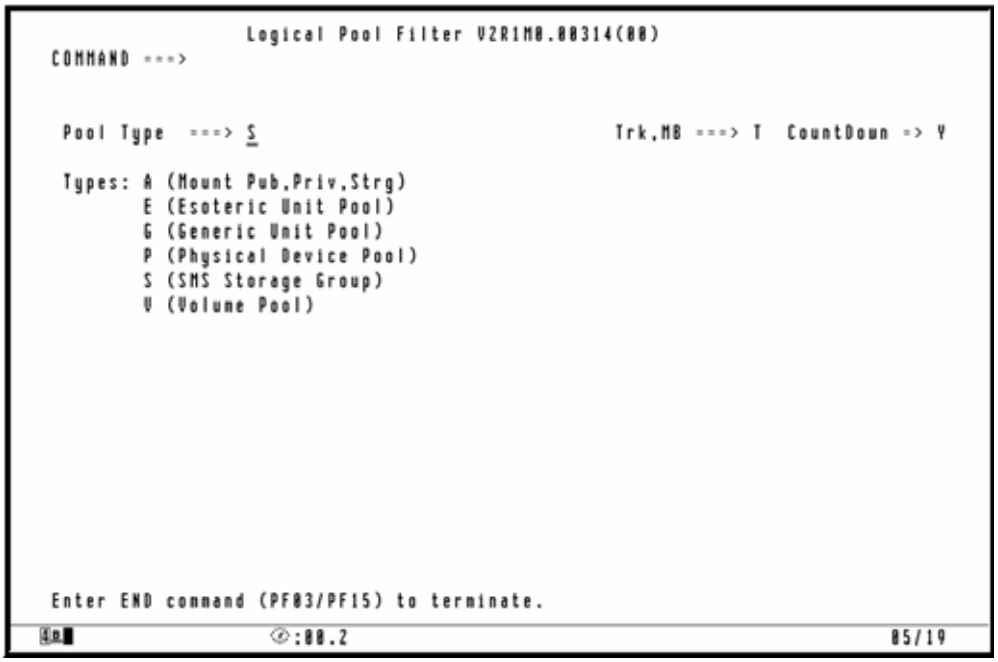

Figure 8–1. Logical Pool Filter panel (from Pools/Volumes selection)

When you select the Logical Pools option from the Datasets Selection panel, the Logical Pool filter panel displays (Figure 8–2) with different logical pool types. See Logical Pool Information Columns, page 8-10 for a description of filters and columns.

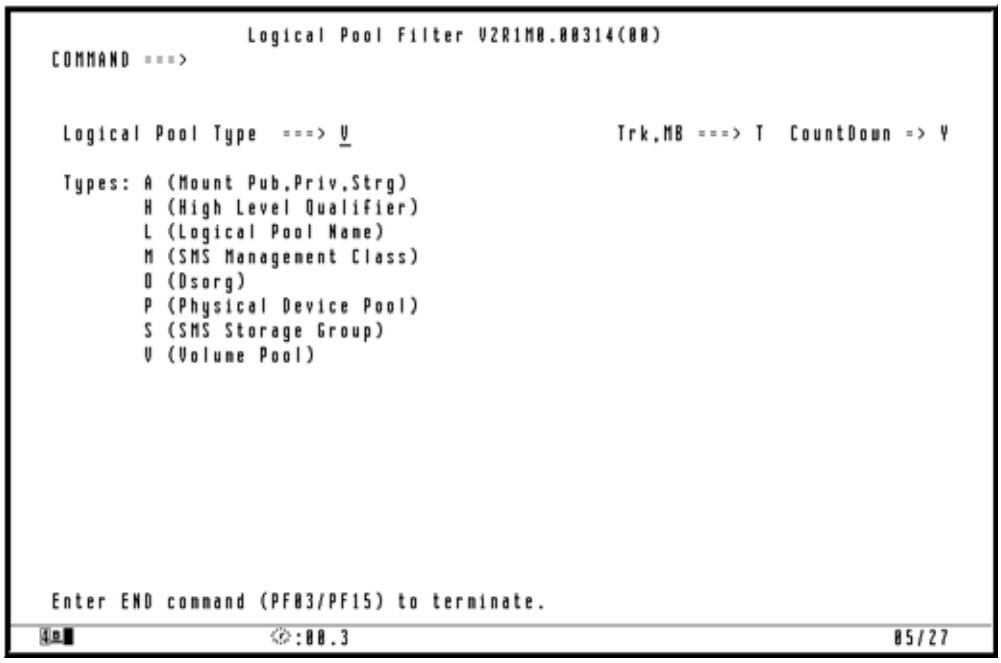

Figure 8–2. Logical Pool Filter panel (from Datasets selection)

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Logical Pool Filters

Located at the top of the Logical Pool Filter panel is the **Pool Type** or **Logical Pool Type** field. Below this field are the filter options that can be used to show a variety of pool type views. The filter options for this panel are described in Table 8–1 and Table 8–2.

Table 8–1. Filter Options, Logical Pool Filter Panel (Pools/Volumes or Tape – Volume Pool)

Filter Options	Description
A	Seeks pool names that are associated with mount attributes that are public, private, storage, or SMS.
E	Searches for esoteric unit pools.
G	Searches for generic unit pools.
P	Seeks physical device pools.
S	Searches for SMS storage groups.
V	Looks for volume pools.

Table 8–2. Filter Options, Logical Pool Filter Panel (Datasets, Tape – Dataset Pool, or DFSMShsm Mgmt)

Filter Options	Description
A	Displays pools defined as public, private, or storage
H	Displays pools by high-level qualifier
L	Displays pools by user-defined name
M	Displays pools by SMS management class
O	Displays pools by dataset organization type (for example, PDS)
P	Displays pools by physical device assigned
S	Displays pools by SMS storage group
V	Displays pools by volume pool

The filter options help to refine the specific information you want to display. They are also very valuable in seeking over committed resources, space availability, and quickly identifying space pool availability.

In addition to the filter options on the Logical Pool Filter Panel, there is the Trk, MB option field. This option allows you to display the information in tracks (T) or megabytes (M). Finally, the Countdown option field allows you to see TSF load the ISPF table. Valid entries for this field are: Y, provide the countdown panel; or N, don't provide a countdown panel. TSF will return to you after the ISPF tables are loaded.

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Displaying Logical Pool Information

The Logical Pool Information panel for dataset pools shows all logical pool names and relevant information associated with the pool type that you selected on the filter panel, for example:

- Mount Pub,Priv,Strg – Shows mount attributes that are public, private, or any other valid SMS storage group name
- High Level Qualifier – Lists all logical pools associated with a high level qualifier
- Logical Pool Name – Lists all logical pools associated with a logical pool name
- SMS Management Class – Lists all logical pools associated with an SMS Management class
- Dataset Organization – Lists all logical pools associated with specific dataset organizations
- Physical Device – Lists all logical pools associated with physical devices
- SMS Storage Group – Lists all logical pools associated with SMS storage groups

This information is featured in several columns that span horizontally across the Logical Pool Information panel. You must scroll to the right to view all the columns that appear on this panel.

Useful Tip. An alternative method of viewing all column information for a particular pool name without scrolling is to move the cursor to the pool name and type an **S** in the Selection (SL) column. This accesses a single panel where all column information appears.

Follow these steps to access the Logical Pool Information panel:

1. From the Logical Pool Filter panel, type the letter matching the filter that you want to use (**A**, **H**, **L**, **M**, **O**, **P**, **S**, or **V**) in the **Logical Pool Type** field.
2. Type **M** (megabytes) or **T** (tracks) in the **Trk, MB** field to view specific column information for megabytes or tracks. The default option is M.
3. Press ENTER to execute the filter.
4. Review the result set generated from the preceding instructions. Use PF11 and PF10 to scroll right and left (respectively) and PF8 and PF7 to page down and page up (respectively) to view all results in this set.
5. A blank line at the left of a line item in a result set indicates that more information is available by typing a valid drill-down option on that line. Type the desired drill-down option on the selection line at the left of a pool and press ENTER.

Useful Tip. Valid drill-down selection options are specific to the tool and filter options selected. Not all options in this list will be valid for each result set. To determine those options that are valid for a result set, position the cursor on the blank line at the left of a result-set line item and press PF1.

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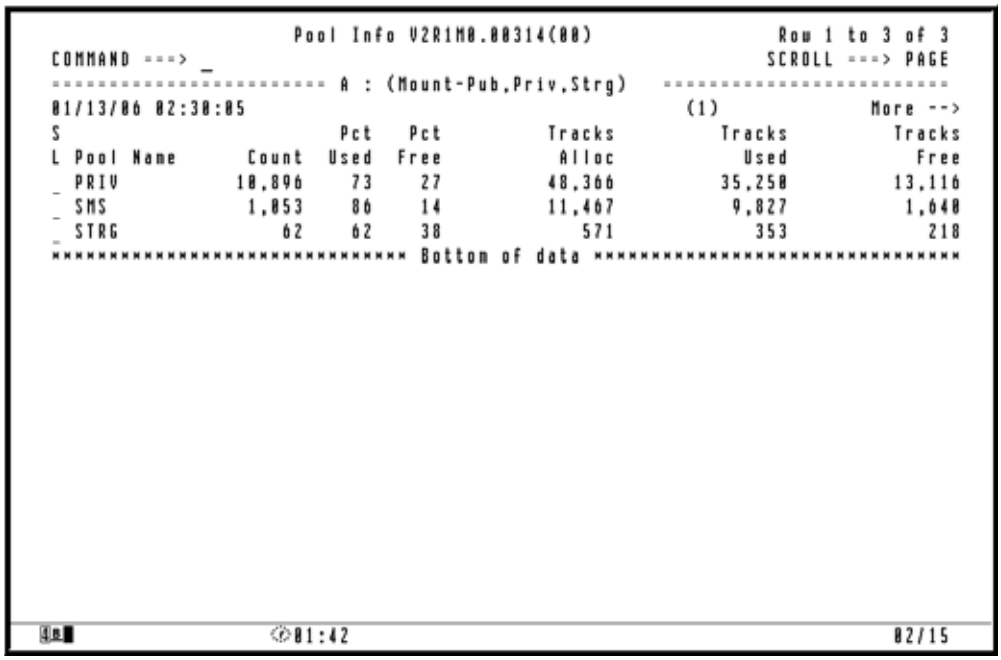

Figure 8–3. Logical Pool Information (Mount-Pub, Priv, Strg)

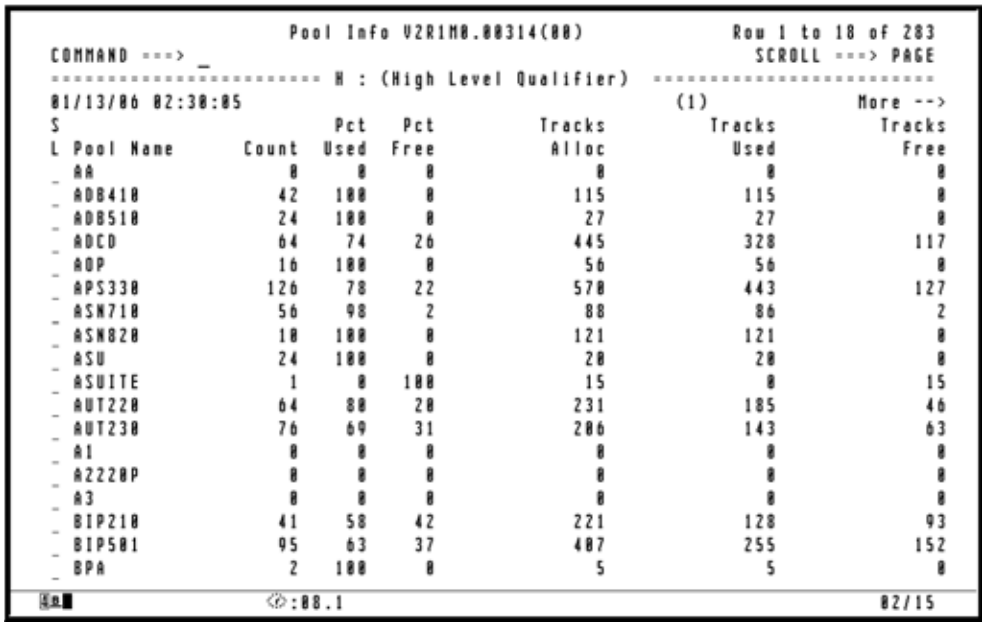

Figure 8–4. Logical Pool Information (High Level Qualifier)

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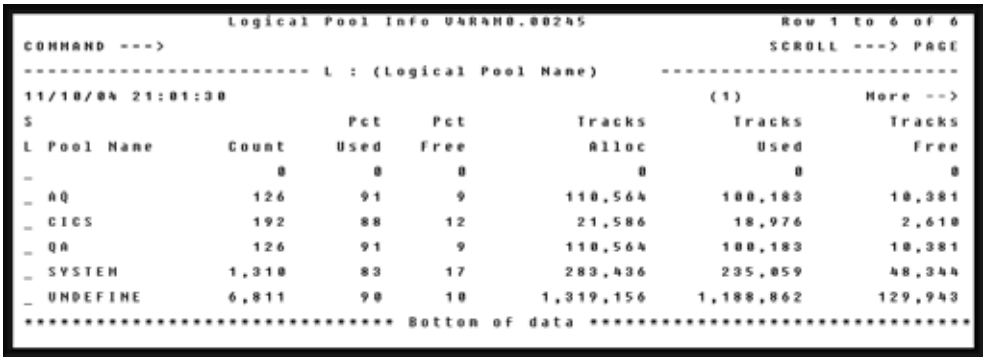
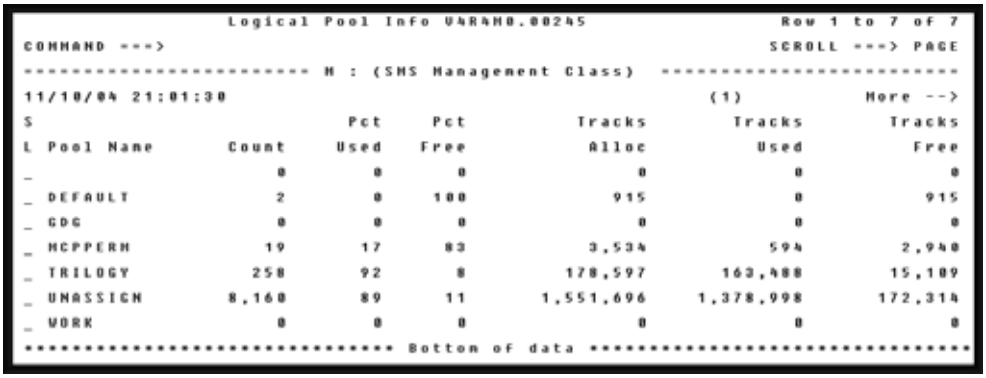


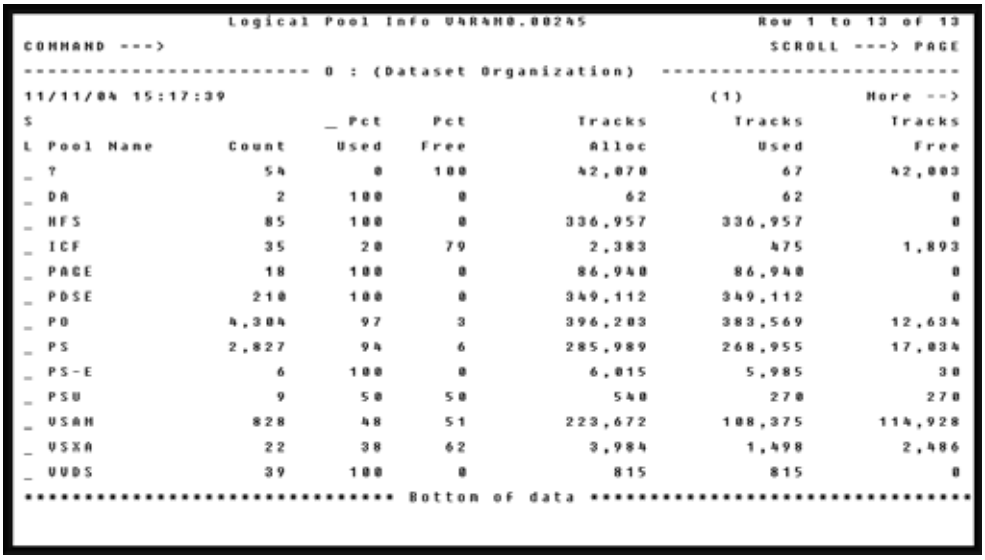
```
                    Logical Pool Info V4R4M0.00245                 Row 1 to 6 of 6
COMMAND --->                                                     SCROLL ---> PAGE
------------------------ L : (Logical Pool Name)     -------------------------
11/10/04 21:01:30                                          (1)          More -->
S                              Pct     Pct          Tracks        Tracks        Tracks
L Pool Name        Count      Used    Free           Alloc          Used          Free
_                      0         0       0               0             0             0
_ AQ                 126        91       9         110,564       100,183        10,381
_ CICS               192        88      12          21,586        18,976         2,610
_ QA                 126        91       9         110,564       100,183        10,381
_ SYSTEM           1,310        83      17         283,436       235,059        48,344
_ UNDEFINE         6,811        90      10       1,319,156     1,188,862       129,943
******************************* Bottom of data ********************************
```

Figure 8–5. Logical Pool Information (Logical Pool Name)



```
                    Logical Pool Info V4R4M0.00245                 Row 1 to 7 of 7
COMMAND --->                                                     SCROLL ---> PAGE
------------------------ M : (SMS Management Class)  -------------------------
11/10/04 21:01:30                                          (1)          More -->
S                              Pct     Pct          Tracks        Tracks        Tracks
L Pool Name        Count      Used    Free           Alloc          Used          Free
_                      0         0       0               0             0             0
_ DEFAULT              2         0     100             915             0           915
_ GDG                  0         0       0               0             0             0
_ MCPPERM             19        17      83           3,534           594         2,940
_ TRILOGY            258        92       8         178,597       163,488        15,109
_ UNASSIGN         8,160        89      11       1,551,696     1,378,998       172,314
_ WORK                 0         0       0               0             0             0
******************************* Bottom of data ********************************
```

Figure 8–6. Logical Pool Information (SMS Management Class)



```
                    Logical Pool Info V4R4M0.00245                 Row 1 to 13 of 13
COMMAND --->                                                     SCROLL ---> PAGE
------------------------ O : (Dataset Organization)  -------------------------
11/11/04 15:17:39                                          (1)          More -->
S                            _ Pct     Pct          Tracks        Tracks        Tracks
L Pool Name        Count      Used    Free           Alloc          Used          Free
_ ?                   54         0     100          42,070            67        42,003
_ DA                   2       100       0              62            62             0
_ HFS                 85       100       0         336,957       336,957             0
_ ICF                 35        20      79           2,383           475         1,893
_ PAGE                18       100       0          86,940        86,940             0
_ PDSE               210       100       0         349,112       349,112             0
_ PO               4,304        97       3         396,203       383,569        12,634
_ PS               2,827        94       6         285,989       268,955        17,034
_ PS-E                 6       100       0           6,015         5,985            30
_ PSU                  9        50      50             540           270           270
_ VSAM               828        48      51         223,672       108,375       114,928
_ VSXA                22        38      62           3,984         1,498         2,486
_ VVDS                39       100       0             815           815             0
******************************* Bottom of data ********************************
```

Figure 8–7. Logical Pool Information (Dataset Organization)

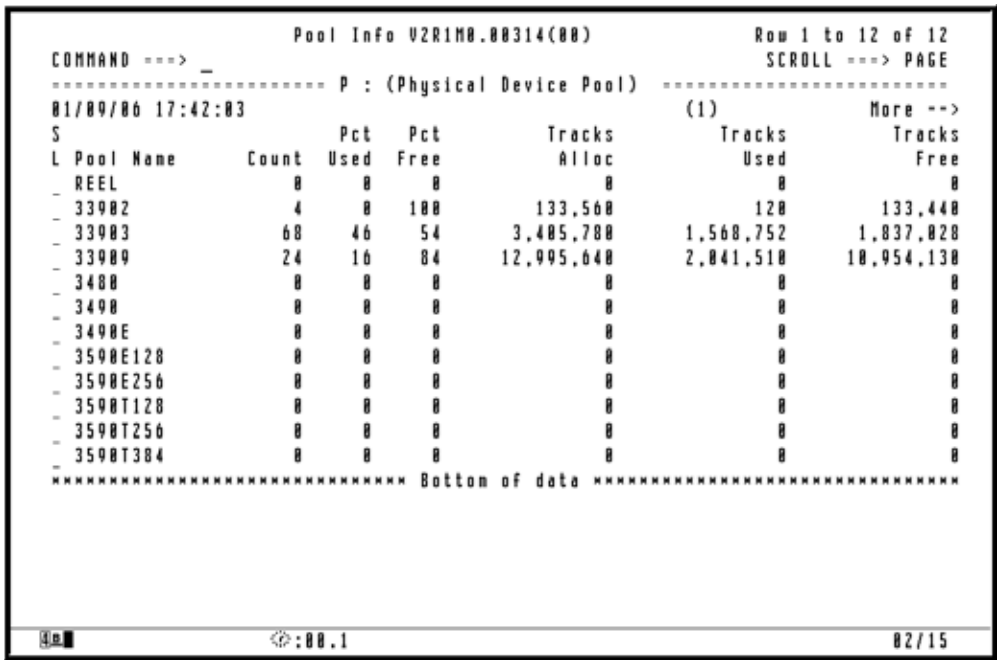


Figure 8–8. Logical Pool Information (Physical Device Pool)

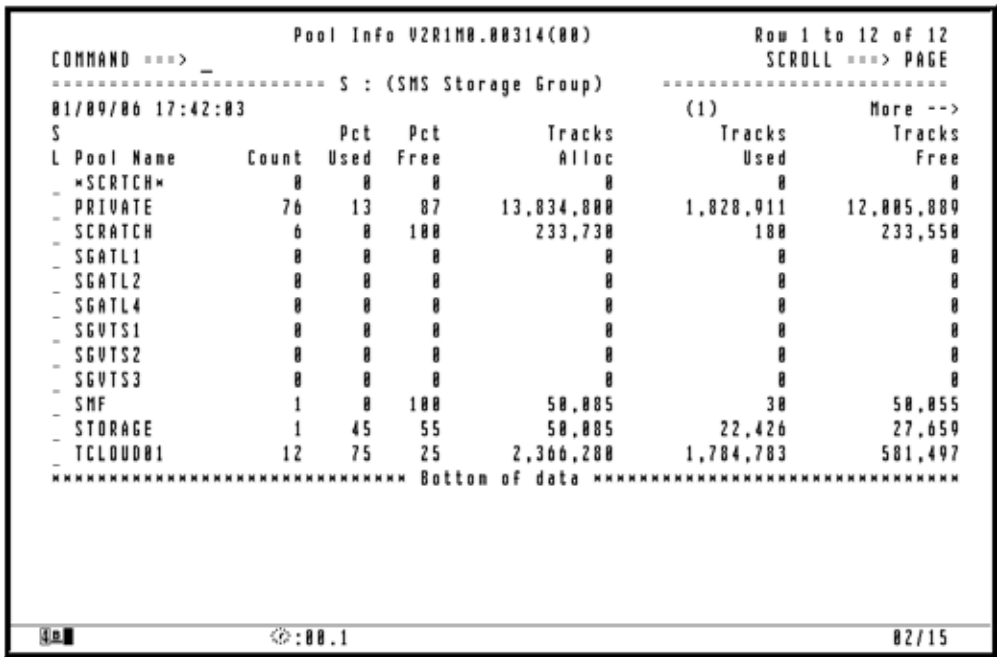


Figure 8–9. Logical Pool Information (SMS Storage Group)

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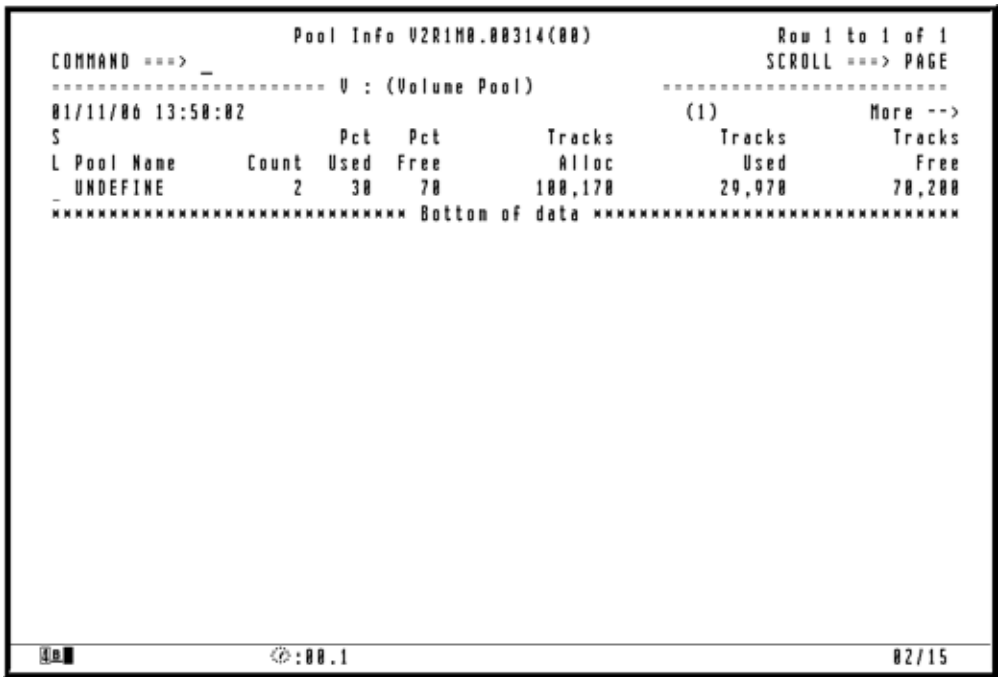

Figure 8–10. Logical Pool Information (Volume Pool)

Information Columns

The columns for the Logical Pool Information panels include the following:

Table 8–3. Logical Pool Information Columns

Column Name	Description
Backup Capacity MB	Number of megabytes of backup capacity
Backup Count	Number of backups
Backup Free MB	Number of megabytes free in backups
Backup Pct Free	Percent of space free in backups
Backup Pct Used	Percent of space used in backups
Backup Tape MB Alloc'd	Number of megabytes allocated to backup tapes
Backup Tape MB Free	Number of megabytes free in backup tapes
Backup Tape MB Used	Number of megabytes used by backup tapes
Backup Used MB	Number of megabytes used in backups
CA Splits	Number of control access splits for a pool. This column information only applies to VSAM databases.
CI Splits	Number of control interval splits for a pool. This column information only applies to VSAM databases.
Cost DASD	Cost of DASD. The cost is derived from the TSF Settings.
Cost HSM	Cost of HSM. The cost is derived from the TSF Settings.
Cost Tape	Cost of tape. The cost is derived from the TSF Settings.
Count	Total number of volumes for each pool. or Total number of pools associated with a particular esoteric pool name, generic pool name, physical device pool name, storage group pool name, volume pool name
Dump Tape Capacity MB	Capacity of dump tapes in megabytes
Dump Tape Count	Number of dump tapes
Dump Tape Free MB	Number of megabytes free in dump tapes
Dump Tape Pct Free	Percent of dump tapes that are free
Dump Tape Pct Used	Percent of dump tapes that are used
Dump Tape Used MB	Number of megabytes used by dump tapes
Megabytes Alloc	Number of allocated megabytes for a pool
Megabytes Free	Number of free megabytes for a pool
Megabytes Used	Number of used megabytes for a pool

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Table 8–3. Logical Pool Information Columns

Column Name	Description
ML1 Allocd MB	Number of megabytes allocated to migration level 1
ML1 B/U Pct Used	Percent of backup used in migration level 1
ML1 Backup MB	Number of megabytes used in backup level 1
ML1 Count	Number of datasets in a pool that have been migrated to level 1
ML1 Free MB	Number of megabytes free in migration level 1
ML1 Pct Free	Percent of space free in migration level 1
ML1 Pct Used	Percent of space used in migration level 1
ML1 Used MB	Number of megabytes used in migration level 1
ML2 Allocd MB	Number of megabytes allocated to migration level 2
ML2 Count	Number of datasets in a pool that have been migrated to level 2
ML2 Free MB	Number of megabytes free in migration level 2
ML2 Pct Free	Percent of space free in migration level 2
ML2 Pct Used	Percent of space used in migration level 2
ML2 Tape Capacity MB	Number of megabytes of tape capacity in migration level 2
ML2 Tape Count	Number of tapes that reside in migration level 2
ML2 Tape Free MB	Number of megabytes free in tapes that reside in migration level 2
ML2 Tape Pct Free	Percent of space free in tapes that reside in migration level 2
ML2 Tape Pct Used	Percent of used space by tapes in migration level 2
ML2 Tape Used MB	Number of megabytes used by tapes in migration level 2
ML2 Used MB	Number of megabytes used in migration level 2
Pct Free	Percentage of free space for a pool
Pct Used	Percentage of space used by a pool
Pool Name	Name of the pool, for example, PRIV, SMS, or STRG
SL	Selection column that is used to select a specific pool to obtain more detailed information about it. See Selecting a Pool, page 8-13.
Tape Capacity MB	Number of megabytes of tape capacity
Tape Count	Number of tapes
Tape Free MB	Number of megabytes with space free in tape
Tape Pct Free	Percent of tapes that are free
Tape Pct Used	Percent of tapes that are used

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Table 8–3. Logical Pool Information Columns

Column Name	Description
Tape Used MB	Number of megabytes used by tape
Total Cost	Total cost of DASD, tape, and HSM. The cost is derived from the TSF Settings.
Total Files/Vols	The total number of files or volumes, depending on the type of pool
Total MB	Total number of megabytes
Tracks Alloc	Number of allocated tracks for a pool
Tracks Free	Number of free tracks for a pool.
Tracks Used	Number of used tracks for a pool

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Selecting a Pool

The selection column (SL) on the Logical Pool Information panel lets you select a specific pool to view in various ways or to take an action. Dataset detail information is available by using TSF's *Zoom* function. Zooming a Logical Pool that is in a Logical Pool result set will display those datasets that comprise that Logical Pool. Follow these steps to select a specific pool from the Logical Pool Information Panel:

1. Move the cursor in the **SL** column next to a specific volume.
2. Type a **D**, **S**, **F**, **H,** or **/** in the **SL** column. See Table 8–4 for a description of the selection options.
3. Press ENTER and depending on the selection you made, the Pool Detail Information panel, History Retrieval panel, or SMS Pool Action Menu appears.
4. Review the result set by typing a valid command-line option. Valid options vary, depending on the pool-filter criteria selected. Valid options can be displayed for any result set by positioning the cursor at the command line and pressing PF1.

Table 8–4. Selection Options, Pool Information

Selection Option	Description
D	Shows all detail records for the selected item
S	Displays pool information on a single panel, called the Logical Pool Information panel as an alternative to scrolling to the right to see all of the column information when you are viewing a particular pool in any of the pool panels.
F	Shows all detail record for the selected item but displays a filter panel first
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular pool or pools. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Accesses the SMS Pool Action Menu where you can perform a specific action to a selected pool.
=	Allows you to repeat an action.

SMS POOL ACTION MENU

The SMS Pool Action Menu allows you to perform specific actions to a selected storage group that appears in the SMS Storage Group panel. Follow these steps to access the SMS Pool Action Menu:

1. Move the cursor in the **SL** column next to a specific pool.
2. Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several storage groups, type a **/** in the **SL** column next to the first storage group. Then move the cursor to each subsequent storage group and type **=** (an equal sign).
3. Press ENTER and the SMS Pool Action Menu appears.
4. Type the option you want in the **Option** field. See Table 8–5 for a description of the selection options.
5. Press **ENTER** and the option executes.

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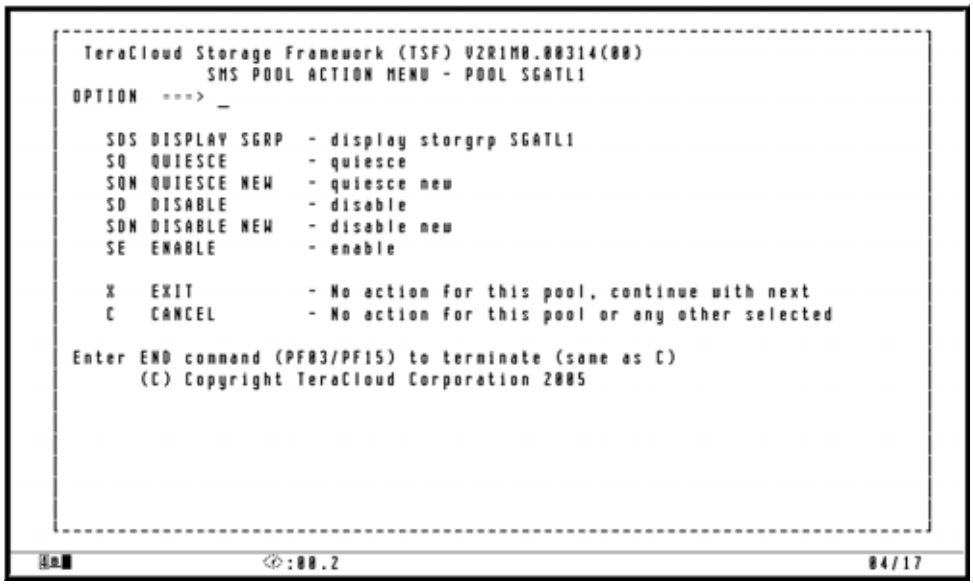

Figure 8–11. SMS Pool Action Menu

The selection options for the SMS Pool Action Menu are listed in Table 8–5.

Table 8–5. SMS Pool Action Menu selection options.

Selection Option	Description
SDS	Displays the selected storage group. This allows you to see its current status.
SQ	Places the selected storage group into quiesce status.
SQN	Places the selected storage group into quiesce new status.
SD	Places the selected storage group into disable status.
SDN	Places the selected storage group into disable new status.
SE	Makes the selected storage group immediately available for existing and new datasets.
X	Passes over the action for the current storage group and proceeds to the next group.
C	Cancels the operation.

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Esoteric Unit Pool (Pools/Volumes only)

The Esoteric Unit Pool panel shows all pools that are associated with an esoteric name as well as all information that is associated with esoteric unit pools. All of this information appears in several columns that span horizontally across the Esoteric Unit Pool. You have to scroll to the right to view all the columns that appear on this panel.

Note: An alternative method of viewing all column information for a particular volume without scrolling is to move the cursor to the name and type an “s” in the SL column. This accesses the Logical Pool Information (Esoteric Unit Pool) panel where all column information is located on a single panel.

To access the Esoteric Unit Pool panel:

1. From the Logical Pool Filter panel, type **E** in the **Pool Type** field.
2. Type **M** (megabytes) or **T** (tracks) in the **Trk, MB** field to view specific column information for megabytes or tracks. The default option is M.
3. Press **Enter** and the Esoteric Unit Pool panel appears (Figure 8–12).

```
                    Pool Info V2R1M0.00314(00)              Row 1 to 18 of 22
COMMAND ===> _                                               SCROLL ===> PAGE
======================= E : (Esoteric Unit Pool)    =========================
01/11/06 11:11:56                                     (1)             More -->
S                        Pct   Pct         Tracks         Tracks         Tracks
L Pool Name       Count  Used  Free          Alloc           Used           Free
_ DASD               96    22    78     16,534,980      3,612,618     12,922,362
_ DISK01              1    75    25         50,085         37,544         12,541
_ DISK02              1    75    25         50,085         37,544         12,541
_ DISK03              1    75    25         50,085         37,544         12,541
_ DISK04              1    75    25         50,085         37,544         12,541
_ DISK05              1    75    25         50,085         37,544         12,541
_ DISK06              1    75    25         50,085         37,544         12,541
_ DISK07              1    75    25         50,085         37,544         12,541
_ DISK08              1    75    25         50,085         37,544         12,541
_ DISK09              1    75    25         50,085         37,544         12,541
_ DISK10              1    75    25         50,085         37,544         12,541
_ DISK11              1    75    25         50,085         37,544         12,541
_ DISK12              1    75    25         50,085         37,544         12,541
_ DISK13              1    75    25         50,085         37,544         12,541
_ DISK14              1    75    25         50,085         37,544         12,541
_ DISK15              1    75    25         50,085         37,544         12,541
_ SYSALLDA           96    22    78     16,534,980      3,612,618     12,922,362
_ SYSDA              96    22    78     16,534,980      3,612,618     12,922,362
                  :00.1                                                02/15
```

Figure 8–12. Esoteric Unit Pool panel

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Generic Unit Pool (Pools/Volumes only)

The Generic Unit Pool panel lists all pools with a generic name and specific information about those pools. The generic unit information appears in various columns that span horizontally across the panel. You have to scroll to the right to view all the columns that appear on this panel.

Note: An alternative method of viewing all column information for a particular volume without scrolling is to move the cursor to the name and type an S in the SL column. This accesses the Logical Pool Information (Generic Unit Pool) panel where all column information is located on a single panel.

To access the Generic Unit Pool panel:

1. From the TSF Logical Pool Filter panel, type **G** in the **Pool Type** field.
2. Type **M** (megabytes) or **T** (tracks) in the **Trk, MB** field to view specific column information for megabytes or tracks. The default option is M.
3. Press **Enter** and the Generic Unit Pool panel appears (Figure 8–13).

```
                    Pool Info V2R1M0.00314(00)              Row 1 to 7 of 7
COMMAND ---> _                                              SCROLL ---> PAGE
------------------------ G : (Generic Unit Pool) -------------------------
01/09/06 17:42:03                                  (1)              More -->
S                        Pct   Pct          Tracks          Tracks          Tracks
L Pool Name      Count   Used  Free           Alloc            Used            Free
_ CST                0      0     0               0               0               0
_ ECCST              0      0     0               0               0               0
_ EHPCT              0      0     0               0               0               0
_ HPCT               0      0     0               0               0               0
_ REEL               0      0     0               0               0               0
_ 3380               8      4    96         333,900          13,485         320,415
_ 3390              88     22    78      16,201,880       3,599,132      12,601,948
********************************* Bottom of data *********************************
                                                                                
                                                                                
                                                                                
```

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CHAPTER

9

AUTOMATION

Automation on the z/OS platform allows any field of any record of data collected by TSF (over 4,300 fields) to be interrogated and automated on when the collection is performed, thus keeping resources to a minimum while maximizing control on storage. A hit during an automation check allows any REXX routine to be fired, providing optimal control to the storage administrator on how they want to perform a correction. See Appendix E for a list of the records and fields within each record type.

Before explaining how the Automation process works, it is important to understand some of the basic elements that make up this tool. Automation includes a started task that performs the following:

- Collects DASD volume and DASD volume pool data
- Runs collections and other Exec/CLISTs on a scheduled basis
- Handles action requests from the GUI/agent
- Handles automation on any field in any record that TSF creates (DASD volume, DASD data set, tape volume, tape data set, volume pools, dataset pools, DFSMShsm backup, DFSMShsm migration, and so on) and SMF records (such as HSM errors)
- Produces a task log that records automation triggers and results, actions, scheduled events, and so on.

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Automation Process

The Automation process starts when you construct IF statements that define the condition you are interested in and when you name the REXX exec that you want to run when the condition occurs.

Every time a record is written, the appropriate IF statements are evaluated and any records that match cause the request to be put on an automation queue. That request is then evaluated by the automation subtask, and if all other conditions of the IF statement are met, it runs the exec.

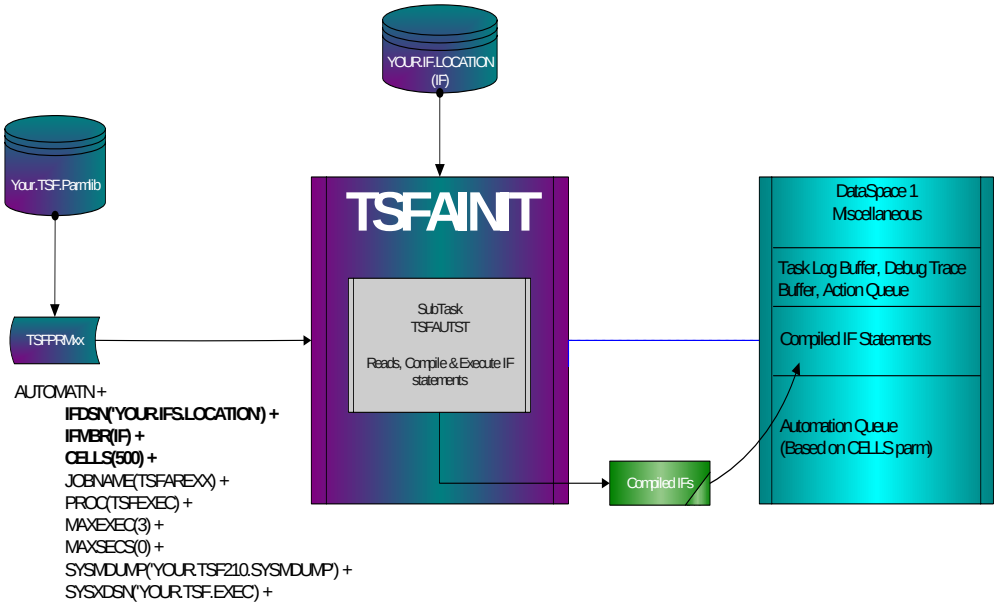

Figure 9–1. TSF Automation Startup

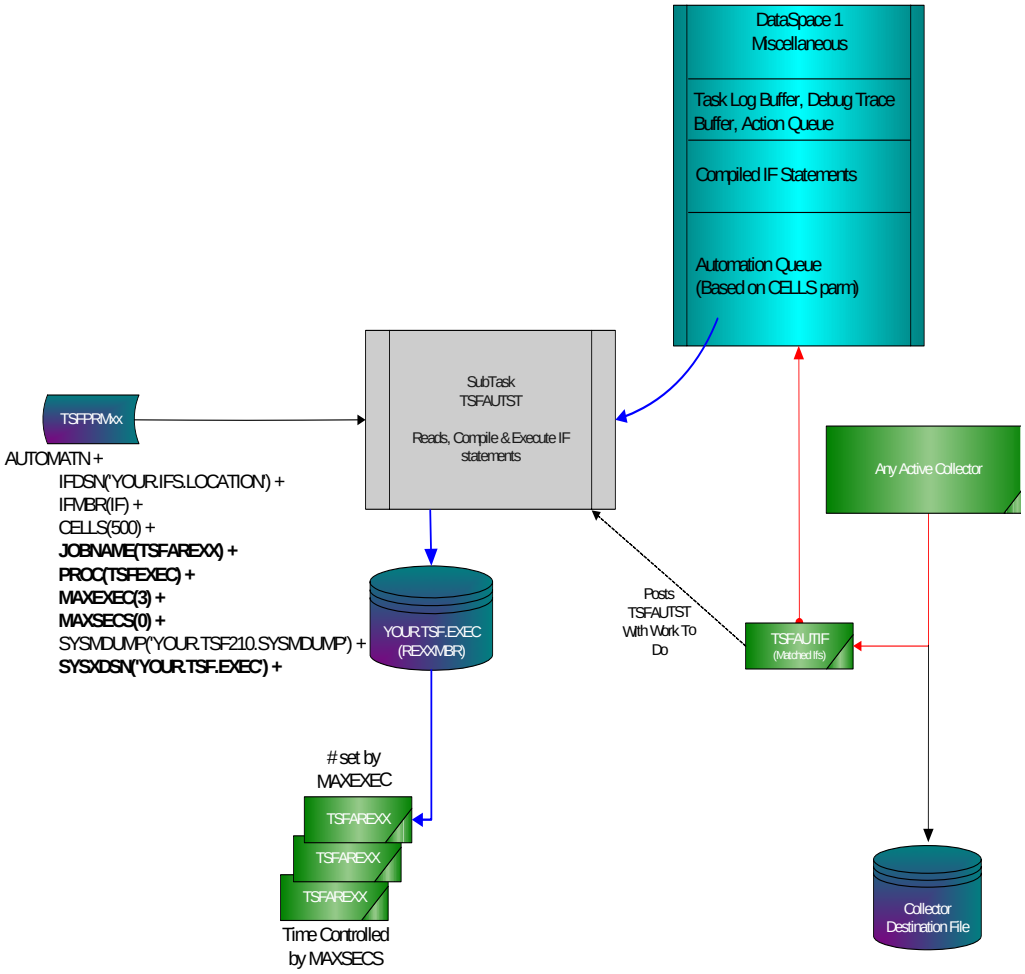

Figure 9–2. TSF Automation Process

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Automation Wizard

Automation includes a Wizard to help you create an IF statement with the existing record types.

To use the Automation Wizard:

1. From the TSF Primary Selection Screen, type **5** (Automation Wizard) in the **Selection** field. The first IF Statement Wizard panel appears (Figure 9–3).
2. Type a name for the IF statement that you are creating (up to 8 characters). You can add a comment to describe the IF statement but the comment is optional.
3. Press `Enter`. Select a record type from the list and press `Enter` (Figure 9–4).
4. Select a field from the list of fields for the record type that you selected and press Enter (Figure 9–5).
5. Enter the relations, values and connectives such as AND, OR, XOR and so forth and press `Enter` (Figure 9–6).
6. Type the name of the REXX exec that you want to run.
7. Type the optional parameters that will be passed to the exec when it is run and the day and time values (Figure 9–7). See IF Statements, page 9-9 for more information about these values.
8. Press `Enter`. You will have the opportunity to edit the IF statement (Figure 9–8). For example, you can add parentheses, if necessary, for multiple conditions.
9. In edit mode, press PF3 (END) to end the edit.

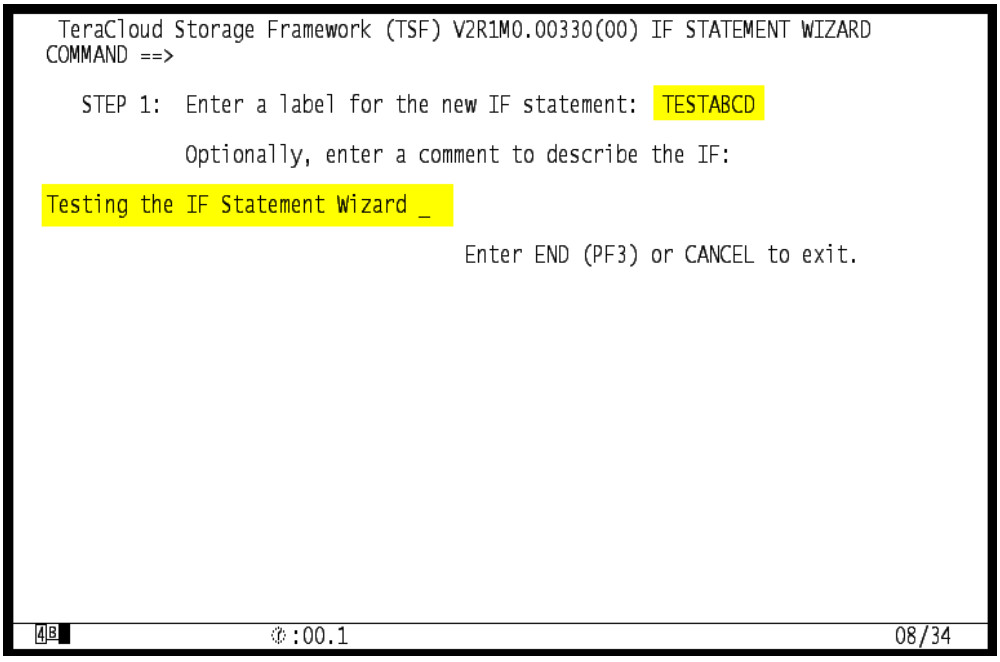

Figure 9–3. IF Statement Wizard panel #1

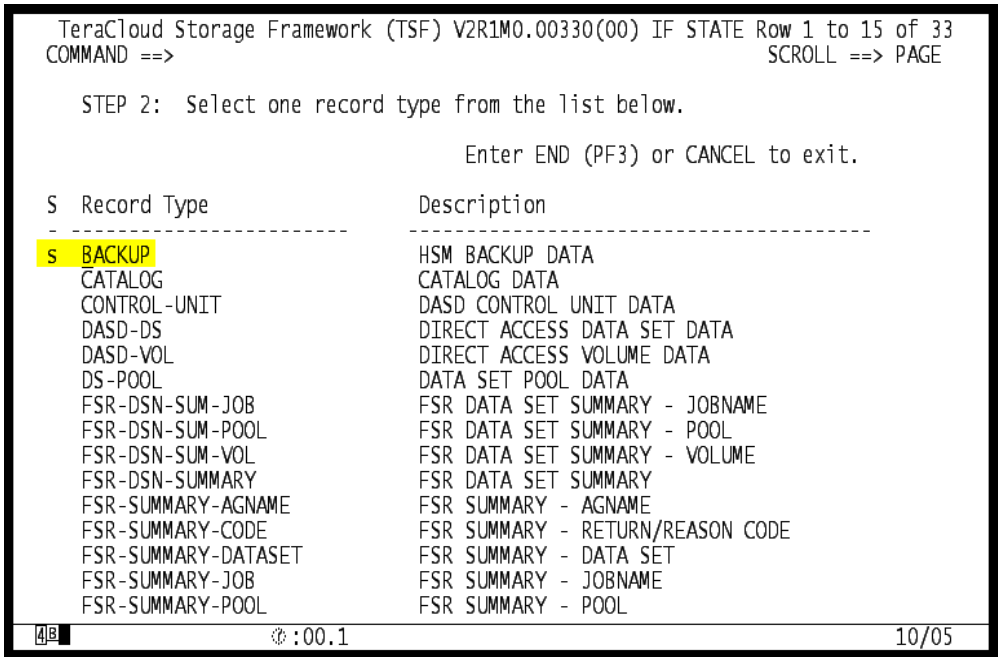

Figure 9–4. IF Statement Wizard panel #2

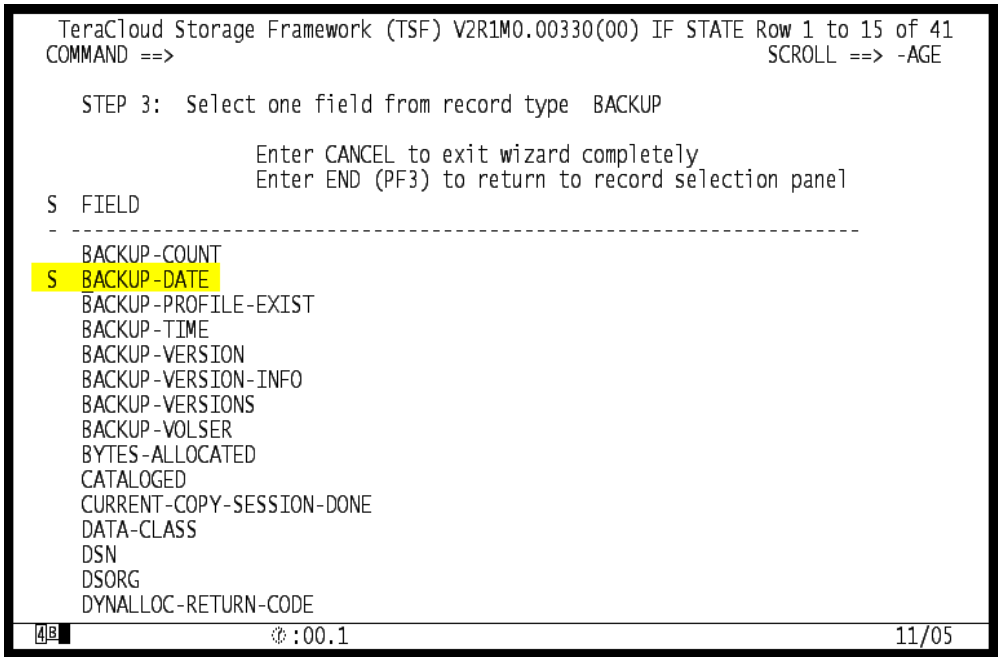

Figure 9–5. IF Statement Wizard panel #3

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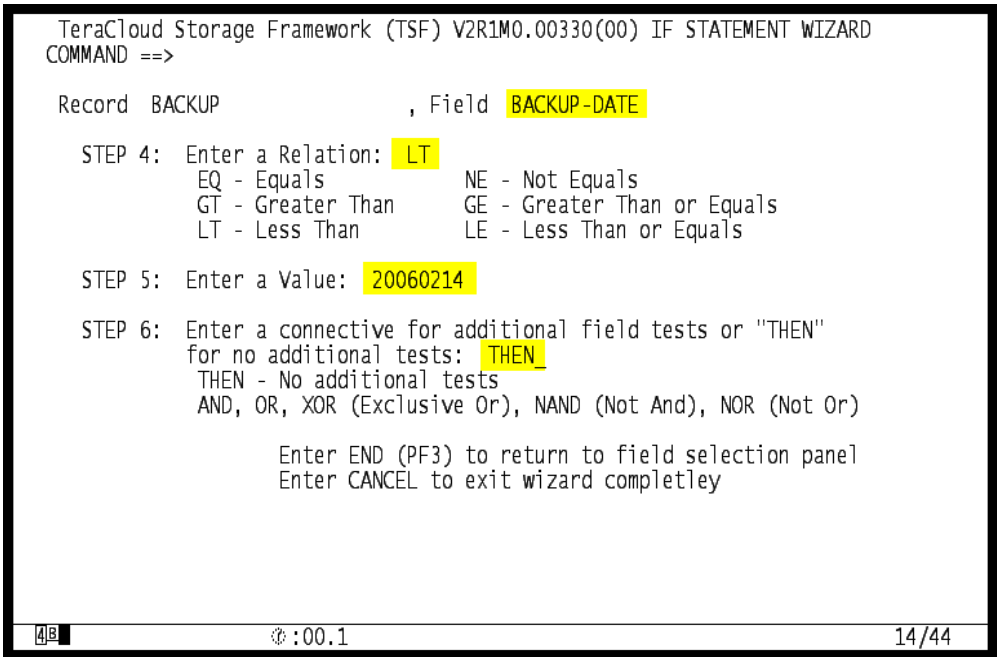

Figure 9–6. IF Statement Wizard panel #4

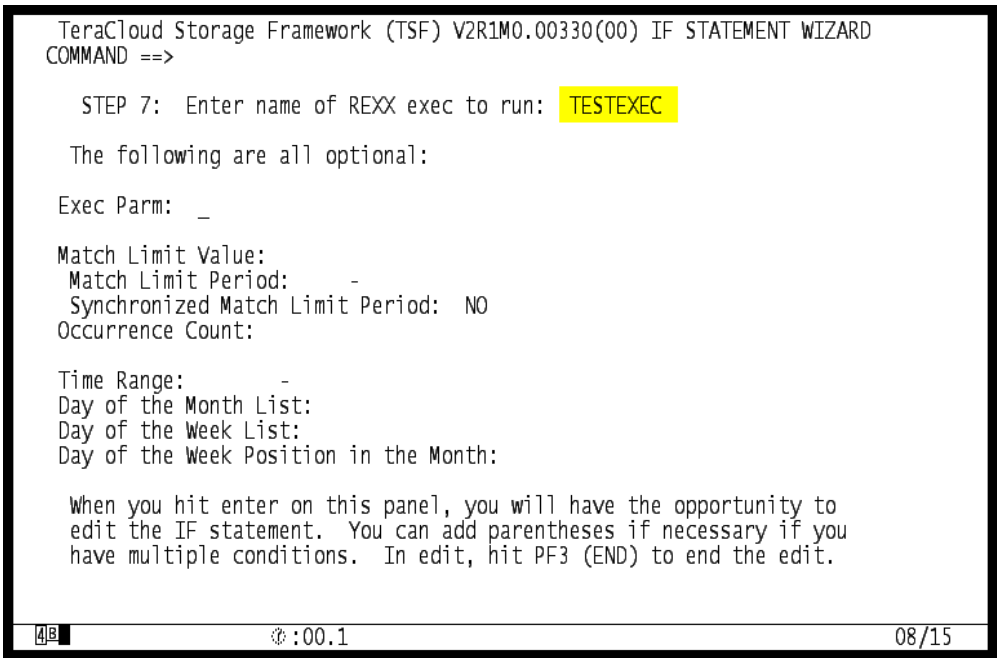

Figure 9–7. IF Statement Wizard panel #5

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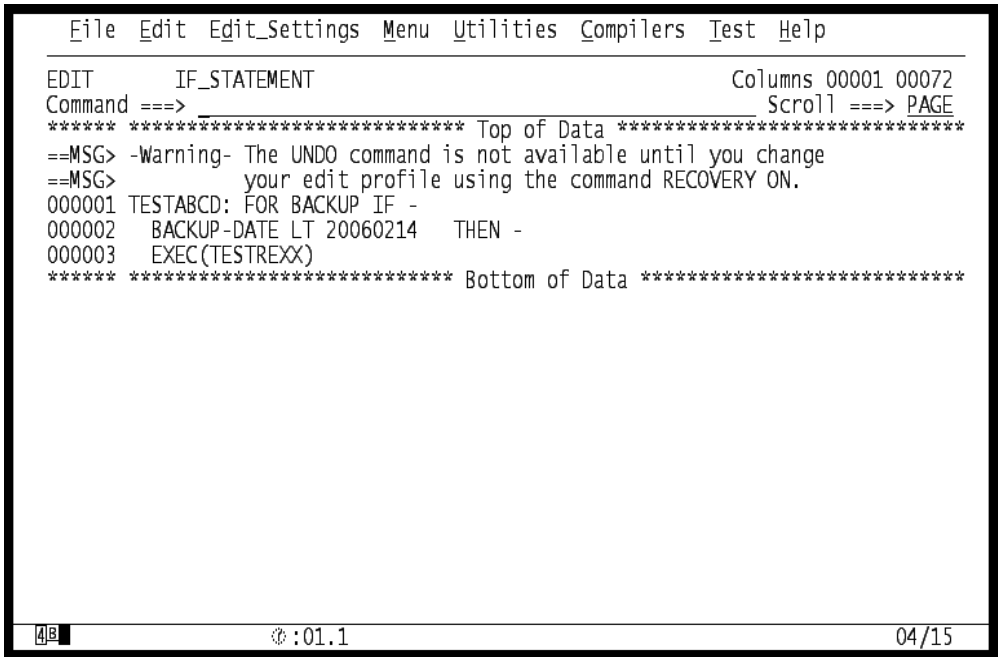

Figure 9–8. IF Statement Wizard results

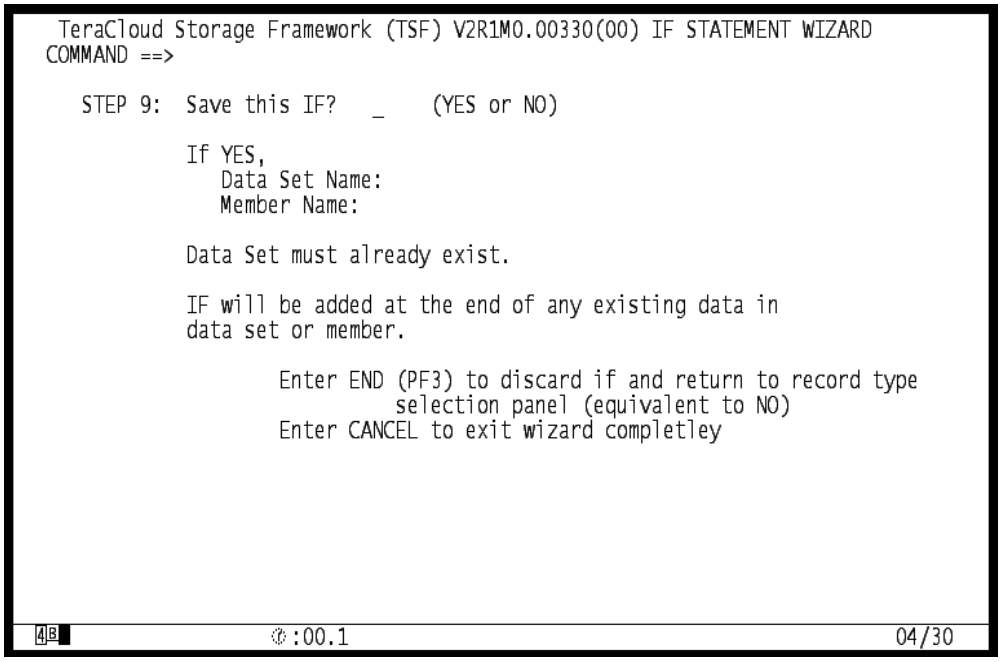

Figure 9–9. IF Statement Wizard save

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IF Statements

IF statements are used to evaluate records and trigger REXX Exec members to perform actions. IF statements are *not* case sensitive. They are converted to upper case when they are read by the system.

The order of the IF statement is not important, except the order of LABEL-FOR-IF-THEN. After the THEN statement/value, the remaining parameters can be in any order. For mixed cases, you must use parenthesis in the IF statement, which you can add in Edit mode. See Automation Wizard, page 9-5.

The syntax of the IF statement is as follows (items in <> are explained below):

```
<label>: FOR <record-type> IF <field> <relation> <value> THEN EXEC(<exec>)
  EXECPARM(<execparm>) MATCHLIM(<matchlim>) DOM(<dom>) DOW(<dow>) TIME(<time>)
  DOWPOS(<dowpos>) OCCURRENCE(<occurrence>)
```

Label

A label for the IF statement must be 1-8 characters in length, alphanumeric (cannot be all numbers); each IF statement must have a label and it must be unique. Spaces are not allowed.

Record Type

Table 9–1 describes record types. The “Trigger” column reflects the job or task that needs to run to trigger each respective record type.

Table 9–1. Summary of Record Types and Automation Triggers

Record Type	Trigger	Description of Record Type
BACKUP	TSFHSMCT	Backup data
CATALOG	TSFCATCT	Catalog data
CONTROL-UNIT	VOLSCAN	DASD control unit data
DASD-DS	TSFDSNCT	Direct access data set data
DASD-VOL	VOLSCAN	Direct access volume data
DS-POOL	TSFPOOL	Data set pool data
FSR-DSN-SUM-JOB	TSFRECRD	FSR data set summary - jobname
FSR-DSN-SUM-POOL	TSFRECRD	FSR data set summary - pool
FSR-DSN-SUM-VOL	TSFRECRD	FSR data set summary - volume
FSR-DSN-SUMMARY	TSFRECRD	FSR data set summary
FSR-SUMMARY-AGNAME	TSFRECRD	FSR summary - AGNAME
FSR-SUMMARY-CODE	TSFRECRD	FSR summary - return/reason code
FSR-SUMMARY-DATASET	TSFRECRD	FSR summary - data set
FSR-SUMMARY-JOB	TSFRECRD	FSR summary - jobname
FSR-SUMMARY-POOL	TSFRECRD	FSR summary - pool

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Table 9–1. Summary of Record Types and Automation Triggers

Record Type	Trigger	Description of Record Type
FSR-SUMMARY-USER	TSFRECRD	FSR summary - User ID
FSR-SUMMARY-VOLUME	TSFRECRD	FSR summary - volume
FSR-VOL-SUMMARY	TSFRECRD	FSR volume summary
HSM-FSR	TSFRECRD	HSM function statistic record
HSM-FSR-TSIBASE	TSFRECRD	HSM FSR in TSIBASE
HSM-WFSR	TSFRECRD	HSM function statistic record
MIGRATION	TSFHSMCT	Migration data
SMS-ABARS	VOLSCAN	SMS ABARS Aggregate
SMS-BCD	VOLSCAN	SMS BCD
SMS-DATACLAS	VOLSCAN	SMS data class
SMS-MGMTCLAS	VOLSCAN	SMS management class
SMS-STORCLAS	VOLSCAN	SMS storage class
SMS-STORGRP	VOLSCAN	SMS storage group
SMS-TAPELIB	VOLSCAN	SMS tape library
TAPE-DS	TSFxxxCT*	Tape data set data
TAPE-VOL	TSFxxxCT*	Tape volume data
TASKLOG	TSF TASK	Task Log
UNIX	TSFUNXCT	OMVS File system data
VOL-POOL	VOLSCAN or TSFPOOL	Volume pool data

Field

<field> is the name of a field in the record referred to by the FOR statement.

Relation

<relation> is one of EQ, NE, GT, GE, LT, LE. These are the relations which can be used. They have many synonyms as follows:

- = Equivalent to EQ
- <> Equivalent to NE
- != Equivalent to NE

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- < Equivalent to LT
- > Equivalent to GT
- <= Equivalent to LE
- >= Equivalent to GE

If field is a multi-valued item (like esoteric, for example), the relation has to be EQ or NE; if EQ, the condition is true if any instance of field matches value; if NE, the condition is true if all instances of field do not match value.

Value

<value> is a value for the field. If the relation is EQ or NE, the value can contain wild card characters (standard IBM masking). The wildcard characters include the following:

- < - positional placeholder for any alpha character
- > - positional placeholder for any numeric character For example, TLS<>.** results in any 5-character HLQ that begins with TLS, has an alpha character in position 4, and has a numeric character in position 5.
- ¬ - logical NOT (Shift-6 adds the 'exclude' symbol to the filter field)
- **%** - positional placeholder for any single alpha or numeric character
- * - any single alpha or numeric character from this position onward without extending beyond qualifiers
- **** - any string of zero or more characters from this position onward across qualifiers

Field-relation-value can be placed in parentheses and multiple sets can be used connected by the standard connectives (AND, OR, XOR, NOR, NAND). Numeric values are limited in length. They cannot exceed 8 digits.

Comma separated lists are acceptable for a value, if the field being evaluated will normally use regular expressions, as long as the relation used is EQ or NE. Also, these fields will accept the Logical NOT operator. For example, the following is an accepted IF statement:

```
IFLABEL1: FOR DASD-VOL IF VOLSER = O*,TCD*,TCD00*,OS39M1 THEN EXEC(MSG)
```

Exec

<exec> gives the name of the Rexx exec to be run if the condition is true and matches all other criteria (TIME, MATCHLIM, etc.). EXEC is required. It has no rules except that it must match an existing EXEC member or no action will occur.

Execparm

<execparm> is an optional parameter that will be passed to the exec when it is run. The maximum length is 80 characters. If it includes a closed parenthesis, it must be wrapped in quotation marks (single or double). EXECPARM can also be wrapped in quotation marks regardless of the presence of a closed parenthesis to remove the chance of unexpected error. For example, EXECPARM(A B C is fine and is equivalent to EXECPARM(“A B C”).

Matchlim

<matchlim> is an optional match limit. The value consists of one or two parts, separated by / if there are two parts.

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MATCHLIM Part I. The first value is the number of times the exec will be run when the IF matches. For example, if MATCHLIM(5) is used, the exec will be run the first 5 times the IF matches. Subsequent matches will not cause the exec to be run.

MATCHLIM Part II. The second value is a time period to which the match limit applies. For example, MATCHLIM(5/HOUR) means the exec should be run only the first 5 times it matches within an hour. Once an hour has passed, it is reset and can run another 5 times. The hour starts when the first match occurs.

The values for the second part are as follows:

- HOUR
- DAY
- SYNCH-HOUR
- SYNCH-DAY
- n-MINUTES
- n-HOURS
- n-DAYS
- n-SYNCH-MINUTES
- n-SYNCH-HOURS
- n-SYNCH-DAYS

The values prefixed with “n-“allow variable time periods. For example, MATCHLIM(5/15-MINUTES) means 5 times in a 15 minute period. SYNCH means the time period does not start when the first match occurs, but is instead synchronized to the day. That is, if SYNCH-HOUR is used and the first match occurs at 0917, the period will expire (and the count be reset to 0) at 1000, not at 1017 which would be the case if the period were HOUR.

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Day and Time Values

Automation records have the following day and time values:

Table 9–2. Day values

Keyword	Description	Values
<dom>	Day of the month	1-31, LAST, LAST-N (where N is a value from 1-31).
<dow>	Day of the week	MO, TU, WE, TH, FR, SA, SU,WEEKDAY, WEEKEND, NOT.
	Note: If the NOT keyword is included, the entire supplied list of values is treated as an exclusion list. For example: (MO,TU,WED,NOT) will cause the specified EXEC member to be called every day *except* Monday, Tuesday or Wednesday.	
<dowpos>	Day of the week position. These variables have the same syntax and values as the COLLECT statement.	EVERY, 1-5, 1ST - 5TH, FIRST-FIFTH, LAST, NEXTTOLAST.
	Note: The values specified for DOWPOS work independently, or in conjunction with other TIME Parameters (E.g. DOW, DOM, TIME). If DOWPOS is specified by itself, then whatever value is specified will be applied to an entire week.	

DOWPOS by itself. If you specify DOWPOS(2) without specifying DOW, then the specified EXEC will be called on the second occurrence of each day of the week in a month. So, if the month started on Wednesday, this statement would trigger starting on the second Wednesday of the month, and continue to trigger for the next six days. It would stop executing on the third Wednesday of the month.

DOWPOS with another parameter. If DOWPOS is specified with another Time parameter (E.g. DOW, DOM, TIME) , then the specified EXEC will only be executed if the DOWPOS value is matched, and the values for the other parameters are matched.

Day Examples

DOM(1,7,14,21) DOWPOS(SECOND) would trigger on the 14th only, since the 1st and 7th of the month could not possibly be the SECOND occurrence of any Day of the week, nor could the 21st.

DOW(MO,FR) DOWPOS(SECOND) would only execute if the day of the week is Monday or Friday, and it is the second occurrence of that day of the week within the month.

Time Values

<time> is two values (HHMM) which are a beginning time and ending time, during which the IF will be allowed to fire. The ending time can be less than the beginning time (for example, TIME(2200,0200)) which means the time period extends over midnight. If so, and if the time the IF statement fires is after midnight but before the end time, the DOM, DOW, and DOWPOS checks are made using yesterday instead of today.

Occurrence

The IF statement only fires when the number of matches equals this count. For example, if OCCURRENCE(3) is used, the IF only fires the third time it matches. If MATCHLIM is also used and has a second value (time period), the occurrence count will reset when the match limit is reset.

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Disabled

<disabled> is an optional parameter that loads the IF statement as disabled, or not active. It can be activated by using the command line or a REXX function.

IF Statement Status

You can view the IF statement status (enabled/disabled) by issuing the following command:

```
/F <TASK>, DISPLAY IFS
```

where <TASK> is the JOBNAME value from the SDSF STATUS DISPLAY. This command will show the location where the IFS member is loaded from, the Time that it was loaded, and the Enable/Disable status of each of the individual IF members.

Update Command

An individual IF statement can be updated on the fly with the new UPDATE command. The syntax is as follows:

```
UPDATE if-label,dsn(mbr)
```

where `if-label` is the label of the IF you want to update (it will be added if it doesn't already exist) and `dsn(mbr)` is where to find it.

Any other IF statements and comments in the data set are ignored and will print out with error code 0 – 4 meaning the statement was not processed because an UPDATE command was used. The match count of the IF is not reset to 0, unlike the REFRESH command, which replaces all the Ifs and resets the match counts to zero.

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IF Statement: Example 1

```
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(PARMTEST) -
   EXECPARM(HELLO)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST1)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST2) MATCHLIM(1)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST3) -
MATCHLIM(1/5-MINUTES)
FOR DASD-DS IF VOLSER = PTW001 THEN EXEC(SAMPLE) MATCHLIM(255)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(TESTX)
FOR DASD-DS IF LOGICAL-POOL NE PTW THEN EXEC(TESTY)
FOR DASD-DS IF LOGICAL-POOL NE MMM THEN EXEC(TESTZ)
FOR DASD-DS IF TRACKS-FREE > 100 THEN EXEC(TESTA)
FOR DASD-DS IF RVA-MB-USED NE 0 AND -
RVA-MB-USED > 10 THEN EXEC(TESTB)
FOR DASD-VOL IF BYTES < 100MB THEN EXEC(TESTC)
FOR DASD-VOL IF BYTES <= 200MB THEN EXEC(TESTD)
```

IF Statement: Example 2

```
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(PARMTEST) -
   EXECPARM(V)
FOR DASD-DS IF RVA-MB-USED NE 0 AND -
RVA-MB-USED > 10 THEN EXEC(PARMTEST) EXECPARM(D)
FOR DASD-VOL IF BYTES < 100MB THEN EXEC(PARMTEST) EXECPARM(V)
FOR DASD-VOL IF BYTES <= 200MB THEN EXEC(PARMTEST) EXECPARM(V)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) EXECPARM(D)
FOR DASD-VOL IF BYTES > 2TB THEN EXEC(PARMTEST) EXECPARM(V)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST1)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST2) MATCHLIM(1)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST3) -
MATCHLIM(1/5-MINUTES)
FOR DASD-VOL IF VSVOLSER = PTW001 THEN EXEC(TEST3) -
MATCHLIM(1/5-MINUTES-SYNCH)
FOR DASD-DS IF VOLSER = PTW001 THEN EXEC(SAMPLE) MATCHLIM(255)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(TESTX)
FOR DASD-DS IF LOGICAL-POOL NE PTW THEN EXEC(TESTY)
FOR DASD-DS IF LOGICAL-POOL NE MMM THEN EXEC(TESTZ)
```

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```
FOR DASD-DS IF TRACKS-FREE > 100 THEN EXEC(TESTA)
FOR VOL-POOL IF POOLTYPE = A AND -
   POOL = XYZ* AND (POOL-TOTAL-VOLUME-COUNT > 10 OR -
   POOL-TOTAL-MB-ALLOCATED > 200) THEN EXEC EXEC(PARMTEST) -
   EXECPARM(Q)
FOR DASD-VOL IF VOLUME-POOL = 7POOL4 THEN EXEC(NOTHING)
```

IF Statement: Example 3

```
FOR DASD-VOL IF VOLUME-POOL = 7POOL4 THEN EXEC(TSFSUB)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) EXECPARM(D)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1) TIME(0800,0900)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1) DOM(26,28,LAST-5)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1) DOW(TU,TH)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1) DOWPOS(1ST)
FOR DASD-DS IF LOGICAL-POOL = PTW THEN EXEC(PARMTEST) -
EXECPARM(D) OCCUR(1) TIME(0800,1700) DOM(27) DOW(WE) DOWPOS(LAST)
```

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Error Codes

Error codes are not output to the automation task log; instead, they are displayed by selecting the running task. This is by design. To view the IF statement error codes, simply review the output.

The following table details the error codes contained in TSFAPARF that are returned by the automation in response to invalid IF statement configuration:

Table 9–3. Error Codes

Return Code	Reason Code	Description
0	0	No error
16	1	Input length LE 0
0	2	Statement is a comment
0	3	Statement is all blank
8	4	No label
8	5	Label is invalid
8	6	No FOR in statement
8	7	No value for record type
8	8	Record type is invalid
8	9	No IF in statement
8	10	No condition (IF is last thing on statement)
8	11	No field name in condition
8	12	Invalid field name in condition
8	13	Invalid relation in condition
8	14	Invalid numeric value in condition
8	15	Invalid length of numeric for field
8	16	Invalid connective
8	17	Unbalanced parentheses
8	18	Unrecognized word after THEN
8	19	Invalid exec name (length not in bounds)
8	20	No exec specified
8	21	Bad MATCHLIM value (not numeric, no value)
8	22	Bad MATCHLIM unit
8	23	Label only (no FOR, no IF)
8	24	No relation (IF x)

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Table 9–3. Error Codes

Return Code	Reason Code	Description
8	25	No value (IF x =)
8	26	No THEN (label: FOR x IF y = z)
8	27	Invalid MATCHLIM unit (minutes > 59)
8	28	Invalid MATCHLIM unit (hours > 23)
8	29	Invalid MATCHLIM unit (days > 32)
8	30	MATCHLIM with open but no close parentheses
8	31	Exec with open but no close parentheses
8	32	Label is not unique
8	33	Exec with no open parentheses
8	34	Invalid value for where in exec
8	35	Statement is too long (issued in TSFAIFP)
8	36	Expected count not found (issued in TSFAIFP)
8	37	EXECPARM with no open parentheses
8	38	EXECPARM with open but no close parentheses
8	39	EXECPARM with no closing quote
8	40	EXECPARM too long
8	41	Invalid hex string
8	42	OCCURRENCE with no closing parentheses
8	43	Invalid value for OCCURRENCE (non-numeric)
8	44	OCCURRENCE with no open parentheses
8	45	TIME with no closing parentheses
8	46	Invalid value for TIME (non-numeric, not 4 dig)
8	47	TIME with no open parentheses
8	48	DOM with no closing parentheses
8	49	Invalid value for DOM (non-numeric or last...)
8	50	DOM with no open parentheses
8	51	DOW with no closing parentheses
8	52	Invalid value for DOW
8	53	DOW with no open parentheses

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Table 9–3. Error Codes

Return Code	Reason Code	Description
8	54	DOWPOS with no closing parentheses
8	55	Invalid value for DOWPOS
8	56	DOWPOS with no open parentheses
8	57	Invalid value for bit field
8	58	Invalid value for DATE **Note**: This applies to fields with FMT=YYYYMMDD specified. It means the value is not length 8, or month greater than 12, or day greater than 31.
8	59	Invalid value for TIME **Note**: This applies to fields with FMT=HHMMSSTH specified. It means the value is not length 8, or hour is greater than 23, or minute is greater than 59, or second is greater than 59.
8	60	Numeric value is too large (more than 8 digits)
8	61	Invalid SMS or MVS status
8	62	DISABLED operand cannot have any values
8	63	Invalid DSORG
8	64	Invalid record format

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Collection

The scheduling component for TSF Automation is driven by the parameter values defined in the **.PARMLIB(TSFCOL00) member. Collection provides a RUN statement functionality in addition to letting you define collections for the various database build datasets (such as TSFDSNCT, TSFCATCT, TSFHSMCT, and so on.). The RUN statement allows the user to specify execution of a REXX EXEC at a scheduled interval. This functionality is separate from the REXX Execs that occur when automation uses the IFS member to execute REXX statements based on IFS record matches.

Automation will automatically populate the STORDATA with DASD Volume and Pool records, but will not automatically populate Dataset, DFSMShsm, or Tape records, without a valid Collect statement which calls the appropriate member (such as TSFDSNCT, TSFCATCT, TSFHSMCT and so on) for that record type. See Chapter 7, “Collection Statements” in the TeraCloud Storage Framework (TSF)™ Installation Guide.

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Task Logs

The task logs are created based on the intervals specified in the TASKLOG area of the TSFPRM member. You can filter the Task Log entries from the Utility selection panel option 7 (Task log). Some issues to keep in mind for the TASKLOG:

- The INTERVAL value is based on hours, not minutes. This is in contrast to the INTERVAL value used in the VOLSCAN section of the TSFPRM member, which is expressed in minutes.
- The INTERVAL parameter value synchronizes the time to the day, rather than representing an ongoing interval spanning multiple days. In other words, if the interval is 5 hours, the log will be created at 0500 and 1000 each day, rather than at an ongoing 5 hour interval like 0500, 1000, 0300, 0800, and so on.
- A task log is automatically created when the task ends.
- If the log buffers fill up, the log will be created even though the time has not come yet. If the INTERVAL value elapses but there is no log data, no log will be created.

To view the task log information:

1 From the TSF Primary Selection Screen, type **U** in the **Selection** field. The Utility Selection panel appears.

2 From the Utility Selection panel, type **7 (Task log)** at the Selection prompt. The Task Log Filter Panel (Figure 9–10) appears to let you filter individual selection criteria for task log information.

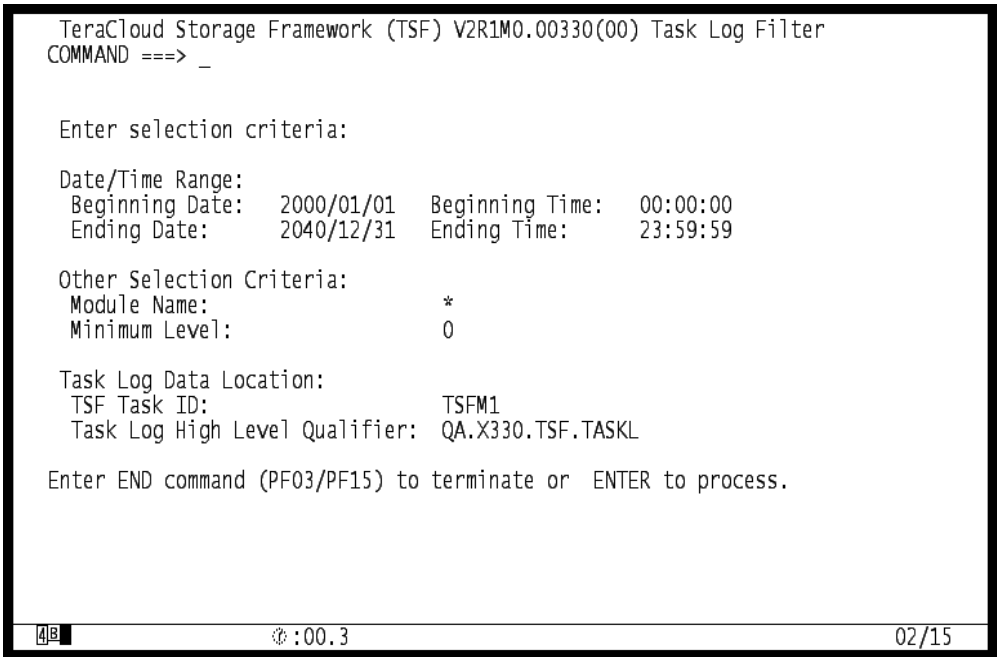

Figure 9–10. Task Log Filter panel

You can filter the task log by date and time range and by other selection criteria such as module name. Dates are in the format *YYYYMMDD*. Times are in the format *HHMMSS*.

3 Type the filter selection criteria for your task log and press ENTER. The Task Log panel appears (Figure 9–11).

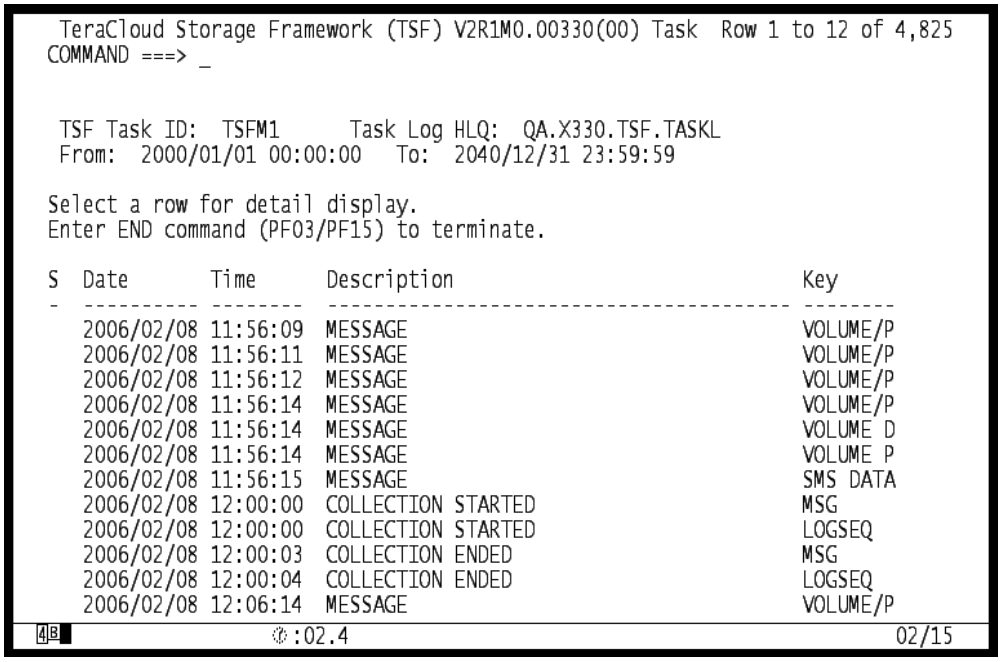

Figure 9–11. Task Log panel

4 Move the cursor in the **S** column next to a specific task log entry.

5 Type an **S**, **H,** or **/** in the **S** column.

6 Press ENTER to see the Task Log Detail panel (Figure 9–12). Notice the message level (highlighted). Table 9–4 lists the severity levels for task log information.

Table 9–4. Task Log Levels.

Level	Description
255	CRITICAL
240	VITAL
208	IMPORTANT
176	SERIOUS
112	INFORMATIONAL
0	TRIVIAL

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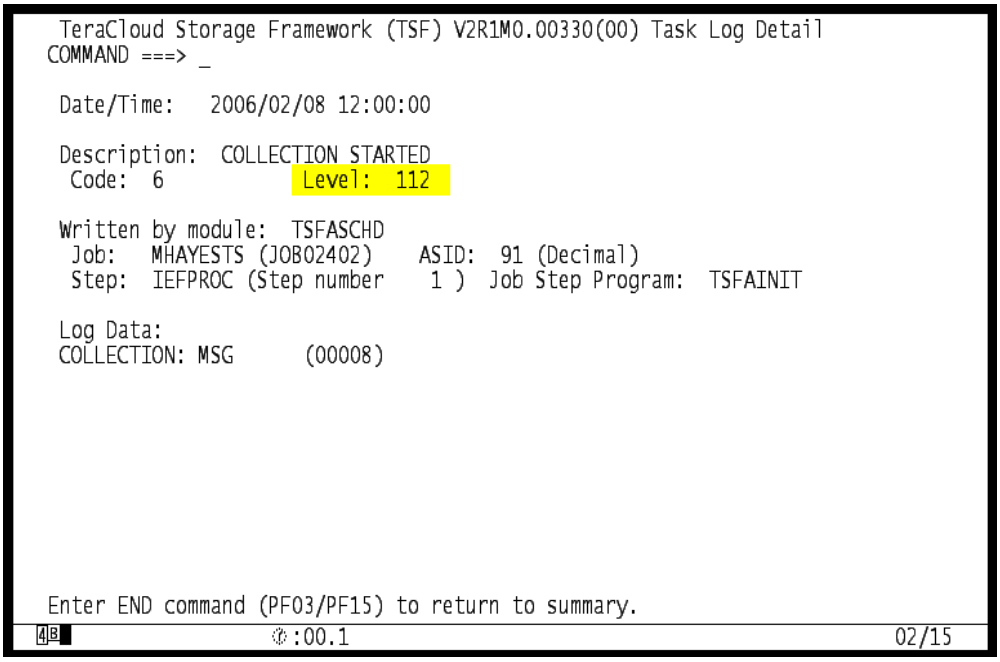

Figure 9–12. Task Log Detail panel

The following events are generated to the task log:

- ACTION COMPLETED
- ACTION NOT QUEUED - CELL SHORTAGE
- ACTION QUEUED
- AUTOMATION DELAYED - ALREADY ACTIVE
- AUTOMATION DELAYED - MAXEXEC LIMIT
- AUTOMATION EXEC ENDED SUCCESSFULLY
- AUTOMATION EXEC ENDED UNSUCCESSFULLY
- AUTOMATION EXEC STARTED
- AUTOMATION NOT QUEUED - CELL SHORTAGE
- AUTOMATION NOT RUN - ASCRE FAILED
- AUTOMATION NOT RUN - ATTACH FAILED
- AUTOMATION NOT RUN - IF DISABLED
- AUTOMATION NOT RUN - MATCHLIM
- AUTOMATION NOT RUN - OCCURRENCE COUNT
- AUTOMATION NOT RUN - POST FAILURE
- AUTOMATION NOT RUN - TIME BOUNDARIES
- AUTOMATION QUEUED
- COLLECTION ENDED
- COLLECTION NOT RUN - ALREADY ACTIVE
- COLLECTION NOT RUN - ASCRE FAIL
- COLLECTION NOT RUN - OVER LIMIT
- COLLECTION STARTED
- INVALID ACTION FOUND ON QUEUE
- USER RECORD

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CHAPTER
10

UTILITIES

Each utility performs a unique function that will help you with data management. Utility selection is available from the TSF Primary Selection Screen. Type **U** (Utilities) in the **Option** field. The Utility Selection panel is displayed (Figure 10–1). Options that you can select from this panel include:

- Compare – Two different databases and list any changes that have occurred
- Catalog – Instantly obtain information for any attribute of any catalog entry in order to analyze catalog discrepancies
- Unix – Analyze Unix files residing on the MVS operating system
- Diagnostics – View information about the CPU and the TSF Settings table
- Task log – View task log entries

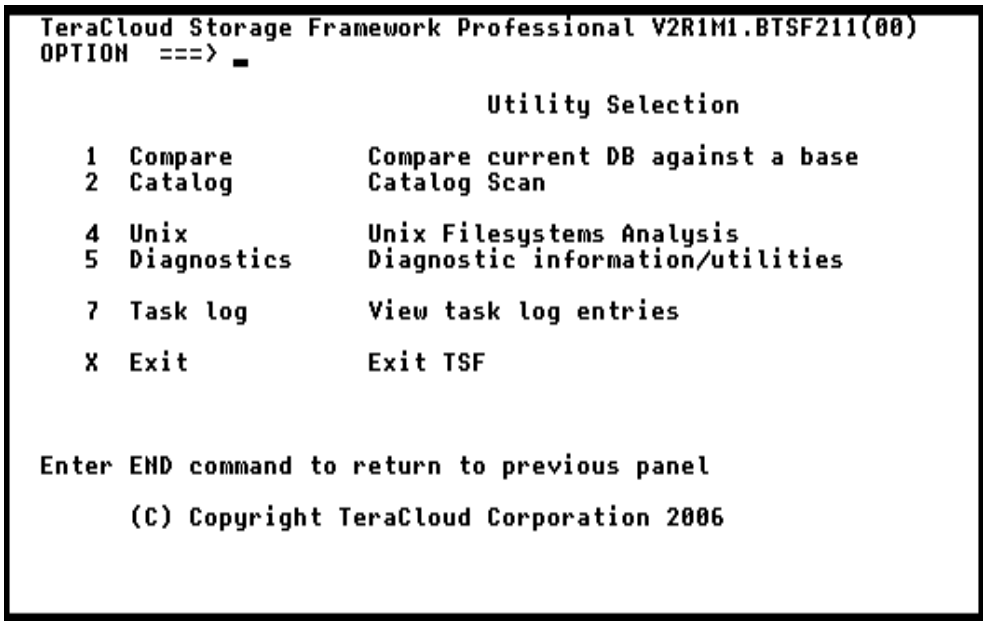

Figure 10–1. Utility Selection menu

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Base Compare Utility

The primary task of the Base Compare Utility panel is to let you type the names of the databases you want to compare. You can perform database comparison for any two databases from the Datasets component of TSF.

You can list the results of database comparison in a summary, detail, or combined summary and detail view. In addition, you can refine the database comparison further with filters to find specific information.

Note: You can enter a relative GDG—for example, hlq.save.dsnout(-1).

Follow these steps to access the Base Compare Utility panel:

1. From the Utility Selection panel, type a **1** (Compare) in the **Option** field.
2. Press ENTER and the Base Compare Utility panel appears (Figure 10–2).
3. Type the *base database name* in the **Base database DSN** field. If a place holder name is in this field, type the baseline database name over it.
4. Type the *current database name* in the **Current database DSN** field. If a place holder name is in this field, type the current database name over it. The current database does not have to be your most recent database. You can declare the current database to be any Datasets database as long as the current database is newer than the base.
5. Press ENTER to populate the **Base Timestamp** and **Current Timestamp** fields. After you activate the database comparison, these fields show you the date and time of the base database and the current database. The format appears in MM/DD/YY (month, day, year) and HH:MM:SS (hours, minutes, seconds).
6. Press ENTER and the Base Compare Filter panel appears (Figure 10–3).

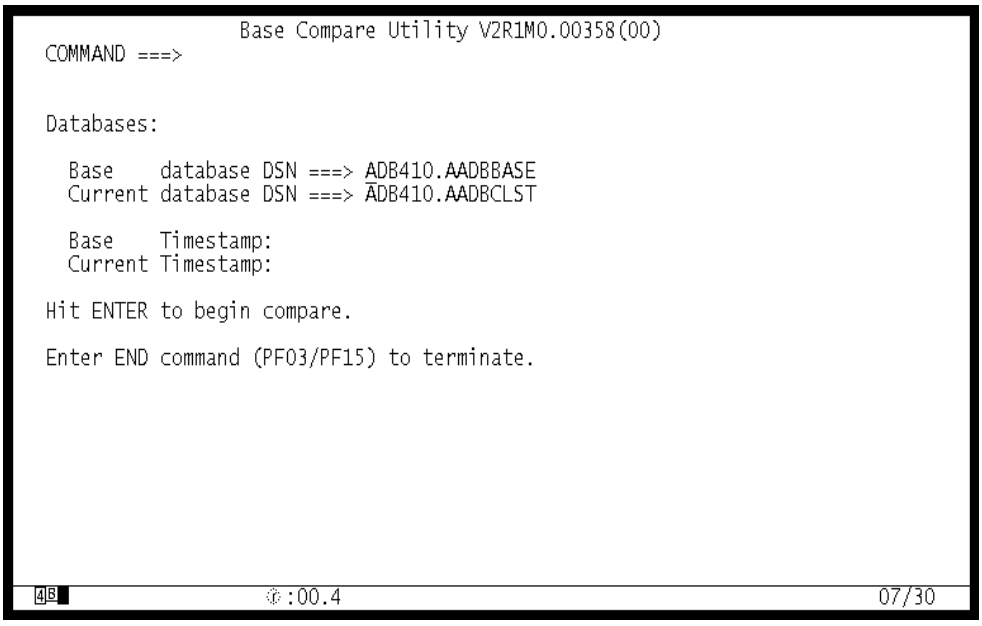

Figure 10–2. Base Compare Utility panel

Base Compare Filter

The Base Compare Filter panel lets you decide how you want to view the database comparison. It also allows you to filter for more specific information in the database comparison display. At the top of the Base Compare Filter panel is the Timestamp section. Located here are the Base Timestamp and Current Timestamp fields. These fields also appeared in the Base Compare Utility panel after the database comparison was activated.

Below the Timestamp section is the Display Options section. The fields located in this section allow you to choose how you want the database comparison to display on the next panel, the Compare Dataset Information. See Utilities (Base Compare), page 3-16.

Figure 10–3. Base Compare Filter panel

Below the Display Options section is the Filters section. The filters allow you to display specific information about the database comparison. This specific information that you select with these filters appears in the next panel, the Compare Dataset Information. Table 10–1 lists the filters. Some of the filters allow you to use wildcard characters and exclude symbols to refine the filter results. See Using Wildcard Characters, page 1-10.

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Useful Tip. Some of the filters have two-part fields. Press Tab to advance. The first field is used for less than (<), greater than (>), or equal to (=), whereas the second field is used to show a numeric value or percentage, for example, a value between 0 and 9999.

Table 10–1. Filters for the Base Compare Filter section

Filter Name	Description
Dataset Name	Allows you to filter by a dataset name. You can type a fully qualified name, a partially qualified name, and a partially qualified name using include or exclude logic. • SYS1.PARMLIB – Displays all SYS1.PARMLIB datasets found • SYS1.** – Displays all datasets that begin with SYS1 • SYS1.**,¬*.D*.** – Includes all datasets that begin with SYS1 except those (¬) that have a second level qualifier that begins with a D
VOLSER	Lets you filter by a volume serial number (VOLSER) name. You can type a fully qualified volume serial number, a wildcard, and exclude logic. • TEST01 – Displays information contained only on volume TEST01 • T* – Displays all information contained on those volumes that begin with T • ¬ T* – Excludes information that is contained on those volumes that begin with T • Blank – Displays all volumes based on other selection filters
Logical Pool	Lets you group logical files together by the standards that you set. This enables you to report on various related datasets by using a logical pool name in this field. After logical pools have been assigned, you can enter any of them in this filter.
New or Old	The New option lets you find all new datasets that were found in the current database but were not in the base database. The Old option lets you locate all old datasets that were found in the base database but were not in the current database.
Storage Group	Lets you filter on an SMS storage group to compare the growth from one database to another. A mask can also be used to filter on multiple storage groups.
Pct Alloc	Lets you compare the percent allocation of any dataset, pool or group between the base and current databases. • > 300 - Returns all files whose allocated space has grown more than 300%
Pct Used	Lets you compare the percent used for any dataset, pool, or group between the base and current databases • > 200 - Returns all files whose used space has grown more than 200%
Pct Free	Lets you compare the percent free for any dataset, pool, or group between the base and current databases. • > 50 - Returns all files whose free space has grown more than 50%

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Displaying Compare Utility Dataset Information

The Compare Utility Dataset Information panel shows the results of the database comparison in summary, detail, or both summary and detail format. In addition, any of the filter options you entered in the Base Compare Filter panel appear in this panel. Follow these steps to access the Dataset Information panel:

1. From the Base Compare Filter panel (Figure 10–3), type **S**, **D**, or **B** in the **Display** field.
2. Type the unit of measure (**T**, **M**, **G**) for the database comparison in the **Trk, MB, GB** field.
3. Type a **Y** or **N** in the **Countdown** field.
4. Type any *valid entries* in the filter fields that work in conjunction with your display selection option.
5. Press ENTER and the Dataset Information panel appears with the results of your database comparison. The information that is displayed on this panel depends on the display option that you typed in the Display field of the Base Compare Filter panel.
   - Compare Utility Dataset Information Summary (Figure 10–4) for **S** display option
   - Compare Utility Dataset Information Detail (Figure 10–5) for **D** display option
   - Compare Utility Dataset Information Summary and Detail (Figure 10–6) for **B** display option, with summary information at the top of the panel and detail information at the bottom of the panel

Useful Tip. Type **SW** on the command line of the Detail panel to switch between the Detail and Summary panels without having to reload the ISPF table.

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Compare Utility Dataset Information Summary

The Compare Utility Dataset Information Summary panel features a table with column fields located across the top that are cross-referenced with database information located to the far left side of the columns.

Below the cross-reference table are two fields associated with the base and current databases. The **DS in Current But not in Base** field shows the number of datasets that are in the current database but not in the base database. The **DS in Base But not in Current** field indicates the number of datasets that are in the base database but not in the current database.

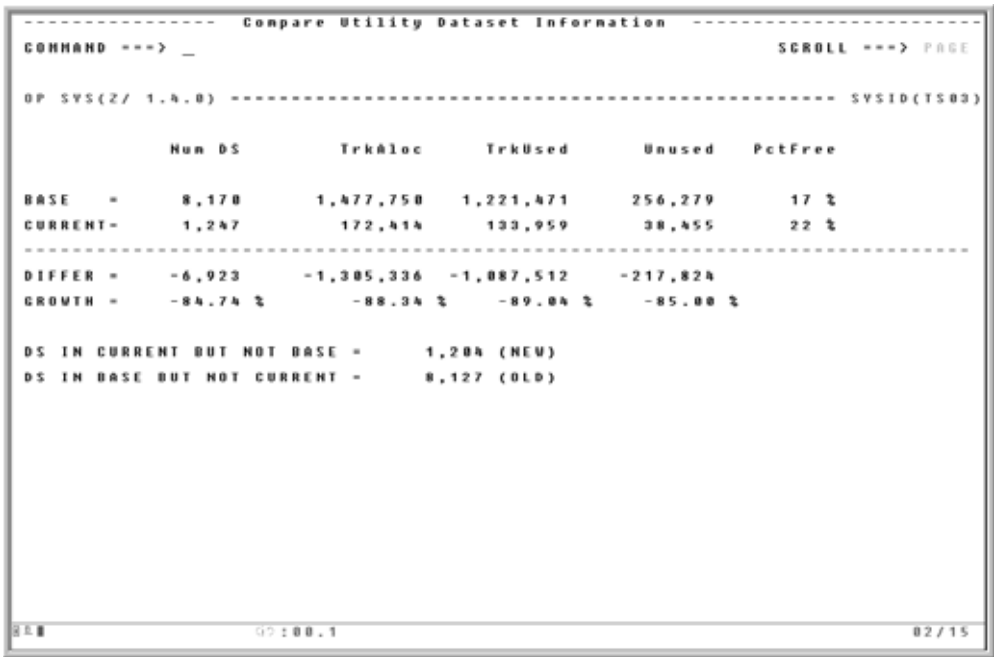

Figure 10–4. Compare Utility Dataset Information Summary panel

Table 10–2 lists the column fields and the cross-referenced database information for the summary panel.

Table 10–2. Compare Utility Dataset Information Summary column fields

Column Name	Description
Num DS	The total number of datasets. When cross-referenced with the database information on the left of the table, this column shows: total number of datasets for the base database; total number of datasets for the current database; the total number of dataset difference between the base and current databases; and the percentage difference in total dataset growth between the base and current databases.
(Track, Megabyte, Gigabyte) Alloc	The measurement unit varies for this column. The exact unit of measurement for allocation that appears here is determined by the value (t, m, g) you entered in the Trk,MB,GB, field on the Base Compare Filter panel. When cross-referenced with the database information on the left of the table, this column shows: the allocation for the base database; the allocation for the current database; the allocation difference between the base and current databases; and the allocation percentage difference between the base and current databases.

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Table 10–2. Compare Utility Dataset Information Summary column fields

Column Name	Description
(Track, Megabyte, Gigabyte) Used	The measurement unit varies for this column. The exact unit of measurement for used space that appears here is determined by the value (t, m, g) you entered in the Trk,MB,GB, field on the Base Compare Filter panel. When cross-referenced with the database information on the left of the table, this column shows: the used space for the base database; the used space for the current database; the used space difference between the base and current databases; and the used space percentage difference between the base and current databases.
Unused	The measurement unit varies for this column. The exact unit of measurement for unused space that appears here is determined by the value (t, m, g) you entered in the Trk,MB,GB, field on the Base Compare Filter panel. When cross-referenced with the database information on the left of the table, this column shows: the unused space for the base database; the unused space for the current database; the unused space difference between the base and current databases; and the percentage difference between the base and current databases.
PctFree	The measurement unit varies for this column. The exact unit of measurement for free space percent that appears here is determined by the value (t, m, g) you entered in the Trk,MB,GB, field on the Base Compare Filter panel. When cross-referenced with the database information on the left of the table, this column shows: the free space percent for the base database; and the free space percent for the current database.

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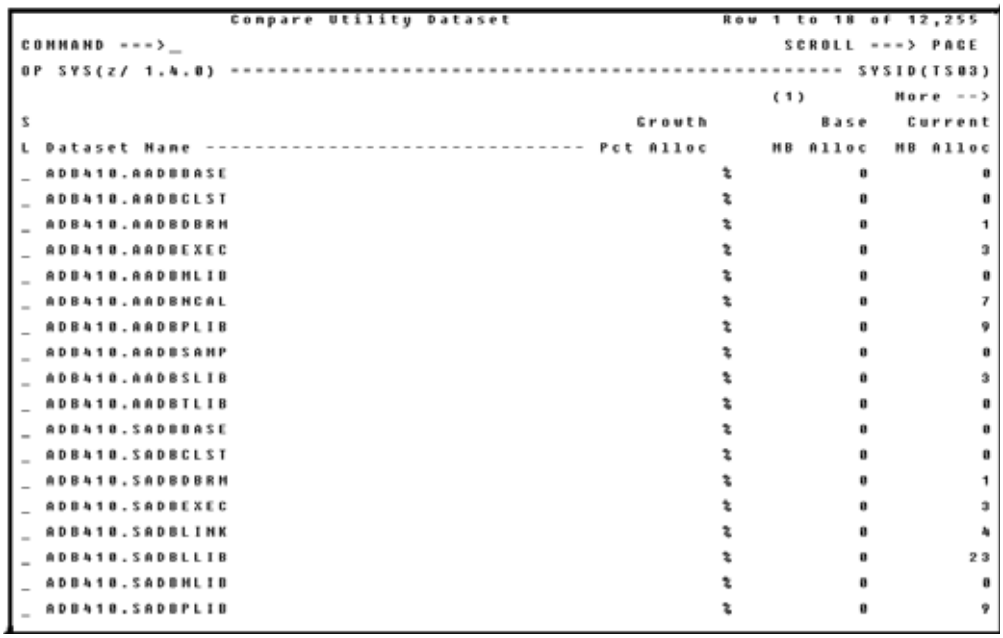
Compare Utility Dataset Information Detail

The Compare Utility Dataset Information Detail panel (Figure 10–5) shows the results of your database comparison. This panel appears if you entered a D in the Display field of the Base Compare Filter panel. In addition, any filter options you entered in the Base Compare Filter panel appear in this panel.



```
                    Compare Utility Dataset                    Row 1 to 18 of 12,255
COMMAND --->_                                                   SCROLL ---> PAGE
OP SYS(z/ 1.4.0) ------------------------------------------------- SYSID(TS03)
                                                                (1)       More -->
S                                                   Growth          Base   Current
L Dataset Name ------------------------------- Pct Alloc      MB Alloc  MB Alloc
_ ADB410.AADBBASE                                        %           0         0
_ ADB410.AADBCLST                                        %           0         0
_ ADB410.AADBDBRM                                        %           0         1
_ ADB410.AADBEXEC                                        %           0         3
_ ADB410.AADBMLIB                                        %           0         0
_ ADB410.AADBNCAL                                        %           0         7
_ ADB410.AADBPLIB                                        %           0         9
_ ADB410.AADBSAMP                                        %           0         0
_ ADB410.AADBSLIB                                        %           0         3
_ ADB410.AADBTLIB                                        %           0         0
_ ADB410.SADBBASE                                        %           0         0
_ ADB410.SADBCLST                                        %           0         0
_ ADB410.SADBDBRM                                        %           0         1
_ ADB410.SADBEXEC                                        %           0         3
_ ADB410.SADBLINK                                        %           0         4
_ ADB410.SADBLLIB                                        %           0        23
_ ADB410.SADBMLIB                                        %           0         0
_ ADB410.SADBPLIB                                        %           0         9
```

Figure 10–5. Compare Utility Dataset Information Detail panel

Table 10–3 lists the column fields for the Compare Utility Dataset Information Detail panel.

Table 10–3. Compare Utility Dataset Information Detail Fields

Column Name	Description
SL	Allows you to enter a selection option.
Dataset Name	Name of the dataset.
Growth Pct Alloc	Difference in the allocated growth percent between the base and current databases.
Base MB Alloc	Number of megabytes allocated for the base database
Current MB Alloc	Number of megabytes allocated for the current database.
Growth Pct Used	Percent of growth between the base and current databases.
Base MB Used	Number of megabytes used for the base database.
Current MB Used	Number of megabytes used for the current database.
Growth Pct Free	Percent of growth that is free between the base and current databases.
Base MB Free	Number of megabytes free for the base database.
Current MB Free	Number of megabytes free for the current database.

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Table 10–3. Compare Utility Dataset Information Detail Fields

Column Name	Description
Volser	Volume serial number.
LPool	Name of the logical pool.
Strg Grp	Name of the storage group.

Compare Utility Dataset Information Summary and Detail

The Compare Utility Dataset Information Summary and Detail panel (Figure 10–6) appears if you entered a B in the Display field of the Base Compare Filter panel or if you entered SW when in the Detail panel. The Summary section appears at the top of the panel, whereas the Detail section appears at the bottom of the panel. Any information you entered from the filters on the Base Compare Filter panel appear in this panel. All of the fields that were previously described apply to this panel. See Table 10–2 and Table 10–3.

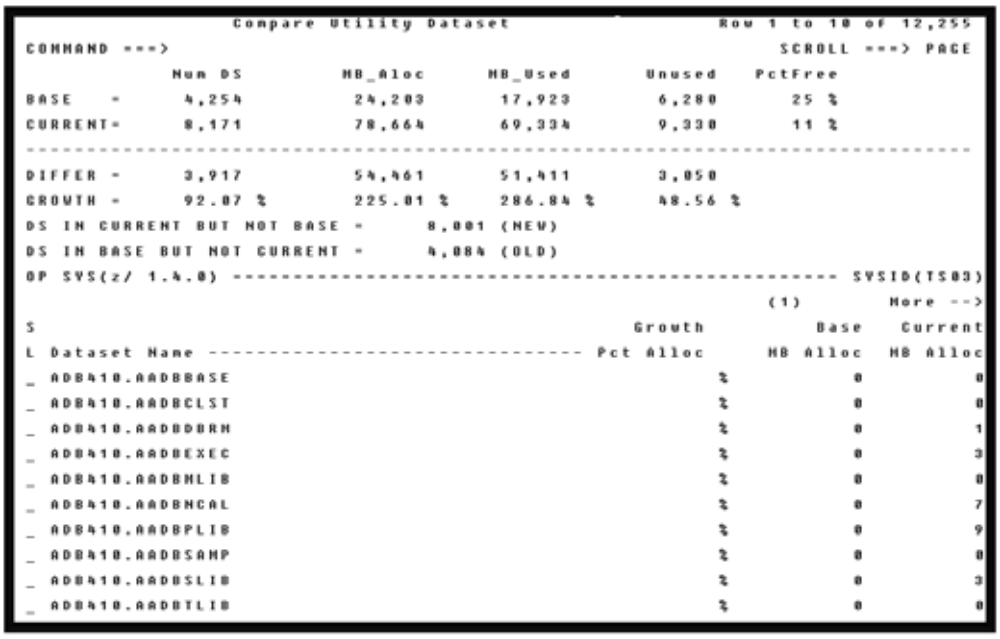

Figure 10–6. Compare Utility Dataset Information Summary and Detail panel

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Filters for Catalog Scan Utility

Catalog Scan filters can be accessed from the Utility Selection panel. This is accomplished by typing **2** (Catalog) in the **Option** field. After entering this selection, the Catalog Scan Filter panel appears (Figure 10–7). The primary purpose of this panel is to let you make display option selections about how catalog scan query information is to appear. See Utilities (Catalog Scan), page 3-17. A subsequent panel lists the catalog scan query information based on your selection from the Catalog Scan Filter panel.

Note: Although this utility can not currently show where catalog entries exist for which there is no actual dataset, there is a batch job called "TSFCATCP," which resides in the "CNTL" file that can provide this information.

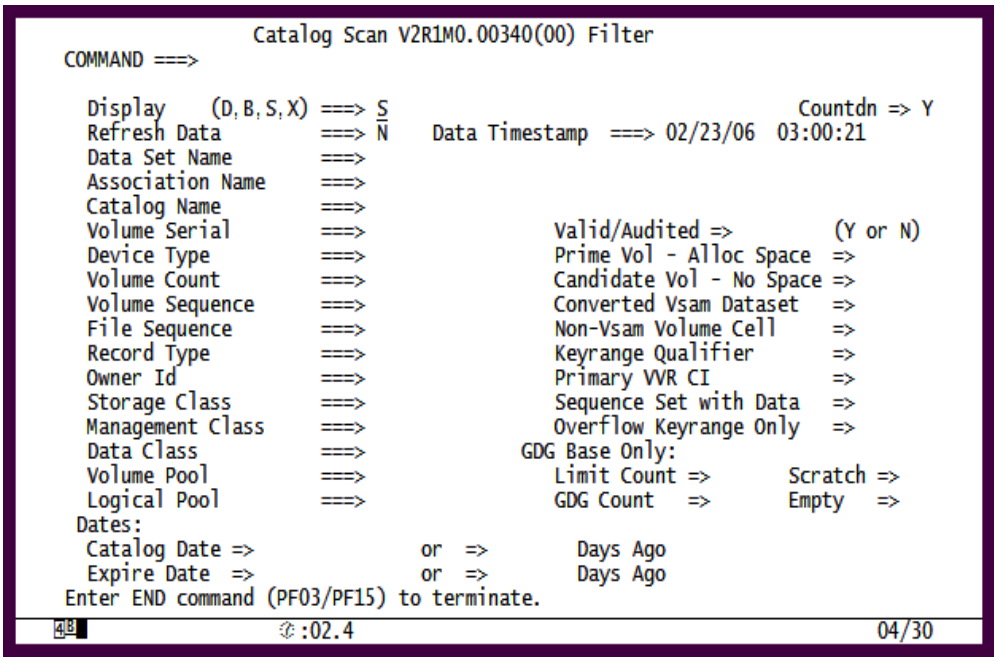

Figure 10–7. Catalog Scan Filter panel

In addition to the display option selections, a variety of filters are also featured on the Catalog Scan Filter panel. The filters for this utility query a database that was built from information extracted from the catalogs. You can list the results of a catalog query in a summary, detail, or both summary and detail view. In addition, you can use filters to find specific information about datasets that are listed in the catalogs. Some of the filters allow you to use wildcard characters and exclude symbols to refine the results. See Using Wildcard Characters, page 1-10.

Useful Tip. Some of the filters have two-part fields. Press Tab to advance. Type a less than (<), greater than (>), or equal to (=) in the first position of the field. Type a numeric value in the second position of the field.

The filters for the Catalog Scan Filter panel include the following:

Table 10–4. Catalog Scan Filters

Filter Name	Description
Association Name	An association to a particular dataset. This association can be a fully qualified name, a partially qualified name, or a partially qualified using include or exclude (¬) logic. • SYS1.PARMLIB – Displays all SYS1.PARMLIB datasets found • SYS1.** – Displays all datasets that begin with SYS1 • SYS1.**,¬*.D*.** – Include all datasets that begin with SYS1 except those that have a second level qualifier that begins with a D
Candidate Vol - No Space	Lets you see dataset catalog entries that are candidate volume entries and are using no space. • Y – Show catalog entries with this option • N – Show catalog entries without this option
Catalog Date	Lets you find the exact or approximate catalog creation date. Two-part field; valid values for the second field are date (MM/DD/YYYY format), TODAY, or CDATE. • < 12/31/2006 – Shows all files that were cataloged before 12/31/2006 • > TODAY – Shows all files with the catalog date being greater than today • = CDATE – Shows all files with the catalog date equal to the creation date
Catalog Name	The name of the catalog that points to the dataset. Type a fully qualified name in this field, a partially qualified name, or a partially qualified using include or exclude logic (**¬**). • SYS1.PARMLIB – Displays all SYS1.PARMLIB datasets found • SYS1.** – Displays all datasets that begin with SYS1 • SYS1.**,¬*.D*.** – Include all datasets that begin with SYS1 except those that have a second level qualifier that begins with a D
Converted Vsam Dataset	Lets you see dataset catalog entries that are converted VSAM datasets. • Y – Show catalog entries with this option • N – Show catalog entries without this option
Countdown	Lets you display or hide the Countdown panel, which shows information about the utilities' progress in relation to the argument that you requested. • Y – Display the Countdown panel • N – Do not display the Countdown panel
Data Class	Lets you find dataset catalog entries associated with a specific data class. Wildcard characters allowed. • CNTL – Shows all catalog entries that have CNTL in the Data Class field • SYS* – Shows all catalog entries that have a data class beginning with SYS

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Table 10–4. Catalog Scan Filters

Filter Name	Description
Data Set Name	The dataset name you want the Catalog Scan utility to find. Type a fully qualified name in this field, a partially qualified name, or a partially qualified using include or exclude (¬**)** logic. • SYS1.PARMLIB – Displays all SYS1.PARMLIB datasets found • SYS1.** – Displays all datasets that begin with SYS1 • SYS1SYS1.**,¬*.D*.** – Include all datasets that begin with SYS1 except those that have a second level qualifier that begins with a
Data Timestamp	Indicates the date and time when the database was captured. The format of the date displays in MM/DD/YY, whereas the format of the time displays in HH/MM/SS.
Device Type	The media device type. • Tape – A tape device • Disk – A disk device
Empty	Lets you identify GDG bases that were defined with EMPTY or NOEMPTY. • Y – Lists all GDG bases with EMPTY • N – List all GDG bases that are NOEMPTY
Expire Date	Lets you find the exact or approximate expiration date of the catalog. Two-part field; valid values for the second field are date (MM/DD/YYYY format), TODAY, or XDATE. • < 12/31/2006 – Shows all files that expired before 12/31/2006 • > TODAY – Shows all files with the expiration date being greater than today • = XDATE – Shows all files that contain the catalog date being equal to the expire date
File Sequence	Shows a file sequence where a dataset catalog entry may be found. Two-part field; valid numeric entries for the second field are from 1 to 99999.
GDG Count	Lets you identify GDG bases by the number of generations currently cataloged. Two-part field; second field represents the number of generations from 1 - 999. • > 250 – Identifies all GDG bases that have more than 250 generations cataloged
Keyrange Qualifier	Lets you see dataset catalog entries that are key range associated to the dataset. • Y – Show catalog entries with this option • N – Show catalog entries without this option
Limit Count	Lets you identify GDG bases by the limit that was defined for the number of generations that would be kept. Two-part field; second field represents the number of generations from 1 - 999. • > 200 – Identifies all GDG bases defined for a limit count of more than 200

Table 10–4. Catalog Scan Filters

Filter Name	Description
Logical Pool	Lets you find dataset catalog entries associated with a specific logical pool. Wildcard characters allowed. • TEST – Shows all catalog entries that have TEST in the Logical Pool field • SYS* – Shows all catalog entries that have a logical pool beginning with SYS
Management Class	Lets you see dataset catalog entries that are associated with a specific management class. Wildcard characters allowed. • BCKWEEK – Shows all catalog entries that have BCKWEEK in the management class • SYS* – Shows all catalog entries that have a management class beginning with SYS
Non-Vsam Volume Cell	Lets you see dataset catalog entries that are non-VSAM datasets. • Y – Show catalog entries with this option • N – Show catalog entries without this option
or => Days Ago	Lets you find the exact or approximate creation date of the catalog. This field works in conjunction with the Catalog Date filter. Two-part field; second field represent the number of days from 0 - 999. • > 365 - Shows all files that were cataloged within the last year. • < 365 - Shows all files that have a catalog date older than a year ago.
or => Days Ago	Lets you find the exact or approximate expiration date of the catalog. This field works in conjunction with the Expire Date. Two-part field; second field represents the number of days from 0 - 999. • < 365 – Shows all files with an expiration date that is older than a year ago • > 365 – Shows all files with an expiration date greater than a year ago
Overflow Keyrange Only	Lets you see dataset catalog entries that have an overflow key range specified. • Y – Shows catalog entries with this option • N – Shows catalog entries without this option
Owner ID	Shows dataset catalog entries that are associated with a specific owner ID. • SPGDSM – Shows all catalog entries that have SPGDSM in the owner field
Primary VVR CI	Lets you see dataset catalog entries that are primary VVR flag set. • Y – Show catalog entries with this option • N – Show catalog entries without this option
Prime Vol - Alloc Space	Lets you see dataset catalog entries that are Prime VOLSER and are using allocated Space. • Y – Show catalog entries with this option • N – Show catalog entries without this option

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Table 10–4. Catalog Scan Filters

Filter Name	Description
Record Type	Lets you see dataset catalog entries associated with a specific record type. • A – Non-Vsam • B – GDG-Base • C – Cluster • D – Data • G – Alt-Idx • H – GDG-Ds • I – Index • L – PDSE • M – GDG-Rolled Off • N – GDG-Deferred • O – Other • P – HFS • R – Path • T – Truename • U – ICF-Connector • X – Alias
Refresh Data	Catalog Scan gives you the option to refresh the database online. If you enter a Y in this field, a message appears asking if you are sure that you really want to build the database online rather than in batch. If you are sure you want to build the database online, you can enter another Y in this field to continue. If a database is not found, then this field shows an N and a database is created online. **Note**: If you have a large catalog environment, you may want to consider running the batch database build job and then return to this panel to perform the analysis. The batch database build job is in the CNTL file in member CTBLDMST.
Scratch	Lets you identify GDG bases that were defined with the attribute of SCRATCH. • Y – Identifies GDG bases defined with SCRATCH • N – Identifies GDG bases with NOSCRATCH
Sequence Set with Data	Lets you see Catalog entries that are Sequence Set with Data. • Y – Shows catalog entries with this option • N – Shows catalog entries without this option
Storage Class	Lets you see dataset catalog entries related to a specific storage class. Wildcard characters allowed. • LARGE – Shows all catalog entries that have LARGE in their storage class field • SYS* – Shows all catalog entries that have a storage class beginning with SYS
Valid/Audited	Used as an audit flag; if TAPEAUDIT(Y) or DASDAUDIT(Y) flag was set when running the catalog database build job, then you can use this filter of Y or N to display records that were found in the catalog, but not on disk or tape.
Volume Count	Lets you see dataset catalog entries with in a volume count range. Two-part field; valid numeric entries for the second field are from 1 to 99999. • >10 – All volumes greater than 10

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Table 10–4. Catalog Scan Filters

Filter Name	Description
Volume Pool	Lets you find dataset catalog entries associated with a specific volume pool. Wildcard characters allowed. • TEST – Shows all catalog entries that have TEST in the Volume Pool field • SYS* – Shows all catalog entries that have a volume pool beginning with SYS
Volume Sequence	Shows the sequence of a volume that is related to the dataset you want to find. Two-part field; valid numeric entries for the second field are from 1 to 99999.
Volume Serial	Volume serial number (VOLSER) that is related to the dataset. Type a fully qualified volume serial number or use a wildcard or exclude logic in this field. • 010123 – Display only information contained on VOLSER 010123 • 01* – Displays all information contained on all VOLSERs that begin with 01 • ¬012* – Exclude information that is contained on any VOLSER beginning with 012

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Displaying Catalog Scan Volume Information

The Catalog Scan Volume Information panel shows the results of your catalog scan query in summary, detail, or both summary and detail format. Follow these steps access the Catalog Scan Volume Information panel:

1. From the Catalog Scan Filter panel (Figure 10–7), type **S**, **D**, or **B** in the **Display** field.
2. Type a **Y** or **N** in the **Countdown** field.
3. Type the *valid entries* in the filter fields for each of the filters that you want to use.
4. Press ENTER and the Catalog Scan Volume Information panel appears with the results of your query. The information that is displayed on this panel depends on the display option that you typed in the Display field of the Catalog Scan Filter panel.
   - Catalog Scan Volume Information Summary (Figure 10–8) for **S** display option
   - Catalog Scan Volume Information Detail (Figure 10–9) for **D** display option
   - Catalog Scan Volume Information Summary and Detail (Figure 10–11) for **B** display option

Catalog Scan Volume Information Summary

The Catalog Scan Volume Information Summary panel (Figure 10–8) lists the results of your catalog scan. If you entered an S in the Display field of the Catalog Scan Filter panel, the Catalog Scan Volume Information Summary panel appears.

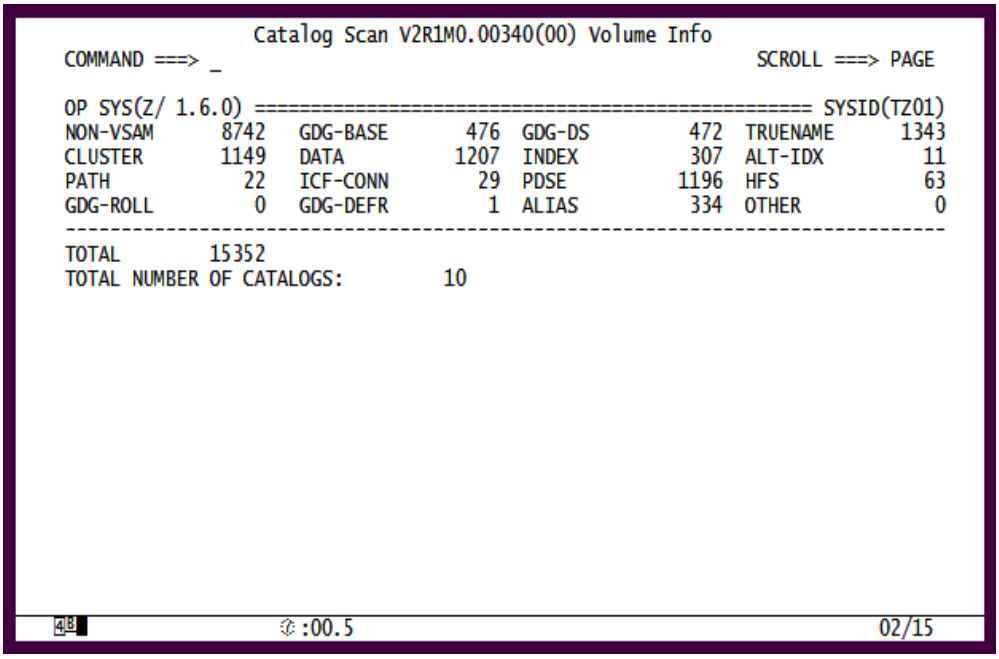

Figure 10–8. Catalog Scan Volume Information Summary panel

The Catalog Scan Volume Information Summary panel features fields that show the results of the catalog scan. The fields for this panel include the following:

Table 10–5. Catalog Scan Volume Information Summary panel fields

Field Name	Description
Alias	Identifies the number of aliases defined to the catalog.
Alt-Idx	Identifies the number of alternate indexes defined to the catalog.
Cluster	Identifies the number of VSAM clusters defined to the catalog.
Data	Identifies the number of VSAM data components defined to the catalog.
GDG-Base	Identifies the number of GDG bases that are defined to the catalog.
GDG-Defr	Identifies the number of GDGs in deferred status defined to the catalog.
GDG-DS	Identifies the number of GDG datasets defined to the catalog.
GDG-Roll	Identifies the number of rolled-off GDGs defined to the catalog.
HFS	Identifies the number of HFS components defined to the catalog.
ICF-Conn	Identifies the number of connector records to ICF catalogs.
Index	Identifies the number of VSAM index components defined to the catalog.
Non-VSAM	Identifies the number of non-VSAM catalog entries.
Other	Identifies the number of unknown catalog entries.
Path	Identifies the number of Path records defined to the catalog.
PDSE	Identifies the number of PDSEs defined to the catalog.
Total	Total number of all catalog entries.
Total Number of Catalogs	Total number of catalogs found in the search.
Truename	Identifies the number of TRUENAME definitions.

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Catalog Scan Volume Information Detail

The Catalog Scan Volume Information Detail panel (Figure 10–9) shows the results of your detailed catalog scan. If you entered a D in the Display field of the Catalog Scan Filter panel the Catalog Scan Volume Information Detail panel appears. Also appearing are any filter options you entered from the Catalog Scan Filter panel.

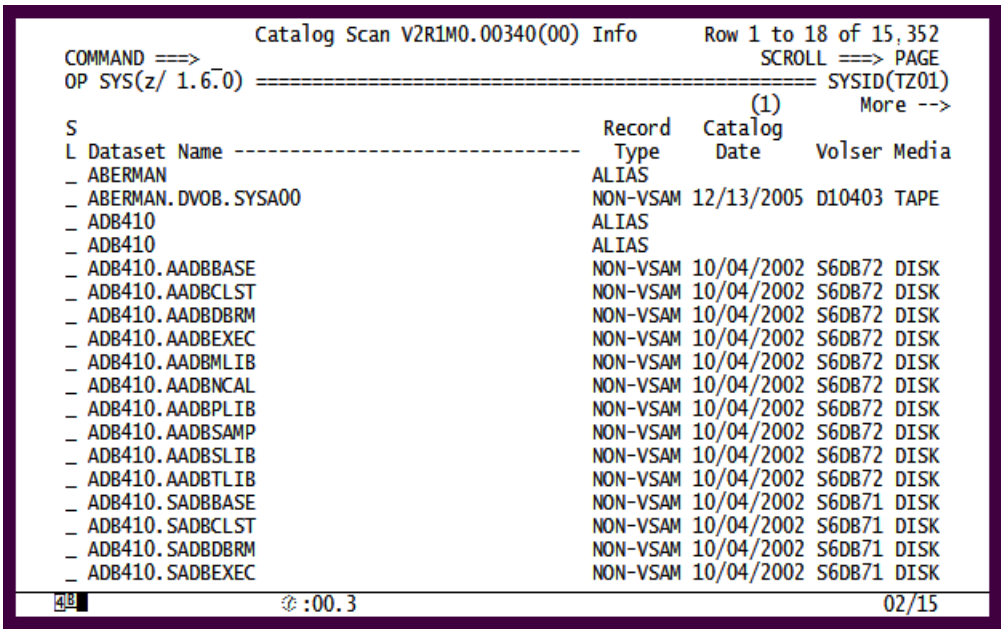

Figure 10–9. Catalog Scan Volume Information Detail panel

The fields for the Catalog Scan Volume Information Detail panel are wide in range, from all of the dataset names that were found to indicating if the catalog (where a dataset name is listed) is physical sequential or not. The fields for the Catalog Scan Volume Information Detail panel include the following:

Table 10–6. Catalog Scan Volume Information Detail panel Dataset fields

Field Name	Description
Alc Spc	Shows a prime VOLSER that is using allocated space and associated with a specific dataset. A Y indicates a prime VOLSER using allocated space, whereas an N designates a prime VOLSER not using allocated space.
Can Vol	Shows candidate volume entries and are using no space. A Y indicates candidate volume entry, whereas an N designates no candidate volume entry.
Catalog Date	Date of when the catalog was created.
Dataset Name	Name of the dataset located in the catalog.
EM	A Y (yes) in this field indicates to scratch when empty.
Fil Seq	Shows the specific sequence of the file where the dataset is located.
GDG Cnt	The number of how many GDGs exist.
GDG Lim	The numbered limit of how many generations of GDG can be kept.

Table 10–6. Catalog Scan Volume Information Detail panel Dataset fields

Field Name	Description
Key Rng	Shows if a key range is associated to a specific dataset. A Y indicates a key range is associated with a dataset, whereas an N designates no key range associated with a dataset.
Media	The specific media type of the device. This can be a tape or a disk.
Mgmt Class	The management classification of the dataset in the catalog.
Non Vsm	Shows non-VSAM datasets. A Y indicates non-VSAM entries, whereas an N designates VSAM entries.
Record Type	The record type of the dataset located in the catalog.
SC	A Y (yes) in this field indicates that a scratch occurs if a GDG rolls off.
Seq Set	Shows if a catalog entry is sequence set. A Y indicates that the catalog entry is sequence set, whereas an N indicates that the catalog entry is not.
SL	Allows you to type in an option. See Dataset Information Detail Panel, page 10-23.
Valid/Audit	A Y or N in this field indicates whether or not to display records that were found in the catalog, but not on disk or tape.
Vol Seq	Shows the specific sequence of the volume where the dataset is located.
Volser	Volume serial number associated with the dataset.

Selecting a Dataset

The selection column (SL) on the Catalog Scan Volume Information Detail panel lets you select a specific dataset to view in various ways or to take an action. Follow these steps to select a specific dataset from the Detail Information Panel:

1. Move the cursor in the **SL** column next to a specific dataset.
2. Type an **S**, **H,** or **/** in the **SL** column. See Table 10–7 for a description of the selection options.
3. Press ENTER and depending on the selection you made, the Dataset Information panel, History Retrieval panel, or Catalog Entry Action Menu appears.

Table 10–7. SL Field Selection Options, Dataset

Selection Option	Description
S	Accesses the Dataset Information Detail Panel, page 10-23.
H	Accesses the History Retrieval panel. This panel allows you to select a start date and time and an end day and time to retrieve a particular dataset or datasets. The dates are typed in month, day and year (MM,DD,YYYY) format and the time is typed in hour, minute, and second (HH,MM, SS) format. Blank values are allowed for any of the entry options on the History Retrieval panel.
/	Depending on the dataset selected, accesses the Catalog Entry Action Menu, page 10-25.
=	Allows you to repeat an action.

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DATASET INFORMATION DETAIL PANEL

You can view more information about a specific dataset by accessing the Dataset Information Detail panel (Figure 10–10). This task can be accomplished by using the selection field on the Catalog Scan Volume Information Detail panel. Follow these steps to view more information about a specific dataset:

1. From the Catalog Scan Volume Information Detail panel (Figure 10–9), press **Tab** to move the cursor to the **Selection** field next to the dataset that you want to view.
2. Type an **S** in the **Selection** field.
3. Press **Enter** and the Dataset Information Detail panel appears.

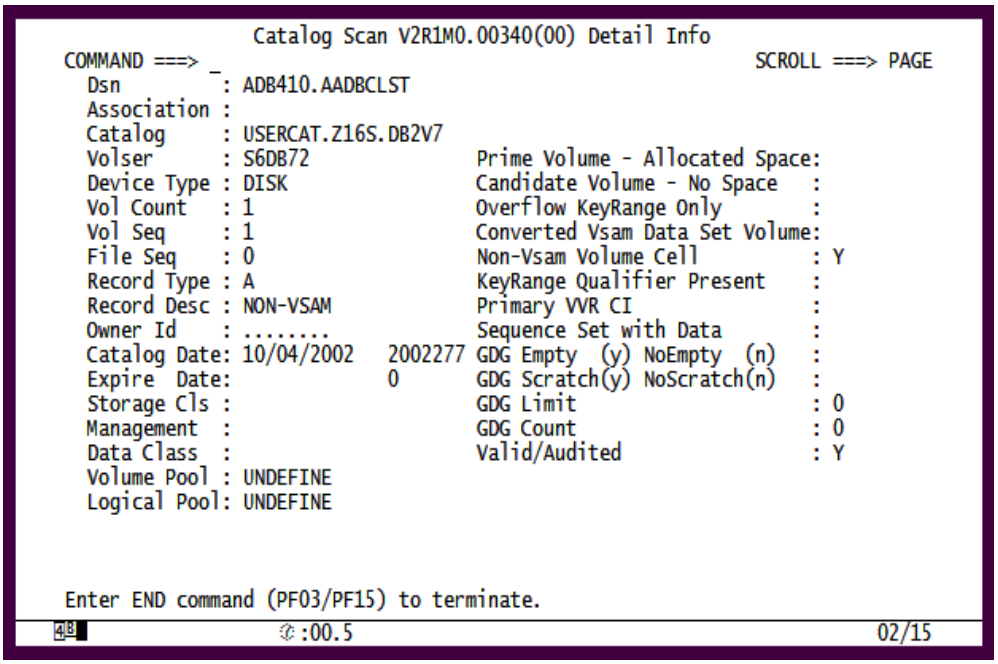

Figure 10–10. Dataset Information Detail panel

The Dataset Information Detail panel features information fields about a specific dataset. These fields range in variety, from the catalog name where the dataset is listed to the GDG Count. You can find in-depth information about a specific dataset in the Dataset Information Detail panel. The fields for the Dataset Information Detail panel are listed in Table 10–8.

Table 10–8. Dataset Information Detail panel fields

Field Name	Description
Association	The specific association to a particular dataset. This association can be a fully qualified name, a partially qualified name, or a partially qualified using include or exclude logic.
Candidate Volume - No Space	Shows if a dataset catalog entry is a Candidate Volume and is using no space.
Catalog	The catalog name of where the dataset entry is listed.
Catalog Date	Shows the date when the entry was made.
Converted VSAM Dataset Volume	Shows if the dataset catalog entry is a converted VSAM dataset.
Data Class	The data class that is associated with the dataset.
Device Type	The specific type of device. This is either Disk or Tape.
DSN	Dataset name you selected from the Catalog Scan Volume Information Detail panel.
Expire Date	Shows the date when the catalog entry expires.
File Seq	Shows the file sequence range you selected by using this filter on the Catalog Scan Volume Information Detail panel.
GDG Count	Shows the GDG bases by the number of generations currently cataloged.
GDG Empty (y) NoEmpty (n)	Lists the dataset catalog entry as either associated with a GDG base and is empty, or is related to a GDG base and is not empty.
GDG Limit	Shows the GDG bases limit.
GDG Scratch (y) NoScratch (n)	Lists the dataset catalog entry as either associated with a GDG base and has SCRATCH attributes, or is related to a GDG base and has no SCRATCH attributes.
KeyRange Qualifier Present	Shows if the dataset catalog entry is associated with a key range.
Logical Pool	The logical pool that is related to the dataset.
Management	The management class type that is related to the dataset.
Non-VSAM Volume Cell	Shows if the dataset catalog entry is not a converted VSAM dataset.
Overflow KeyRange Only	Shows if a dataset catalog entry has an overflow key range specified.
Owner ID	User ID of the person who created the dataset.
Primary VVR CI	Shows if the dataset catalog entry is a primary WR flag set.
Prime Volume - Allocated Space	Shows if a dataset catalog entry is a Prime VOLSER and is using allocated space.
Record Desc	A brief description of the record type code.

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Table 10–8. Dataset Information Detail panel fields

Field Name	Description
Record Type	A record type code that is associated with a dataset. These record type codes include the following: • A – Non-Vsam • B – GDG-Base • C – Cluster • D – Data • G – Alt-Idx • H – GDG-Ds • I – Index • L – PDSE • M – GDG-Rolled Off • N – GDG-Deferred • O – Other • P – HFS • R – Path • T – Truename • U – ICF-Connector • X – Alias
Sequence Set with Data	Shows if the dataset catalog is sequence set.
Storage Cls	The storage class type that is related to the dataset.
Valid/Audited	Used as an audit flag; if TAPEAUDIT(Y) or DASDAUDIT(Y) flag was set when running the catalog database build job, then you can use this filter of Y or N to display records that were found in the catalog, but not on disk or tape.
Vol Count	Shows the volume count range you selected by using this filter on the Catalog Scan Volume Information Detail panel.
Vol Seq	Lists the volume sequence range you selected by using this filter on the Catalog Scan Volume Information Detail panel.
Volser	Volume serial number that is associated with the dataset.
Volume Pool	The volume pool that is related to the dataset.

CATALOG ENTRY ACTION MENU

The Catalog Entry Action Menu lets you perform specific actions to a selected catalog dataset or datasets that appear in the Catalog Scan Volume Information Detail panel (Figure 10–11). Follow these steps to access the Catalog Entry Action Menu:

1. Move the cursor in the **SL** column next to a specific dataset.
2. Type a **/** (forward slash) in the **SL** column. If you want to perform a specific action to several datasets, type a **/** in the **SL** column next to the first dataset. Then move the cursor to each subsequent dataset and type **=** (an equal sign).
3. Press ENTER and the Catalog Entry Action Menu appears. Notice, the specific record type appears along the heading of the Catalog Action Menu. However, the options for this menu are the same despite the record type.

4 Type the option you want in the Option field. See Table 10–9 for a description of the selection options.

5 Press ENTER and the option executes.

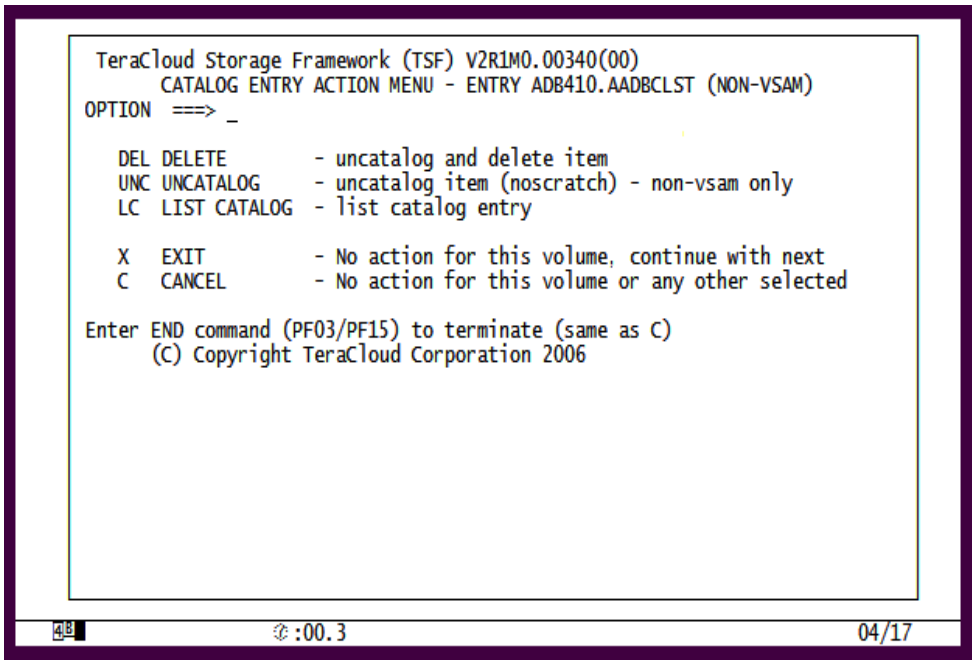

Figure 10–11. Catalog Entry Action Menu for a Non-VSAM record type

The selection options for the Catalog Entry Action Menu are listed in Table 10–9.

Table 10–9. Catalog Entry Action Menu selection options.

Option	Description
DEL Delete	Deletes the selected dataset and removes its entry from the catalog.
UNC UnCatalog	Deletes the catalog entry for the selected dataset.
LC List Catalog	Displays catalog information about the selected dataset.
X	Passes over the action for the current dataset and procedes to the next dataset.
C	Cancels the operation.

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Catalog Scan Volume Information Summary and Detail

If you entered a B in the Display filter field of the Catalog Scan Filter panel the Catalog Scan Volume Information Summary and Detail panel appears (Figure 10–12). The Summary section appears at the top of the panel, whereas the Detail section appears at the bottom of the panel. Any information you entered from the filters on the Catalog Scan Filter panel appear in this panel. All of the fields that were previously described for the Catalog Scan Volume Information Summary panel and the Catalog Scan Volume Information Detail panels also apply to this panel.

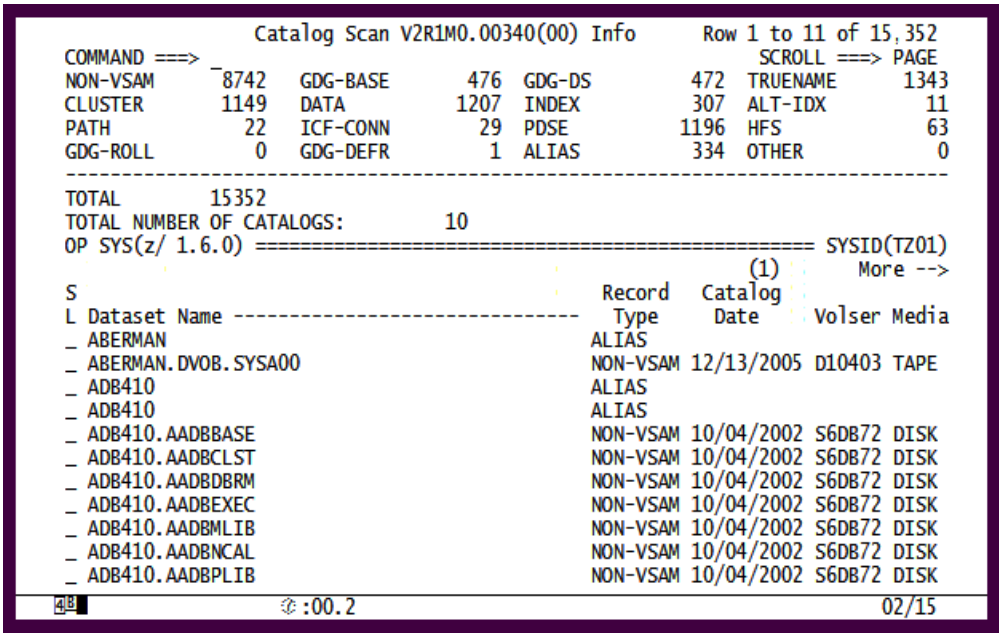

Figure 10–12. Catalog Scan Volume Information Summary and Detail panel

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Unix Filesystems

The Unix Filesystems Utility allows you to find Unix file systems that reside in the OS/390 environment. You can show the results of a Unix file systems query in a summary, detail, or both summary and detail view. In addition, you can use filters to find more specific information about a Unix file system. The Unix Filesystems utility includes these panels:

- Unix Filesystem Filter - Allows you to choose how you want to display the results of your Unix file system query and if you want to filter for specific information that is associated with a Unix file system.
- Unix Filesystem Information - Shows the requested results of your Unix file system query in summary, detail, or both summary and detail format.
- Unix File Detail - Allows you to view most of the same information about a particular Unix file that is on the Unix Filesystem Information Detail panel only the information appears on a single panel.

Unix Filesystem Filter

The Unix Filesystem Filter panel is where you make your Unix file system request. This panel is accessed from the Utility Selection panel.

To access the Unix Filesystem Filter panel:

1. From the Utility Selection panel, type **4** in the **Selection** field.
2. Press **Enter** and the Unix Filesystem Filter panel appears (Figure 10–13).

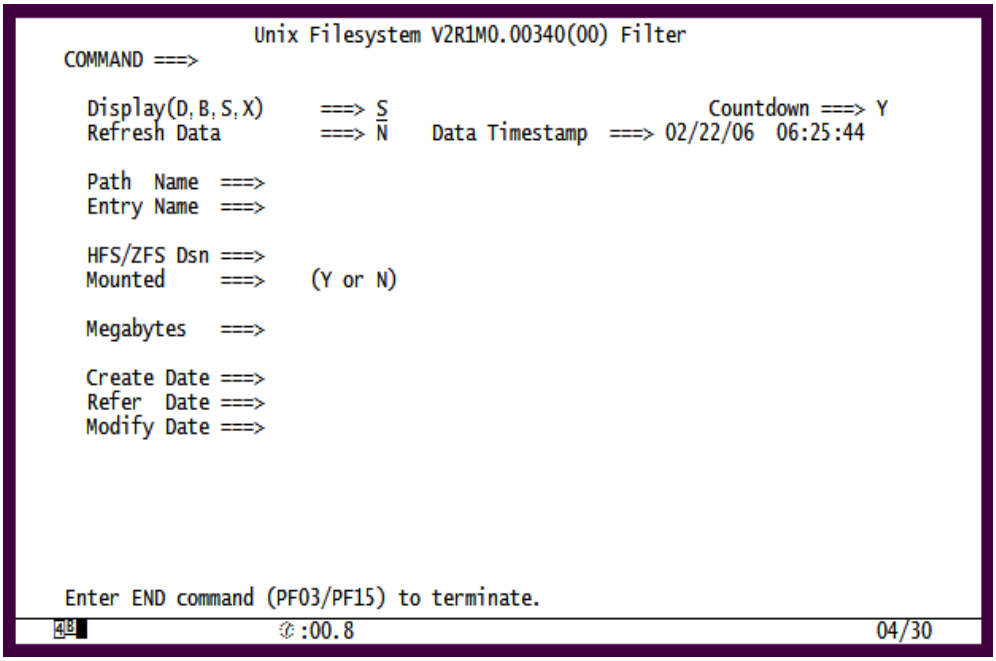

Figure 10–13. Unix Filesystem Filter panel

This panel features various filters that allow you to query for specific information regarding Unix file systems. The results of your Unix file system query returns different views. The various filters for the Unix Filesystem Filter panel include the following:

Table 10–10. Unix Filesystem panel Filters

Filter	Description
Display	Allows you to choose how you want the results of the Unix file system query to display on the Unix Filesystem Information panel. Options: • **S** - Displays a summary view of your Unix file query. This is the default option. • **D** - Displays a detailed view of your Unix file query. • **B** - Displays both a summary and detail view of your Unix file query. • **X** - Resets all filter fields to their defaults.
Countdown	Allows you to either display or hide the Countdown panel. The Countdown panel shows information as to the where the utility is in relation to the argument requested by you. Options: **Y** - Display the Countdown panel. **N** - Do not display the Countdown panel.
Refresh Data	The Unix Filesystem utility gives you the option to refresh the database online. If you enter a Y in this field, a message appears asking if you are sure that you really want to build the database online rather than in batch. If you are sure you want to build the database online, you can enter another Y in this field to continue. If a database is not found, then this field shows an N and a database is created online.
Data Timestamp	Shows the date and time the database was captured. The date and time appear in MM/DD/YY and HH:MM:SS formats.
Path Name	Type a fully qualified path file system name in this field, a partially qualified name, or a partially qualified name using include or exclude logic. An asterisk (*) indicates that zero or more characters can fill this position. Two asterisks (**) indicates that zero or more qualifiers may be present. A percent sign (%) designates a place holder for one character. **Examples:** • /ETC/** - Displays all Unix file systems that begin with “/ETC/” • /ETC/HOST%/** - Displays all Unix file systems that begin with /ETC/ and the second qualifier is five characters long and begins with HOST
Entry Name	Type a fully qualified Unix file system entry name in this field, a partially qualified name, or a partially qualified name using the include or exclude logic. An asterisk (*) indicates that zero or more characters can fill this position. Two asterisks (**) indicates that zero or more qualifiers may be present. A percent sign (%) indicates a place holder for one character. **Examples:** • /ETC/** - Displays all Unix file systems that begin with “/ETC/” • /ETC/HOST%/** - Displays all Unix file systems that begin with /ETC/ and the second qualifier is five characters long and begins with HOST

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Table 10–10. Unix Filesystem panel Filters

Filter	Description
HFS/ZFS DSN	Type a fully qualified file system name in this field, a partially qualified file name or a partially qualified file name using the include or exclude logic. The file layout is different than the Path and Entry filter field names and is similar to that of standard MVS files. **Examples:** • SYS1.** - Identifies all files that begin with SYS1 • SYS1*.LOAD.** - Identifies all files where the high-level qualifier begins with SYS1 but could contain up to four more characters, and where the second qualifier is LOAD
Mounted	Type a Y if you want to view file systems that are mounted. Type an N to view file systems that are not mounted.
Megabytes	Allows you to type a file size range in megabytes. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. The second field is a number representing the size of the file in megabytes. You can type in 1 - 999999999 for this second part.
Create Date	Allows you to type the file creation date. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. The second field is the creation date of the file. You can type in the date in MM/DD/YYYY format. **Example:** < 12/31/2003 - Displays files created before 12/31/2003
Refer Date	Allows you to type the file system reference date. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. The second field is the reference date of the file. You can type in the date in MM/DD/YYYY format. **Example:** > 12/31/2003 - Returns all file systems referenced since 12/31/2003
Modify Date	Allows you to type the file system modification date. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. The second field is the modification date of the file. You can type in the date in MM/DD/YYYY format. **Example:** = 12/31/2003 - Returns all file systems modified on 12/31/2003

To filter for Unix file systems in the OS 390 environment:

1. Type a display option (**S**, **D**, **B**) in the **Display** field.
2. Type a **Y** or **N** in the **Countdown** field.
3. Type the *valid entries* for each of the filters you want to use.
4. Press **Enter** and depending on the display option (S, D, B) you typed in the Display field, the Unix Filesystem Information Summary, Unix Filesystem Information Detail, or the Unix Filesystem Information Summary/Detail panel appears.

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Unix Filesystem Information Summary

The Unix Filesystem Information Summary panel lists the results of your Unix file system request. If you entered an S in the Display field of the Unix Filesystem Filter panel, the Unix Filesystem Information Summary panel appears (Figure 10–14).

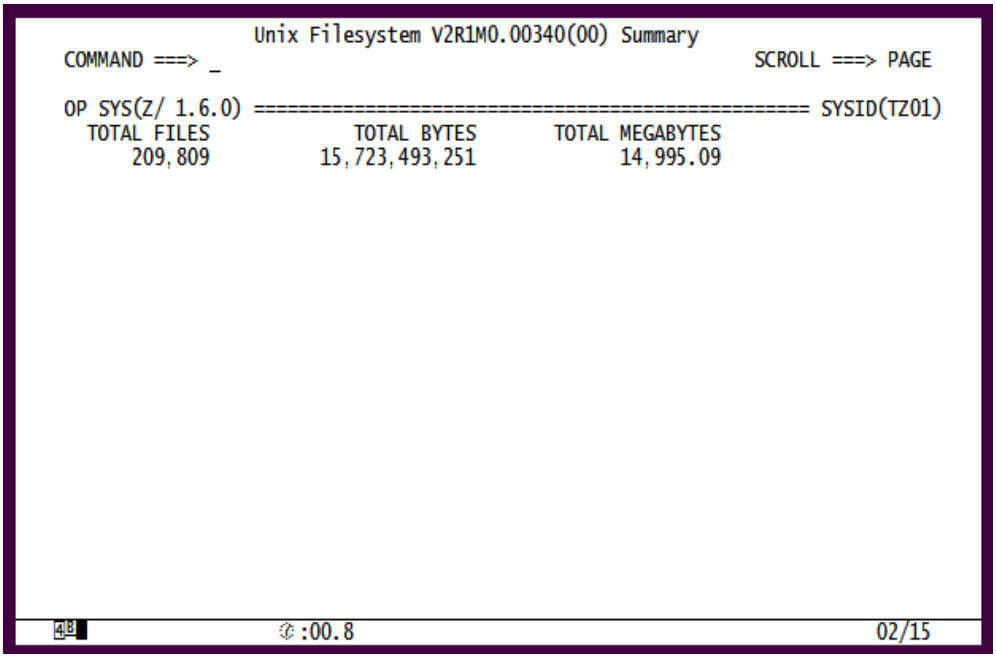

Figure 10–14. Unix Filesystem Information Summary panel

The Unix Filesystem Information Summary panel's fields show the results of your Unix file system request. Because this is a summary view there is not as many fields appearing on this panel as the Unix Filesystem Information Detail panel. The fields for Unix Filesystem Information Summary panel include the following:

Table 10–11. Unix Filesystem Information Summary panel fields

Field	Description
Total Files	Shows the total number of Unix files that were found.
Total Bytes	Shows the total number of bytes for all the Unix files that were found.
Total Megabytes	Shows the total number of megabytes for all the Unix files that were found.

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Unix Filesystem Information Detail

The Unix Filesystem Information Detail panel shows the results of your detailed Unix file system query. If you entered a D in the Display field from the Unix Filesystem Filter panel, the Unix Filesystem Information Detail panel appears (Figure 10–15). Also appearing are any specific filter options you entered in the Unix Filesystem Filter panel.

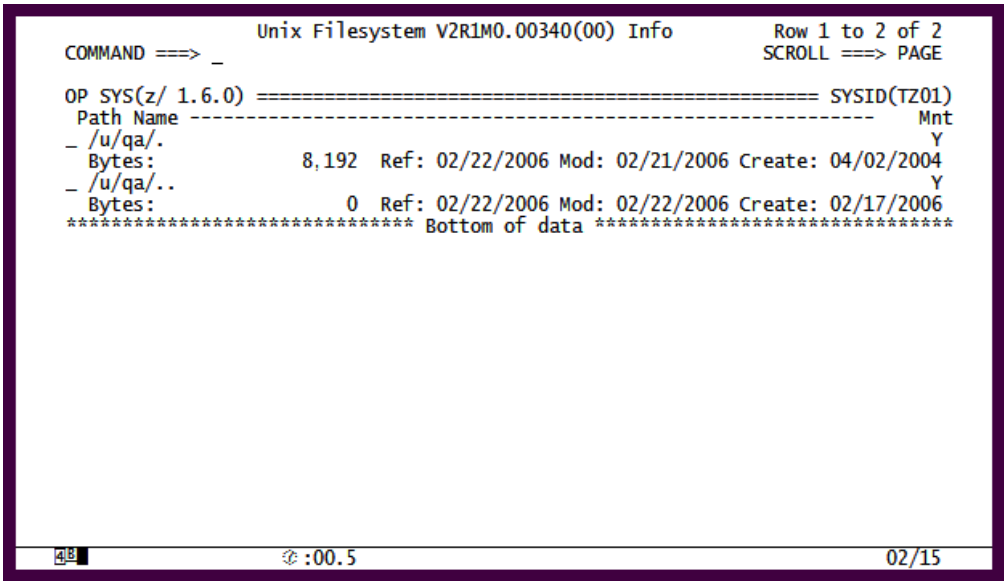

Figure 10–15. Unix Filesystem Information Detail panel

The fields that appear on Unix Filesystem Information Detail panel show the results of the request you made from the Unix Filesystem Filter panel. The information in the fields is wide in range, from the path name of a Unix file system to whether or not a Unix file system is mounted.

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The Unix Filesystem Information Detail panel fields include the following:

Table 10–12. Unix Filesystem Information Detail panel fields

Field	Description
Selection	Allows you to select a Unix file so you can access a single panel with information related to that file. This is mostly the same information that is found on the Unix Filesystem Information Detail panel except that it appears on a single panel.
Path Name	Full path of where the Unix file is located.
Bytes	Total number of bytes for the Unix file.
Ref	Reference date of the Unix file in MM/DD/YYYY format.
Mod	Modification date of the Unix file in MM/DD/YYYY format.
Create	Creation date of the Unix file in MM/DD/YYYY format.
Mnt	Shows if the Unix file is mounted or not. A Y indicates the Unix file is mounted, whereas an N signifies that it is not.

Viewing Information about a specific Unix File

You can make viewing information about a specific Unix file easier to view by accessing a single panel called the Unix File Detail panel. This is accomplished by using the selection field on the Unix Filesystem Information Detail panel.

To view a single panel for a specific Unix file:

1. Press **Tab** to move the cursor to the **Selection** field next to the path name of the Unix file you want to view.
2. Type an **S** in the **Selection** field.
3. Press **Enter** and the Unix File Detail panel appears (Figure 10–16).

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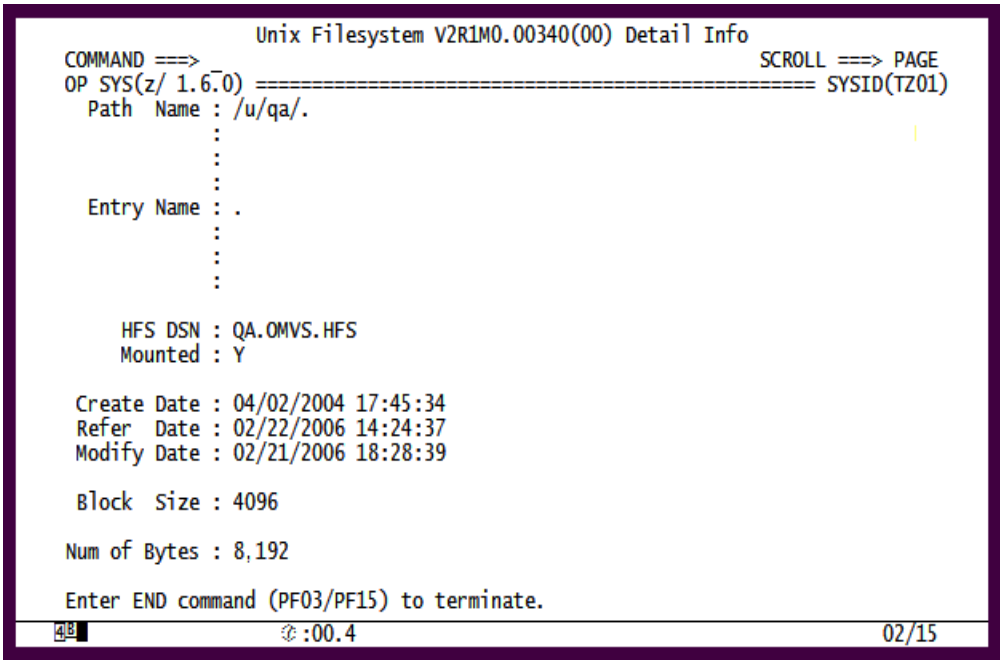

Figure 10–16. Unix File Detail panel

The Unix File Detail panel features most of the fields that are featured on the Unix Filesystem Information Detail panel. However, there are two field that are different. These are the HFS DSN and Block Size fields. The HFS DSN field shows the complete dataset path of the Unix file using a period (.) instead of the slash (/) to separate file names. The Block Size field indicates the total block size of the Unix file.

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Unix Filesystem Information Summary and Detail

The Unix Filesystem Information Summary and Detail panel (Figure 10–17) appears if you entered a B in the Display field of the Unix Filesystem Filter panel. The Summary section appears at the top of the panel, whereas the Detail section appears at the bottom. Any information you entered using the filters on the Unix Filesystem Filter panel appear in this panel. All of the fields that were previously described for the Unix FIlesystem Information Summary panel and the Unix Filesystem Information Detail panels also apply to this panel.

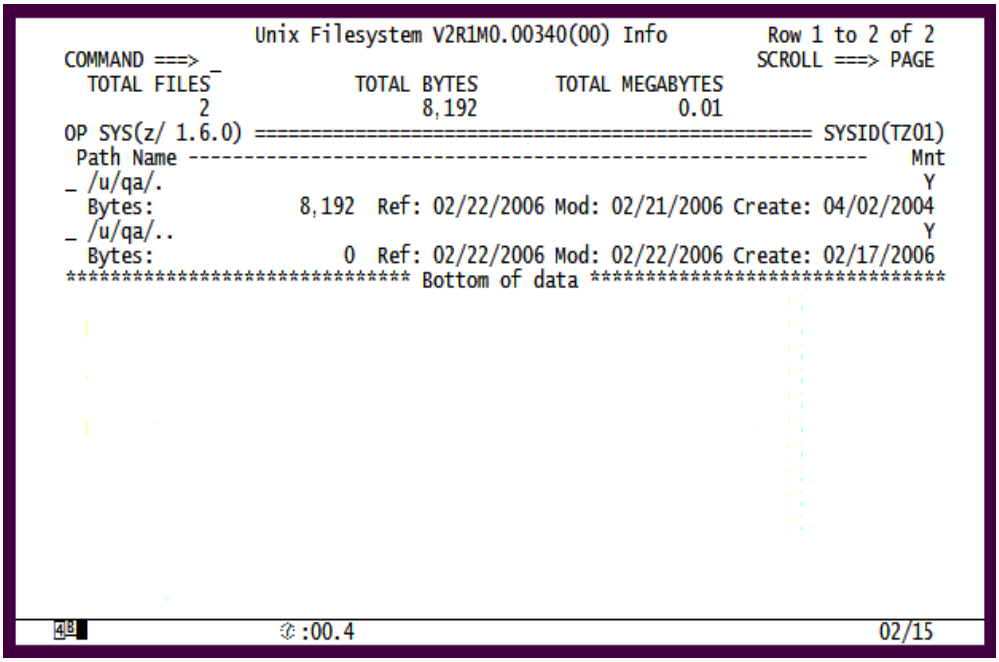

Figure 10–17. Unix Filesystem Information Summary and Detail panel

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CPU Information

The CPU Information panel (Figure 10–18) shows specific information about your CPU. This information would be sent to TeraCloud Technical Support at their request.

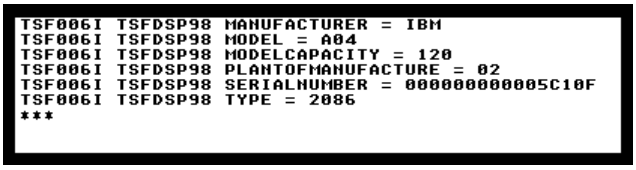

Figure 10–18. CPU Information panel

The fields for the CPU Information panel include the following:

Table 10–13. CPU Information panel fields

Field	Description
Manufacturer	Name of the manufacturer of the CPU.
Model	Model number of the CPU.
Model Capacity	
Plant of Manufacture	
Serial Number	Manufacturer's serial number of the CPU.
Type	Type classification number of the CPU.

The CPU Information panel is accessed from the Diagnostics Utilities panel.

To access the CPU Information panel:

1. From the Diagnostics Utilities panel, type **1** in the **Selection** field.
2. Press ENTER and the CPU Information panel appears.

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Examples

The following examples help clean up your catalogs, thus improving performance.

List All Empty GDG Bases

1. From the Utility Selection panel, type **2** (Catalog) in the **Selection** field and press ENTER. The Catalog Scan Filter panel appears.
2. From the Catalog Scan Filter panel, ensure that **D** is the selection option in the **Display** field. If it is not, type this option in this field**.**
3. In the **Record Type** field type **B**.
4. In the **GDG Count** field type **= 0**.
5. Press ENTER to execute the filter. The Catalog Scan Information Detail panel appears.
6. Press **F11** to scroll right and under the **GDG Cnt** heading you will see **0**, which designates all empty GDG bases.

```
                 Catalog Scan V2R1M0.00371(00) Info        Row 1 to 18 of 294
COMMAND ===> _                                               SCROLL ===> PAGE
OP SYS(z/ 1.6.0) ================================================== SYSID(TZ01)
                                              <-- More      (2)       More -->
S                                              Vol File     Mgmt   GDG GDG S E
L Dataset Name -------------------------------  Seq  Seq    Class   Lim Cnt C M
_ F3306T9.PSRPFMT.END.PFMDHIST.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPBAL.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPBLK.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPBSQ.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPBTN.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPDEF.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPID.LP                 0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPOVR.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPREM.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPRMW.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPRTF.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDPSEQ.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDSHR.LP                 0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDSUMM.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDTE.LP                  0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMDTRAN.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMEFACT.LP                0    0              5   0 Y N
_ F3306T9.PSRPFMT.END.PFMEQPRG.LP                0    0              5   0 Y N
4B                  :00.8                                            02/15
```

Figure 10–19. List of all empty GDG bases

List All GDG Bases Defined as No Scratch

1. From the Utilities Selection panel, type **2** (Catalog) in the **Selection** field and press ENTER. The Catalog Scan Filter panel appears.
2. From the Catalog Scan Filter panel, ensure that **D** is the selection option in the **Display** field. If it is not, type this option in this field**.**
3. In the **Record Type** field type **B**.
4. In the **Scratch** field type **N**.
5. Press ENTER to execute the filter. The Catalog Scan Information Detail panel appears.
6. Press **F11** to scroll right and under the **SC** (Scratch) heading you will see **N**, which means no scratch.

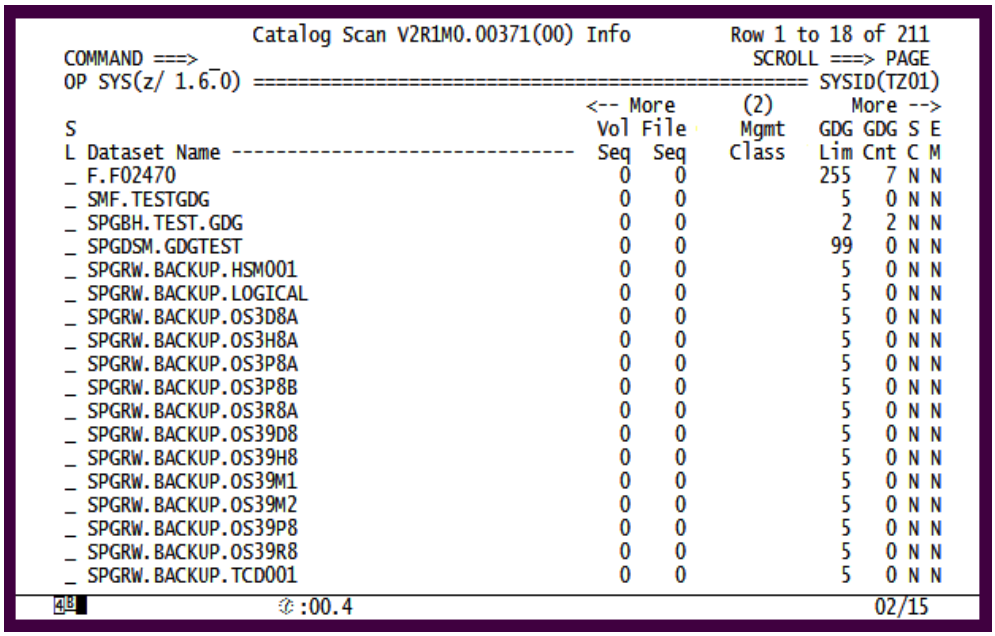

Figure 10–20. Catalog Scan Information Detail panel showing no scratch

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List All GDG Bases Defined with a Limit Greater Than 100

1. From the Utilities Selection panel, type **2** (Catalog) in the **Selection** field and press ENTER. The Catalog Scan Filter panel appears.
2. From the Catalog Scan Filter panel, ensure that **D** is the selection option in the **Display** field. If it is not, type this option in this field**.**
3. In the **Record Type** field type **B**.
4. In the **Limit Count** field type **> 100**.
5. Press ENTER to execute the filter. The Catalog Scan Information Detail panel appears.
6. Press **F11** to scroll right and under the **GDG Lim** heading are all GDG bases with a limit greater than 100.

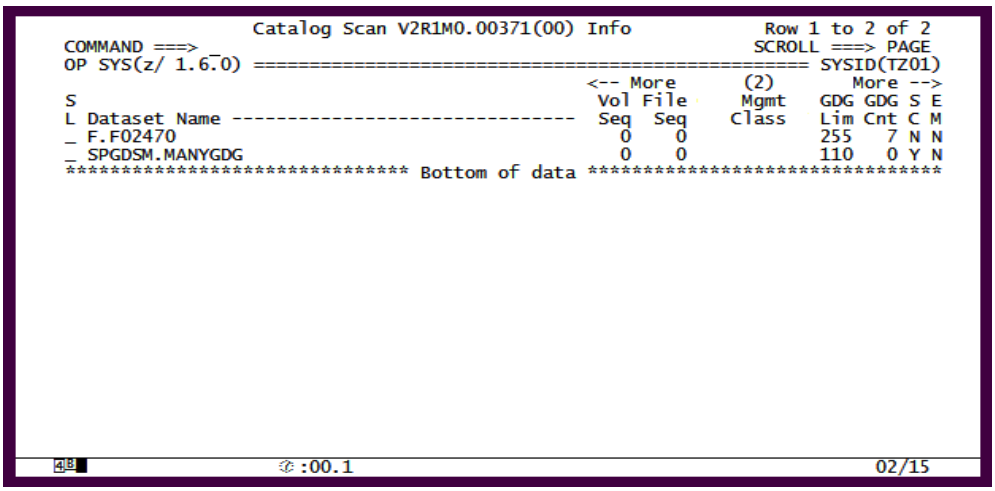

Figure 10–21. List of all GDG bases with a limit greater than 100

List All Non-VSAM GDGs On Tape

1. From the Utilities Selection panel, type **2** (Catalog) in the **Selection** field and press ENTER. The Catalog Scan Filter panel appears.
2. From the Catalog Scan Filter panel, ensure that **D** is the selection option in the **Display** field. If it is not, type this option in this field**.**
3. In the **Device Type** field type **TAPE**.
4. In the **Record Type** field type **A**.
5. Press ENTER to execute the filter. The Catalog Scan Information Detail panel appears.
6. Under the **Record Type** heading are all Non-VSAM GDGs on tape.

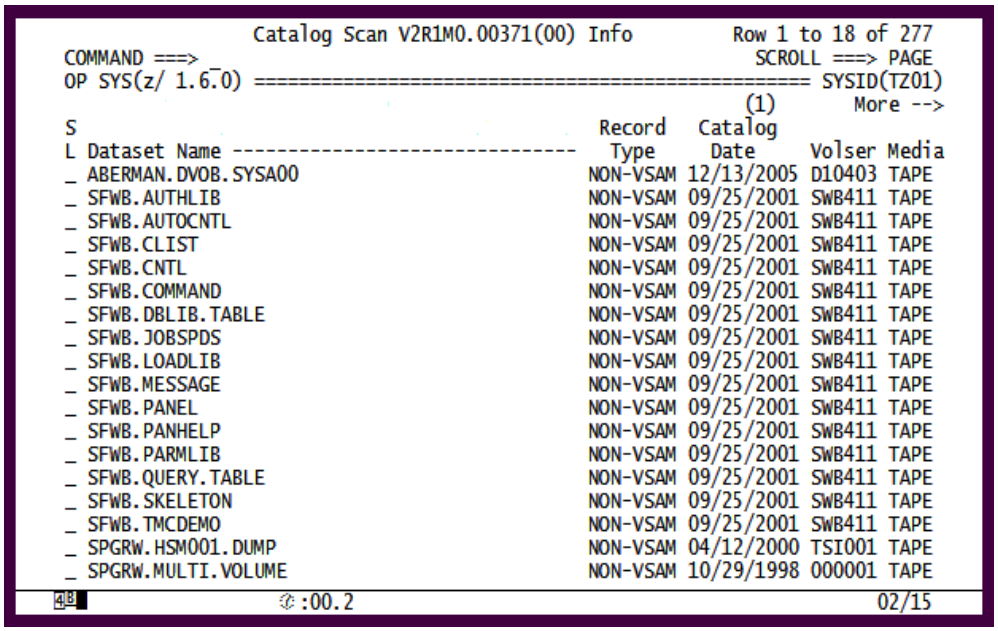

Figure 10–22. List of all non-VSAM GDGs on tape

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CHAPTER

11

SETTINGS

TeraCloud Storage Framework (TSF) uses variables to populate and execute application-specific parameters. This information—originally provided or updated during installation—can be modified at any time by using the Settings menu option.

Settings is available from the TSF Primary Selection panel. Type **S** (Settings) in the **Option** field. The main Settings panel is displayed (Figure 11–1), from which you can execute a series of panels to modify variables.

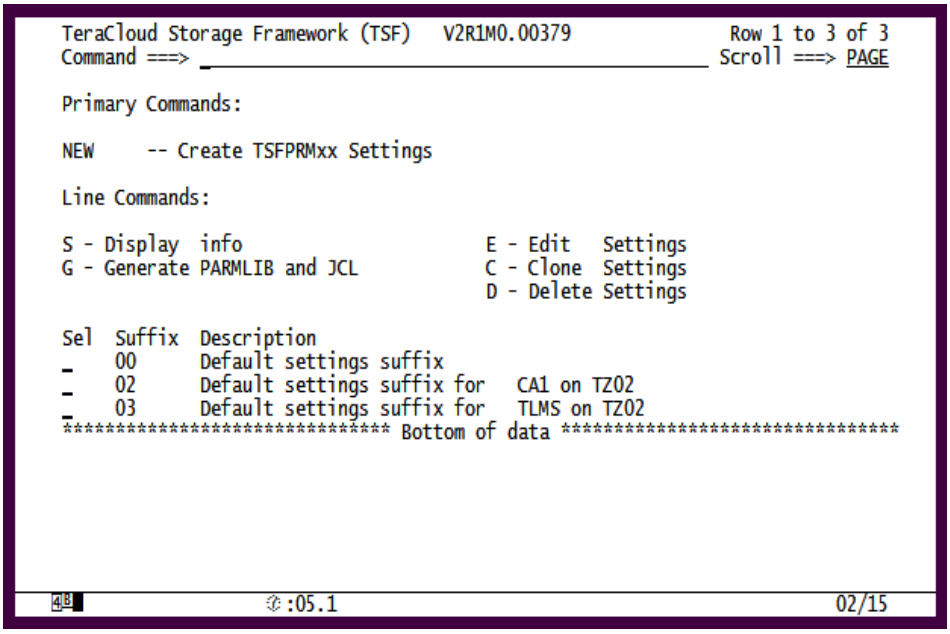

Figure 11–1. TSF Installation Settings panel.

This panel has a primary command that you can type on the Command Line, **NEW**, which will take you through the dialog to create a new Settings suffix. The **Sel** field—which corresponds to Select—lets you type various line commands, for example, **E** (for Edit Settings). See Modify Variables.

If you need to check the existing TSFPRMxx settings before you start editing, the **Sel** fields lets you type **S** (for Display information).

If you want to use TSFPRMxx settings that were already created, the **Sel** field lets you type **C** (for Clone settings), and then you can go through the settings panels, make changes, and save them as a different TSFPRMxx member.

If you create a TSFPRMxx member, go through the settings panels, and then decide that you do not want to use them, the **Sel** field lets you type **D** (for Delete settings).

When the installation settings process is completed, whether you are creating new settings or editing existing ones, the **Sel** field lets you type **G** (for Generate), and TSF updates CLIST and PARMLIB members and other JCL.

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Modify Variables

TSF Settings panels 1 through 13 let you modify all TSFSET CLIST variables. These variables are used for all components of TSF and can be modified at any time. Descriptions of the variables can be found in the TeraCloud Storage Framework (TSF) Installation Guide. Follow these steps to modify variables:

1. From the Settings panel, tab to the **Sel** field—which corresponds to Select—and type E (Edit Settings).
2. Press ENTER. The Edit Settings panel appears (Figure 11–2).
3. From the Edit Settings panel, type a number (1-13) in the Option field that corresponds to the settings panel you want to change. Or, type A to review all settings panels.
4. Press ENTER to navigate to the Settings panel that you selected.

   Note: To cancel changes before they are processed, type **cancel** at the command line or press F3.
5. From the Settings panel, review variables and type values in the fields for those settings that you want to modify.
6. Type END to save changes and update CLIST, JCL, and PARMLIB variables.

```
TSF V2R1M0.00368 - Edit Settings - suffix(00)
Option ===> _

Primary Commands:

END     -- to save changes             CANCEL  -- to not save changes

                                                                More:     +
Select Parameter Set to Edit:

A  ALL         All parameters                Suffix  . . . : 00
                                             Description:
1  DATASETS    Installation Data Sets        Default settings suffix
2  JCL         JCL Settings                  ____________________________

3  AGENT       Agent Settings                Created By  . : MHAYES
4  AUTOMATN    Automation settings           Create Date . : 5 May 2006
5  CATSCAN     Catalog Scan settings         Create Time . : 11:13:07
6  HSMSCAN     HSM Scan settings
7  LOGDS       Logging settings              Modified By . : SPGGVP
8  SCHEDULE    Scheduler settings            Modified Date : 16 May 2006
9  SMFSCAN     SMF Scan settings             Modified Time : 15:17:12
10 TAPESCAN    Tape Scan settings
11 TASKLOG     Task Log settings
4B                    :00.6                                      02/15
```

Figure 11–2. Edit Settings panel

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CHAPTER
12

PROACTIVITY

ProActivity lets you use any utility (including non-IBM utilities) to perform a specific action on datasets or volumes that have been returned from a selected TeraCloud Storage Framework (TSF) filter. ProActivity is not available as an option from the TSF Primary Selection Menu, but implementation is extremely flexible. You create a ProActivity JCL member, place that JCL in the CNTL library that is provided with ProActivity, and provide a ProActivity control card member.

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ProActivity Examples

TSF provides ProActivity examples that let you accomplish some of the following tasks:

- Delete specific versions of HSM backups
- Migrate datasets to either level 1 or 2 of DFHSM
- Move datasets from one volume to another using DFDSS
- Delete datasets

You can add ProActivity JCL members and ProActivity Control Card members to the CNTL library and execute those commands using the ISPF interface provided by TSF. Batch ProActivity jobs (prefixed by PRO) are also available to execute actions based on results in a previous step. These members reside in HLQ.TSF.CNTL.

Useful Tip. Remember when actions are taken against an object, that object will not reflect the change in TSF until the database being used is refreshed.

Member List

ProActivity JCL members (Table 12–1) reside in distribution library HLQ.TSF.PROACT. The maximum length for any JCL member is seven alphanumeric characters. Also distributed are ProActivity Control Card members that begin with an alphabetic character. The control cards have a maximum length of eight characters.

Table 12–1. Sample JCL Members

Member Name	Description
BKVERS	Sample ProActivity control card
DELETE	Sample ProActivity control card
DFMOVE	Sample ProActivity control card
HMIG1	Sample ProActivity control card
HMIG2	Sample ProActivity control card
ZDFDSS	Sample ProActivity JCL member
ZDFMOVE	Sample ProActivity JCL member
ZFDRCPK1	Sample ProActivity JCL member
ZFDRCPK2	Sample ProActivity JCL member
ZFDRCPK3	Sample ProActivity JCL member
ZFDRCPK4	Sample ProActivity JCL member
ZFDRDUMP	Sample ProActivity JCL member
ZFDRRSTOR	Sample ProActivity JCL member
ZTSO	Sample ProActivity JCL member

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Member Usage

ProActivity Control Card members and JCL members can be used with Batch ProActivity jobs or they can be used online in any TSF component. Figure 12–1 shows a JCL member with the following keywords, which are also used in other ProActivity JCL members.:

- MSGCLASS=x Specifies where the job output will be directed; output classes are predefined and vary from site to site.
- NOTIFY= Notifies you when the job has finished. You must specify a valid user ID with this parameter.
- EXEC PGM= Identifies the statement as a job step definition and specifies the program to be executed.

```
  Menu  Utilities  Compilers  Help
 ____________________________________________________________________________
 BROWSE    QA.X330.TSF.PROACT(ZDFDSS) - 01.00        Line 00000000 Col 001 080
********************************* Top of Data ***********************************
//JOBNAME  JOB (XXXX),SFPROACT,CLASS=A,
//             MSGCLASS=X,NOTIFY=YOURID
//*
//*********************************************************************
//**  BASIC DFDSS                                                    **
//**                                                                 **
//*********************************************************************
//*
//STEP1   EXEC PGM=ADRDSSU,
//             REGION=4000K
//*
//SYSPRINT  DD SYSOUT=*
//*
//*
//SYSIN     DD *
******************************** Bottom of Data *********************************



 Command ===> _____________________________________________ Scroll ===> PAGE
4B                  :00.1                                                24/15
```

Figure 12–1. ZDFDSS sample ProActivity JCL Member

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Figure 12–2 shows the ZDFMOVE ProActivity JCL member that is used to move datasets.

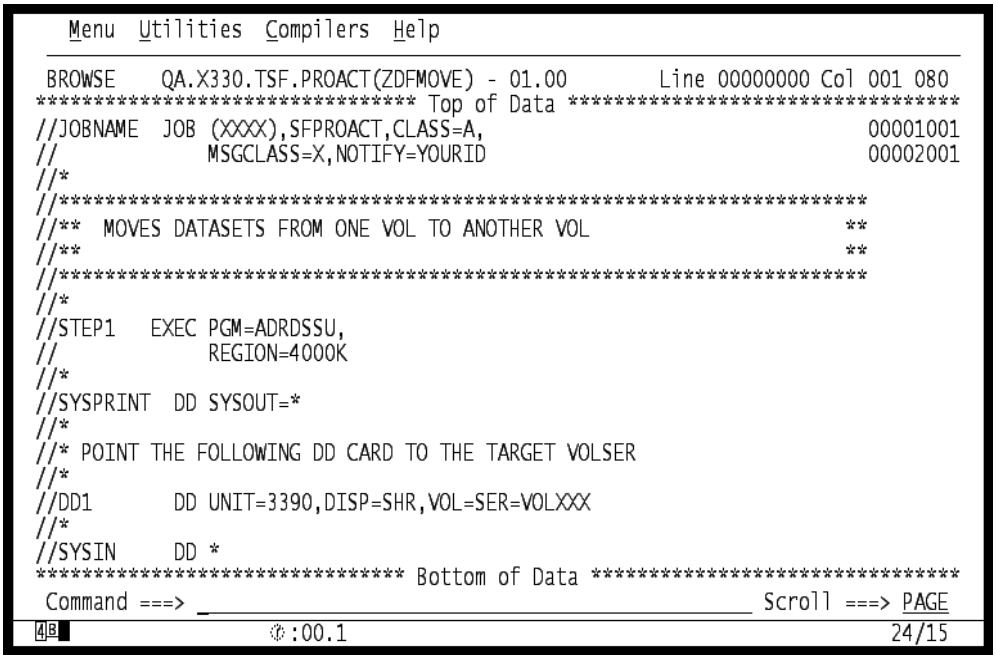

Figure 12–2. ZDFMOVE sample ProActivity JCL member

Figure 12–3 shows the ZTSO sample ProActivity JCL member for the TSO command processor. It is used to execute any TSO command in batch format. The program that is executed in this example is IKJEFT01 (EXEC PGM=IKJEFT01).

Useful Tip. ProActivity does not circumvent security. You must have the authority to take the actions selected.

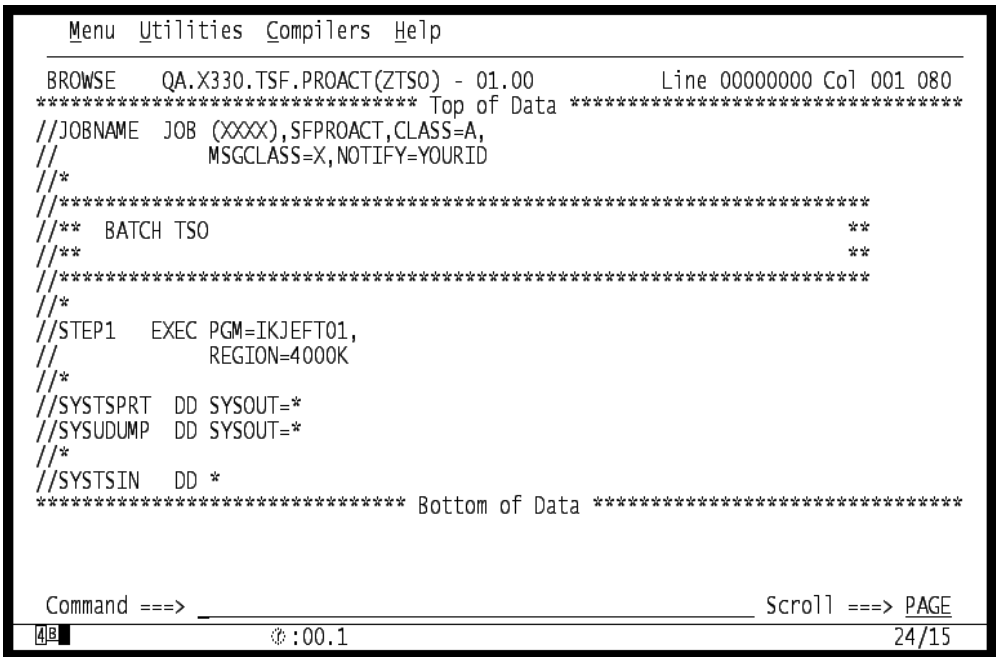

Figure 12–3. ZTSO Sample ProActivity JCL member

Figure 12–4 shows the HIMG2 ProActivity Control Card member, which migrates datasets to DFHSM level 2. The keyword <&DATASET_NAME> is used like a wildcard variable. Control card keywords are explained in more detail later in this chapter.

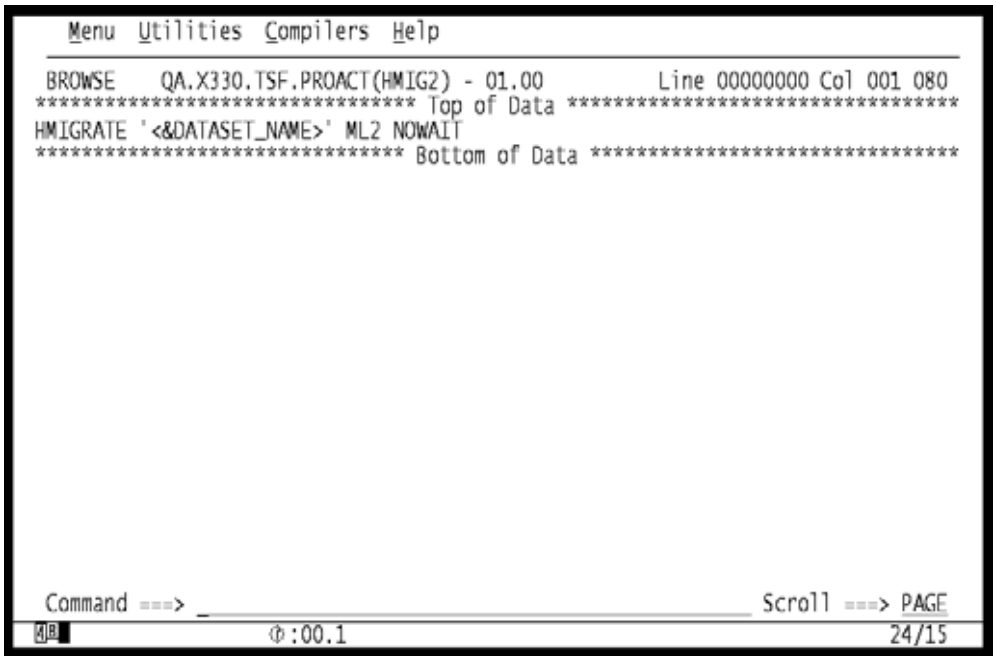

Figure 12–4. HIMG2 ProActivity Control Card member

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ZTSO DELETE EXAMPLE

Figure 12–5 shows a Datasets report listing all datasets that were created more than a year ago and never referenced and can be deleted. Notice that ZTSO DELETE is typed in the command line. When executed by pressing ENTER, it calls the ZTSO utility JCL along with the DELETE skeleton member to perform the delete datasets task. The JCL member must always be typed first and should be prefixed with a Z for identification purposes.

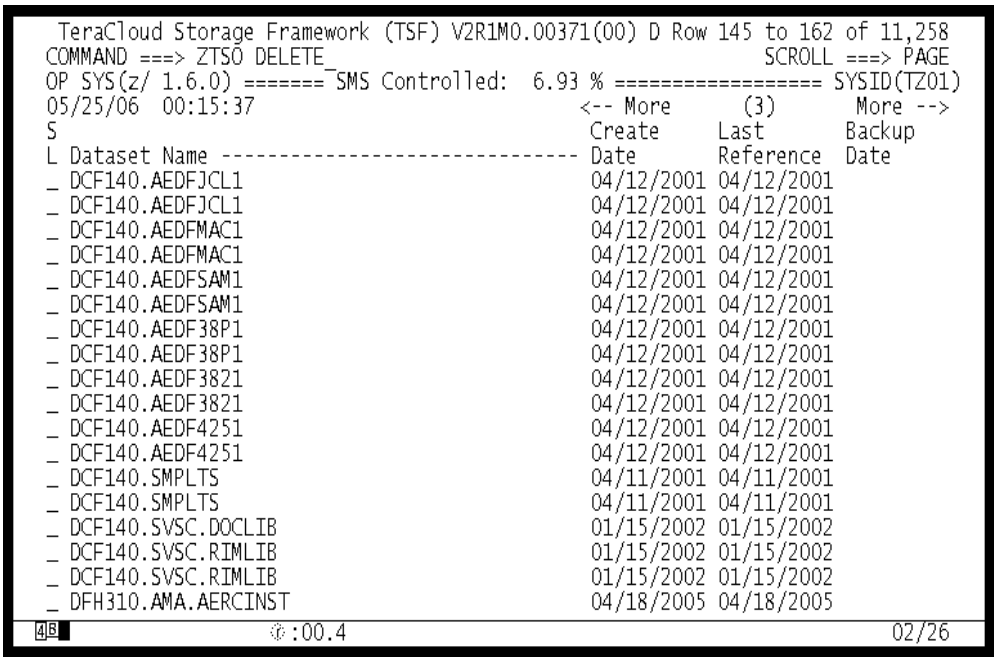

Figure 12–5. ZTSO DELETE, Datasets Report.

ZTSO DELETE RESULTS

Figure 12–6 shows the results of the ZTSO DELETE command. Datasets located under the //SYSTSIN DD * are deleted. You can submit this job at any time or you can save it to another member or dataset for a later submission. Be sure to review the instructions in the Security member in the PARMLIB file on how to restrict ProActivity to specific users at your facility.

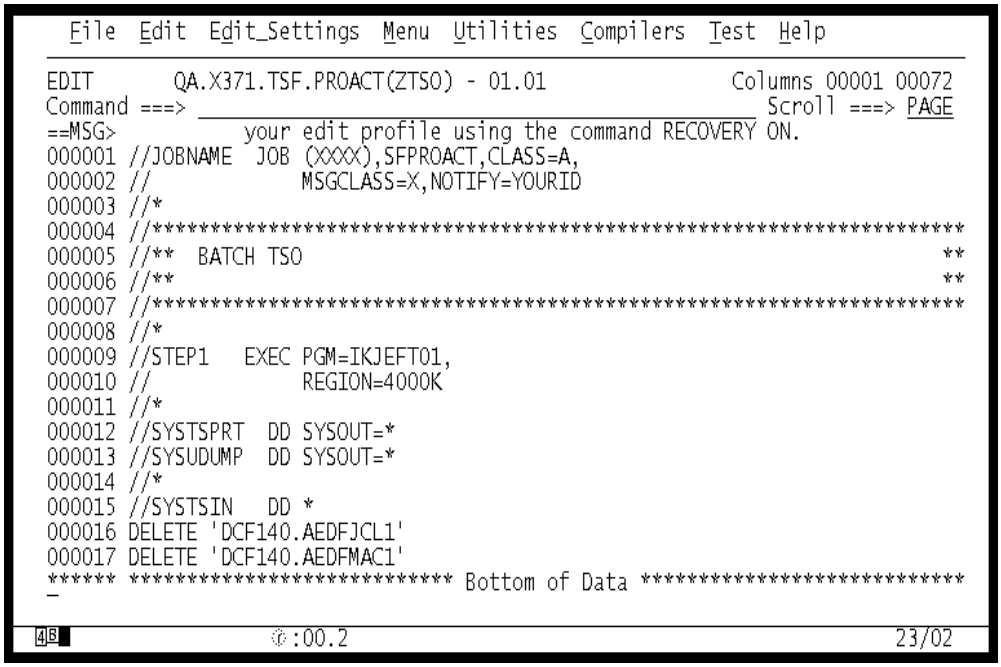

Figure 12–6. ZTSO DELETE command results

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Control Card Keywords

Control card keywords are wildcards that are replaced with the true name of a variable. They can be used in your skeleton input control cards for a dataset name, a volume serial number, a storage group, etc. For example, if the skeleton input control card required a dataset name to be included, you could type <&DATASET_NAME>.

Volumes

The following control card keywords are used for Volumes

Table 12–2. Volume Keywords

Keyword	Field Name
<&ADDR>	VSUNIT
<&VOLSER>	VSVOLSER
<&UNIT>	VSDEVNAM
<&STORAGE_GROUP>	VSGROUP
<&SMS>	VSSMSIND
<&MOUNT>	VSGROUP

Disk Datasets

The following control card keywords are used for Datasets:

Table 12–3. Disk Dataset Keywords

Keyword	Field Name
<&CLUSTER_NAME>	DSVVCLNM
<&COMPONENT_NAME>	DSNAME
<&DATASET_NAME>	DSNAME
<&VOLSER>	DSVOL
<&UNIT>	DSMDLEXT
<&STORAGE_GROUP>	DSSTRGP
<&STORAGE_CLASS>	DSSTRCL
<&DATA_CLASS>	DSDTACL
<&MANAGEMENT_CLASS>	DSMGTCL
<&RECFM>	DSRECFM
<&LRECL>	DSLRECL
<&BLKSIZE>	DSBLKSZ
<&OPT_BLKSIZE>	DSOPTBLK

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Table 12–3. Disk Dataset Keywords

Keyword	Field Name
<&TRK_ALLOC>	DSTRKA
<&TRK_USED>	DSTRKU
<&TRK_FREE>	DSTRKF
<&MB_ALLOC>	DSMBALOC
<&MB_USED>	DSMBUSED
<&MB_FREE>	DSMBFREE
<&LOGICAL_POOL>	DSLPOOL0
<&CREATION_DATE>	DSCREDT
<&EXPIRATION_DATE>	DSEXPDT
<&LAST_REFERENCE_DATE>	DSREFD
<&LRD> (same as last reference date)	DSREFD
<&CATALOG_NAME>	DSCATNAM

The following control card keywords are used for Tape, “Volume” Option:

Table 12–4. Tape Volume Keywords

Keyword	Field Name
<&VOLSER>	TR00VSN
<&VOL_SEQ>	TR00VSQ
<&DATASET_NAME>	TR00DSN
<&EXPDT>	TR00EXPD
<&EXPIRATION_DATE>	TR00EXPG
<&FIRST_VOLSER>	TR00FRVS
<&PREV_VOLSER>	TR00PRVS
<&NEXT_VOLSER>	TR00NXVS
<&LABEL>	TR00LABL
<&OUT_DATE>	TR00ODTG
<&OUT_CODE>	TR00OCOD
<&SLOT>	TR00SLOT
<&CREATE_DATE>	TR00CRDG
<&LAST_USED_DATE>	TR00DTUG

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Table 12–4. Tape Volume Keywords

Keyword	Field Name
<&EXTERNAL_MGR_ID>	TR00EXTM
<&MANAGEMENT_CLASS>	TR00SMSM

The following control card keywords are used for Tape, “Dataset” Option

Table 12–5. Tape Dataset Keywords

Keyword	Field Name
<&VOLSER>	TR01VSN
<&DATASET_NAME>	TR01DSN
<&EXPDT>	TR01EXDT
<&EXPIRATION_DATE>	TR01EXDG
<&CREATE_DATE>	TR01CRDG
<&FILE_NUMBER>	TR01FSN
<&RECFM>	TR01RFM
<&LRECL>	TR01LREC
<&BLOCKSIZE>	TR01BLKS

The following control card keywords are used for Tape, “HSM Volume” Option:

Table 12–6. Tape HSM Volume Keywords

Keyword	Field Name
<&VOLSER>	TR00VSN
<&DATASET_NAME>	TR00DSN
<&FIRST_VOLSER>	TR00FRVS
<&PREV_VOLSER>	TR00PRVS
<&NEXT_VOLSER>	TR00NXVS

The following control card keywords are used for Tape, “HSM Dataset” Option

Table 12–7. Tape HSM Dataset Keywords

Keyword	Field Name
<&VOLSER>	TR01VSN
<&FIRST_VOLSER>	TR01FVSN
<&DATASET_NAME>	TR01DSN
<&FILE_NUMBER>	TR01FSN

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The following control card keywords are used for DFSMShsm Mgmt, “Migrate/Recall” Option

Table 12–8. HSM Migrate/Recall Keywords

Keyword	Field Name
<&DATASET_NAME>	FCDMCK
<&HSM_LEVEL>	FCDLVL
<&MIGRATION_DATE>	FCDMIDT
<&LAST_RECALL_DATE>	FCDREDT
<&LAST_REFERENCE_DATE>	FCDRFDT
<&EXPIRATION_DATE>	FCDEXDT
<&LAST_BACKUP_DATE>	FCDBKDT
<&MIGRATE_FROM_VOLSER>	FCDVSN
<&RECALL_TO_VOLSER>	FCDRETV
<&UNIT>	FCDDTYP
<&STORAGE_CLASS>	FCDSTCL
<&DATA_CLASS>	FCDDTCL
<&MANAGEMENT_CLASS>	FCDMGCL
<&MIGRATION_DATE_JUL>	FCDMIDJ
<&LAST_RECALL_DATE_JUL>	FCDREDJ
<&LAST_REFERENCE_DATE_JUL>	FCDRFDJ
<&EXPIRATION_DATE_JUL>	FCDEXDJ
<&LAST_BACKUP_DATE_JUL>	FCDBKDJ

The following control card keywords are used for DFSMShsm Mgmt, “Backup” Option

Table 12–9. HSM Backup Keywords

Keyword	Field Name
<&DATASET_NAME>	FCDMCK
<&BACKUP_FROM_VOLSER>	FCBFRVOL
<&VERSION>[a]	

a. The <&VERSION> keyword is used when in the backup component of DFSMShsm Mgmt Detail. This allows you to specify a backup version for ProActivity. Whenever this keyword is used, the BKVERS skeleton input control card must be used in conjunction with the VERSION command. An example of this would be if a user wanted to issue an action against only backup version number 2 of a specific dataset, the entry on the Command line would look like:

ZTSO BKVERS VERSION(2)

The version number 2 is then passed to the <&VERSION> keyword.

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The following control card keywords are used for Utilities, “Catalog Scan” option:

Table 12–10. CATSCAN keywords

Keyword	Field Name
<&DATASET_NAME>	CR00DSN
<&ASSOC_NAME>	CR00ASS
<&CATALOG_NAME>	CR00CAT
<&VOLSER>	CR00VOL
<&VOL_COUNT>	CR00VCNT
<&VOL_SEQ>	CR00VSEQ
<&FILE_SEQ>	CR00FSEQ
<&EXPIRATION_DATE>	CR00XDG
<&CATALOG_DATE>	CR00CDG
<&OWNER_ID>	CR00OWN
<&MANAGEMENT_CLASS>	CR00MGC
<&STORAGE_CLASS>	CR00STC
<&DATA_CLASS>	CR00DTC
<&GDG_LIMIT>	CR00LIMT

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Control Card Examples

The following example shows you the steps that are required for setting up a control card. The example uses ProActivity JCL members and ProActivity control card members with five steps that are required to accomplish this task. The scenario is as follows:

All physical sequential datasets that have not been referenced in six months are to be migrated to DFHSM level 2 using a utility. Follow these steps to migrate all the physical sequential datasets to DFHSM level 2:

1. Create the necessary JCL member. (This should be a one time event.)
2. Create the necessary input control card. (This should be a one time event.)
3. Use the Datasets component of TSF to locate all physical sequential datasets that have not been referenced in more than six months and obtain a detailed listing of them.
4. Type the *ZXXXX Keyword* command at the command line of the detail display, where *ZXXXX* is the ProActivity JCL member and *Keyword* is the ProActivity control card member that you created in steps 1 and 2.
5. Press ENTER and Datasets creates the necessary JCL with the proper control cards to migrate the datasets to DFHSM level 2.
6. At this point, you can either submit the JCL by typing **SUB** at the command line or save the generated JCL into a user PDS for further editing.

For demonstration purposes, steps 1 and 2 are complete and the sample command library contains the JCL member and control card necessary to complete this task. Figure 12–7 begins with step 3, using Datasets to filter all physical sequential datasets that have not been referenced in six months.

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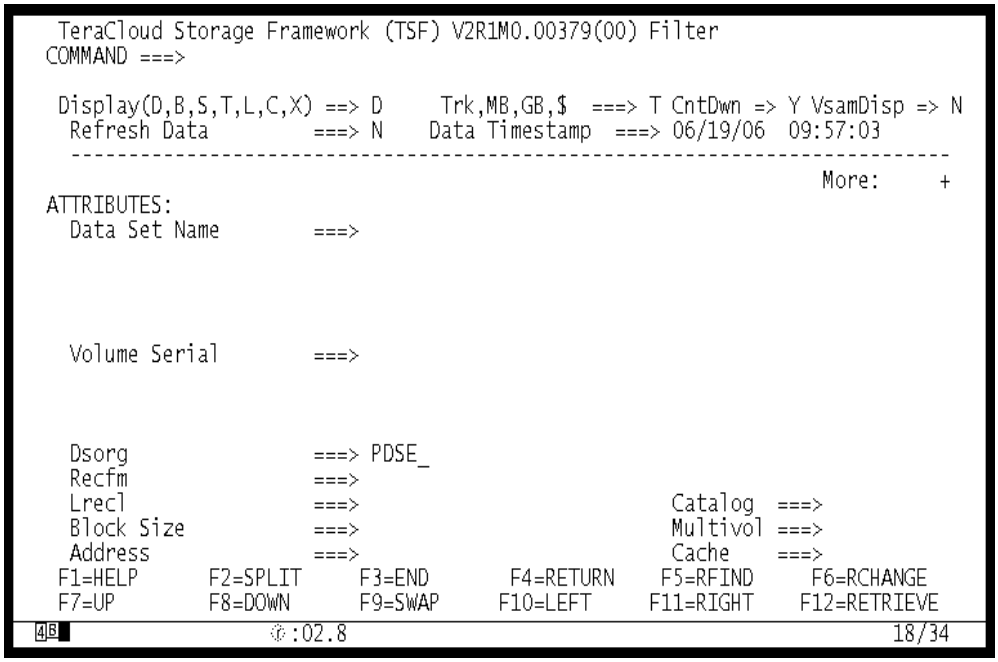

Figure 12–7. Datasets, used to filter all PDSE.

After all the filtering values are typed, pressing ENTER accesses the Dataset Information panel where the results appear. Figure 12–8 shows the Dataset Information panel with the filtered results.

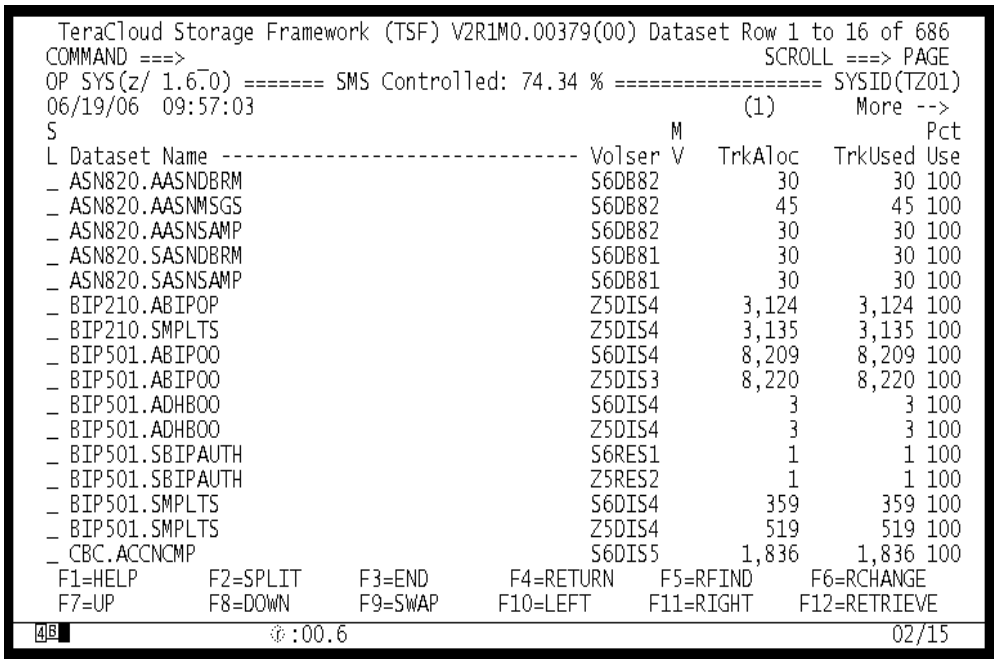

Figure 12–8. Dataset Information panel, filtered results.

After the results appear, you can now move the cursor to the command line and type the ZTSO HMIG2 command, where ZTSO is the ProActivity JCL member to execute the TSO command in batch format and where HMIG2 is the ProActivity control card member required to migrate datasets to DFHSM level 2. After the command is typed, press ENTER. The Datasets JCL panel appears with the required JCL to migrate the datasets to DFHSM level 2. Figure 12–9 shows the results that appear in the Datasets JCL panel.

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The Datasets JCL panel in Figure 12–9 shows the job stream created from typing ZTSO MHIG2 at the command line of the Dataset Information panel. The Datasets JCL panel allows you complete access to all ISPF edit commands such as CHANGE, FIND, DELETE, CREATE and so on. You can now take the job stream and edit it, save it as a member of a PDS, or submit it. Follow these steps to save the job stream to a member of a PDS:

1. Type CREATE at the command line.
2. Type **C999999** at line 1 in the numbers column.
3. Press ENTER and follow the standard ISPF requirements to save a member of a PDS.

```
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
-------------------------------------------------------------------------------
EDIT       SPGGVP.JCL.T150050.DFINDER                        Columns 00001 00022
Command ===>                                                   Scroll ===> PAGE
****** ******************************** Top of Data ********************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //JOBNAME  JOB (XXXX),SFPROACT,CLASS=A,
000002 //             MSGCLASS=X,NOTIFY=YOURID
000003 //*
000004 //*********************************************************************
000005 //**  BATCH TSO                                                       **
000006 //**                                                                  **
000007 //*********************************************************************
000008 //*
000009 //STEP1   EXEC PGM=IKJEFT01,
000010 //             REGION=4000K
000011 //*
000012 //SYSTSPRT  DD SYSOUT=*
000013 //SYSUDUMP  DD SYSOUT=*
000014 //*
000015 //SYSTSIN   DD *
000016 HMIGRATE 'ASN820.AASNDBRM' ML2 NOWAIT
000017 HMIGRATE 'ASN820.AASNMSGS' ML2 NOWAIT
000018 HMIGRATE 'ASN820.AASNSAMP' ML2 NOWAIT
000019 HMIGRATE 'ASN820.SASNDBRM' ML2 NOWAIT
000020 HMIGRATE 'ASN820.SASNSAMP' ML2 NOWAIT
000021 HMIGRATE 'BIP210.ABIPOP' ML2 NOWAIT
000022 HMIGRATE 'BIP210.SMPLTS' ML2 NOWAIT
```

Figure 12–9. JCL required to migrate datasets to Level 2

Useful Tip. The difference between WAIT and NOWAIT is as follows: NOWAIT will send all requests to HSM (a large number could cause performance issues with HSM). WAIT will single thread each command and give the results of that command. The job will take longer, but the impact on HSM will negligible.

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Using ProActivity For Custom Reporting

In addition to using ProActivity for generating job streams, you can also create customized reports. This task is accomplished by entering ProActivity keywords to select the fields you want to appear in the report.

The following example demonstrates a generated report for all datasets not referenced in a 180 days. The report should only contain the last reference date and the dataset name. In this scenario, you want to create this report in the Datasets component of TSF. Because Datasets is to display all fields for each dataset, you want to create ProActivity members to execute after the Datasets results appear. You need to create a JCL member (ZXXXXX) and a control card member. Even though there will be no JCL in the resulting report, you will be able to manipulate the ProActivity program into thinking a batch job is being created. Start this task by opening your ZXXXXX JCL member and creating one line which is the title for the report. The member in this example, called ZTITLE, looks like the following:

```
EDIT       QA.X371.TSF.PROACT(ZTITLE) - 01.00         Columns 00001 00072
****** ***************************** Top of Data ******************************
000001 //**  MOVES DATASETS FROM ONE VOL TO ANOTHER VOL
****** **************************** Bottom of Data ****************************
```

The next step is to create your control card member specifying just the keywords you want displayed in the report. It is important that you do not begin the keyword in column 1. Either use a dash (-) or leave column 1 blank. The control card member is this example, called DSNRPT, looks like the following:

```
EDIT       QA.X371.TSF.PROACT(ZTITLE) - 01.00         Columns 00001 00072
****** ***************************** Top of Data ******************************
000001 - <&LAST_REFERENCE_DATE - <&DATASET_NAME>
****** **************************** Bottom of Data ****************************
```

If you type ZTITLE DSNRPT on the command line within a Datasets report and press ENTER, the resulting report would look like the following:

```
EDIT       QA.X371.TSF.PROACT(ZTITLE) - 01.00         Columns 00001 00072
****** ***************************** Top of Data ******************************
  000001 REPORT OF DATASETS NOT REFERENCED IN AT LEAST 180 DAYS
  000002 - 01/21/06 -QA.X371.AUTO.CLIST
  000003 - 01/15/06 -QA.X371.CONTROL
  000004 - 12/18/05 -QA.X371.TEST.DATA 000005 - 12/14/05 -SPGLT.PROD.CONTROL
****** **************************** Bottom of Data ****************************
```

The report can then be saved. ProActivity is not designed to be a report generator; however, as shown in this example, it can serve as a utility to create custom or ad hoc reports.

Useful Tip. Limit is three keywords per line.

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CHAPTER
13

BATCH JOBS

The CNTL library contains many members that can be used to schedule reports, build databases, perform maintenance, and anticipate potential problems.

Batch Reporting JCL

The members listed in Table 13–1 can be used to provide scheduled reports. These reports are designed to provide Best-Practice information to support the health of your environment. Each member, found in <HLQ>.TSFXXX.CNTL, contains instructions for use. Available input parameters are provided within the JCL comments (//*).

Table 13–1. Batch Reporting JCL

Member Name	Description
TSFCANDV	Produces a Candidate volume report similar to that of the CandVol feature in Datasets.
TSFCATCP	Compares entries in the Catalog database with the Datasets database and produces a report showing catalog entries for datasets that do not exist
TSFCOMPR	Compares and reports on databases created by Datasets (the same result as the Compare utility; see Chapter 10, Utilities)
TSFDSNLS	Allows the user to create a Datasets batch report with specific search criteria (produces the same result as online Datasets) **Note:** This job creates its own database.
TSFINVLS	Produces a batch DASD and Controller inventory report of all online devices (provides the same result as Pools/Volumes Inventory option)
TSFRVALS	Produces a batch RVA DASD report (the same result as the Virtual report in Pools/Volumes)
TSFTDLST	Produces a batch dataset-level report for Tape (the same result as the Data Set option of Tape)
TSFTVLST	Produces a batch volume-level report for Tape (the same result as the Volume option of Tape)
TSFTLLST	Produces a batch report for Tape Logical Pool summary
TSFBCDS	Produces a DFSMShsm backup report (the same result as option 2 in DFSMShsm Mgmt, B=Backup)

Table 13–1. Batch Reporting JCL

Member Name	Description
TSFMCDS	Produces a batch DFSMShsm migrate/recall report (the same result as option 2 in DFSMShsm Mgmt, M=Migr/Recl)
TSFVTOC	Deletes current VTOC base and creates a new VTOC base
TSFVOLLS	Produces a batch DASD volume report (the same result as online Pools/ Volumes)

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Batch ProActivity JCL

The members listed in Table 13–2 are used to implement ProActivity at the batch level (see Chapter 12, Proactivity, for more information). Each member, found in <HLQ>.<MLQ>.TSF.PROACT, contains instructions for use.

WARNING: Use caution when running these jobs. Manual intervention is not possible once the job is submitted.

Table 13–2. Batch Proactivity JCL

Member Name	Description
PROCATDS	Provides the ability to take proactive action in standalone batch mode with information reported in the Catalog Utility; for example, alter the GDG base limit of all bases defined with a limit more than 100
PRODFIND	Provides the ability to be proactive in standalone batch mode with datasets; for example, change all datasets whose organization type is unknown to PS.
PROSFIND	Provides the ability to be proactive in standalone batch mode with volumes.
PROTAPDS	Provides the ability to be proactive with tape datasets that are associated with the Tape Management System in standalone batch mode.
PROTAPVL	Provides the ability to be proactive in standalone batch mode with tape volumes that are associated with the Tape Management System.
PROTRBCD	Provides the ability to be proactive in standalone batch mode with datasets that are associated with the BCDS (Backup Control Data set); for example, delete all dataset backup versions greater than 3.
PROTRMCD	Provides the ability to be proactive in standalone batch mode with datasets that are associated with the MCDS (Migrated Control Data set); for example, migrate all physical sequential datasets that have not been referenced in more than 180 days.

Sample Control Cards and JCL for ProActivity

Sample control cards and JCL can be used in conjunction with the PRO batch jobs shipped with the product or online in any of the components of TSF. See Chapter 12, Proactivity for more information.

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Database Build JCL

The members listed in Table 13–3 contain JCL to build TSF database files. Each member, found in <HLQ>.TSFXXX.CNTL, contains instructions for use.

Table 13–3. Database Build JCL

Member Name	Description
TSFDSNCT	Creates the main VSAM database used in Pools/Volumes, Datasets, and the GUI; this job creates the Physical Sequential DSNOUT database for Datasets and the database for the HLQ reporting Utility option; TSFDSNCT uses a multi-tasking process, which may increase CPU utilization during collection but reduces overall collection time.
TSFCATCT	Builds the database for the Catalog Utility feature
TSFCVLOG	Batch job to convert old dsnout files to volume logging datasets Resides in <HLQ>.TSFXXX.SKELETON.
TSFLOGSQ	Batch job to select logging criteria for catalog info and DFSMShsm info
TSFLOGST	Batch job to select logging criteria for Pools/Volumes, Datasets and Tape info
TSFCNTL	Batch job to submit to the Collection Scheduler.
TFBLDHSM	Builds the database for the HSM Tape option in Tape
TSFCA1CT	Builds the database for Tape users who have CA-1 as their Tape Management System
TSFRMMCT	Builds the database for Tape users who have RMM as their Tape Management System
TSFTLMCT	Builds the database for Tape users who have TLMS as their Tape Management System
TSFHSMCT	Builds the database used by DFSMShsm Mgmt Detail
TSFUNXCT	Builds the database used by the Unix component in Utilities

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PARMLIB Members

The PARMLIB file contains members that usually stay the same from one product version to the next. Most are tables used in various TSF components.

Note: Select option **S** (Settings) from the TSF Primary Selection menu to edit these parameters. Although you can edit TSFPRMxx directly, the Settings panel generates PARMLIB and JCL. Any changes that you make outside the Settings panel may not be saved in PARMLIB.

Table 13–4. PARMLIB Members

Member Name	Description	Components Used In...
BUDGETAB	Used for Threshold management, provides examples of establishing budgets for various applications. Note the data sets must be assigned to a logical pool. To assign a dataset to a logical pool please see the member “POOLTABL”	Datasets (display option ‘T’ only)
DEVTYPES	Used by TeraCloud Technical support	
EXCLUDE	Indicates which volumes are to be included or excluded. Note that the “exclude” parameter field must be set to “Y” for this option to be in effect.	Pools/Volumes, Datasets (Online & Batch)
IF	IF statements for TSF Automation	TSF
MASTREC	Master Record for DSNOUT	Datasets
POOLTABL	Used to group datasets together for “logical pool” reporting.	Pools/Volumes, Datasets, DFSMShsm Mgmt, Tape, Utilities (Batch & Online)
POOLVOL	Used to group volumes together for “volume pool” reporting	Pools/Volumes, Datasets, DFSMShsm Mgmt, Tape, Utilities (Batch & Online)
SORTGN	Sort parameters, not to be changed	
SORTSG	Sort parameters, not to be changed	
TAPESIZE	Used for customization of Tape Media Type	Tape
TMCSORT1	Sort parameters, not to be changed	Tape
TMCSORT2	Sort parameters, not to be changed	Tape
TMCSORT3	Sort parameters, not to be changed	Tape
TRECREP	Repro for DFSMShsm Mgmt	DFSMShsm Mgmt
TRECSRT1	Sort parameters, not to be changed	DFSMShsm Mgmt
TSFCOLnn	Used to schedule all of the build jobs.	TSF
TSFGUENV	Stores the environment information for the Graphical User Interface which was entered during TSFSET execution	TSFAGENT

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Table 13–4. PARMLIB Members

Member Name	Description	Components Used In...
TSFKEY00	Used to authorize components of TSF to run on individuals computer systems	All components – online & Batch
TSFMAIN	Main CLIST to execute to get into the ISPF components	All components – online & Batch
TSFPRM00	**Contains parameters and settings to customize online and batch processes within TSF**	**TSF**
TSFSETTB	Used for initial settings in TSFSET.	TSFSET
TSFSRTnn	Sort parameters, not to be changed	
TSFTAPSS	Used by TSFSET to find the tape management system	TSFSET
TSFVERSN	Used by TSFSET to get the current version number	TSFSET
TSIBASE	IDCAMS define and repro fro TSI.DATABASE	DFSMShsm Mgmt
TSIDAILY	Used to purge records and give the ability to use a temporary dataset for the reorg function instead of a permanent dataset. This member is used in conjunction with TSIREORA	DFSMShsm Mgmt
TSIPURGE	Used for cleaning up the DFSMShsm Mgmt activity database (hlq.tsi.database)	DFSMShsm Mgmt (Activity)
TSIREORA	Used in conjunction with TSIDAILY only to accomplish the new reorg method	DFSMShsm Mgmt
TSIREORG	Used for cleaning up the DFSMShsm Mgmt activity database (hlq.tsi.database)	DFSMShsm Mgmt (Activity)
TVARULES	Rules to identify and summarize data allocation changes.	Automator Batch
TVAVOLS	Used for volume rules in Total Volume Analyzer to create a baseline.	Automator Batch
UX001SRT	Sort parameters, not to be changed	UNIX Utility

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Started Task Procedures

Table 13–5 lists the members that are found in <HLQ>.TSF.CNTL. These members contain the JCL to create or start TSF started tasks.

Table 13–5. Started Task Procedure JCL

Member Name	Description
TSFRECRD	Started task used to interface with DFHSM and TSFSPACE This task must start after TSFSPACE. When shutting down, TSFRECRD should be stopped first.
TSFSPACE	Started task used as a dataspace buffer for TSFRECRD This task must start before TSFRECRD. **Note:** TSFSPACE automatically starts TSFRECRD after initialization. If you would like to bypass this, add the following SET statement to the TSIPARMS member of the PARMLIB file:[a] SET INITCMD(‘’) [**note:** these are two single quotes] Depending on your security system setup, you may need to grant TSFSPACE the necessary permissions to issue an MVS command.
TSFAGENT	Started task that is the agent that collects data from the mainframe to be transmitted to the GUI; runs under Unix System Services
TSFEXEC	Scheduler started task that controls the execution of your batch database builds and log selection information to our log files for history purposes.

a.Note that single quotes are displayed in the following command.

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Miscellaneous Control File Members

The members listed in Table 13–6 contain miscellaneous JCL, control cards, sort cards, and utilities to assist in tuning TSF. Many of these members which are found in <HLQ>.TSFXXX.CNTL may never need to execute. Others should not be modified unless instructed by Technical Support personnel.

Table 13–6. Miscellaneous CNTL Members

Member Name	Description
TSFALBKP	Creates a DFSMShsm Mgmt dataset to be used as backup **Note:** this job is not the backup
TSFCKINV	Compares all online volumes to those in the VOLPOOL member; if an online volume is found that is not assigned to a volume pool, this job returns a condition code 16
TSFCTYPE	Debugging tool used by TeraCloud Corporation
TSFDEF2	Defines the main VSAM database (STORDATA)
TSFDEFSM	Defines the SMFSCAN database
TSFDEFTA	Defines the TAPESCAN database
TSFDEFUC	Defines the UCBSCAN database
TSFDEFVO	Defines the VOLSCAN database
TSFDEVTP	Used as a debugging tool; checks the physical characteristics of a specific volume serial number or a range of volume serial numbers
TSFPROCS	Copies started-task procedures from the CNTL dataset to the installation system-procedure library
TSFTTEST	Used for debugging purposes by TeraCloud.

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Maintenance Jobs

The following members in <HLQ>.TSFXXX.CNTL allow you to execute certain commands in previously defined jobs.

Table 13–7. Batch commands.

Command	Description
TSFCOMNx	Batch jobs that purge older records from TSI.DATABASE and then perform a reorg. **Note:** These jobs do not need to be run if you plan to use the automated method of purging records.
TSFCOMND	Purges old or unwanted records such as detail data from DFSMShsm Mgmt database. However, you must run the REORG to reclaim space with the database. Note: this maintenance job stream requires console command authority
TSFHMERG	Merges DFHSM log records to the DFSMShsm Mgmt database Note: log records can be from other systems or past data Batch job that allows HSM LOG information to be processed from other systems as input to TSI.DATABASE. **Note:** This job is not needed if you plan to run the TSI started task on all participating Sysplex systems. This can also be used in place of collecting SMF records.
TSFSMERG	Merges SMF records to the DFSMShsm Mgmt database Note: SMF records can be from other systems or past data Batch job that allows processing of an SMF file as input into TSI.DATABASE.

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APPENDIX

A

TSF FLOWCHARTS

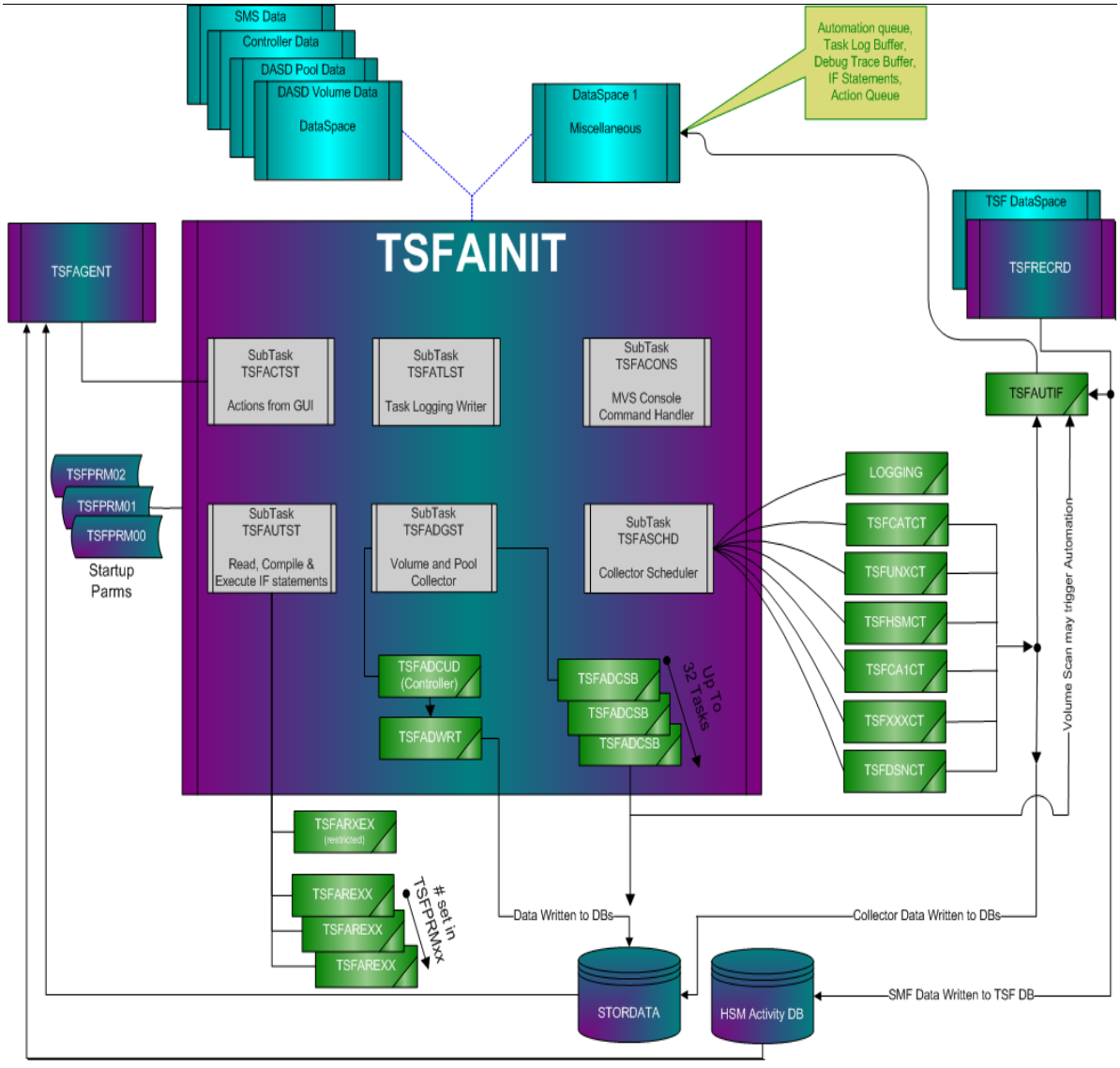

Figure A–1. TSF product overview

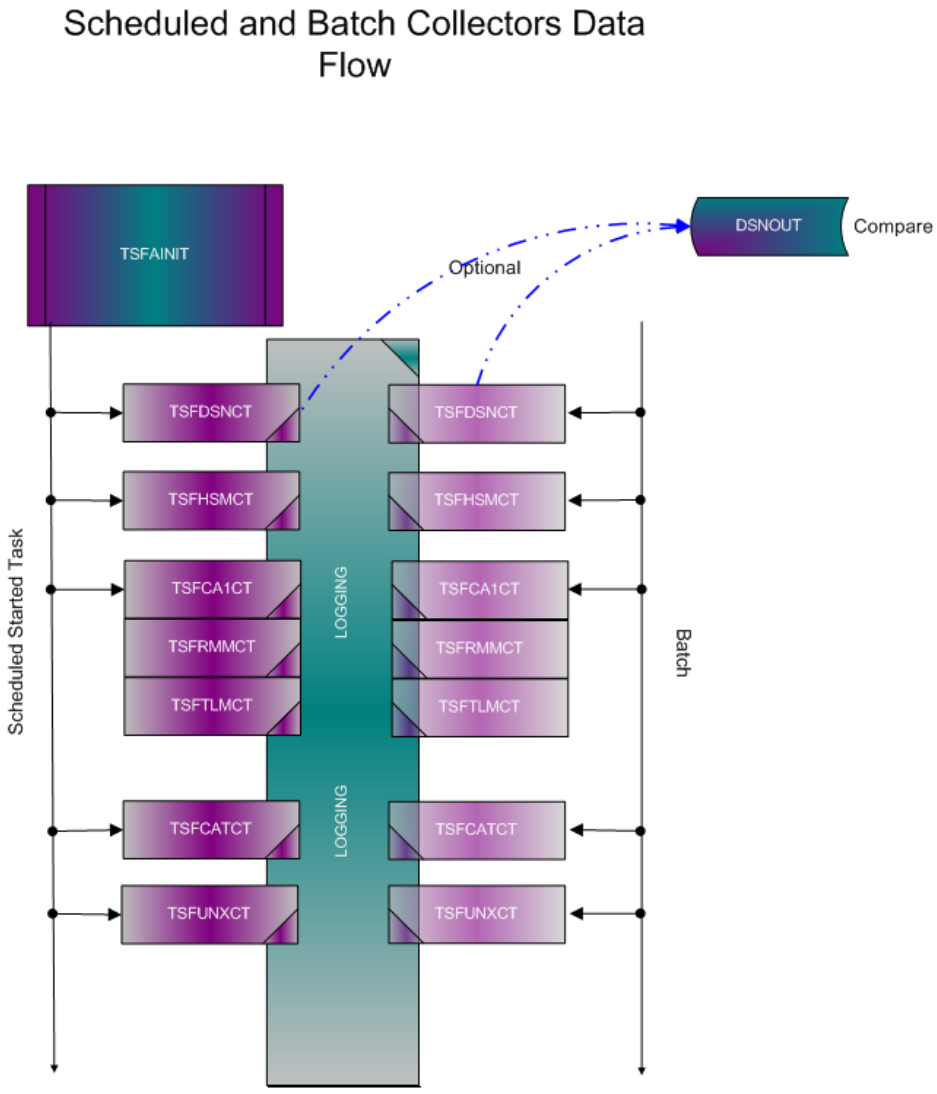

Figure A–2. TSF Collectors

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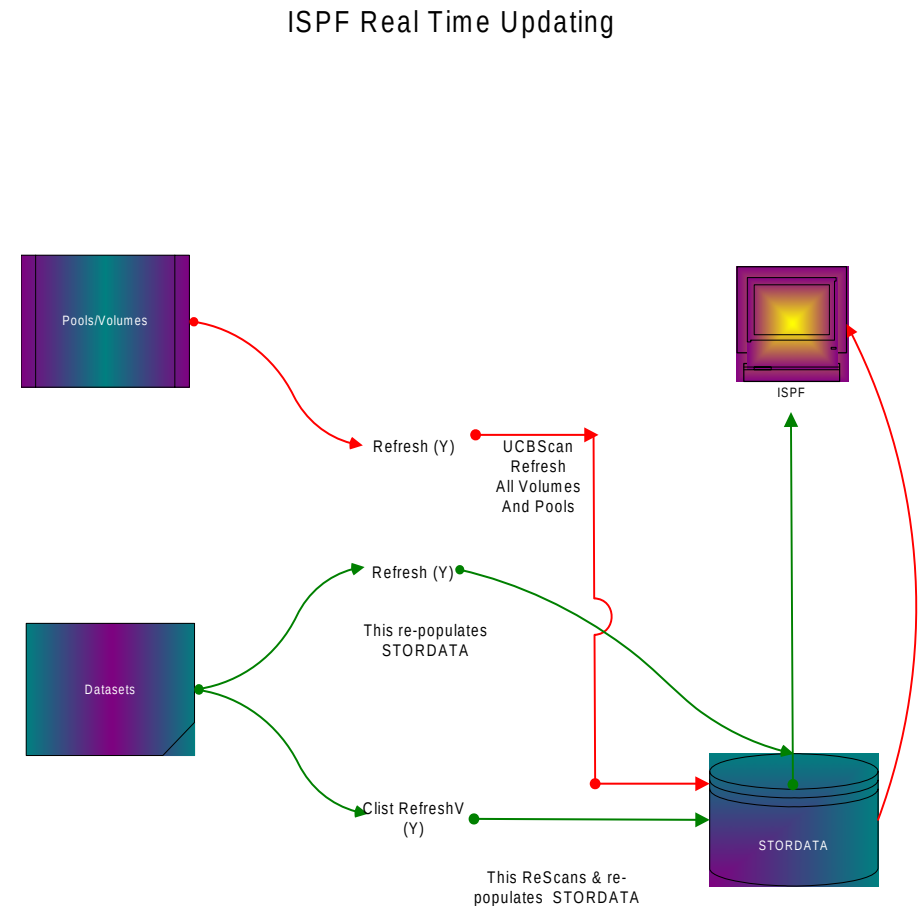

Figure A–3. TSF ISPF real time updating

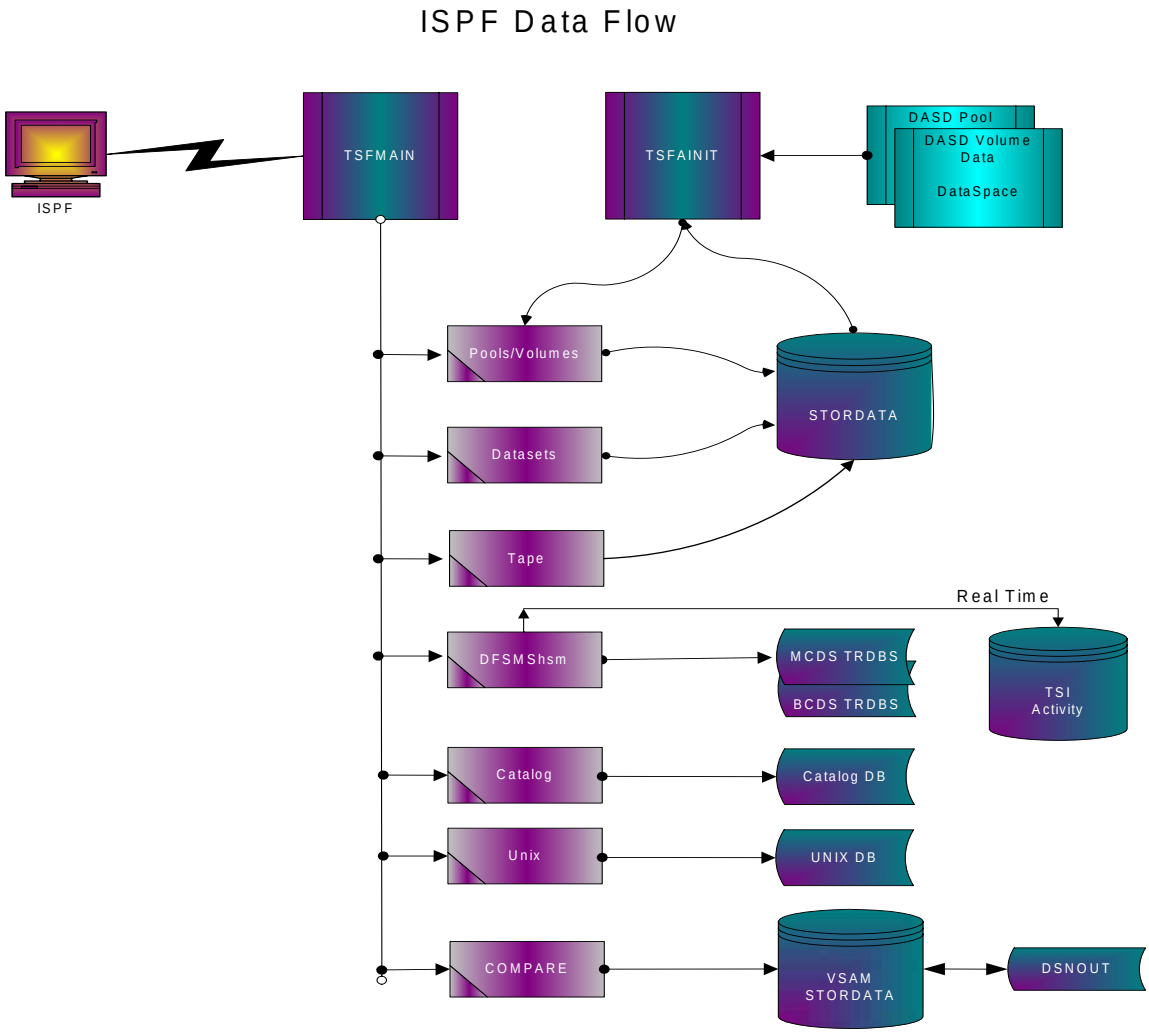

Figure A–4. TSF ISPF data flow

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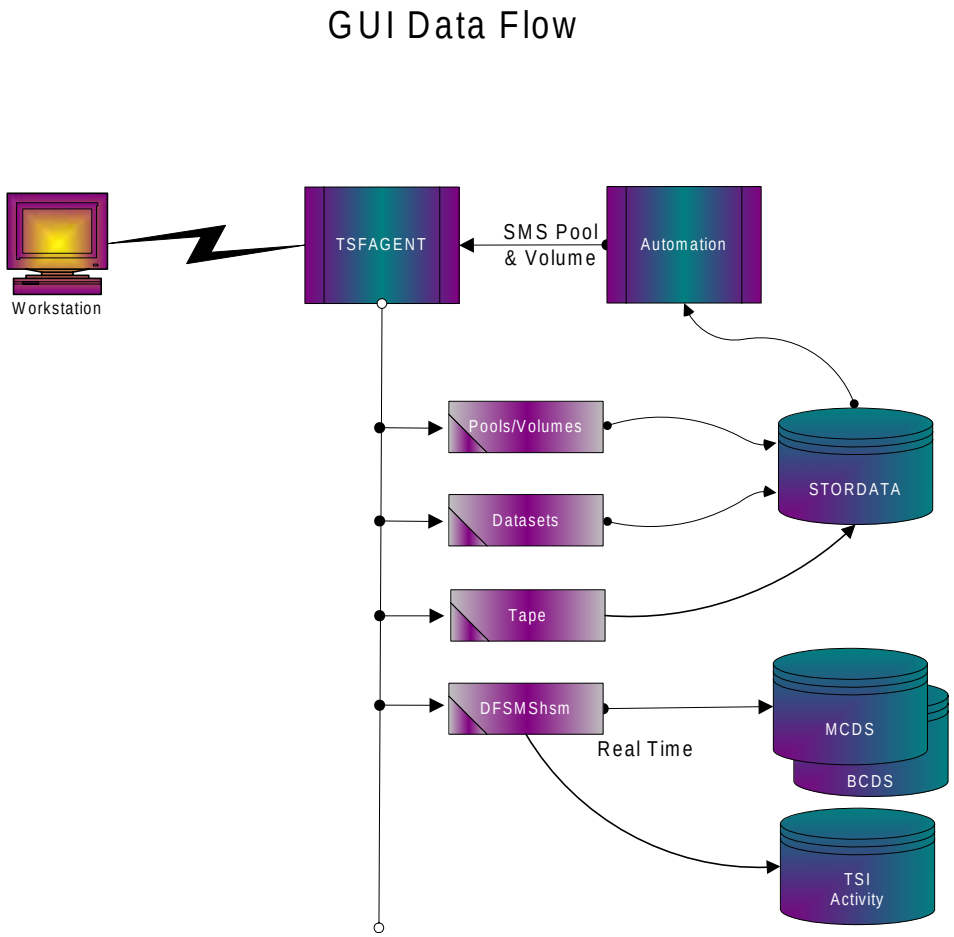

Figure A–5. TSF GUI data flow

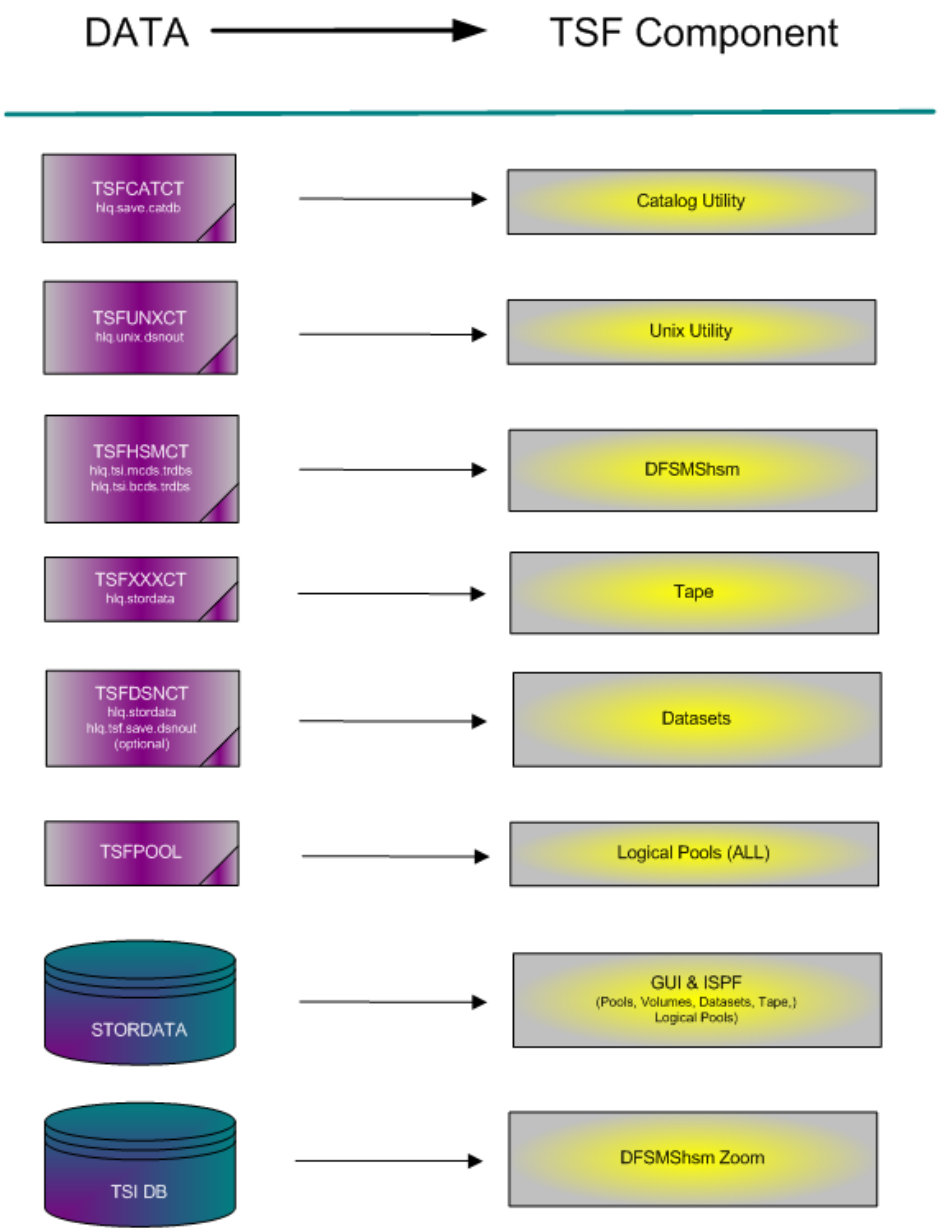

Figure A–6. TSF data/component

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APPENDIX

B

DFSMSHSM MGMT RECORD LAYOUTS

DFSMShsm Mgmt was designed to provide a wide variety of information. To that end, it generates a high volume of records, which if not purged, directly affect response time in Zoom. Likewise, numerous records are generated in the TSF database for all HSM activities. If the database becomes too large and thereby difficult to work with, you can turn off record collection by type or reduce the retention days for the various records.

As an example, if you examine Table B–2, it quickly becomes apparent that the potential exists for each new dataset that is migrated to generate six records. *Purging* those generated records is a critical part of the process to maintain a reasonably sized database. It is recommended that you collect records by all allowable record types and retain them as long as tolerable.

Retention Parameters

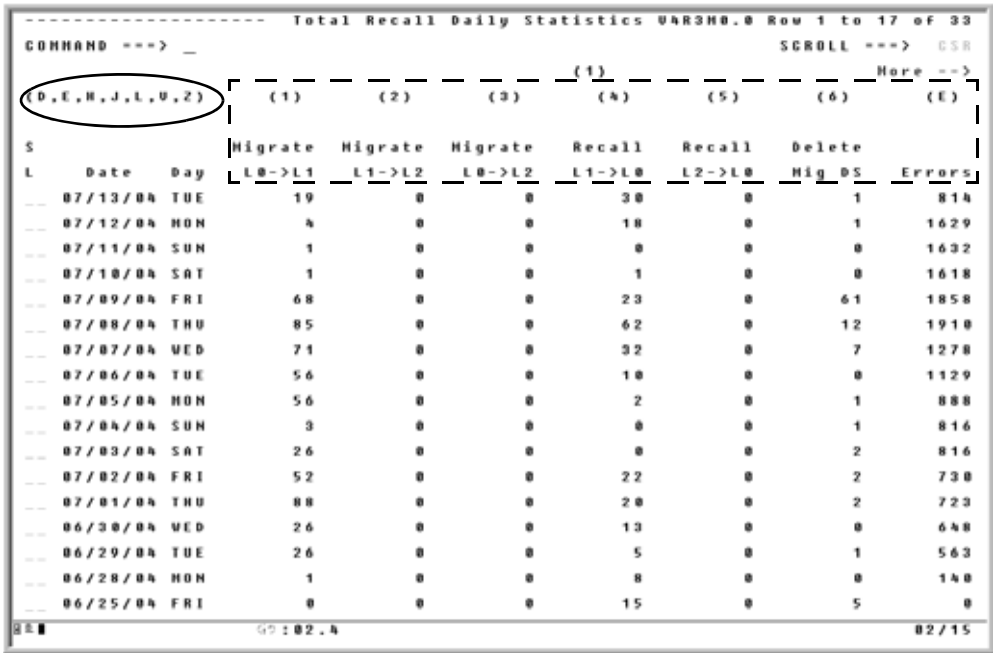
Operational parameters are defined in the SMFSCAN settings panel (see the TeraCloud Storage Framework Installation Guide). Retention (purge) parameters are defined in the TSIPURGE member of HLQ.TSF.PARMLIB. These settings control the collection of records by the categories listed in that member:

- Detail retention period: DETAILRETPD(*n* days)
- Hourly summary retention period: HOURLYSUMMARYRETPD(*n* days)
- Daily summary retention period: DAILYSUMMARYRETPD(*n* days)
- Monthly summary retention period: MONTHLYSUMMARYRETPD(*n* days).

Begin with the defaults defined within TSIPURGE and adjust them as needed.

Statement Parameters

Display options are controlled by parameters defined in the SMFSCAN settings panel. These are **Record by Data Set Name**, **Record by Volser**, **Record by Job Name**, **Record by User ID**, **Record By Pool Name**, and **Record By Error**. When NO is the value for any of these options, the column display is affected in DFSMShsm Mgmt Zoom.



```
-------------------  Total Recall Daily Statistics V4R3M0.0 Row 1 to 17 of 33
COMMAND ===> _                                                SCROLL ===> CSR
                                                  (1)                  More -->
(D,E,H,J,L,V,Z)      (1)      (2)      (3)      (4)      (5)      (6)      (E)

S                  Migrate  Migrate  Migrate   Recall   Recall   Delete
L    Date    Day    L0->L1   L1->L2   L0->L2   L1->L0   L2->L0   Mig DS   Errors
__  07/13/04 TUE        19        0        0       30        0        1      814
__  07/12/04 MON         4        0        0       18        0        1     1629
__  07/11/04 SUN         1        0        0        0        0        0     1632
__  07/10/04 SAT         1        0        0        1        0        0     1618
__  07/09/04 FRI        68        0        0       23        0       61     1858
__  07/08/04 THU        85        0        0       62        0       12     1910
__  07/07/04 WED        71        0        0       32        0        7     1278
__  07/06/04 TUE        56        0        0       10        0        0     1129
__  07/05/04 MON        56        0        0        2        0        1      888
__  07/04/04 SUN         3        0        0        0        0        1      816
__  07/03/04 SAT        26        0        0        0        0        2      816
__  07/02/04 FRI        52        0        0       22        0        2      730
__  07/01/04 THU        88        0        0       20        0        2      723
__  06/30/04 WED        26        0        0       13        0        0      648
__  06/29/04 TUE        26        0        0        5        0        1      563
__  06/28/04 MON         1        0        0        8        0        0      140
__  06/25/04 FRI         0        0        0       15        0        5        0
                      G9:02.4                                                02/15
```

Figure B–1. Default column display in DFSMShsm Mgmt Daily Zoom feature.

To better understand how changes to the display are affected by settings defined in the SMFSCAN settings panel, or in HLQ.TSF.PARMLIB(TSIPURGE), examine Figure B–1.

The letters (circled) in Figure B–1 correspond to the rows in the **Displays In** sidehead in Table B–2. Changes to the parameters affect whether the item is available for display. For example, if you add RECORDSBYJOBNAME(NO) to TSFPRM00 (or if you change it to NO on the SMFSCAN settings panel), then **J** (jobname) is no longer is available as a display option.

The column headings in Figure B–1 (dotted-line rectangle) correspond to the Detail Record FSRTYPE list in Table B–2. That is, column heading (3) Migrate L0=>L2 in Figure B–1 corresponds to FSRTYPE 3.

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Record Type Descriptions

The list in Table B–1 describes the record types found in the TSF database.

Table B–1. Record types.

Record Type	Description
01	Describes dataset level records
02	Describes volume level records
03	Describes job name level records
04	Describes userid level records
05	Describes logical pool level records
06	Describes error level records

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Table B–2. TSFRECRD Collection

	Default Parameter Settings					
	RECORDBYDSNAME (NO)	RECORDBYVOLSER (NO)	RECORDBYJOBNAME (YES)	RECORDBYUSERID (NO)	RECORDBYPOOLNAME (YES)	RECORDBYERROR (YES)
Displays In	Zoom Display 'D'	not used	Zoom Display 'J'	not used	Zoom Display 'L'	Zoom Display 'E'
Record Type	01	02	03	04	05	06
Detail Records[a] FSRTYPE Columns (1) Migrate L0=>L1	1		1		1	
(2) Migrate L1=>L2	1		1		1	
(3 (Migrate L0=>L2)	1		1		1	
4 (Recall L1=>L0)	1		1		1	
5 Recall L2=>L0)	1		1		1	
6 (Delete Mig DSN)	1		1		1	
7 (Daily Backup)	1		1		1	
8 (Spill Backup)	1		1		1	
9 (Recover)	1		1		1	
10 (Recycle Backup Vol)	1		1		1	

Table B–2. TSFRECRD Collection

	Default Parameter Settings					
	RECORDBYDSNAME (NO)	RECORDBYVOLSER (NO)	RECORDBYJOBNAME (YES)	RECORDBYUSERID (NO)	RECORDBYPOOLNAME (YES)	RECORDBYERROR (YES)
Displays In	Zoom Display ‘D’	not used	Zoom Display ‘J’	not used	Zoom Display ‘L’	Zoom Display ‘E’
11 (Delete by Age)	1		1		1	
12 (Recycle Mig Vol)	1		1		1	
13 (Full Volume Dump)	1		1		1	
14 (Vol DSN Restore)	1		1		1	
15 (ABackup)	1		1		1	
16 (ARecover)	1		1		1	
17 (Expire Primary Mig)	1		1		1	
18 (Partial Release)	1		1		1	
19 (Expire Incr Backup)	1		1		1	
20 (HBDelete Incr Backup)	1		1		1	
Summary Records						
Hourly Summary[b]	1					

Table B–2. TSFRECRD Collection

	Default Parameter Settings					
	RECORDBYDSNAME (NO)	RECORDBYVOLSER (NO)	RECORDBYJOBNAME (YES)	RECORDBYUSERID (NO)	RECORDBYPOOLNAME (YES)	RECORDBYERROR (YES)
Displays In	Zoom Display 'D'	not used	Zoom Display 'J'	not used	Zoom Display 'L'	Zoom Display 'E'
Daily Summary[c]	1					
Monthly Summary[d]	1					

a. The number ones (1) in this column indicates the number of records generated for this instance when TSFRECRD is running using SET statement defaults (indicated). Multiply 1 by the number of datasets processed by HSM daily to gain an understanding of the number of records accumulated daily within the TSI database.

b. Allows display of HSM activity by hour using the 'H' line command next to a date in Zoom.

c. Allows display in Zoom of dataset names that had an HSM activity performed against them.

d. Allows display of activity by month using the 'Starting Display' filter in Zoom.

APPENDIX

C

PREDEFINED FILTERS

TSF is shipped with several predefined volume and dataset filters to help you become productive immediately after installation. These filters—based on SRM Best Practices—are listed in this appendix.

Pool Volume Filters

Table C–1. Predefined Pool/Volume Filters

Filter Name	Description
DFWOFF	Show all volumes where DFW is turned off
IBMINVTY	Show inventory of all IBM DASD with countdown screen off
NOINXVTC	Either no INDEX-VTOC or is disabled for SMS volumes
VOLGT90	Volumes greater than 90 percent allocated and less than 5000 contiguous tracks
ZVA01	Volumes gt 80% allocated
ZVA02	Volumes lt 30% allocated
ZVA03	Any volser with disabled index
ZVA04	Esoterics
ZVA05	SMS managed volumes
ZVA06	Volumes not sms managed
ZVA07	DFW off
ZVA08	Track caching off
ZVA09	Cach fast write off

Datasets Filters

Table C–2. Predefined Datasets Filters

Filter Name	Description
CREATEDT	DS whose create date is eq to last ref and gt 20% free space
DSNGT180	Non-system dsn's greater than 180 days since last reference
EMPTY	Empty datasets
EMPTYDSN	Summary and detail view of empty dsn's older than 1 day
LASTREF	= CDATE
LOGLPOOL	Summary of logical pools and data set activity
ROLLEDGD	Rolled off gdg's still on dasd created more than 60 days ago
UNCATDS	Non-system uncatlg dsn's created more than 1 day ago
ZDSN01	Block size < 4096
ZDSN02	DSN with blocksize > 4096 and < 20000
ZDSN03	Block size > 27998 and device type = 3390
ZDSN04	Block size > 23476 and device type = 3380
ZDSN05	Duplicate datasets
ZDSN06	Duplicate uncataloged datasets w/ EXCL
ZDSN07	Uncataloged DSNS, CHECK ¬ DSNS
ZDSN08	Non-VSAM w/ EXT > 5
ZDSN09	VSAM w/ EXT > 16
ZDSN10	Multi-volume non-VSAM with Extents > 5
ZDSN11	Multi-volume VSAM with Extents > 16
ZDSN12	PO w/EXTS > 5
ZDSN13	Rolled off GDGS
ZDSN14	VSAM w/ CI splits > 10,000
ZDSN15	VSAM w/CA splits > 100
ZDSN16	VSAM w/IMBED
ZDSN16A	VSAM w/REPLICATE
ZDSN17	Predictive archive-customize POOLTABL/PARMLIB-rerun SFBLDMST
ZDSN1819	Empty DSNS, check DSNS to EXCLUDE; ¬
ZDSN20	Datasets not-referenced in more than 1 year

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Table C–2. Predefined Datasets Filters

Filter Name	Description
ZDSN21	Unreferenced DSNS with DSORG = ???
ZDSN22	Unreferenced DSNS with DSORG = PS*
ZDSN23	Unreferenced DSNS with DSORG = PO*
ZDSN24	Unreferenced DSNS with DSORG = VS*
ZDSN25	DSN with > 20% free - CHECK ¬
ZDSN26	Datasets with > 20% free and DSORG=PS*
ZDSN27	Datasets with > 20% free and DSORG=PO*
ZDSN28	Datasets with > 20% free and DSORG=VS*
ZDSN29	Predictive release savings

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Tape Volume Filters

Table C–3. Predefined Tape Volume Filters

Filter Name	Description
CREQLST	1 file tapes < 5 MB and Create Date = Last Referenced Date
LT10PCT	Non-scratch tape volumes < 10 % used
SCRATCH	Summary and detail view of all scratch tapes
TAPE1	Small datasets 1 file
ZTA0102	Number of tapes and GB on tapes
ZTA03	Non-scratch with 1 file < 5 MB
ZTA04	Non-scratch not referenced > 375 days
ZTA05	Non-scratch not-referenced > 5 years - check not-ref-date
ZTA06	Non-scratch not-referenced > 10 years - check not-ref-date
ZTA07	Non-scratch tapes not referenced since create date
ZTA08	Non-scratch tapes with < 50% utilization
ZTA10	Number of DSNs under EDM control
ZTA11	Number of bad tapes
ZTA13	Scratch tapes not used in over 1 year

Tape Dataset Filters

Table C–4. Predefined Tape Dataset Filters

Filter Name	Description
LT10MBDS	DSN'S on tape that are < 10 MB and are not on scratch tapes
UNCATLG	Summary of uncataloged DSN'S on non-scratch tape
ZTA09	# of non-scratch tapes w/ uncataloged dsns
ZTA15	small tape datasets, VTS, TMM candidates
ZTA16	Tapes that expired yesterday

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APPENDIX

D

TSF CONSOLE COMMANDS

All of the commands in Table D–1 can be sent to TSFRECRD for execution by either:

- Issuing an MVS modify command against the TSFRECRD address space.
- Issuing the TSO command processor TSITSOCE.
- Executing TSITSOCE as a batch program.

Some of the following commands can also be sent to TSFSPACE for execution. However, this can only be done by issuing an MVS modify command against the TSFSPACE address space.

List of Commands

Table D–1. Commands

Command	Description
ABEND	Makes the TSFRECRD address space abend with an S0C1 immediately. Used for problem diagnosis; should only be invoked at the request of customer support. `F TSFRECRD,ABEND`
ALLOCATE	Dynamically allocates a dataset for use by TSFRECRD. Usually this is done to allocate a relative generation of a GDG for use by SMFINPUT, HSMLOG or IDCAMS commands. Alias is ALLOC. `F TSRECRD, ALLOC,DSNAME(your.dataset),OLD,KEEP` The parameters available for use with this command are: • DDNAME(ddname) – Can also be specified as FILE(ddname), where ddname is the one to eight character ddname. • DSNAME(dsname) – Can be specified as DATASET(dsname), where dsname is the 1 to 44 character name of an existing dataset. A relative generation of a generation dataset group may be specified by adding the relative generation number preceded by a plus (+) or minus (-) sign in parentheses following the dsname. • OLD/MOD/SHR – Requested allocation status • CATALOG/UNCATLOG/DELETE/KEEP – Requested normal disposition
CONSOLE	Activates code elements that will be used in future enhancements to the product and should not be used until those enhancements are generally available.
DISPLAY	Displays configuration information and the current value of parameters in TSFSPACE and TSFRECRD `F TSFSPACE,DISPLAY, or F TSFRECRD,DISPLAY`

DUMP	Causes an SVC dump of the TSFSPACE or TSFRECRD and TSFSPACE address spaces.
	`F TSFSPACE,DUMP`
	`F TSFRECRD,DUMP`

END	Separates the SET commands from action commands in the initial TSFRECRD input in the SYSTSIN file. This is primarily used in the TSIPARMS member of PARMLIB.
EXTEND	Extends the data space owned by TSFSPACE–also used as a buffer for information coming into TSFRECRD. The only parameter available for this command is BLOCKS(*n*), where *n* is the number of 4096 blocks to extend the data space by. The maximum size of the data space is 2 gigabytes, or the installation defined maximum. `F TSFSPACE,EXTEND,BLOCKS(n)`
FREE	Unallocates datasets allocated through the ALLOCATE command. `F TSFRECRD,FREE,DSNAME(your.dataset)` The parameters available for this command are: • DDNAME(ddname) – Can also be specified as FILE(*ddname*), where ddname is the 1 to 8 character ddname. • DSNAME(dsname) – Can be specified as DATASET(*dsname*), where *dsname* is the 1 to 44 character name of an existing dataset. A relative generation of a generation dataset group may be specified by adding the relative generation number preceded by a plus or minus sign in parentheses after the dsname.

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Table D–1. Commands

Command	Description

HSMLOG	Loads SMF data from a sequential HSM log dataset. The command has two parameters, which are mutually exclusive.
	• DDNAME(ddname) – Can also be specified as FILE(ddname), where ddname is the 1 to 8 character name of a JCL DD statement.
	• DSNAME(dsname) – Can be specified as DATASET(dsname), where dsname is the 1 to 44 character name of an existing dataset. The members of a PDS are not supported.
	Typically, DDNAME references a ddname in the TSFRECRD started task JCL. DSNAME references a dataset that is to be dynamically allocated when the command is issued. In either case, the referenced dataset is dynamically unallocated after the data is processed. This command can be issued at any time via the following:
	`MODIFY TSFRECRD,HSMLOG DSNAME(dsname)`
	`F TSFRECRD,HSMLOG DSNAME(dsname)`
	This command is always executed internally at TSFRECRD initialization time with an operand of DDNAME(HSMLOGIN). If the ddname does not exist, no message is issued and no data is processed for this command. If the dsname can not be dynamically allocated, messages are issued and processing continues. In SYSPLEX mode this command is routed to the primary system for execution, regardless of where the command was issued.

IDCAMS	Performs predefined IDCAMS functions–can be issued at any time. Causes the VSAM database to be dynamically unallocated before IDCAMS is called to process the IDCAMS input statements from the dataset referenced in the command parameters After IDCAMS completes, the VSAM database is dynamically unallocated again to insure any exclusive enqueue is released prior to dynamically allocating the VSAM database with a disposition of SHR ALLOCATE commands are not currently supported in the IDCAMS input processed by this command. This command is provided to allow users to reorganize the database without taking TSFRECRD down, in SYSPLEX mode this would require bringing TSFRECRD down on all participating systems. In SYSPLEX mode this command is routed to the primary system for execution, regardless of where the command was issued. This command should normally be issued after the PURGE command to recover excess DASD space used by the VSAM database. This command has 3 parameters, any or all of which may be used to specify the predefined dataset containing the input statements to the IDCAMS program:

Table D–1. Commands

Command	Description
	`F TSFRECRD IDCAMS,DSNAME(hlq.sfwb.cntl),MEMBER(TSIREORG)` • DDNAME(ddname) – Can also be specified as FILE(*ddname*), where *ddname* is the 1 to 8 character ddname. Typically, the DDNAME parameter would be used to reference a ddname in the TSFRECRD started task JCL. The default operand is DDNAME(AMSREORG). If the ddname does not exist, no message is issued and no data is processed for this command. • DSNAME(dsname) – Can be specified as DATASET(*dsname*), where dsname is the 1 to 44 character name of an existing dataset. A member of a partitioned dataset may be specified by adding the member name in parentheses following the dsname. The DSNAME parameter would be used to reference a dataset that is to be dynamically allocated when the command is issued. The referenced dataset is dynamically unallocated after the data is processed. If the dsname can not be dynamically allocated, messages are issued and processing continues. The default dataset name is the name of the partitioned dataset allocated to ddname SYSTSIN at TSFRECRD initialization. • MEMBER(member) – Where member is the 1 to 8 character name of an existing member of an existing partitioned dataset. The default operand is MEMBER(TSIREORG).
MAP	Used by systems support to identify maintenance level. `F TSFRECRD,MAP`
MVS	Used to issue a system command from the TSFSPACE or TSFRECRD address spaces. The system command issued starts with the first non-blank character following the MVS command name and consists of the remainder of the input record. For example, you may want to issue an MVS Start command within the INITCOMMAND parameter to start TSFRECRD after TSFSPACE initializes. The following command would accomplish this task: `SET INITIALCOMMAND('MVS START TSFRECRD')`

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Table D–1. Commands

Command	Description

PURGE	Used to erase selected records from the VSAM TSI database. Lets you recover excess DASD space used by the database without taking TSFRECRD down. Can be issued as a modify(F) to TSFRECRD or can be in the TSIPURGE member of the PARMLIB file.
	
	Each record type has a daily, hourly, and monthly summary record and a detail record. The Trending record type (22) only has a daily, hourly, and monthly summary record. The record types can be found in "Record Type Descriptions" later in this chapter. Abbreviations can be used down to the lowest character that makes the parameter unique. Each time a Purge command is issued, it causes a read through the entire database. For this reason, reduce the number of Purge commands by adding several parameters on one Purge.
	
	RECORDTYPE(nn) – Where nn is a specific record type, a range of record types separated by a colon (:), or a list of specific record types and/or ranges separated by commas. This was the original record type designation parameter and will not be supported in a future version. Please use the following two parameters in its place.
	
	ERASEDETAILTYPES(nn) – Can also be specified as ED(nn), where nn is a specific detail record type, a range of detail record types separated by a colon (:), or a list of specific detail record types and/or ranges separated by commas.
	
	ERASESUMMARYTYPES(nn) – Can also be specified as ES(nn). Where nn is a specific summary record type, a range, or a list of specific summary record types and/or ranges separated by commas.
	
	DETAILRETPD(nnnnnn) – Where nnnnnn is the number of days worth of daily summary records to retain in the database.
	
	SUMMARYRETPD(nnnnnn) – Where nnnnnn is the number of days worth of summary records to retain in the database. This was the original summary retention parameter and will not be supported in a future version. Please use the following three parameters in its place.
	
	HOURLYSUMMARYRETPD(nnnnnn) – Where nnnnnn is the number of days worth of hourly records to retain in the database.
	
	DAILYSUMMARYRETPD(nnnnnn) – Where nnnnnn is the number of days worth of daily summary records to retain in the database.
	
	MONTHLYSUMMARYRETPD(nnnnnn) – Where nnnnnn is the number of days worth of monthly records to retain in the database.
	
	Other than having to adjust the retention periods to something suitable to the user's environment, like the database size, the following command should be used as a guideline:
	
	`PURGE ERASEDETAILTYPES(01:06) ERASESUMMARYTYPES(01:06) +`
	`HOURLYSUMMARYRETPD(7) DAILYSUMMARYRETPD(14)`
	`+MONTHLYSUMMARYRETPD(365) DETAILRETPD(5)`

Table D–1. Commands

Command	Description
RELOAD	Used to reload the logical pool table–can be used at any time. This command has 4 parameters, any or all of which may be used to specify the predefined dataset containing the input statements to a new logical pool table. DDNAME(ddname) – Can also be specified as FILE(ddname), where ddname is the 1 to 8 character ddname. Typically, the DDNAME parameter would be used to reference a ddname in the TSFRECRD started task JCL. The default operand is DDNAME(POOLTABL) or the ddname that was used to define the logical pool table at TSFRECRD initialization time. If the ddname does not exist, no message is issued and no dataset is processed for this command. DSNAME(dsname) – Can be specified as DATASET(dsname), where dsname is the 1 to 44 character name of an existing dataset. A member of a partitioned dataset may be specified by adding the member name in parentheses following the dsname. The DSNAME parameter would be used to reference a dataset that is to be dynamically allocated when the command is issued. The referenced dataset is dynamically unallocated after the data is processed. If the dsname cannot be dynamically allocated, messages are issued and processing continues. The default dataset name is the name of the partitioned dataset allocated to ddname POOLTABL at TSFRECRD initialization. MEMBER(member) – Where member is the 1 to 8 character name of an existing partitioned dataset. The default is MEMBER(POOLTABL) LOGICALPOOLTABLE – Indicates which pool table to reload. The default is LOGICALPOOLTABLE. You can use POOLTABLE in place of LOGICALPOOLTABLE.
SMFINPUT	Loads SMF data from a sequential dataset. The SMFINPUT command has two parameters, which are mutually exclusive. DDNAME(ddname), which can also be specified as FILE(ddname), where ddname is the 1 to 8 character name of a JCL DD statement. The DSNAME(dsname) parameter, which can be specified as DATASET(dsname), where dsname is the 1 to 44 character name of an existing dataset. Members of a PDS are not supported. Typically, the DDNAME parameter would be used to reference a ddname in the TSFRECRD started tasks. JCL and the DSNAME parameter would be used to reference a dataset that is to be dynamically allocated when the command is issued. In either case the referenced dataset is dynamically unallocated after the dataset is processed. Although this command can be issued at any time via the MODIFY TSFRECRD,SMFINPUT or F TSFRECRD,SMFINPUT console command, this command is always executed internally at TSFRECRD initialization time with an operand of DDNAME(SMFINPUT). If the ddname does not exist, no message is issued and no data is processed for this command. If the dsname can not be dynamically allocated, messages are issued and processing continues. In SYSPLEX mode this command is routed to the primary system for execution, regardless of where the command was issued.

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Table D–1. Commands

Command	Description
STACK	The STACK, alias BATCH, command is used to cause a previously defined set of commands to be issued to TSFRECRD from a dataset. For example, to execute a set of commands defined in member TSIPURGE in the PARMLIB file, issue: `F TSFRECRD,STACK,DSNAME(hlq.sfwb.parmlib),MEMBER(TSIPURGE)` The parameters are as follows: • DDNAME(ddname) - This parameter can also be specified as FILE(ddname). Where ddname is the 1 to 8 character ddname. Typically, the DDNAME parameter would be used to reference a ddname in the TSFRECRD started task JCL. • DSNAME(dsname) - This parameter can be specified as DATASET(dsname). Where dsname is the 1 to 44 character name of an existing dataset. A member of a partitioned dataset may be specified by adding the member name in parentheses following the dsname. The DSNAME parameter would be used to reference a dataset that is to be dynamically allocated when the command is issued. The referenced dataset is dynamically unallocated after the data is processed. If the dsname can not be dynamically allocated, messages are issued and processing continues. The default dataset name is the name of the partitioned dataset allocated to ddname SYSTSIN at TSFRECRD initialization. • MEMBER(member) - Where the member is the 1 to 8 character name of an existing member of an existing partitioned dataset.
STOP	This command is used to shutdown TSFSPACE or TSFRECRD. Any of the following console commands can be used to shutdown TSFSPACE or TSFRECRD started tasks: MODIFY TSFSPACE,STOP (F TSFSPACE,STOP) MODIFY TSFRECRD,STOP\ (F TSFRECRD,STOP) STOP TSFSPACE (P TSFSPACE) STOP TSFRECRD (P TSFRECRD)

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Table D–1. Commands

Command	Description
SUBMIT	The SUBMIT (alias SUB) command is used to submit a batch job in a dataset or member of a partitioned dataset from the TSFRECRD address space to the system. For example, to submit a batch job in the cntl file called “sfbldmst”, issue: F TSFRECRD,SUBMIT,DSNAME(hlq.sfwb.cntl),MEMBER(sfbldmst) • DDNAME(ddname) - This parameter can also be specified as FILE(ddname). Where ddname is the 1 to 8 character ddname. Typically, the DDNAME parameter would be used to reference a ddname in the TSFRECRD started task JCL. • DSNAME(dsname) - This parameter can be specified as DATASET(dsname). Where dsname is the 1 to 44 character name of an existing dataset. A member of a partitioned dataset may be specified by adding the member name in parentheses following the dsname. The DSNAME parameter would be used to reference a dataset that is to be dynamically allocated when the command is issued. The referenced dataset is dynamically unallocated after the data is processed. If the dsname can not be dynamically allocated, messages are issued and processing continues. The default dataset name is the name of the partitioned dataset allocated to ddname SYSTSIN at TSFRECRD initialization. • MEMBER(member) Where member is the 1 to 8 character name of an existing member of an existing partitioned dataset.
USER	The USER (alias WHO) command is used to display all users in the GRS complex having an enqueue on the TSFRECRD database. This command can be helpful in determining IDCAMS command failures. Example: F TSFRECRD,USER JCL can also be used in lieu of issuing commands at normal start up of TSFSPACE and TSFRECRD. Typically commands are placed in a member or members in the PARMLIB library. For example, some of the default start up parameters are specified in the SMFSCAN section of the TSFPRMXX member located in the PARMLIB library. Here is an example of these parameters: SMFSCAN DATABASE (HLQ SFWB.TSI.DATABASE)+ JOBACTIVITY(NO)+ PRIMARY(TS03,TS23)+ GROUPNAME(@TCLOUD@)+ AUTOTIME(1040)+ INITCMD(“) Typically, commands are used to purge and reorganize the TSF database. It is recommended that the purge be automated to run each day by using the AUTOCOMMAND and AUTOTIME parameters. However, should the user desire to reorg the database, purge records, or issue other commands, additional batch members are available in the CNTL file. For more information, see Chapter 13, Batch Jobs.

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APPENDIX

E

AUTOMATION RECORD AND FIELD DEFINITIONS

The automation field definitions in the following sections are grouped by record type. The same field name can appear in multiple records. Table E–1 provides a summary of record types that can be used for Automation. The record must be identified in the FOR clause of the IF statement. For example, most records have a VOLUME or VOLSER field. Consider the following two IF statements:

```
FOR DASD-VOL IF VOLUME = PTW001 THEN EXEC(WHATEVER)

FOR DASD-DS IF VOLUME=PTW001 THEN EXEC(OTHER)
```

Table E–1. Summary of Record Types and Fields

Record Type	Fields	Description of Record Type
BACKUP	41	BACKUP DATA
CATALOG	35	CATALOG DATA
CONTROL-UNIT	28	DASD CONTROL UNIT DATA
DASD-DS	162	DIRECT ACCESS DATA SET DATA
DASD-VOL	92	DIRECT ACCESS VOLUME DATA
DS-POOL	56	DATA SET POOL DATA
FSR-DSN-SUM-JOB	14	FSR DATA SET SUMMARY - JOBNAME
FSR-DSN-SUM-POOL	14	FSR DATA SET SUMMARY - POOL
FSR-DSN-SUM-VOL	14	FSR DATA SET SUMMARY - VOLUME
FSR-DSN-SUMMARY	14	FSR DATA SET SUMMARY
FSR-SUMMARY-AGNAME	359	FSR SUMMARY - AGNAME
FSR-SUMMARY-CODE	359	FSR SUMMARY - RETURN/ REASON CODE
FSR-SUMMARY-DATASET	359	FSR SUMMARY - DATA SET
FSR-SUMMARY-JOB	359	FSR SUMMARY - JOBNAME

Table E–1. Summary of Record Types and Fields

Record Type	Fields	Description of Record Type
FSR-SUMMARY-POOL	359	FSR SUMMARY - POOL
FSR-SUMMARY-USER	359	FSR SUMMARY - USERID
FSR-SUMMARY-VOLUME	359	FSR SUMMARY - VOLUME
FSR-VOL-SUMMARY	297	FSR VOLUME SUMMARY
HSM-FSR	93	HSM FUNCTION STATISTIC RECORD
HSM-FSR-TSIBASE	93	HSM FSR IN TSIBASE
HSM-WFSR	47	HSM FUNCTION STATISTIC RECORD
MIGRATION	57	MIGRATION DATA
SMS-ABARS	29	SMS ABARS AGGREGATE
SMS-BCD	25	SMS BCD
SMS-DATACLAS	80	SMS DATA CLASS
SMS-MGMTCLAS	49	SMS MANAGEMENT CLASS
SMS-STORCLAS	21	SMS STORAGE CLASS
SMS-STORGRP	49	SMS STORAGE GROUP
SMS-TAPELIB	35	SMS TAPE LIBRARY
TAPE-DS	129	TAPE DATA SET DATA
TAPE-VOL	281	TAPE VOLUME DATA
UNIX	15	OMVS FILE SYSTEM DATA
VOL-POOL	56	VOLUME POOL DATA

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Automation Record Type: Backup Data

Table E–2. Automation Fields for BACKUP

Field Name	Description
2K-BLOCKS	Size of latest backup version in 2K blocks. Numeric value (no decimal points).
BACKUP-COUNT	Log summary backup count. Numeric value (no decimal points).
BACKUP-DATE	Latest backup date. Character length is 10 or less.
BACKUP-PROFILE-EXIST	Indicates whether or not the backup has a user profile defined. Valid entries for this field are: • Y – Display only those datasets that have a defined user profile • N – Display only those datasets that do not have a defined user profile
BACKUP-TIME	Latest backup time (nn:nn:nn). Character length is 8 or less.
BACKUP-VERSION	Current number of backup versions for the cataloged dataset. Numeric value (no decimal points).
BACKUP-VERSION-INFO	Record contains backup version information. Character length is 1.
BACKUP-VERSIONS	Total number of backup versions related to the dataset. Numeric value (no decimal points).
BACKUP-VOLSER	First volume serial of the backup volume. Character length is 6 or less.
BYTES-ALLOCATED	Allocated bytes for the dataset backup. Numeric value (no decimal points).
CATALOGED	Indicates whether or not the dataset is cataloged on the user volume being backed up. Character length is 1.
CURRENT-COPY-SESSION-DONE	Indicates whether or not the current copy session is finished. Character length is 1.
DATA-CLASS	Current data class that is associated with the dataset. Character length is 8 or less.
DSN	Dataset name of the first dataset being backed up. Character length is 44 or less.
DSORG	Dataset organization of the dataset. Character length is 4 or less.
DYNALLOC-RETURN-CODE	Dynamic allocation return code if one was encountered for all datasets migrated, recalled, or backed up. Character length is 2 or less.
ERROR-ABEND-CODE	Error abend code if one was encountered for all datasets migrated, recalled, or backed up. Character length is 4 or less.
ERROR-COUNT	Number of errors encountered between the various migration levels. This field is limited to data within the LOG date time stamp. Numeric value (no decimal points).
ERROR-REASON-CODE	Error reason code if one was encountered for all datasets migrated, recalled, or backed up. Character length is 4 or less.

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Table E–2. Automation Fields for BACKUP

Field Name	Description
ERROR-RETURN-CODE	Error return code if one was encountered for all datasets migrated, recalled, or backed up. Valid entries for this field are any valid DFHSM error return codes. If no entry is specified for this field then all DFHSM errors encountered will be displayed. This field is limited to data within the LOG date time stamp. Character length is 3 or less.
ERROR-TYPE	Error type if one was encountered for all datasets. Valid entries for this field are: • M – Migrated • R – Recalled • B – Backed up
FREQUENCY	Backup frequency in days. Numeric value (no decimal points). -1 is the default.
JOB	Name of the job that was run for the backup. Character length is 8 or less.
JOB-LAST	Last job. Character length is 8 or less.
JOB-LAST-1	Last job - 1. Character length is 8 or less.
JOB-LAST-2	Last job - 2. Character length is 8 or less.
JOB-LAST-3	Last job - 3. Character length is 8 or less.
JOB-LAST-4	Last job - 4. Character length is 8 or less.
LOGICAL-POOL	Logical pool that is related to the dataset. Character length is 8 or less.
MAX-BACKUPS	Maximum number of backup copies. Numeric value (no decimal points).
MGMT-CLASS	Current management class that is associated with the dataset. Character length is 8 or less.
NUMBER-OF-BACKUPS	Total number of backup versions. Numeric value (no decimal points).
ON-ML1	Indicates whether or not the backup resides on DFHSM level 1. Valid entries for this field are: • Y – Display only those datasets that reside on Level1 • N – Display only those datasets that do not reside on Level 1, regardless of where they exist
ON-TAPE	Indicates whether or not the backup resides on tape or disk. Valid entries for this field are: • Y – Display backups that reside on tape • N – Display only those backups that reside on disk
RETIRED	Indicates datasets whose backups will be retired. Valid entries for this field are: • Y – Display only those datasets that will be retired • N – Display only those datasets that have not been retired
SMS	Indicates whether SMS managed datasets were encountered for backups. Character length is 1.
STORAGE-CLASS	Current storage class that is associated with the dataset. Character length is 8 or less.

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Table E–2. Automation Fields for BACKUP

Field Name	Description
STORAGE-GROUP	Current storage group that is associated with the dataset. Character length is 8 or less.
TRACKS	Size, in tracks, on the user volume. Numeric value (no decimal points).
VOLSER	User volume serial number. Character length is 6 or less.
VSAM	Indicates whether or not the dataset is a VSAM dataset. Character length is 1.

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Automation Record Type: Catalog Data

Table E–3. Automation Fields for CATALOG

Field Name	Description
ASSOCIATION-NAME	Association name. Character length is 44 or less.
AUDIT-FLAG	Audit/Validity flag. Character length is 1.
CANDIDATE-VOLUME-NO-SPACE	Candidate volume – no space. Character length is 1.
CATALOG-NAME	Catalog name. Character length is 44 or less.
CONVERTED-VSAM-DATA-SET-VOLUME	Converted VSAM dataset volume. Character length is 1.
CREATION-DATE	Create date in Gregorian format. Character length is 10 or less.
DATA-CLASS	Data class. Character length is 8 or less.
DEVICE	Device description (disk or tape). Character length is 4 or less.
DSNAME	Dataset name. Character length is 44 or less.
EXPIRATION-DATE	Expire date in Gregorian format. Character length is 10 or less.
FILE-SEQUENCE	File sequence. Numeric value (no decimal points).
GDG-CURRENT-COUNT	GDG current count. Numeric value (no decimal points).
GDG-EMPTY	GDG empty. Value is Y or N.
GDG-LIMIT-COUNT	GDG limit count. Numeric value (no decimal points).
GDG-SCRATCH	GDG scratch. Value is Y or N.
GENERIC-UNIT-DEVICE-TYPE	Generic unit device type. Character length is 8 or less.
KEYRANGE-QUALIFIER-PRESENT	Keyrange qualifier present. Character length is 1.
LOGICAL-POOL	Logical pool name for list = logical pool 0 through logical pool 9. Character length is 8 or less.
MANAGEMENT-CLASS	Management class. Character length is 8 or less.
MIGRATION-LEVEL	Device type, either 1 or 2 for volume migration.
NON-VSAM-VOLUME-CELL	Non-VSAM volume cell. Character length is 1 or less.
OVERFLOW-KEYRANGE-ONLY	Overflow key range only. Character length is 1 or less.
OWNERID	Owner ID. Character length is 8 or less.
PRIMARY-VVR-CI	Primary VVR CI. Character length is 1 or less.

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Table E–3. Automation Fields for CATALOG

Field Name	Description
PRIME-VOLUME-ALLOCATED-SPACE	Prime volume allocated space. Character length is 1 or less.
RECORD-TYPE	Record type. Character length is 1 or less.
RECORD-TYPE-DESCRIPTION	Record type description. Character length is 8 or less.
SEQUENCE-SET-WITH-DATA	Sequence set with data. Character length is 1 or less.
STORAGE-CLASS	Storage class. Character length is 8 or less.
UCB-DEVTYP	UCB type (hex device type). Character length is 8 or less.
UNABLE-TO-ALLOCATE-CATALOG	Unable to alloc. catalog. Character length is 1 or less.
VOLSER	Volume. Character length is 6 or less.
VOLUME-COUNT	Volume count. Numeric value (no decimal points).
VOLUME-POOL	Volume pool. Character length is 8 or less.
VOLUME-SEQUENCE	Volume sequence. Numeric value (no decimal points).

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Automation Record Type: DASD Control Unit Data

Table E–4. Automation Fields for CONTROL-UNIT

Field Name	Description
ALIAS	Alias unit address. Value is Y or N.
AVAILABLE-CACHE-CAPACITY	Available cache capacity obtained from subsystem status, TSFSTATS.
CHPID	Channel path ID. Numeric value, no decimal points.
CONFIGUED-NON-VOLATILE-STORAGE	Configured non-volatile storage obtained from subsystem status, TSFSTATS.
CONFIGURED-CACHE-CAPACITY	Configured cache capacity obtained from subsystem status, TSFSTATS.
CONFIGURED-DEVICES	Configured devices obtained from subsystem status, TSFSTATS.
CONTROL-UNIT-MODEL	Control unit model.
DEVICE-ADDRESS	Device address.
DEVICE-STATUS	Device status.
DEVICE-STATUS-2	Device status field #2.
GLOBAL-STATUS	Global status.
LENGTH-OF-PERFORMANCE-STATISTICS	Length of performance statistics.
NEDID	Node element identifier from CDR. Character length is 28 or less.
NON-VOLATIVE-STORAGE-STATUS	Non-volative storage status.
OFFLINE-CACHE-CAPACITY	Offline cache capacity
OVERALL-CACHING-STATUS	Overall caching status.
PINNED-CACHE-CAPACITY	Pinned cache capacity.
PINNED-NON-VOLATILE-STORAGE	Pinned non-volatile storage.
RECORD-DATE	Record date, format is YYYYMMDD.
RECORD-TIME	Record time, format is HHMMSSTH.
SENSE-SUBSYSTEM-STATUS-FORMAT	Sense subsystem status format, from subsystem status, TSFSTATS.
STATISTICS-SET/DEVICE	Statistics set device, from subsystem status, TSFSTATS.

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Table E–4. Automation Fields for CONTROL-UNIT

Field Name	Description
SUBSYSTEM-IDENTIFIER	Subsystem identifier
UNIT	Unit address. Character length is 5 or less.
VENDOR	Manufacturer. Numeric value, no decimal points.
VENDOR-LOCATION	Manufacturer location or plant location. Numeric value, no decimal points.
VENDOR-SERIAL-NUMBER	Manufacturer serial number. Numeric value, no decimal points.
VOLSER	Volume serial number, blank if unknown. Character length is 6 or less.

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Automation Record Type: DASD Dataset Data

Table E–5. Automation Fields for DASD-DS

Field Name	Description
ADDRESS	Device address of the volume on which the dataset resides. Character length is 4 or less.
ALLOCATION-TYPE	Allocation type. Character length is 1.
BACKUP-DATE	Last backup date of the current dataset. Character length is 10 or less.
BLKSIZE	Block size of the data set. Character length is 5 or less.
BLOCKS/TRACK	Number of directory blocks per track. Numeric value (no decimal points).
CACHE	Cache criteria when database was created (C,T,D,N)
CANDIDATE-VOLUME	Indicates whether or not datasets are associated with a candidate volume. • Y – Display all datasets that have an associated candidate volume • N – Do not display datasets that have an associated candidate volume
CA-SPLITS	Number of control access splits. This information only applies to VSAM databases. Numeric value (no decimal points).
CATALOG	Returns status--cataloged, not-cataloged, cataloged duplicates, not-cataloged duplicates. Character length is 3 or less.
CATALOG-NAME	Dataset name defined in the catalog. Character length is 44 or less.
CI-SPLITS	Number of control interval splits. This information only applies to VSAM databases. Numeric value (no decimal points).
COMPRESSION-METHOD	Dataset compression method (R, G, T).
COMPRESSION-RATIO	Dataset compression ratio. Numeric value, decimal points allowed. Format is N.NN.
CREATION-DATE	Date that the data set was created. Character length is 10 or less.
DATA-CLASS	SMS data class name. Character length is 8 or less.
DATASET-CHANGED-SINCE-LAST-BACKUP	Indicates whether or not a dataset was changed since the last backup date (Y or N).
DEFERRED-GDG	Deferred GDG status flag (Y or N).
DEVICE-MODEL	Device model. Character length is 6 or less.
DIRECTORY-BLOCKS-MAX	Maximum number of directory blocks. Numeric value (no decimal points).
DIRECTORY-BLOCKS-USED	Size of the used portion of the directory block. Numeric value (no decimal points).
DSN	Data set name. Character length is 44 or less.
DSORG	Datasets by organization type--for example, PDS for partitioned datasets. Character length is 4 or less.

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
EXPIRATION-DATE	Datasets by expiration date, numbers of days since expiration, or date attribute. Character length is 10 or less.
EXTENDED/ COMPRESSED-DATASET	Extended and compressed dataset flag (Y or N).
EXTENDED-DATASET	Extended dataset flag (Y or N).
EXTENTS	Number of extents that a dataset is in on the volume. Character length is 3 or less. Note: An excessive number of extents degrades performance and serves as an indicator of possible extend failures or DASD fragmentation.
FILE-SEQ-NUMBER	File sequence number for the dataset. Binary data, numeric value (no decimal points).
FREE-SPACE-CALCULATION-ERROR	Indicates whether or not an error occurred when calculating the number of free-space areas on a volume (Y or N).
GDG	GDG status flag (Y or N).
KEYRANGE-DATASET	Indicates whether or not the dataset catalog entry is associated with a key range (Y or N).
KEYRANGE-DATASET-LOW-LEVEL-QUALIFIER	Low-level qualifier for the key range dataset. Character length is 4 or less.
LAST-REFERENCE-DATE	Last referenced date, numbers of days since last reference, or date attribute. Character length is 10 or less.
LOGICAL-POOL	Logical pool that is related to the dataset. Character length is 8 or less.
LOGICAL-POOL-0	Logical pool name 0 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-1	Logical pool name 1 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-2	Logical pool name 2 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-3	Logical pool name 3 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-4	Logical pool name 4 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-5	Logical pool name 5 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-6	Logical pool name 6 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-7	Logical pool name 7 associated with the dataset. Character length is 8 or less.

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
LOGICAL-POOL-8	Logical pool name 8 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-9	Logical pool name 9 associated with the dataset. Character length is 8 or less.
LRECL	Datasets by logical record length. Character length is 5 or less.
MB-ALLOCATED	Number of megabytes allocated to the data set. Numeric value, decimal points allowed. Format is 99999999999V99.
MB-FREE	Difference between MB-ALLOCATED and MB-USED. Numeric value, decimal points allowed. Format is 99999999999V99.
MB-USED	Number of megabytes used by the data set. Numeric value, decimal points allowed. Format is 99999999999V99.
MEMBERS	Number of members in a partitioned data set. Numeric value (no decimal points).
MGMT-CLASS	SMS management class name. Character length is 8 or less.
MODEL	Extended model name. Character length is 10 or less.
MULTI-VOLUME-COUNT	Count for the current multi-volume dataset. Numeric value (no decimal points).
MULTI-VOLUME-MB-ALLOCATED	Total allocated megabytes on the multi-volume. Numeric value (no decimal points).
MULTI-VOLUME-MB-FREE	Difference between MULTI-VOLUME-MB-ALLOCATED and MULTI-VOLUME-MB-USED. Numeric value (no decimal points).
MULTI-VOLUME-MB-USED	Number of used megabytes on the multi-volume. Numeric value (no decimal points).
MULTI-VOLUME-PERCENT-FREE	Percentage of free space for an associated multi-volume dataset. Numeric value (no decimal points).
MULTI-VOLUME-PERCENT-USED	Percentage of used megabytes, gigabytes, or tracks (depending on unit selected) for an associated multi-volume dataset. Numeric value (no decimal points).
MULTI-VOLUME-TOTAL-EXTENTS	Total number of extents that a multiple volume dataset is in on all volumes. Numeric value (no decimal points).
MULTI-VOLUME-TRACKS-ALLOCATED	Total tracks allocated by the dataset on all volumes. Numeric value (no decimal points).
MULTI-VOLUME-TRACKS-FREE	Total tracks allocated but not used on all volumes. Numeric value (no decimal points).
MULTI-VOLUME-TRACKS-USED	Total tracks in use by the data set on all volumes. Numeric value (no decimal points).
NON-VSAM-ATTRIBUTE	Non-VSAM attribute byte for dataset catalog entries that are non-VSAM datasets.

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
OPTIMUM-BLOCKS/ TRACK	Number of optimum blocks per track. Numeric value (no decimal points).
OPTIMUM-BLOCKSIZE	Optimum block size for the data set. Numeric value (no decimal points).
PAGE-SIZE	Size of the page (HFS PDSE). Numeric value (no decimal points).
PAGE-TOTAL	Total number of pages (HFS). Numeric value (no decimal points).
PAGE-USED	Number of pages used HFS). Numeric value (no decimal points).
PERCENT-FREE	Percentage of free space for an associated dataset. Numeric value (no decimal points).
PERCENT-USED	Percentage of used megabytes, gigabytes, or tracks, depending on unit selected. Numeric value (no decimal points).
PHYSICAL-POOL	Physical pool name. Character length is 4 or less.
PRIMARY-ALLOCATION	VSAM datasets by primary allocation. Numeric value (no decimal points).
RECFM	Datasets by record format. Character length is 5 or less.
REL-GEN-NUM	Returns GDG datasets according to the generation-number query criteria. Numeric value (no decimal points).
ROLLED-GDG	Rolled GDG status flag (Y or N).
RVA	RVA flag that indicates whether or not a dataset is on an RVA device. • Y – Returns only those datasets that are behind RVA controllers. • N – Excludes all datasets that are under RVA control.
RVA-COMPRESSION-RATIO	Amount of space reclaimed by compression on RVA DASD versus that which the dataset would occupy if it were on a non-RVA device. Returns the RVA compression ratio for datasets on RVA devices. Numeric value, decimal points allowed. Format is N.NN.
RVA-MB-USED	Number of megabytes used on an RVA device. Numeric value, decimal points allowed. Format is 99999999999V99.
SECONDARY-ALLOCATION	VSAM datasets by secondary allocation. Numeric value (no decimal points).
SMS	DFSMS status of volumes. The default of blank returns both DFSMS and non-DFSMS volumes. • Y – SMS controlled volume • N – Non-SMS controlled volume
STORAGE-CLASS	SMS storage class name. Character length is 8 or less.
STORAGE-GROUP	SMS storage group name. Character length is 8 or less.

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
STRIPE-COUNT	Stripe count for the dataset. Numeric value (no decimal points). Note: This field is important when you are copying multi-volume datasets because changing stripe counts requires data manipulation. If you want to quickly move data from a source location to a target location, the source stripe count must be the same as the target stripe count for a striped extended format data set.
SYSTEM-ID	System ID where the data set record was created/updated. Character length is 4 or less.
TRACKS-ALLOCATED	Number of tracks that the dataset has allocated. Numeric value (no decimal points).
TRACKS-FREE	Number of tracks that the dataset has allocated that do not contain data. Numeric value (no decimal points).
TRACKS-USED	Number of tracks that the dataset is using. Numeric value (no decimal points).
VOLUME-POOL	Volume Pool name. Character length is 8 or less. Note: This field is user-created from the member POOLVOL, located in the PARMLIB library.
VOLUME-SEQ-NUMBER	Volume sequence number. Binary data, numeric value (no decimal points).
VOLUME-SERIAL-NUMBER	Volume serial number on which the dataset resides. Character length is 6 or less.
VOLUME-STRIPE-NUMBER	Number for a volume stripe. Numeric value (no decimal points). Format is TS00222.
VSAM-AIX-ATTRIBUTES	Indicates the IBM AIX attributes for the VSAM dataset, if any.
VSAM-ALTERNATE-KEY-RKP	Alternate relative key position (RKP) for the VSAM dataset. Numeric value (no decimal points).
VSAM-AMDSB-ATTRIB	Attributes for the Access Method Data Statistics Block (AMDSB). One AMDSB is created for each open VSAM data or index component.
VSAM-AVG-RECORD-LENGTH	Average record length for the VSAM dataset. Numeric value (no decimal points).
VSAM-CI/CA	Number of control intervals per control area. Numeric value (no decimal points).
VSAM-CI-SIZE	Control interval size in bytes. Numeric value (no decimal points).
VSAM-CLUSTER-ATTRIBUTES	Cluster attributes for the VSAM dataset
VSAM-CLUSTER-NAME	Cluster name for the VSAM dataset. Character length is 44 or less.
VSAM-CONCURRENT-REQUESTS	Maximum number of concurrent I/O requests to be allowed. Numeric value (no decimal points).
VSAM-DATASET	Indicates VSAM dataset (Y or N).

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
VSAM-DATASET-ATTRIBUTES	Indicates an association with VSAM dataset attributes.
VSAM-DATASET-HEADER	VSAM dataset header flag.
VSAM-DBRC-USAGE	The DBRC usage indicator is used at database open time for update processing to verify usage of the correct DBRC RECON data set.
VSAM-EXCEPTION-EXIT	Exception exit exists for the VSAM dataset. Character length is 8 or less.
VSAM-EXTENTS-ON-VOLUME	Number of extents on volume. Numeric value (no decimal points).
VSAM-FREE-BYTES/CI	Number of free bytes for a control interval on the VSAM database. Numeric value (no decimal points).
VSAM-FREE-BYTES-IN-DATASET	Number of free bytes in the VSAM dataset. Numeric value (no decimal points).
VSAM-FREE-CI/CA	Number of free control intervals per control area. Numeric value (no decimal points).
VSAM-HI-ALLOCATED-RBA	Indicates high allocated space or RBA greater than x. Numeric value (no decimal points).
VSAM-HI-KEY-RBA	High key value record or RBA greater than x. Numeric value (no decimal points).
VSAM-HI-USED-RBA	Indicates high used space or relative byte address (RBA) greater than x. Numeric value (no decimal points).
VSAM-INDEX-LEVELS	Number of VSAM index components defined to the catalog. Numeric value (no decimal points).
VSAM-KEY-LENGTH	Key length for the VSAM dataset. Numeric value (no decimal points).
VSAM-MAX-RECORD-SIZE	Maximum record size in the VSAM dataset. Numeric value (no decimal points).
VSAM-MIN-BUFFER-SIZE	Indicates the minimum size for the VSAM buffer. Numeric value (no decimal points).
VSAM-NUMBER-OF-BUFFERS	Number of main storage data buffers for VSAM. Numeric value (no decimal points).
VSAM-NUMBER-OF-DELETED-RECORDS	Number of records deleted in the VSAM dataset. Numeric value (no decimal points).
VSAM-NUMBER-OF-EXCPS	Datasets by the total number of exceptions. Numeric value (no decimal points).
VSAM-NUMBER-OF-EXTENTS	Number of extents that a dataset is in. Numeric value (no decimal points).
VSAM-NUMBER-OF-INSERTED-RECORDS	Number of records inserted in the VSAM dataset. Numeric value (no decimal points).

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
VSAM-NUMBER-OF-LOGICAL-RECORDS	Number of logical records in the VSAM dataset. Numeric value (no decimal points).
VSAM-NUMBER-OF-RETRIEVED-RECORDS	Number of records retrieved in the VSAM dataset. Numeric value (no decimal points).
VSAM-NUMBER-OF-UPDATED-RECORDS	Number of records updated in the VSAM dataset. Numeric value (no decimal points).
VSAM-OPEN-INDICATOR	Identifies VSAM datasets that were open at the time the database was built.
VSAM-PCT-FREE-BYTES/CI	Percentage of control interval free space. Numeric value (no decimal points).
VSAM-PCT-FREE-CI-IN-CA	Percentage of control interval free space in the control area. Numeric value (no decimal points).
VSAM-RKP	Relative key position (RKP) for the VSAM dataset, or the position of the first byte of the key, relative to zero. Numeric value (no decimal points).
VSAM-SHARE-ATTRIBUTES	Indicates an association with VSAM share attributes.
VSAM-SHARE-OPTIONS	Datasets by Cross Region Share option. Valid values: 1,2,3,4 3 = Filter and list only type 3 sharing VSAM DS.
VSAM-SPACE-FLAG	Indicates the status of space for the VSAM dataset.
VSAM-SYSTEM-TIMESTAMP	Date and time when the VSAM database was captured. Character length is 8 or less. Format of the date is MM/DD/YY, whereas the format of the time is HH/MM/SS.
VSAM-TYPE	VSAM type. Character length is 5 or less. Values are ESDS, KSDS, RRDS, LVDS, or VRRDS.
VSAM-UNIQUE	UNIQUEKEY for the VSAM dataset (UNIQUE or NON attribute).
VSAM-VOLUME-BLOCKS/TRACK	Number of blocks per track for the volume containing the VSAM dataset. Numeric value (no decimal points).
VSAM-VOLUME-BLOCKSIZE	Block size for the volume containing the VSAM dataset. Numeric value (no decimal points).
VSAM-VOLUME-BYTES/ALLOC-UNIT	Total number of available bytes for the volume containing the VSAM dataset. Numeric value (no decimal points).
VSAM-VOLUME-BYTES/TRACK	Number of bytes per track for the volume containing the VSAM dataset. Numeric value (no decimal points).
VSAM-VOLUME-EXTENT-TYPE	Extent type for the volume containing the VSAM dataset.
VSAM-VOLUME-FLAGS	Flag byte to indicate the status of the VSAM volume.
VSAM-VOLUME-HI-ALLOC-RBA	High number of total available tracks, megabytes, or gigabytes on the volume or RBA greater than x. Numeric value (no decimal points).

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Table E–5. Automation Fields for DASD-DS

Field Name	Description
VSAM-VOLUME-HI-KEY-RBA	High key value for volume or RBA greater than x. Numeric value (no decimal points).
VSAM-VOLUME-HI-USED-RBA	High number of used megabytes, gigabytes, or tracks on the volume or RBA greater than x. Numeric value (no decimal points).
VSAM-VOLUME-TRACKS/ALLOC-UNIT	Total number of available tracks for the volume containing the VSAM dataset. Numeric value (no decimal points).
VSAM-VOLUME-TRACKS/CYL	Number of tracks per cylinder for the volume containing the VSAM dataset. Numeric value (no decimal points).
VVDS-CATNAME	VVDS entry catalog name. Character length is 44 or less.
VVDS-ENTRY-NAME	Returns the entry name for a cataloged dataset in the VVDS. Character length is 44 or less.
WASTED-SPACE-KB	Wasted space, in kilobytes. Numeric value (no decimal points).

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Automation Record Type: DASD Volume Data

Table E–6. Automation Fields for DASD-VOL

Field Name	Description
AVAILABLE-BYTES	Available bytes associated with the volume. Binary data, numeric value, can be suffixed with KB, MB, GB, or TB.
AVAILABLE-TRACKS	Available tracks associated with the volume. Binary data, numeric value (no decimal points).
CACHE-STATUS	Caching status of the device. • + Enabled • - Disabled
CAPACITY-IN-BYTES	Total number of bytes. Binary data, numeric value, can be suffixed with KB, MB, GB, or TB.
CAPACITY-IN-CYLINDERS	Total number of cylinders. Binary data, numeric value (no decimal points).
CAPACITY-IN-TRACKS	Number of tracks on the volume. Binary data, numeric value (no decimal points).
CHPID	Channel path ID.
CONTIG-AVAILABLE-BYTES	Largest free space extent on the volume in bytes. Binary data, numeric value, can be suffixed with KB, MB, GB, or TB.
CONTIG-AVAILABLE-CYLINDERS	Largest free space extent on the volume in cylinders. Binary data, numeric value (no decimal points).
CONTIG-AVAILABLE-TRACKS	Largest free space extent on the volume in tracks. Binary data, numeric value (no decimal points).
CONTROL-UNIT-MODEL	Model number of control unit (for example, 3990-3). Character length is 8 or less.
CONTROL-UNIT-NAME	Type of control unit (for example, 3990-3). Character length is 8 or less.
DATASET-OPENS	Number of currently open datasets on the volume. Binary data, numeric value (no decimal points).
DEVICE-NAME	Extended device generic (for example, 33903). Character length is 8 or less.
DIR-BLKS/TRK	Directory-blocks-per-track.
ESOTERIC	Esoteric names to which the volume belongs. Character length is 8 or less.
FRAGMENTATION-INDEX	Fragmentation index. Binary data, numeric value (no decimal points).
FREE-DSCBS	Free dataset control blocks. Binary data, numeric value (no decimal points).
FREE-EXTENTS	Free extents. Binary data, numeric value (no decimal points).
FREE-VIRS	Free VIRS. Binary data, numeric value (no decimal points).

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Table E–6. Automation Fields for DASD-VOL

Field Name	Description
GENERIC	Generic device type of the volume (for example, 3380 or 3390). Character length is 8 or less.
MAX-BLKSIZE	Maximum block size. Binary data, numeric value (no decimal points).
PHYSICAL-POOL	Device mount attribute. Character length is 4 or less.
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
RESPONSE-TIME	Response time of a device. A device response time is returned in the milliseconds that SpaceFinder required to return the I/O. Binary data, numeric value (no decimal points).
SERVICE-TIME	Service time for the volume. Binary data, numeric value (no decimal points).
SHARED-DASD	Shared DASD status of the volume (Y or N).
SMS-GROUP-STATUS	. Not defined to SMS + Enabled - Disabled * Quiesced D Disabled new Q Quiesced new > Volser mismatch
SMS-STATUS	Y SMS controlled volume N Non-SMS controlled volume I SMS controlled volume in Initial status ?
SMS-VOLUME-STATUS	. Not defined to SMS + Enabled - Disabled * Quiesced D Disabled new Q Quiesced new > Volser mismatch
STORAGE-GROUP	Storage group name. Character length is 8 or less.
TRACKS-PER-CYLINDER	Tracks per cylinder.
UNIT	Megabytes, Gigabytes, Tracks, or Cost per MB. Character length is 4 or less.
USED-BYTES	Number of bytes in use on the volume. Binary data, numeric value, can be suffixed with KB, MB, GB, or TB.

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Table E–6. Automation Fields for DASD-VOL

Field Name	Description
USED-TRACKS	Number of tracks in use on the volume. Binary data, numeric value (no decimal points).
USERS	Number of current users of the volume. Binary data, numeric value (no decimal points).
USE-STATUS	Use status (A/O/P/S).
VENDOR	Manufacturer
VENDOR-LOCATION	Manufacturer location or plant location.
VENDOR-SERIAL-NUMBER	Manufacturer serial number.
VOLSER	Volume serial number. Character length is 6 or less.
VOLUME-PC-USED	Volumes by percentage used. Numeric value (no decimal points).
VOLUME-POOL	Volume Pool name. Character length is 8 or less.
VTOC-INDEX-STATUS	Volumes by VTOC status indicator ENA Indexed DIS Non-indexed VTOC
VTOC-PC-USED	Volumes by VTOC percentage used. Numeric value (no decimal points).
VTOC-TRACKS	Number of tracks in the VTOC. Binary data, numeric value (no decimal points). Unsigned (16).

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Automation Record Type: Dataset Pool Data

Table E–7. Automation Fields for DS-POOL

Field Name	Description
POOL	Name of the pool. Character length is 8 or less.
POOL-BACKUP-TAPE-DATASET-COUNT	Number of backup tapes. Numeric value (no decimal points).
POOL-BACKUP-TAPE-MB-ALLOCATED	Number of megabytes allocated to backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-MB-FREE	Number of megabytes free in backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-MB-USED	Number of megabytes used by backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-PERCENT-FREE	Percent of space free in backup tapes. Numeric value (no decimal points).
POOL-BACKUP-TAPE-PERCENT-USED	Percent of space used in backup tapes. Numeric value (no decimal points).
POOL-CA-SPLITS	Number of control access splits for a pool. This column information only applies to VSAM databases. Numeric value (no decimal points).
POOL-CI-SPLITS	Number of control interval splits for a pool. This column only applies to VSAM databases. Numeric value (no decimal points).
POOL-DATASET-COUNT	Total number of datasets associated with a particular pool name. Numeric value (no decimal points).
POOL-DUMP-TAPE-DATASET-COUNT	Number of dump tapes. Numeric value (no decimal points).
POOL-DUMP-TAPE-MB-ALLOCATED	Capacity of dump tapes in megabytes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-MB-FREE	Number of megabytes free in dump tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-MB-USED	Number of megabytes used by dump tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-PERCENT-FREE	Percent of dump tapes that are free. Numeric value (no decimal points).
POOL-DUMP-TAPE-PERCENT-USED	Percent of dump tapes that are used. Numeric value (no decimal points).
POOL-MB-ALLOCATED	Number of allocated megabytes for a pool. Numeric value, decimal points allowed. Format is 9.99.
POOL-MB-FREE	Number of free megabytes for a pool. Numeric value, decimal points allowed. Format is 9.99.
POOL-MB-USED	Number of used megabytes for a pool. Numeric value, decimal points allowed. Format is 9.99.

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Table E–7. Automation Fields for DS-POOL

Field Name	Description
POOL-ML1-BACKUP-DATASET-COUNT	Number of datasets in a pool that have been migrated to backup level 1. Numeric value (no decimal points).
POOL-ML1-BACKUP-MB-ALLOCATED	Number of megabytes allocated to the backup in migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-BACKUP-PERCENT-USED	Percent of backup used in migration level 1. Numeric value (no decimal points).
POOL-ML1-DATASET-COUNT	Number of datasets in a pool that have been migrated to level 1. Numeric value (no decimal points).
POOL-ML1-MB-ALLOCATED	Number of megabytes allocated to migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-MB-FREE	Number of megabytes free in migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-MB-USED	Number of megabytes used in migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-PERCENT-FREE	Percent of space free in migration level 1. Numeric value (no decimal points).
POOL-ML1-PERCENT-USED	Percent of space used in migration level 1. Numeric value (no decimal points).
POOL-ML2-DATASET-COUNT	Number of datasets in a pool that have been migrated to level 2. Numeric value (no decimal points).
POOL-ML2-MB-ALLOCATED	Number of megabytes allocated to migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-MB-FREE	Number of megabytes free in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-MB-USED	Number of megabytes used in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-PERCENT-FREE	Percent of space free in migration level 2. Numeric value (no decimal points).
POOL-ML2-PERCENT-USED	Percent of space used in migration level 2. Numeric value (no decimal points).
POOL-ML2-TAPE-DATASET-COUNT	Number of tapes that reside in migration level 2. Numeric value (no decimal points).
POOL-ML2-TAPE-MB-ALLOCATED	Number of megabytes of tape capacity in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-MB-FREE	Number of megabytes free in tapes that reside in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-MB-USED	Number of megabytes used by tapes in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-PERCENT-FREE	Percent of space free in tapes that reside in migration level 2. Numeric value (no decimal points).

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Table E–7. Automation Fields for DS-POOL

Field Name	Description
POOL-ML2-TAPE-PERCENT-USED	Percent of used space by tapes in migration level 2. Numeric value (no decimal points).
POOL-PERCENT-FREE	Percentage of free space for a pool. Numeric value (no decimal points).
POOL-PERCENT-USED	Percentage of space used by a pool. Numeric value (no decimal points).
POOL-TAPE-DATASET-COUNT	Number of tapes. Numeric value (no decimal points).
POOL-TAPE-MB-ALLOCATED	Number of megabytes of tape capacity. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-MB-FREE	Number of megabytes with space free in tape. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-MB-USED	Number of megabytes used by tape. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-PERCENT-FREE	Percent of tapes that are free. Numeric value (no decimal points).
POOL-TAPE-PERCENT-USED	Percent of tapes that are used. Numeric value (no decimal points).
POOL-TOTAL-DATASET-COUNT	The total number of datasets, depending on the type of pool. Numeric value (no decimal points).
POOL-TOTAL-MB-ALLOCATED	Total number of megabytes. Numeric value, decimal points allowed. Format is 9.99.
POOL-TRACKS-ALLOCATED	Number of allocated tracks for a pool. Numeric value (no decimal points).
POOL-TRACKS-FREE	Number of free tracks for a pool. Numeric value (no decimal points).
POOL-TRACKS-USED	Number of used tracks for a pool. Numeric value (no decimal points).
POOLTYPE	The type of pool record: A Mount attribute (public, storage, or private) E Esoteric unit pool G Generic unit pool H High level qualifier pool L Logical pool M SMS management class pool O DSORG pool P Physical device type pool S SMS storage group pool V Volume logical pool
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.

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Automation Record Type: FSR Dataset Summary - Jobname

Table E–8. Automation Fields for FSR-DSN-SUM-JOB

Field Name	Description
HOUR	Hour.
INPUT-ACCESSES	Count of accesses for input. Fullword aligned, 4 bytes.
JOBNAME	Job name. Character length is 8 or less.
LAST-INPUT-ACCESS-DATE	Date of last input access. Numeric value (no decimal points).
LAST-INPUT-ACCESS-JOB	Last job to access for input. Character length is 8 or less.
LAST-INPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-INPUT-ACCESS-TIME	Time of last input access. Fullword aligned, 4 bytes.
LAST-OUTPUT-ACCESS-DATE	Date of last output access. Numeric value (no decimal points).
LAST-OUTPUT-ACCESS-JOB	Last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-TIME	Time of last output access. Fullword aligned, 4 bytes.
OUTPUT-ACCESSES	Count of accesses for output. Fullword aligned, 4 bytes.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.

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Automation Record Type: FSR Dataset Summary - Pool

Table E–9. Automation Fields for FSR-DSN-SUM-POOL

Field Name	Description
HOUR	Hour.
INPUT-ACCESSES	Count of accesses for input. Fullword aligned, 4 bytes.
LAST-INPUT-ACCESS-DATE	Date of last input access. Numeric value (no decimal points).
LAST-INPUT-ACCESS-JOB	Last job to access for input. Character length is 8 or less.
LAST-INPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-INPUT-ACCESS-TIME	Time of last input access. Fullword aligned, 4 bytes.
LAST-OUTPUT-ACCESS-DATE	Date of last output access. Numeric value (no decimal points).
LAST-OUTPUT-ACCESS-JOB	Last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-TIME	Time of last output access. Fullword aligned, 4 bytes.
OUTPUT-ACCESSES	Count of accesses for output. Fullword aligned, 4 bytes.
POOL	Pool name. Character length is 8 or less.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.

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Automation Record Type: FSR Dataset Summary - Volume

Table E–10. Automation Fields for FSR-DSN-SUM-VOL

Field Name	Description
HOUR	Hour.
INPUT-ACCESSES	Count of accesses for input. Fullword aligned, 4 bytes.
LAST-INPUT-ACCESS-DATE	Date of last input access. Numeric value (no decimal points).
LAST-INPUT-ACCESS-JOB	Last job to access for input. Character length is 8 or less.
LAST-INPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-INPUT-ACCESS-TIME	Time of last input access. Fullword aligned, 4 bytes.
LAST-OUTPUT-ACCESS-DATE	Date of last output access. Numeric value (no decimal points).
LAST-OUTPUT-ACCESS-JOB	Last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-TIME	Time of last output access. Fullword aligned, 4 bytes.
OUTPUT-ACCESSES	Count of accesses for output. Fullword aligned, 4 bytes.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.
VOLUME	Volume serial. Character length is 6 or less.

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Automation Record Type: FSR Dataset Summary

Table E–11. Automation Fields for FSR-DSN-SUMMARY

Field Name	Description
DSNAME	Dataset name. Character length is 44 or less.
HOUR	Hour.
INPUT-ACCESSES	Count of accesses for input. Fullword aligned, 4 bytes.
LAST-INPUT-ACCESS-DATE	Date of last input access. Numeric value (no decimal points).
LAST-INPUT-ACCESS-JOB	Last job to access for input. Character length is 8 or less.
LAST-INPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-INPUT-ACCESS-TIME	Time of last input access. Fullword aligned, 4 bytes.
LAST-OUTPUT-ACCESS-DATE	Date of last output access. Numeric value (no decimal points).
LAST-OUTPUT-ACCESS-JOB	Last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-JOBS	2nd to last job – 9th to last job to access for output. Character length is 8 or less.
LAST-OUTPUT-ACCESS-TIME	Time of last output access. Fullword aligned, 4 bytes.
OUTPUT-ACCESSES	Count of accesses for output. Fullword aligned, 4 bytes.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.

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Automation Record Types: FSR Summary

Table E–12 shows the fields for all FSR Summary records including the following record types:

- FSR-SUMMARY-AGNAME
- FSR-SUMMARY-CODE
- FSR-SUMMARY-DATASET
- FSR-SUMMARY-JOB
- FSR-SUMMARY-POOL
- FSR-SUMMARY-USER
- FSR-SUMMARY-VOLUME

Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
ABACKUP-AUTOMATIC-REQUESTS	Number of system initiated automatic requests. Halfword aligned, 2 bytes.
ABACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
ABACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
ABACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
ABACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
ABACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
ABACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
ABACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
ABACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
ABACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
ABACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
ABACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
ABACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
ABACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
ABACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
ABACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
AGNAME	AGNAME. Used for record type FSR-SUMMARY-AGNAME only. Character length is 8 or less.
ARECOVER-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
ARECOVER-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
ARECOVER-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
ARECOVER-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
ARECOVER-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
ARECOVER-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
ARECOVER-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
ARECOVER-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
ARECOVER-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
ARECOVER-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
ARECOVER-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
ARECOVER-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
ARECOVER-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DAILY-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DAILY-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DAILY-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DAILY-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
DAILY-BACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
DAILY-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DAILY-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DAILY-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DAILY-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DAILY-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DAILY-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DAILY-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DAILY-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
DAILY-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DAILY-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DAILY-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DATASETS-RECONNECTED	Number of datasets reconnected. Fullword aligned, 4 bytes.
DELETE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
DELETE-BACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
DELETE-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
DELETE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DELETE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
DELETE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-BY-AGE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
DELETE-BY-AGE-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
DELETE-BY-AGE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BY-AGE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BY-AGE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DELETE-BY-AGE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DELETE-BY-AGE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
DELETE-BY-AGE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-BY-AGE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-MIGRATED-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
DELETE-MIGRATED-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
DELETE-MIGRATED-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-MIGRATED-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-MIGRATED-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DELETE-MIGRATED-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DELETE-MIGRATED-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-MIGRATED-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DSNAME	Dataset name. Used for record type FSR-SUMMARY-DATASET only. Character length is 44 or less.
ELAPSED-JOB-STEP-TIME	Elapsed job step time. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
EVENT-COUNT	Event count. Fullword aligned, 4 bytes.
EXPIRE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
EXPIRE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
EXPIRE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
EXPIRE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
EXPIRE-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
EXPIRE-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
EXPIRE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
EXPIRE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
EXPIRE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
EXPIRE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
EXPIRE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
EXPIRE-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
EXPIRE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
EXPIRE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
EXPIRE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
EXTENT-REDUCTIONS	Number of extent reductions. Numeric value, no decimal points.
FAILED-ABACKUPS	Count of Abackups failed. Numeric value, no decimal points.
FAILED-COPIES	Number of failed copies. Halfword aligned, 2 bytes.
FAILED-DATASET-RESTORES	Number of DSN restores failed. Halfword aligned, 2 bytes.
FAILED-DUMPS	Number of failed dumps. Halfword aligned, 2 bytes.
FAILED-VOLUME-RESTORES	Number of volume restores failed. Halfword aligned, 2 bytes.
FORCED-VOLUME-MIGRATIONS	Number of volume migrations forced. Halfword aligned, 2 bytes.
HOUR	Hour.
HSM-SHUTDOWNS	Number of DFSMShsm shutdowns that day. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
HSM-STARTS	Number of DFSMShsm startups that day. Fullword aligned, 4 bytes.
HSM-SUBTASK-ABENDS	Number of subtask abends that day. Fullword aligned, 4 bytes.
JOBNAME	Job name. Used for record type FSR-SUMMARY-JOB only. Character length is 8 or less.
LEVEL1-TO-LEVEL2-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL1-TO-LEVEL2-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL1-TO-LEVEL2-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL1-TO-LEVEL2-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
LEVEL1-TO-PRIMARY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL1-TO-PRIMARY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
LEVEL2-TO-PRIMARY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL2-TO-PRIMARY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
NUMBER-OF-MWE	Number of MWE's received from SVC. Fullword aligned, 4 bytes.
PARTREL-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PARTREL-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PARTREL-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PARTREL-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
PARTREL-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
PARTREL-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PARTREL-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PARTREL-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PARTREL-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
PARTREL-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PARTREL-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PARTREL-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
PARTREL-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
PARTREL-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PARTREL-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PARTREL-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
POOL	Pool name. Used for record type FSR-SUMMARY-POOL only. Character length is 8 or less.
PRIMARY-TO-LEVEL1-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL1-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL1-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
PRIMARY-TO-LEVEL1-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
PRIMARY-TO-LEVEL1-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL2-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL2-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL2-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
PRIMARY-TO-LEVEL2-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECALL-TAKEAWAY-ML2-EXTRA-MOUNTS	Recall Takeaway ML2 extra mounts. Numeric value, no decimal points.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
RECALLS-SATISFIED-WITH-MOUNTED-TAPE	Recalls satisfied with mounted tape. Numeric value, no decimal points.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.
RECOVERS-SATISFIED-WITH-MOUNTED-TAPE	Recover satisfied with mounted tape. Numeric value, no decimal points.
RECOVERY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RECOVERY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RECOVERY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECOVERY-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
RECOVERY-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
RECOVERY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECOVERY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RECOVERY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RECOVERY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECOVERY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECOVERY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECOVERY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECOVERY-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
RECOVERY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECOVERY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECOVERY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
RECYCLE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECYCLE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECYCLE-MIGRATION-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RECYCLE-MIGRATION-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECYCLE-MIGRATION-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
RECYCLE-MIGRATION-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECYCLE-MIGRATION-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
REQUESTED-ABACKUPS	Count of ABACKUPS requested. Numeric value, no decimal points.
REQUESTED-DATASET-RESTORES	Number of DSN restore requests. Halfword aligned, 2 bytes.
REQUESTED-VOLUME-RESTORES	Number of volume restores requested. Halfword aligned, 2 bytes.
RESTORE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RESTORE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RESTORE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RESTORE-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
RESTORE-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
RESTORE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RESTORE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RESTORE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
RESTORE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RESTORE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RESTORE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RESTORE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RESTORE-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
RESTORE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RESTORE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RESTORE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RETURN/REASON-CODE	Return and reason code. Used for record type FSR-SUMMARY-CODE only. Character length is 8 or less.
SPILL-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
SPILL-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
SPILL-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
SPILL-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
SPILL-BACKUP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
SPILL-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
SPILL-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
SPILL-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
SPILL-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
SPILL-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
SPILL-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
SPILL-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
SPILL-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
SPILL-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
SPILL-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
SPILL-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
SYSTEM-REQUESTED-COPIES	Number of system requested copies. Halfword aligned, 2 bytes.
SYSTEM-REQUESTED-DUMPS	Number of system requested dumps. Halfword aligned, 2 bytes.
TAPE-BACKUP-VOLUMES-RECYCLED	Number of tape backup volumes recycled. Halfword aligned, 2 bytes.
TAPE-ML2-VOLUMES-RECYCLED	Number of tape ML2 volumes recycled. Halfword aligned, 2 bytes.
TIME-DUMP-REQUESTS-WAITED-FOR-ALLOCATION	Time dump requests waited for allocation. Fullword aligned, 4 bytes.
TIME-DUMP-REQUESTS-WAITED-IN-QUEUE	Time dump requests waited in queue. Fullword aligned, 4 bytes.
TIME-LAST-DSR-WRITTEN-TO-SMF	Time last DSR written to SMF. Fullword aligned, 4 bytes.
TIME-TO-PROCESS-ALL-REQUEST	Time all requests took to process. Fullword aligned, 4 bytes.
TIME-TO-PROCESS-EACH-REQUEST	Time each requests took to process. Fullword aligned, 4 bytes.
TOTAL-AGE-OF-DATASETS-VALID	Flags. Bit = TOTAL AGE OF DATASETS PROCESSED field is being used.
TRACKS-RECONNECTED	Number of tracks reconnected to tape. Fullword aligned, 4 bytes.
USER-REQUESTED-COPIES	Number of user requested copies. Halfword aligned, 2 bytes.
USER-REQUESTED-DUMPS	Number of user requested dumps. Halfword aligned, 2 bytes.
USERID	User ID. Used for record type FSR-SUMMARY-USER only. Character length is 8 or less.
VOLUME	Volume serial. Used for record type FSR-SUMMARY-VOLUME only. Character length is 6 or less.

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Table E–12. Automation Fields for FSR-SUMMARY Record Types

Field Name	Description
VOLUME-DUMP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
VOLUME-DUMP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
VOLUME-DUMP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
VOLUME-DUMP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
VOLUME-DUMP-GB-WRITTEN	Number of gigabytes written. Fullword aligned, 4 bytes.
VOLUME-DUMP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
VOLUME-DUMP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
VOLUME-DUMP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
VOLUME-DUMP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
VOLUME-DUMP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
VOLUME-DUMP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
VOLUME-DUMP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
VOLUME-DUMP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
VOLUME-DUMP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
VOLUME-DUMP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
VOLUME-DUMP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
VOLUME-MIGRATIONS	Number of volume migrations. Halfword aligned, 2 bytes.
VOLUMES-BACKED-UP	Number of volumes backed up. Halfword aligned, 2 bytes.

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Automation Record Types: FSR Volume Summary

Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
ABACKUP-AUTOMATIC-REQUESTS	Number of system initiated automatic requests. Halfword aligned, 2 bytes.
ABACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
ABACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
ABACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
ABACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
ABACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
ABACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
ABACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
ABACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
ABACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
ABACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
ABACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
ABACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
ARECOVER-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
ARECOVER-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
ARECOVER-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
ARECOVER-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
ARECOVER-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
ARECOVER-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
ARECOVER-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
ARECOVER-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
ARECOVER-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
ARECOVER-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
ARECOVER-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
ARECOVER-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
CHANGED-SINCE-WRITTEN	Bit flag. Value = Y or N.
DAILY-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DAILY-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DAILY-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DAILY-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DAILY-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DAILY-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DAILY-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DAILY-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DAILY-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DAILY-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DAILY-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DAILY-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DAILY-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
DATASETS-RECONNECTED	Number of datasets reconnected. Fullword aligned, 4 bytes.
DELETE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-BACKUP-GB-READ	Number of gigabytes read. Fullword aligned, 4 bytes.
DELETE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DELETE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DELETE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-BY-AGE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-BY-AGE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BY-AGE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-BY-AGE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DELETE-BY-AGE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
DELETE-BY-AGE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-BY-AGE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-BY-AGE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
DELETE-MIGRATED-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
DELETE-MIGRATED-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-MIGRATED-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
DELETE-MIGRATED-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
DELETE-MIGRATED-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
DELETE-MIGRATED-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
DELETE-MIGRATED-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
DELETE-MIGRATED-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
DUMP-ATTEMPTED	Bit flag. Value = Y or N.
DUMP-COPIES-FAILED	Number of attempted dump copies that failed.
DUMP-COPIES-REQUESTED	Number of dump copies requested.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
EXPIRE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
EXPIRE-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
EXPIRE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TOTAL-ELAPSED-TIME	Total elapsed time. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
EXPIRE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
EXPIRE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
EXPIRE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
EXPIRE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
EXPIRE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
EXPIRE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
EXPIRE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
EXPIRE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
EXPIRE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
EXPIRE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
EXPIRE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
EXPIRE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
EXTENDED-AGE-OF-DATASETS-PROCESSED-VALID	Bit flag. Value = Y or N.
FRAGMENTATION-INDEX	Measures how fragmented a volume is.
HOUR	Hour.
INTERVAL-MIGRATIONS	Number of interval migrations forced. Halfword aligned, 2 bytes.
LEVEL1-TO-LEVEL2-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL1-TO-LEVEL2-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL1-TO-LEVEL2-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL1-TO-LEVEL2-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
LEVEL1-TO-LEVEL2-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL1-TO-LEVEL2-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL1-TO-PRIMARY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL1-TO-PRIMARY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL1-TO-PRIMARY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
LEVEL2-TO-PRIMARY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
LEVEL2-TO-PRIMARY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
LEVEL2-TO-PRIMARY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
LEVEL2-TO-PRIMARY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
MIGRATIONS-FORCED-BY-LACK-OF-SPACE	Number of migrations that are forced due to space constraints or lack of space.
MINIMUM-AGE-OF-DATASETS-MIGRATED-FROM	Minimum value for the age of datasets that are migrated from.
MOST-RECENT-DUMP-FAILED	Bit flag. Value = Y or N.
NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM datasets that are processed.
OCCUPANCY-AFTER-MIGRATION	Occupancy after migration.
OCCUPANCY-BEFORE-MIGRATION	Occupancy before migration.
OCCUPANCY-STATS-UPDATED	Bit flag. Value = Y or N.
OCCUPANCY-TARGET	Occupancy target.
OCCUPANCY-TRIGGER	Occupancy trigger.
PARTREL-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PARTREL-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PARTREL-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PARTREL-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PARTREL-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PARTREL-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PARTREL-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
PARTREL-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PARTREL-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PARTREL-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
PARTREL-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PARTREL-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PARTREL-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
PCT-ELIGIBLE-NOT-MIGRATED	Percent of the space on the volume that is eligible for migration but not migrated.
PCT-ELIGIBLE-NOT-MIGRATED-UPDATED	Bit flag. Value = Y or N.
PRIMARY-TO-LEVEL1-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL1-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL1-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
PRIMARY-TO-LEVEL1-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL1-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
PRIMARY-TO-LEVEL2-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL2-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
PRIMARY-TO-LEVEL2-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
PRIMARY-TO-LEVEL2-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
PRIMARY-TO-LEVEL2-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECORD-DATE	Julian date.
RECORD-TYPE	Record type.
RECOVERY-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RECOVERY-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RECOVERY-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECOVERY-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECOVERY-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RECOVERY-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
RECOVERY-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECOVERY-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECOVERY-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECOVERY-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECOVERY-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECOVERY-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECOVERY-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECYCLE-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECYCLE-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECYCLE-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RECYCLE-MIGRATION-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
RECYCLE-MIGRATION-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RECYCLE-MIGRATION-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
RECYCLE-MIGRATION-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RECYCLE-MIGRATION-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RESTORES-ATTEMPTED	Number of volume restores attempted. Halfword aligned, 2 bytes.
RESTORE-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
RESTORE-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
RESTORE-FAILED	Number of failed restores. Halfword aligned, 2 bytes.
RESTORE-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
RESTORE-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
RESTORE-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
RESTORE-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
RESTORE-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
RESTORE-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
RESTORE-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
RESTORE-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
RESTORE-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
RESTORE-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
RESTORE-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
RESTORES-FAILED	Total number of data set restores that failed for this volume.
RESTORES-REQUESTED	Total number of data set restores requested for this volume.
SECONDS-MIGRATING	Time, in seconds, spent doing system migrations for this volume.
SPILL-BACKUP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
SPILL-BACKUP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
SPILL-BACKUP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
SPILL-BACKUP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
SPILL-BACKUP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
SPILL-BACKUP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
SPILL-BACKUP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
SPILL-BACKUP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
SPILL-BACKUP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
SPILL-BACKUP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
SPILL-BACKUP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.
SPILL-BACKUP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
SPILL-BACKUP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
SUCCESSFUL-INTERVAL-MIGRATIONS	Number of successful interval migration tasks.
TOTAL-ALLOCATED-TRACKS	Total space on the volume, in tracks.
TOTAL-CAPACITY-KB	The total capacity of this volume in KB (1024 bytes).
TOTAL-FREE-TRACKS	Total free space on the volume, in tracks.
TRACKS-RECONNECTED	Number of tracks reconnected to tape. Fullword aligned, 4 bytes.
UNIT-NAME	Esoteric or generic name. Character length is 8 or less.
UNIT-TYPE	1 byte field, hexadecimal value 20 = DASD 80 = tape
USER-INITIATED-MIGRATIONS	Number of user-initiated migrations.
VOLUME	Volume serial. Character length is 6 or less.
VOLUME-DUMP-AUTOMATIC-REQUESTS	Number of system-initiated automatic requests. Halfword aligned, 2 bytes.
VOLUME-DUMP-ELAPSED-TIME	Total time to process. Fullword aligned, 4 bytes.
VOLUME-DUMP-FAILED-REQUESTS	Number of failing requests. Halfword aligned, 2 bytes.
VOLUME-DUMP-KB-READ	Number of bytes read below 1 gigabyte. Fullword aligned, 4 bytes.
VOLUME-DUMP-KB-WRITTEN	Number of bytes written below 1 gigabyte. Fullword aligned, 4 bytes.
VOLUME-DUMP-MOUNT-TIME	Total time requests waited for mount. Fullword aligned, 4 bytes.
VOLUME-DUMP-NON-VSAM-DATASETS-PROCESSED	Number of non-VSAM processed. Binary data, numeric value (no decimal points).
VOLUME-DUMP-TIME-REQUESTS-QUEUED	Total time requests queued. Fullword aligned, 4 bytes.
VOLUME-DUMP-TOTAL-AGE-OF-DATASETS	Total age in days of datasets. Fullword aligned, 4 bytes.
VOLUME-DUMP-TOTAL-AGE-OF-DATASETS-EXTENDED	Total age of datasets processed. Fullword aligned, 4 bytes.
VOLUME-DUMP-TRACKS-READ	Number of tracks read. Fullword aligned, 4 bytes.

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Table E–13. Automation Fields for FSR-VOL-SUMMARY Record Types

Field Name	Description
VOLUME-DUMP-TRACKS-WRITTEN	Number of tracks written. Fullword aligned, 4 bytes.
VOLUME-DUMP-VOLUNTARY-REQUESTS	Number of user-initiated voluntary requests. Halfword aligned, 2 bytes.
VOLUME-TYPE	Volume type: • P = Primary • M = Migration • B = Automatic primary backup • S = Spill backup • O = Offline (ML2).

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Automation Record Type: HSM Functional Statistics Record

Table E–14 shows the fields for all HSM FSR records including the following record types:

- HSM-FSR
- HSM-FSR-TSIBASE

Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
ABEND-CODE	Abend code. Numeric value (no decimal points).
AGE	Age since last reference. Numeric value (no decimal points).
ALLOCATION-COMPLETE-TIME	Time dataset allocations completed. Hexadecimal data.
APPLYINCREMENTAL-SPECIFIED	APPLYINCREMENTAL specified. Value is TRUE or FALSE, only EQ and NE allowed for relation.
ATTEMPTS-BEFORE-SUCCESS	Number of attempts before successful. Numeric value (no decimal points).
BACKUP-COPY-GENERATION-NUMBER	Backup copy generation number. Value is TRUE or FALSE, only EQ and NE allowed for relation.
BACKUP-DATE	Backup date. Value is TRUE or FALSE, only EQ and NE allowed for relation.
BACKUP-DURING-RETRY	Backup made during retry. Value is TRUE or FALSE, only EQ and NE allowed for relation.
BACKUP-FAILED-ENQUEUE	Backed up even though ENQUE failed. Value is TRUE or FALSE, only EQ and NE allowed for relation.
BACKUP-FAILED-ENQUEUE-FAILED-TWICE	Backup failed ENQUEUE failed twice. Value is TRUE or FALSE, only EQ and NE allowed for relation.
CONCURRENT-COPY-BACKUP	Concurrent copy used to backup. Value is TRUE or FALSE, only EQ and NE allowed for relation.
CONVERSION-REQUESTED	Conversion requested. Value is TRUE or FALSE, only EQ and NE allowed for relation.
CPU-TIME	CPU time in.01 seconds.
DASD-BYTES-READ	DASD bytes read (bytes or KB). Numeric value (no decimal points).
DASD-BYTES-WRITTEN	DASD bytes written (bytes or KB). Numeric value (no decimal points).
DASD-TRACKS-READ	DASD tracks read/freed (tracks or 0). Numeric value (no decimal points).
DASD-TRACKS-WRITTEN	DASD tracks written (tracks or 0). Numeric value (no decimal points).
DATA-MOVEMENT-END-TIME	Time data movement completed. Hexadecimal data.
DATA-MOVEMENT-START-TIME	Time data movement started. Hexadecimal data.

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Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
DSN or DATA-SET-NAME	Data set name. Character length is 44 or less.
DSN-BACKUP-DELETED-FROM-TAPE	DSN backup deleted from TAPE. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-BACKUP-DELETED-VIA-EXPDT/MGMTCLAS	DSN backup deleted via EXPDT/MGMTCLAS. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-BACKUP-DELETED-VIA-EXPIREBV	DSN backup deleted via EXPIREBV. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-EXPIRED-FROM-ML1	DSN being expired from LEVEL1. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-EXPIRED-FROM-ML2	DSN being expired from LEVEL2. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-MIGRATED-VIA-RECONNECTION	DSN migrated via reconnection. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSN-RECOVERY-REQUESTED-FROM-VOLUME	DSN recovery requested from volume. Value is TRUE or FALSE, only EQ and NE allowed for relation.
DSORG	Dataset by organization type.
DUMP-CLASS	Dump class 1. Character length is 8 or less.
DYNALLOC-RETURN-CODE or DYNAMIC-ALLOCATION-RETURN-CODE	Dynamic allocation return code. Numeric value (no decimal points).
END-TIME	Time request process completed. Hexadecimal data.
ERROR	Return code. Numeric value (no decimal points). Length=14.
EXTENT-REDUCTION	Extent reduction. Value is TRUE or FALSE, only EQ and NE allowed for relation.
FROM-FULL-VOLUME-DUMP	From full volume dump. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
FROM-STRIPED-DATASET	From striped dataset. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
FROM-VOLUME-SPECIFIED	From volume specified. Value is TRUE or FALSE, only EQ and NE allowed for relation.
FSRF32K-TRACKS-READ/FREED	Number of tracks read/freed if FSRF32K. Value is TRUE or FALSE, only EQ and NE allowed for relation.

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Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
FSRF32K-TRACKS-WRITTEN	Number of tracks written if FSRF32K. Value is TRUE or FALSE, only EQ and NE allowed for relation.
FUNCTIONS-FROM-MOUNTED-TAPE	Count of functions from mounted tape. Numeric value (no decimal points).
GDS-ROLLED-OFF	GDS rolled off. Value is TRUE or FALSE, only EQ and NE allowed for relation.
GT-2GB	Dataset greater than 2GB. Value is TRUE or FALSE, only EQ and NE allowed for relation.
GT-32K-TRACKS	Dataset greater than 32K tracks. Value is TRUE or FALSE, only EQ and NE allowed for relation.
HOST	Host identifier. Character length is 2 or less.
HOUR	Hour. Used for HSM-FSR-TSIBASE records only.
HSM-REQUEST-NUMBER	DFHSM request number. Numeric value (no decimal points).
JOBNAME	Job name. Character length is 8 or less.
LAST-MOVE-DATE	Date last moved. Numeric value (no decimal points).
LAST-REF-DATE	Last reference date. Numeric value (no decimal points).
MANAGEMENT-CLASS	Management class name. Character length is 8 or less.
ML2-SPECIFIED	ML2 specified. Value is TRUE or FALSE, only EQ and NE allowed for relation.
MOVED-BY-DFDSS	Moved by DFDSS. Value is TRUE or FALSE, only EQ and NE allowed for relation.
NO-BACKUP-DATE	FSRGEN contains a version number. Value is TRUE or FALSE, only EQ and NE allowed for relation.
NO-BACKUP-VERSION	FSRDATE (not FSRGEN). Value is TRUE or FALSE, only EQ and NE allowed for relation.
NO-ENQ-BEFORE-BACKUP	HSM directed to not ENQ before backup. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
NUMBER-OF-DUMP-COPIES	Number of dump copies requested. Numeric value (no decimal points).
NUMBER-OF-FAILED-DUMP-COPIES	Number of attempted failed dump copies. Numeric value (no decimal points).
NUMBER-OF-OUTPUT-RECYCLE-TAPE-VOLUMES	Number of output recycle tape volumes. Numeric value (no decimal points).
NUMBER-OF-TAPE-VOLUMES	Tape volumes used. Numeric value (no decimal points).

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Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
OPERATING-ENVIRONMENT	FSR flag for operating environment. Hexadecimal data. Used for HSM-FSR records only (not in TSIBASE).
OPTCD	OPTCD from DSCB. Hexadecimal data.
ORIGINAL-VOLUME	Original volume serial. Character length is 6 or less.
ORIGINATING-HOST-ID	Host ID that generated the request. Character length is 2 or less.
POSTPROCESSING-START-TIME	Time post-processing started. Hexadecimal data.
PREPROCESSING-END-TIME	Time preprocessing completed. Hexadecimal data.
PROCESSED-ON-REMOTE	Processed by remote host. Value is TRUE or FALSE, only EQ and NE allowed for relation.
RACF-GROUP	RACF group. Character length is 8 or less.
READER-START-DATE	Reader start date. Numeric value (no decimal points).
READER-START-TIME	Reader start time. Hexadecimal data.
REASON-CODE	Reason code. Numeric value (no decimal points).
RECEIVING-DEVICE-TYPE	Receiving device type. Hexadecimal data.
RECEIVING-VOLUME	Receiving volume. Character length is 6 or less.
RECFM	Datasets by record format. Hexadecimal data.
RECORD-DATE	Date of SMF record. Numeric value (no decimal points).
RECORD-TIME	Time of SMF record. Hexadecimal data.
RECORD-TYPE	Record type (HSM-FSR-TSIBASE records). Hexadecimal data.
REPLACE-SPECIFIED	Replace specified. Value is TRUE or FALSE, only EQ and NE allowed for relation.
REQUEST-DATE	Date request made. Numeric value (no decimal points).
REQUEST-TIME	Time request made. Hexadecimal data.
RETURN-CODE	Return code. Numeric value (no decimal points).
SMF-RECORD-TYPE	SMF record type (HSM-FSR records). Hexadecimal data.
START-TIME	Time request process started. Hexadecimal data.
STORAGE-CLASS	Storage class name. Character length is 8 or less.
SUCCESS-ON-REMOTE	Request successful on remote system. Value is TRUE or FALSE, only EQ and NE allowed for relation.
SYSTEM	System ID where the record was created/updated. Character length is 4 or less.

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Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
TAPE-BLOCKS-PROCESSED	Bytes/KB/blocks processed. Numeric value (no decimal points).
TAPE-VOLUMES	Tape volume serial number. Character length is 6 or less.
TO-STRIPED-DATASET	To striped dataset. Value is TRUE or FALSE, only EQ and NE allowed for relation.
TSO-REQUEST	TSO (not BATCH) request. Value is TRUE or FALSE, only EQ and NE allowed for relation.
TYPE	Function type as follows: • 1 Primary to level 1 migration • 2 Level 1 to level 2 migration, or level 1 to level 1 migration, or level 2 to level 2 migration • 3 Primary to level 2 migration • 4 Recall from level 1 to primary • 5 Recall from level 2 to primary • 6 Delete a migrated data set • 7 Daily backup • 8 Spill backup • 9 Recovery • 10 Recycle backup volume • 11 Data set deletion by age • 12 Recycle migration volume • 13 Full volume dump • 14 Volume or data set restore • 15 ABACKUP function • 16 ARECOVER function • 17 Expire primary or migrated data sets • 18 PARTREL function • 19 Expire incremental backup version • 20 Delete incremental backup version • 21 Fast replication backup function • 22 Fast replication recover function • 23 Fast replication delete function
USED-MOUNTED-TAPE	Completed using mounted tape. Value is TRUE or FALSE, only EQ and NE allowed for relation.
USERID	User ID. Character length is 8 or less.
USER-REQUEST	USER (not SYSTEM) request. Value is TRUE or FALSE, only EQ and NE allowed for relation.
VOLUME-MOUNTED	Volume mounted. Value is TRUE or FALSE, only EQ and NE allowed for relation.

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Table E–14. Automation Fields for HSM-FSR record types

Field Name	Description
VOLUME-SPECIFIED	Volume specified on recall. Value is TRUE or FALSE, only EQ and NE allowed for relation.
WAIT-REQUEST	WAIT (not NOWAIT) request. Value is TRUE or FALSE, only EQ and NE allowed for relation.

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Automation Record Type: HSM WFSR

Table E–15. Automation Fields for HSM-WFSR

Field Name	Description
ABACKUP-LEVEL-0-SPACE	Level 0 space used during ABACKUP. Numeric value (no decimal points).
ABACKUP-LEVEL-0-SPACE-UNITS	For level 0 space units. Hexadecimal data.
ABACKUP-LEVEL-1-SPAC	Level 1 space used during ABACKUP. Numeric value (no decimal points).
ABACKUP-LEVEL-1-SPACE-UNITS	For level 1 space units. Hexadecimal data.
ABACKUP-LEVEL-2-SPAC	Level 2 space used during ABACKUP. Numeric value (no decimal points).
ABACKUP-LEVEL-2-SPACE-UNITS	For level 2 space units. Hexadecimal data.
ABACKUP-TOTAL-SPAC	Total space used during ABACKUP. Numeric value (no decimal points).
ABACKUP-TOTAL-SPACE-UNITS	For total space units. Hexadecimal data.
ABEND-CODE	Abend code. Numeric value (no decimal points).
ACCOMPANY-DATASET-COUNT	Count of accompany datasets processed. Numeric value (no decimal points).
ACCOUNT	User specified account code. Character length is 32 or less.
AGGREGATE-GROUP-NAME	Aggregate group name. Character length is 30 or less.
ALLOCATE-DATASET-COUNT	Count of allocate datasets processed. Numeric value (no decimal points).
CPU-TIME	ABACKUP/ARECOVER process time. Numeric value (no decimal points).
DSN	Data set name. Character length is 44 or less.
DYNALLOC-RETURN-CODE	Dynamic allocation return code. Numeric value (no decimal points).
END-TIME	Time request process completed. Hexadecimal data.
ERROR	Return code. Numeric value (no decimal points). Length=12.
HOST	Host identifier. Character length is 2 or less.
HSM-REQUEST-NUMBER	DFHSM request number. Numeric value (no decimal points).
JOBNAME	Job name. Character length is 8 or less.

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Table E–15. Automation Fields for HSM-WFSR

Field Name	Description
LEVEL-0-DATASET-COUNT	Count of level 0 datasets processed. Numeric value (no decimal points).
MIGRATED-DATASET-COUNT	Count of migrated datasets processed. Numeric value (no decimal points).
NETVIEW-FTP-DATE	Date of Netview FTP transfer. Numeric value (no decimal points).
NETVIEW-FTP-REQUESTED	Netview FTP requested. Value is TRUE or FALSE, only EQ and NE allowed for relation.
NETVIEW-FTP-TIME	Time of Netview FTP transfer. Numeric value (no decimal points).
NETVIEW-NODE	Node ID of Netview FTP. Character length is 8 or less.
OPERATING-ENVIRONMENT	FSR flag for operating environment. Hexadecimal data.
ORIGINAL-VOLUME	Original volume serial. Character length is 6 or less.
RACF-GROUP	RACF group. Character length is 8 or less.
READER-START-DATE	Reader start date. Numeric value (no decimal points).
READER-START-TIME	Reader start time. Hexadecimal data.
REASON-CODE	Reason code. Numeric value (no decimal points).
RECALL-EXTRA-MOUNTS	Recall takeaway ML2 extra mounts. Numeric value (no decimal points).
RECEIVING-DEVICE-TYPE	Receiving device type. Hexadecimal data.
RECEIVING-VOLUME	Receiving volume. Character length is 6 or less.
RECORD-DATE	Date of SMF record. Numeric value (no decimal points).
RECORD-TIME	Time of SMF record. Hexadecimal data.
REQUEST-DATE	Date request made. Numeric value (no decimal points).
REQUEST-TIME	Time request made. Hexadecimal data.
RETURN-CODE	Return code. Numeric value (no decimal points).
SMF-RECORD-TYPE	SMF record type. Hexadecimal data.
START-TIME	Time request process started. Hexadecimal data.
SYSTEM	System ID where the record was created/updated. Character length is 4 or less.
TAPE-COPY-DATASET-COUNT	Count of tape copy datasets processed. Numeric value (no decimal points).
TAPE-VOLUM	Number of tape volume serial entries. Numeric value (no decimal points).

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Table E–15. Automation Fields for HSM-WFSR

Field Name	Description
TAPE-VOLUMES	Tape volume serial number. Character length is 6 or less. Tape volume entry WFSRNENT times.
TSO-REQUEST	TSO request. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
TYPE	Function type as follows: • 1 Primary to level 1 migration • 2 Level 1 to level 2 migration, or level 1 to level 1 migration, or level 2 to level 2 migration • 3 Primary to level 2 migration • 4 Recall from level 1 to primary • 5 Recall from level 2 to primary • 6 Delete a migrated data set • 7 Daily backup • 8 Spill backup • 9 Recovery • 10 Recycle backup volume • 11 Data set deletion by age • 12 Recycle migration volume • 13 Full volume dump • 14 Volume or data set restore • 15 ABACKUP function • 16 ARECOVER function • 17 Expire primary or migrated data sets • 18 PARTREL function • 19 Expire incremental backup version • 20 Delete incremental backup version • 21 Fast replication backup function • 22 Fast replication recover function • 23 Fast replication delete function
USERID	User ID. Character length is 8 or less.
WAIT-REQUESTED	WAIT requested. Value is TRUE or FALSE, only EQ and NE allowed for relation.

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Automation Record Type: Migration

Table E–16. Automation Fields for MIGRATION

Field Name	Description
ABEND-CODE	Indicates the abend code for a failure. This information is limited to the Log date range. Character length is 4 or less.
ACCESS-JOB	Name of the job that was accessed for migration. Character length is 8 or less.
ACCESS-JOB-LAST	Indicates the latest job to access. Character length is 8 or less.
ACCESS-JOB-LAST-1	Indicates the latest job -1 to access. Character length is 8 or less.
ACCESS-JOB-LAST-2	Indicates the latest job -2 to access. Character length is 8 or less.
ACCESS-JOB-LAST-3	Indicates the latest job -3 to access. Character length is 8 or less.
ACCESS-JOB-LAST-4	Indicates the latest job -4 to access. Character length is 8 or less.
BYTES-ALLOCATED	Shows the bytes allocated for the current dataset being reported on. Numeric value (no decimal points).
BYTES-FREE	Specifies bytes free for the current dataset being reported on. Numeric value (no decimal points).
BYTES-ON-MIGRATED-VOLUME	Indicates the number of bytes the dataset occupies on the migration volume. Numeric value (no decimal points).
BYTES-USED	Shows the bytes used for the current dataset being reported on. Numeric value (no decimal points).
CHANGE-BIT	Bit allocation field. Indicates whether the change bit is on. Valid values = Y or N.
CREATION-DATE	Specifies the dataset creation date (Gregorian). Character length is 10 or less. Date format is mm/dd/yyyy.
DATA-CLASS	Shows the data class of the current dataset if it is controlled by SMS. Character length is 8 or less.
DELETED	Indicates whether the dataset has been deleted. Valid values = Y or N.
DEVICE-TYPE	Identifies datasets migrated or recalled from a specific device type. Character length is 6 or less.
DSN	Dataset name of the first dataset being migrated. Character length is 44 or less.
DSORG	Specifies the dataset organization of the dataset. Character length is 4 or less.
DYNALLOC-RETURN-CODE	Indicates the dynamic allocation return code if one was encountered for all datasets migrated, recalled, or backed up. Character length is 2 or less.
ELIGIBLE-FOR-RECYCLE	Indicates whether the dataset is eligible for recycle on backup or migration volumes. Valid values = Y or N.
ERROR-COUNT	Shows the number of errors encountered for the current dataset for migrations and recalls. This information is limited to the Log date range. Numeric value (no decimal points).

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Table E–16. Automation Fields for MIGRATION

Field Name	Description
ERROR-REASON-CODE	Indicates the reason code of a DFHSM failure for either migrate or recall. This information is limited to the Log date range. Character length is 4 or less.
ERROR-RETURN-CODE	Indicates the error return code for the last error encountered for the current dataset. This field is limited to the Log date range. Character length is 3 or less.
ERROR-TYPE	Summary of the error types encountered for migration. Valid values = M,R,B.
EXPIRATION-DATE	Shows the expiration date (Gregorian). Character length is 10 or less.
GDG	Indicates whether the dataset is a generation-data-group (GDG) dataset. Valid values = Y or N.
HSM-LEVEL	Indicates the level of DFHSM desired, 0, 1, or 2.
LAST-BACKUP-DATE	Shows the last backup date (Gregorian) of the current dataset. Character length is 10 or less.
LAST-REFERENCE-DATE	Indicates the last referenced date (Gregorian); date format is mm/dd/yyyy. Character length is 10 or less.
LOGICAL-POOL	Specifies the logical pool that is related to the dataset. Character length is 8 or less.
MANAGEMENT-CLASS	Shows the management class of the current dataset if it is controlled by SMS. Character length is 8 or less.
MIGRATED-HSM-DSN	Indicates the DFHSM level and dataset name of the last migrated dataset. Character length is 44 or less.
MIGRATE-FROM-VOLSER	Indicates the volume serial number that the dataset was migrated from. Character length is 6 or less.
MIGRATE-L1-COUNT	Indicates the number of times a dataset has been migrated to level one. This field is limited to data within the LOG date time stamp. Numeric value (no decimal points).
MIGRATE-L1-ERRORS	Indicates the number of errors encountered when a dataset has been migrated to level one. Numeric value (no decimal points).
MIGRATE-L1-TO-L2-COUNT	Indicates the number of datasets migrated from level one to level two during this period. This information is limited to the Log date range. Numeric value (no decimal points).
MIGRATE-L1-TO-L2-ERRORS	Indicates the number of errors encountered when a dataset has been migrated from level one to level two. Numeric value (no decimal points).
MIGRATE-L2-COUNT	Indicates the number of times a dataset has been migrated to level two. This field is limited to data within the LOG date time stamp. Numeric value (no decimal points).
MIGRATE-L2-ERRORS	Indicates the number of errors encountered when a dataset has been migrated to level two. Numeric value (no decimal points).
MIGRATE-VOLSER	Indicates the volume serial number that the dataset was migrated from. Character length is 6 or less.

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Table E–16. Automation Fields for MIGRATION

Field Name	Description
MIGRATION-DATE	Shows the Gregorian date of the migration. Character length is 10 or less.
MULTI-VOLUME	Indicates whether the current dataset is a true multi-volume dataset. Valid values = Y or N.
PCT-OF-SPACE-SAVED	Indicates the percent of space saved through migration. Character length is 3 or less.
RECALL-COUNT	Indicates the total recall activity for the life of the dataset as reflected in the MCDS. Numeric value (no decimal points).
RECALL-DATE	Shows the last recall date (Gregorian) of the current dataset. Character length is 10 or less.
RECALL-L1-COUNT	Indicates the number of times a dataset has been recalled from level one. This field is limited to data within the LOG date time stamp. Numeric value (no decimal points).
RECALL-L1-ERRORS	Indicates the number of errors encountered when a dataset has been recalled from level one. Numeric value (no decimal points).
RECALL-L1-TO-L0	Indicates the log recall count for L1 -> 0, or number of times the current dataset has been recalled from each level.This information is limited to the Log date range. Numeric value (no decimal points).
RECALL-L2-COUNT	Indicates the number of times a dataset has been recalled from level two. This field is limited to data within the LOG date time stamp. Numeric value (no decimal points).
RECALL-L2-ERRORS	Indicates the number of errors encountered when a dataset has been recalled from level two. Numeric value (no decimal points).
RECALL-L2-TO-L0	Indicates the log recall count for L2 -> 0, or number of times the current dataset has been recalled from each level. This information is limited to the Log date range. Numeric value (no decimal points).
RECALL-TO-VOLSER	Indicates the volume serial that the dataset was recalled to. Character length is 6 or less.
ROLLED-OFF-GDG	Indicates whether the dataset is a rolled-off GDG. Valid values = Y or N.
SMALL-DS-PACKING	Indicates whether the dataset is part of a compressed DFHSM dataset. Valid values = Y or N.
SMS	Indicates whether the current dataset is controlled by SMS. Valid values = Y or N.
STORAGE-CLASS	Shows the storage class of the current dataset if it is controlled by SMS. Character length is 8 or less.
STORAGE-GROUP	Shows the storage group associated with the dataset. Character length is 8 or less.

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Automation Record Type: SMS Aggregate Backup and Recovery Support (ABARS)

Aggregate backup and recovery is a process to back up and recover user-defined groups of data sets vital to your business. Aggregate backup can be done by TSO command or in-stream application batch jobs. DFSMShsm uses aggregate groups and management classes to manage the aggregate backup process.

Table E–17. Automation Fields for SMS-ABARS

Field Name	Description
AGDACCT	Aggregate data account (user-defined groups of data sets)
AGDACCTL	Aggregate data control file. The control file contains information needed at the remote site to recover the data sets.
AGDDEST	Aggregate data destination file name
AGDDSN1 AGDDSN2 AGDDSN3 AGDDSN4 AGDDSN5	Aggregate data dataset name (1 through 5).
AGDEXPDY	Aggregate data expire day
AGDEXPYR	Aggregate data expire year
AGDINDSN	Aggregate data instruction data set name. The instruction data set is free-form text that contains information to assist in recovering and running the application.
AGDINMEM	Aggregate data in memory
AGDMCLEN	Aggregrate data management class length
AGDMCNAM	Aggregrate data management class name.
AGDMEM1 AGDMEM2 AGDMEM3 AGDMEM4 AGDMEM5	Aggregate data memory location name (1 through 5). During aggregate recovery, backed-up data sets are recreated at the recovery site. If data set name conflicts arise, a large variety of resolution options are available. They include various forms of rename, replacing the existing data set with the new data set, and bypassing the recovery of certain data sets.
AGDNCOPY	Aggregate data copy. Data sets are identified in selection data sets and can be copied, allocated empty, or accompanied on other tapes. ABARS tracks the attributes of the aggregate group, and they can be used to create the proper environment at the recovery site.
AGDPREFX	Aggregate data prefix
DESCRIPTION	Specific description for backup tape file. Character length is 30 or less. Example: RACF - Shows tapes that have been assigned a description of RACF.
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change

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Table E–17. Automation Fields for SMS-ABARS

Field Name	Description
NAME	Name
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
SYSTEM-COUNT	System count

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Automation Record Type: SMS BCD

Table E–18. Automation Fields for SMS-BCD

Field Name	Description
BCDCSPTR	BCD CS ptr
BCDCYLCP	Backup control data set cylinder
BCDDUNIT	Backup control data set unit name
BCDEFLEN	BCD
BCDFLGS	Backup control data set flags
BCDMCLEN	Backup control data set management class length
BCDMCNAM	Backup control data set management class name
BCDSCDSN	Backup control data set name
BCDSYSNM	Backup control data set system name
BCDTRKSZ	Backup control data set track size
DESCRIPTION	Specific description for backup tape file. Character length is 30 or less. Example: RACF - Shows tapes that have been assigned a description of RACF.
DS-SEPARATION-PROFILE-DSN	Dataset separation profile dataset name
DS-SEPARATION-PROFILE-DSN-LENGTH	Dataset separation profile dasaset name length
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
NAME	Name
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
SYSTEM-COUNT	System count

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Automation Record Type: SMS Data Class

Table E–19. Automation Fields for SMS-DATACLAS

Field Name	Description
ALLOCATION-UNIT-SPECIFIED	Allocation unit is specified
AVERAGE-VALUE	Average value
AVGREC	Average record length
AVGREC-SPECIFIED	Average record length is specified
BLOCKED	Blocked
BLOCKSIZE-LIMIT	Block size limit of datasets
BWO-SPECIFIED	Backup-while-open is specified
CA-PCT-FREE	Percentage of free space for a control area
CARRIAGE-CONTROL	Carriage control is specified
CI-PCT-FREE	Percentage of free space for a control interval
CI-SPAN-SPECIFIED	Control interval span is specified.
CISIZE	Control-interval size in bytes.
COMPACTION	Level of tape compaction.
COMPACTION-SPECIFIED	Compaction is specified.
COMPRESSION-DICTIONARY-TYPE-SPECIFIED	Compression dictionary type is specified
DATA-CI-SIZE-SPECIFIED	Data control interval size is specified.
DCDBWOTP	Data class description with backup-while-open (BWO) indicator
DCDLOGRC	Data class description, logical record
DCDSPAND	Data class description, SPANNED field indicator for whether the data record is allowed to cross control interval boundaries
DESCRIPTION	Description
DIRECTORY-BLOCKS	Number of directory blocks per track.
DIRECTORY-BLOCKS-SPECIFIED	Directory blocks is specified.
DSN-TYPE	Dataset name type
EXPIRATION-ATTRIBUTE-SPECIFIED	Expiration attribute is specified.

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Table E–19. Automation Fields for SMS-DATACLAS

Field Name	Description
FREE-CA-PCT-SPECIFIED	Percentage of control area free space is specified.
FREE-CI-PCT-SPECIFIED	Percentage of control interval free space is specified.
KEYLEN	Maximum VSAM key length supported.
KEYLEN-SPECIFIED	Key length is specified.
KEYOFF	KEYOFF
KEYOFF-SPECIFIED	KEYOFF is specified
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
LOG-STREAM-ID	Log stream ID
LOG-STREAM-ID-LENGTH	Log stream ID length
LOGSTREAMID-SPECIFIED	Log stream ID is specified.
LRECL	Logical record length
LRECL-SPECIFIED	Logical record length specified
MEDIA	The specific media type of the device. This can be a tape or a disk.
MEDIA-TYPE-SPECIFIED	Media type is specified.
NAME	Dataset name
PRIMARY-SPACE	Summary of the primary space used
PRIMARY-SPACE-SPECIFIED	Primary space is specified.
RECFM	Record format
RECFM-SPECIFIED	Record format is specified.
RECORD-ACCESS-BIAS-SPECIFIED	Record access bias is specified.
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-ORGANIZATION	Record organization
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.

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Table E–19. Automation Fields for SMS-DATACLAS

Field Name	Description
RECORDING-TECHNOLOGY	A Y (Yes) appears under a specific recording format column in the Recording Format section. This indicates the recording format of the tape. Recording formats include: Non-cartridge, 18 track, 36 track, 128 track, 256 track, and 384 track.
RECORDING-TECHNOLOGY-SPECIFIED	Recording technology is specified.
RECORG-SPECIFIED	Record organization is specified.
REDUCE-SPACE-BY-PCT-SPECIFIED	Reduce space by percent specified.
REDUCTION-PCT	Reduction percent
RETENTION-ATTRIBUTE-SPECIFIED	Retention attribute is specified.
RETPD/EXPDT-DAYS	Retention period/expiration date in days
RETPD/EXPDT-YEARS	Retention period/expiration date in years
RLS-CF-CACHE-VALUE	Shows that VSAM RLS data with greater than 4K CI's defined to DFSMS CF cache structures can be cached
RLS-CF-CACHE-VALUE-SPECIFIED	RLS CF CACHE VALUE field is specified
SECONDARY-SPACE	Secondary space to be allocated
SECONDARY-SPACE-SPECIFIED	Secondary space is specified
SHARE-XREGION	Provides the ability to locate datasets by Cross Region Share option.
SHARE-XSYSTEM	Provides the ability to locate datasets by Cross Region System option.
SHAREOPT-XREGION-SPECIFIED	Cross Region Share option is specified.
SHAREOPT-XSYSTEM-SPECIFIED	Cross Region System option is specified.
SPACE-CONSTRAINT-RELIEF-SPECIFIED	Space constraint relief is specified.
SPHERE-RECOVERABILITY-SPECIFIED	Sphere recoverability is specified.
STANDARD/SPANNED	VSAM datasets were created with the SPANNED option specified.
SYSTEM-COUNT	System count
VOLCNT-SPECIFIED	Volume count is specified.

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Table E–19. Automation Fields for SMS-DATACLAS

Field Name	Description
VOLUME-COUNT	Dataset catalog entries with in a volume count range. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. Type a range between 1 and 99999 for the second position of this field. Example: >10 - All volumes greater than 10.
VSAM-CANDIDATE-AMOUNT	VSAM dataset catalog entries that are candidate volume entries
VSAM-EXTENDED-ADDRESSING-SPECIFIED	VSAM extended address is specified
VSAM-IMBED	VSAM datasets that were created with imbedded keys.
VSAM-IMBED-SPECIFIED	VSAM IMBED is specified
VSAM-RECORD-ACCESS-BIAS	Allows the system to acquire and choose the buffering algorithms
VSAM-REPLICATE	VSAM datasets that were defined with REPLICATE.
VSAM-REPLICATE-SPECIFIED	VSAM REPLICATE is specified.
VSAM-REUSE	VSAM datasets that were created with the REUSE option specified.
VSAM-SPEED	VSAM datasets that were created with the SPEED option specified.

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Automation Record Type: SMS Management Class

Table E–20. Automation Fields for SMS-MGMTCLAS

Field Name	Description
BACKUP-FREQUENCY	Backup frequency
DELETED-BACKUPS	Deleted backups
DESCRIPTION	Description
EXISTING-BACKUPS	Existing backups
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
LEVEL1-DAYS	Indicates whether data sets can migrate to Level 1 storage and how long they can remain there
MCDBKUP	MCD backup
MCDEDAY	MCD expire day
MCDEXPDY	MCD expire date
MCDEXPF	MCD expire flag
MCDEYEAR	MCD expire year
MCDFLAGS	MCD flags
MCDGDGFL	MCD GDG flags
MCDMIGF	MCD MIGRATE flag
MCDMRETF	MCD migrate retention
MCDMRTDY	Migration control data set
MCDPELEM	Migration control data set
MCDPERD	MCD period
MCDRDARC	Migration control data set
MCDRETF	MCD retention
MCDRFMT	MCD record format
MCDTSCR	Migration control data set
MCDTSLU	Time stamp when the VSAM data set was last updated
NAME	Name of the management class
PRIMARY-DAYS	Primary days

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Table E–20. Automation Fields for SMS-MGMTCLAS

Field Name	Description
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
SYSTEM-COUNT	System count

Automation Record Type: SMS Storage Class

Table E–21. Automation Fields for SMS-STORCLAS

Field Name	Description
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
NAME	Name
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
SYSTEM-COUNT	System count

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Automation Record Type: SMS Storage Group

Table E–22. Automation Fields for SMS-STORGRP

Field Name	Description
HSM-AUTO-DUMP	Indicates HSM AUTODUMP processing
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
LIBRARY-NAMES	Library names
LIBRARY-NAMES-LENGTHS	Length of library names
LOW-THRESHOLD	Low threshold
NAME	Name
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
SG-STATUS-SYSTEMS	Storage group status for systems
SG-STATUS/SYSTEM	Storage group status for system
STORAGE-GROUP-TYPE	Storage group type
SYSTEM-COUNT	System count

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Automation Record Type: SMS Tape Library

Table E–23. Automation Fields for SMS-TAPELIB

Field Name	Description
LAST-UPDATE-DATE	Shows the last change date.
LAST-UPDATE-TIME	Shows the last change time.
LAST-UPDATE-USERID	User ID who made the last change
LBDCFCS1 LBDCFCS2 LBDCFCS3 LBDCFCS4 LBDCFCS5 LBDCFCS6 LBDCFCS7 LBDCFCS8	Library definition.
LBDDCLEN	Library definition, character length
LBDDCNAM	Library definition, character name
LBDDEDVT	Library definition
NAME	Current dataset name. Hexadecimal data.
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.

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Automation Record Type: Tape Dataset

Table E–24. Automation Fields for TAPE-DS

Field Name	Description
ALTERNATE-MEDIA	Alternate media type for tapes. Character length is 8 or less. Example: HCAP - Shows tapes that have an alternate media type of high capacity (HCAP).
BLKSIZE	Block size of the dataset. Numeric value (no decimal points).
BLOCK-COUNT	Block count of the dataset. Numeric value (no decimal points).
BYTES	Bytes used on the tape. Numeric value (no decimal points).
CATALOGED	Indicates whether the dataset is cataloged. Character length is 3 or less.
CLOSED-BY-ABEND	Indicates whether datasets are marked as closed by an abend. A Y designates datasets closed by abend. An N shows datasets not closed by abend.
CREATING-JOB	Creating job name. Character length is 8 or less. You can use wildcards. Example: PAY* - Show datasets that were created with a job name beginning with PAY.
CREATING-PROGRAM	Creating program name.Example: PJB001 - Show datasets that were created with a program name of PJB001.
CREATING-STEP	Creating step name. Character length is 8 or less. Example: PJB001 - Show datasets that were created with a step name of PJB001.
CREATION-DATE	Creation date (Gregorian). Character length is 10 or less.
CREATION-TIME	Creation time. Character length is 5 or less.
DEFAULT-EXPIRATION-DATE	Indicates whether the default expiration date was used when the tape was opened. Character length is 1.
DEFAULT-EXPIRATION-USED	Y Tape uses the default expiration date N Tape does not use the default expiration date
DESCRIPTION	Specific description for tapes. Character length is 30 or less. Example: RACF - Shows tapes that have been assigned a description of RACF.
DSN	Dataset name of the first data set on the tape. Character length is 44 or less.
DSNB-NUMBER	Current dataset name block number. Hexadecimal data.
EXPIRATION-DATE	Date when the catalog entry expires (Gregorian date). Character length is 10 or less.
EXPIRED-BY-CATALOG	Indicates whether datasets are expired by catalog control. Character length is 1.
EXPIRED-BY-TMS	Indicates whether datasets have expired by TMS. A Y shows datasets expired by TMS. An N indicates datasets that have not expired by TMS.
FILE-SEQ-NUMBER	File sequence number. Numeric value (no decimal points).

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
FIRST-VOLUME	First volume of the dataset named in DSN. Character length is 6 or less.
GDG	Indicates whether this is a GDG dataset. Character length is 1.
HSM-TAPE-TYPE	Indicates the HSM tape type (B,D,M).
LOCATION	Specific location code for tapes. Character length is 8 or less. Example: SHELF - Shows tapes that have an assigned location code of SHELF
LOGICAL-POOL	Specifies the logical pool that is related to the dataset. This is a list item that is multi-valued and can check for the presence or absence of a pool name in any of the 0-9 logical pool fields.
LOGICAL-POOL-0	Logical pool name 0 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-1	Logical pool name 1 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-2	Logical pool name 2 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-3	Logical pool name 3 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-4	Logical pool name 4 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-5	Logical pool name 5 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-6	Logical pool name 6 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-7	Logical pool name 7 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-8	Logical pool name 8 associated with the dataset. Character length is 8 or less.
LOGICAL-POOL-9	Logical pool name 9 associated with the dataset. Character length is 8 or less.
LRECL	Record length of the dataset. Numeric value (no decimal points).
MB	Megabytes used. Numeric value, decimal points allowed. Format is 9999.99.
MGMTCLS	SMS management class. Character length is 8 or less.
MULTI-FILE	Indicates whether tape file count is greater than 1 (multiple file datasets). Character length is 1.
NEXT-DSNB	Address of next DSNB in chain. Hexadecimal data.
OUT-CODE	Specifies the out code (cascaded from volume). Character length is 4 or less.
PREV-DSNB	Address of previous DSNB in chain. Hexadecimal data.

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
RECFM	Record format of the dataset. Character length is 5 or less.
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
RELATIVE-GDG-NUMBER	GDG files associated with a relative generation number. Numeric value (no decimal points). Example: > 3 - Show all GDG files that have a relative generation number of greater than 3. = 0 - Show all GDG files that have a relative generation number equal to the current generation.
RMM-3480-IDRC	From JFCTRTCH - IDRC support. DSN used 3480 IDRC. Value is TRUE or FALSE, only EQ and NE allowed for relation.
RMM-ABEND-IN-PROCESS-WHEN-CLOSED	Indicates that an abend was in progress when dataset closed. Hexadecimal data.
RMM-ABEND-PROBABLY-IN-OCE	Indicates that an abend probably occurred in O/C/EOV. Hexadecimal data.
RMM-BLOCK-COUNT	Block count. Fullword aligned, 4 bytes.
RMM-BLOCK-SIZE	Physical block size. Fullword aligned, 4 bytes.
RMM-CATALOGED	Indicates that dataset is cataloged. Hexadecimal data.
RMM-CREATION-CDS-ID	Record create CDS ID. Character length is 8 or less.
RMM-CREATION-DATE	DSN create date. Numeric value (no decimal points). Format is YYYYDDD.
RMM-CREATION-DDNAME	Creating DDNAME. Character length is 8 or less.
RMM-CREATION-JOBNAME	Creating job name. Character length is 8 or less.
RMM-CREATION-PROGRAM	Creating program name. Character length is 8 or less.
RMM-CREATION-STEPNAME	Creating step name. Character length is 8 or less.
RMM-CREATION-SYSTEM	Create system ID. Character length is 8 or less.
RMM-CREATION-TIME	DSN create time. Numeric value (no decimal points). Format is HHMMSST.
RMM-DATA-CLASS	SMS data class name. Character length is 8 or less.

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
RMM-DATASET-OWNER	Dataset owner. Character length is 8 or less.
RMM-DATASET-SEQUENCE-NUMBER	Dataset sequence number. Numeric value (no decimal points).
RMM-DATASET-SIZE-KB	Dataset size in KB. Fullword aligned, 4 bytes.
RMM-DEFAULT-RETENTION-PERIOD-USED	Indicates whether the default retention period was used. Values: TRUE or FALSE.
RMM-DUMMY-RECORD	Dummy record - allow TSO ADD. Hexadecimal data.
RMM-END-MEDIA-POSITION	File end media position. Hexadecimal data.
RMM-EXPIRATION-DATE	Expiration date. Numeric value (no decimal points).
RMM-FILE-END-BLOCK-ID	File end block ID. Fullword aligned, 4 bytes.
RMM-FILE-START-BLOCK-ID	File start block ID. Fullword aligned, 4 bytes.
RMM-FORCE-SUPPLIED	Indicates force supplied. Values: TRUE or FALSE.
RMM-FOUND-NOT-CATALOGED-BY-VRS	Indicates that dataset was found not to be cataloged during VRS. Hexadecimal data.
RMM-LAST-CHANGED-DATE	Last change date. Numeric value (no decimal points). Format is YYYYDDD
RMM-LAST-CHANGED-SYSTEM	Last change system ID. Character length is 8 or less.
RMM-LAST-CHANGED-TIME	Last change time. Numeric value (no decimal points). Format is HHMMSST.
RMM-LAST-CHANGED-USER-ID	Last change user ID. Character length is 8 or less.
RMM-LAST-READ-DATE	Date that dataset was last read. Numeric value (no decimal points). Format is YYYYDDD.
RMM-LAST-USE-DDNAME	Last use DD name. Character length is 8 or less.
RMM-LAST-USE-DEVICE	Last use device number. Character length is 4 or less.
RMM-LAST-USE-JOBNAME	Last use job name. Character length is 8 or less.
RMM-LAST-USE-PROGRAM	Last use program name. Character length is 8 or less.

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
RMM-LAST-USER-CHANGE-DATE	Last user change date. Numeric value (no decimal points).
RMM-LAST-USER-CHANGE-TIME	Last user change time. Numeric value (no decimal points).
RMM-LAST-USE-STEPNAME	Last use step name. Character length is 8 or less.
RMM-LAST-WRITE-DATE	Date that dataset was last written. Numeric value (no decimal points). Format is YYYYDDD.
RMM-LOGICAL-RECORD-LENGTH	Logical record length. Fullword aligned, 4 bytes.
RMM-MANAGEMENT-CLASS	SMS management class name. Character length is 8 or less.
RMM-MATCHING-VRS-NAME	Matching VRS name. Character length is 44 or less.
RMM-MULTIVOL-BLOCK-COUNT	Total block count - across all volumes containing DS. Fullword aligned, 4 bytes.
RMM-NEXT-DSN	Next DSNAME or null. Character length is 44 or less.
RMM-NEXT-DSN-LENGTH	Length of next DSNAME. Hexadecimal data.
RMM-NO-COMPACTION	From JFCTRTCH - IDRC support. No compaction. Value is TRUE or FALSE, only EQ and NE allowed for relation.
RMM-OLD-MANAGEMENT-CLASS	Old SMS management class name. Character length is 8 or less.
RMM-ORIGINAL-EXPIRATION-DATE	Original expiration date. Numeric value (no decimal points).
RMM-PHYSICAL-FILE-SEQUENCE-NUMBER	Physical file sequence number. Hexadecimal data.
RMM-PREVIOUS-DSN	Previous DSNAME or null. Character length is 44 or less.
RMM-PREVIOUS-DSN-LENGTH	Length of previous DSNAME. Hexadecimal data.
RMM-PRIMARY-VRS-SUBSEQUENT-SUBCHAIN-NAME	Primary VRS subsequent subchain name. Character length is 8 or less.
RMM-PRIMARY-VRS-SUBSEQUENT-SUBCHAIN-STATE-DATE	Primary VRS subsequent subchain start date. Numeric value (no decimal points).
RMM-RECORD-DELETED	Record deleted. Hexadecimal data.

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
RMM-RECORD-FORMAT	Record format. Character length is 4 or less.
RMM-RECORD-LEVEL	Record level number. Hexadecimal data.
RMM-RECORD-PREVIOUSLY-DELETED	Record previously deleted. Hexadecimal data.
RMM-RETAINED-BY-VRS	Indicates that dataset is retained by VRS. Hexadecimal data.
RMM-RETENTION-DATE	Retention date. Character length is 4 or less.
RMM-SECONDARY-VRS-FIELDS-LENGTH	Length of secondary VRS fields. Hexadecimal data.
RMM-SECONDARY-VRS-JOBNAME-MASK	Secondary VRS job name mask. Character length is 8 or less.
RMM-SECONDARY-VRS-MASK	Secondary VRS mask. Character length is 8 or less.
RMM-SECONDARY-VRS-SUBSEQUENT-SUBCHAIN-NAME	Secondary VRS subsequent subchain name. Character length is 8 or less.
RMM-SECONDARY-VRS-SUBSEQUENT-SUBCHAIN-START-DATE	Secondary VRS subsequent subchain start date. Numeric value (no decimal points).
RMM-SECURITY-LEVEL	Security level. Hexadecimal data.
RMM-SELECT/PROCESSED-BY-SATELLITE-UPDATE	Select /Processed by satellite update. Hexadecimal data.
RMM-START-MEDIA-POSITION	File start media position. Hexadecimal data.
RMM-STORAGE-CLASS	SMS storage class name. Character length is 8 or less.
RMM-STORAGE-GROUP	SMS storage group name. Character length is 8 or less.
RMM-UNIT-ADDRESS	Unit address. Character length is 4 or less.
RMM-VOLUME-SEQUENCE-NUMBER	Volume sequence number. Halfword aligned, 2 bytes.
RMM-VRS-JOBNAME-MASK	Matching VRS job name mask. Character length is 8 or less.
RMM-VRS-MANAGEMENT-VALUE	VRS management value. Character length is 8 or less.
RMM-VRS-NAME-LENGTH	Length of matching VRS name. Hexadecimal data.

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Table E–24. Automation Fields for TAPE-DS

Field Name	Description
RMM-VRS-TYPE	Matching VRS type, one of: D-DATASET, S-SMSMC, V-VRSMV, M-DSN/MV
ROBOTIC	Indicates whether dataset is on a robot tape. Values: Y OR N.
SCRATCH	Indicates whether tape is scratch. Values: TRUE or FALSE.
SYSTEM	Specifies system ID for tape. You can use wildcards. Character length is 8 or less. Example: PRO* - Shows tapes that were created on a computer with a system ID starting with PRO.
TAPE-MEDIA	Specifies the tape media type, such as 3480 and so on. Character length is 8 or less.
UPDATED-BY-USER	Y/N if TMS record was updated by user.
VOLSER	Name of the volume serial that is on tape. Character length is 6 or less.
VOLUME-COUNT	Dataset volume count from catalog. Allows you to see dataset catalog entries with in a volume count range. This is a two position field. Type a less than (<), greater than (>), or equal to (=) in the first position of this field. Type a range between 1 and 99999 for the second position of this field. Example: >10 - All volumes greater than 10.
VOLUME-POOL	Volume pool name based on a volume serial naming convention. The volume pool name can be from 1 to 8 characters in length. Example: PAYROLL - Returns all Volsers that have been assigned to the PAYROLL system or application.

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Automation Record Type: Tape Volume

Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
3480	Tape is contained only on 3480 cartridge. Character length is 1.
3490	Tape is contained only on 36 track cartridge (3490). Character length is 1.
128-TRACK	Indicates whether the tape is a 128-track tape. Values: TRUE or FALSE.
1600-BPI	Tape has a BPI of 1600. Character length is 1.
200-BPI	Tape has a BPI of 200. Character length is 1.
256-TRACK	Indicates whether the tape is a 256-track tape. Values: TRUE or FALSE.
3490E	Tape is contained only on 36 track cartridge - double length (3490E). Character length is 1.
3590-TAPE	Returns all information contained on all tapes that are 3590.
38K-BPI	Tape has a BPI of 38K. Character length is 1.
38K-BPI-COMPACTED	Tape has a BPI of 38K (compacted). Character length is 1.
556K-BPI	Tape has a BPI of 556K. Character length is 1.
6250-BPI	Tape has a BPI of 6250. Character length is 1.
800-BPI	Tape has a BPI of 800. Character length is 1.
ADDITIONAL-FILES	Additional files exist on tape Y Multiple file tape N Single file tape
ALTERNATE-MEDIA	Alternate media type for tapes. Character length is 8 or less. Example: HCAP - Shows tapes that have an alternate media type of high capacity (HCAP).
BAD-TAPE	Indicates bad tape, do not mount for scratch. Y Tape marked Bad N Tape not marked Bad
BLKSIZE	Block size of the dataset. Numeric value (no decimal points).
BLOCK-COUNT	Block count of the dataset. Numeric value (no decimal points).
BPI	Tape Bytes Per Inch (for example, 6250). Character length is 5 or less.
BYTES	Bytes used on the tape. Numeric value (no decimal points).
CATALOG-CONTROLLED	Tape is catalog controlled. Character length is 1.
CATALOGED	Y (Yes) appears if the dataset is cataloged.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
CLOSED-BY-ABEND	Y Volume closed by abend N Volume not closed by abend
CLOSED-BY-TMS	Y Volume closed by TMS N Volume not closed by TMS
CREATED-BY-COPYCAT	File is created by CA-1 Copycat. Character length is 1.
CREATION-DATE	Creation date (Gregorian). Character length is 10 or less.
CREATION-DD	Creating DD name. Character length is 8 or less.
CREATION-JOB	Creating job name. Character length is 8 or less. You can use wildcards. Example: PAY* - Show tapes that were created with a job name beginning with PAY.
CREATION-PGM	Create program name for tapes that were created with a specific program name. Character length is 8 or less. Example: PJB001 - Show tapes that were created with a program name of PJB001.
CREATION-STEP	Creating step name. Character length is 8 or less. Example: PJB001 - Show datasets that were created with a step name of PJB001.
CREATION-TIME	Creation time. Numeric value (no decimal points).
CREATION-UNIT	Creating unit. Wildcards are allowed for this field. Character length is 4 or less. Example: 018* - Show tapes that have a create unit starting with 018.
CYCLE-CONTROLLED	Y Tape is cycle controlled N Tape is not cycle controlled.
DATE-FIRST-USED	Date that tape was first used (Gregorian). Character length is 10 or less.
DATE-LAST-CLEANED	Date of last cleaning (Gregorian). Character length is 10 or less.
DATE-LAST-USED	Last use date (Gregorian). Character length is 10 or less.
DEFAULT-EXPIRATION-DATE-USED	Y Tape uses the default expiration date N Tape does not use the default expiration date
DEFAULT-EXPIRATION-DATE-USED-AT-OPEN	Default expiration date was used when the tape was opened. Character length is 1.
DELETED	Y Designates tapes marked as deleted N Shows tapes not marked as deleted

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
DESCRIPTION	Specific description for tapes. Character length is 30 or less. Example: RACF - Shows tapes that have been assigned a description of RACF.
DSN	Dataset name of the first data set on the volume. Character length is 44 or less.
DYNAM-T-TAPE	Tapes is controlled by BrightStor CA-Dynam/T Tape Management for VSE (tape library management solution). Character length is 1.
ERASE-REQUIRED	Tapes is marked as erase required. Character length is 1.
EXPIRATION-DATE	Date when the volume expires (Gregorian date). Character length is 10 or less.
EXPIRED-BY-SMS	Y Tapes expired by SMS N Tapes not expired by SMS
EXPIRED-BY-TMS	Y Tape expired by TMS N Tapes is not expired by TMS
EXTERNAL-DATA-MANAGED-TAPE	Y Tape is external data managed tape N Tape is not external data managed tape
EXTERNAL-DATA-MANAGER-ID	External tape manager ID. Character length is 4 or less. You can use wildcards. Examples: HSM3 - Displays only Volsers that are externally managed with a tape manager ID of HSM3. HSM* - Displays only volsers that are externally managed with a tape manager ID that begins with HSM.
FILES	Files on tape volume. Numeric value (no decimal points).
FIRST-DSNB	Address of the first DSNB associated with the volume.
FIRST-FILE-CATALOGED	Is first file cataloged? Provides the ability to evaluate datasets by first file cataloged. Character length is 3 or less.
FIRST-VOLSER	First volume of the data set named in DSN. Character length is 6 or less.
FREQUENCY-CONTROLLED	Y Tape is frequency controlled N Tapes isn't frequency controlled
GDG	Is this a GDG dataset? Options: Y - Show GDG datasets. N - Show non-GDG datasets.
HSM-TAPE-TYPE	HSM tape type (B,D,M).
LABEL	Tape label type; for example, SL returns tapes with standard labels. Character length is 3 or less.
LAST-17-OF-DSN	Last seventeen bytes of dataset name. Character length is 17 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
LAST-DSNB	Address of the last DSNB associated with the volume.
LAST-USED-JOB	Job name that last used the volume. Character length is 8 or less.
LAST-USED-PGM	Last used program name. You can use wildcards. Character length is 8 or less. Example: PAY* - Show tapes that were last used with a program name beginning with PAY.
LAST-USED-UNIT	Unit last used. Character length is 4 or less.
LOCATION	Specific location code for tapes. Character length is 8 or less. Example: SHELF - Shows tapes that have an assigned location code of SHELF
LOGICAL-POOL	Specifies the logical pool that is related to the volume. This is a list item that is multi-valued and can check for the presence or absence of a pool name in any of the 0-9 logical pool fields.
LOGICAL-POOL-0	Logical pool name 0 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-1	Logical pool name 1 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-2	Logical pool name 2 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-3	Logical pool name 3 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-4	Logical pool name 4 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-5	Logical pool name 5 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-6	Logical pool name 6 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-7	Logical pool name 7 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-8	Logical pool name 8 associated with the volume. Character length is 8 or less.
LOGICAL-POOL-9	Logical pool name 9 associated with the volume. Character length is 8 or less.
LRECL	Record length of the dataset. Numeric value (no decimal points).
MB	Megabytes used. Numeric value, decimal points allowed. Format is 9999.99.
MEDIA	Tape media type (for example, 3490) Character length is 8 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
MGMTCLAS	SMS management class. Character length is 8 or less.
MULTI	Is tape one of multi tapes (Y or BLNK).
MULTI-FILE	Does tape have more than 1 file? Values: Y Indicates multiple file tapes N Shows single file tapes
NEEDS-CLEANING	Y Tape marked to be cleaned N Tape not marked to be cleaned
NEXT-VOLSER	Next volume of a multi-volume set. Character length is 6 or less.
NUMBER-OF-DSNBS	Number of dataset name blocks. Numeric value (no decimal points).
OPENED-FOR-OUTPUT	Y Tape last opened as output N Tape last used as input
OUTCODED	Is tape outcoded? (Y or N)
OUT-OF-AREA-CODE	Specifies the out of area code. Hexadecimal data.
OUT-OF-AREA-DATE	Date taken out of area (Gregorian). Character length is 10 or less.
PERM-READ-ERRORS-SINCE-CLEANING	Permanent read errors since tape was last cleaned. Numeric value (no decimal points).
PERM-READ-ERRORS-SINCE-INIT	Permanent read errors since tape was initialized. Numeric value (no decimal points).
PERM-WRITE-ERRORS-SINCE-CLEANING	Permanent write errors since tape was last cleaned. Numeric value (no decimal points).
PERM-WRITE-ERRORS-SINCE-INIT	Permanent write errors since tape was initialized. Numeric value (no decimal points).
PREVIOUS-VOLSER	Previous volume of a multi-volume set. Character length is 6 or less.
RECFM	Record format of the dataset. Character length is 5 or less.
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.
RECREATED	Tape is recreated. Character length is 1.
REEL	Tape is contained only on media type REEL. Character length is 1.
RELATIVE-GDG-NUMBER	Allows you to filter on GDG files associated with a relative generation number. Numeric value (no decimal points).
RELEASED-BY-VAULT-MANAGER	Y Tape released by external vault manager N Tape not released

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-3480-IDRC	From JFCTRTCH - IDRC support. DSN used 3480 IDRC. Value is TRUE or FALSE, only EQ and NE allowed for relation.
RMM-ABEND-IN-PROCESS-WHEN-CLOSED	Abend in process when a data set closed. Values: TRUE or FALSE.
RMM-ABEND-PROBABLY-IN-OCE	Abend probably in O/C/EOV. Values: TRUE or FALSE.
RMM-ACCESS-MVS-USE	Indicates whether the volume may be used on MVS systems. Values: TRUE or FALSE.
RMM-ACCESS-ONLY-FIRST-DATASET-RECORDED	Indicates whether the volume should access only the first tape DS recorded. Values: TRUE or FALSE.
RMM-ACCESS-OWNER-ALTER	Indicates whether the owner may alter volume. Values: TRUE or FALSE.
RMM-ACCESS-OWNER-READ	Indicates whether the owner may read volume. Values: TRUE or FALSE.
RMM-ACCESS-OWNER-UPDATE	Indicates whether the owner may update volume. Values: TRUE or FALSE.
RMM-ACCESS-READ-ONLY	Indicates whether the volume has read-only protection. Values: TRUE or FALSE.
RMM-ACCESS-UPDATE-PROTECTION	Indicates whether the volume has update protection. Values: TRUE or FALSE.
RMM-ACCESS-VM-USE	Indicates whether the volume may be used on VM systems. Values: TRUE or FALSE.
RMM-ACCOUNTING-INFORMATION	Accounting information. Character length is 40 or less.
RMM-ACCOUNTING-INFORMATION-LENGTH	Length of accounting field (or zero). Character length is 40 or less.
RMM-ASSIGNED-DATE	Assigned date (YYYYDDD).
RMM-ASSIGNED-TIME	Assigned time (HHMMSST).
RMM-AUTHORIZED-USER-IDS	Authorized user IDs area. Character length is 96 or less.
RMM-BIN-MEDIA-NAME	Bin media name. Character length is 8 or less.
RMM-CONTAINER	Container. Character length is 16 or less.
RMM-CREATING-JOBNAME	Creating job name. Character length is 8 or less.
RMM-CREATING-USERID	Creating user ID. Character length is 8 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-CREATION-CDS-ID	Record create CDS ID. Character length is 8 or less.
RMM-CREATION-DATE	Volume create date. Numeric value (no decimal points). Format is YYYYDDD.
RMM-CREATION-SYSTEM	Create system ID. Character length is 8 or less.
RMM-CREATION-TIME	Volume create time. Numeric value (no decimal points). Format is HHMMSST.
RMM-CURRENT-ANSI-LABEL-VERSION	Current label version. Hexadecimal data.
RMM-DATE-LAST-READ	Date volume last read. Numeric value (no decimal points). Format is YYYYDDD.
RMM-DATE-LAST-WRITTEN	Date volume last written. Numeric value (no decimal points).
RMM-DATESTORED	Date stored. Numeric value (no decimal points). Format is YYYYDDD.
RMM-DEFAULT-RETENTION-PERIOD	Indicates whether the default retention period was used. Values: TRUE or FALSE.
RMM-DESCRIPTION	User description. Character length is 30 or less.
RMM-DESIRED-LOCATION-NAME	Desired location name. Character length is 8 or less.
RMM-DESIRED-LOCATION-TYPE	Desired location type, 4 bits, one of the following: B'0000' Shelf location B'0001' Storage location B'0010' Manual library B'0011' Automatic library B'0100' Store with bins B'0101' Store without bins
RMM-DESTINATION	Destination name. Character length is 8 or less.
RMM-DESTINATION-BIN-MEDIA-NAME	Destination bin media name. Character length is 8 or less.
RMM-DESTINATION-BIN-NUMBER	Destination bin number. Character length is 6 or less.
RMM-DUMMY-RECORD	Dummy record - allow TSO ADD. Hexadecimal data.
RMM-EXPIRATION-DATE	Expiration date. Numeric value (no decimal points). Format is YYYYDDD.
RMM-EXPORT-TOKEN	Export token. Character length is 8 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-EXTENDED-BIN-APPLIED	Extended bin applied. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
RMM-FIRST-DATASET-CREATION-SYSTEM	First data set create SYSID. Character length is 8 or less.
RMM-FIRST-DSN	DSNAME of first file on tape. Character length is 44 or less.
RMM-FIRST-DSN-LENGTH	Length of first DSNAME on tape. Character length is 44 or less.
RMM-FORCE-SUPPLIED	Indicates force supplied. Values: TRUE or FALSE.
RMM-HOME-LOCATION	Home location name. Character length is 8 or less.
RMM-HOME-LOCATION-TYPE	Home location type, 4 bits, one of the following: B'0000' Shelf location B'0001' Storage location B'0010' Manual library B'0011' Automatic library B'0100' Store with bins B'0101' Store without bins
RMM-INIT-REQUESTED-FOR-ATL-VOLUME	Indicates INIT requested for ATL volume. Values: TRUE or FALSE.
RMM-INSTALLATIONS-MEDIA-NAME	Installations media name. Character length is 8 or less.
RMM-IN-TRANSIT	Indicates volume in transit. Value is TRUE or FALSE, only EQ and NE allowed for relation. When not set, volume is in location.
RMM-JFCB-LABEL-TYPE	Copy of JFCBLTYP. Hexadecimal data.
RMM-KBYTES-ON-TAPE	Tape usage in KB. Fullword aligned, 4 bytes.
RMM-LABEL-AL	Label type is AL. Values: TRUE or FALSE.
RMM-LABEL-BLP	Indicates whether the tape was last written using BLP. Values: TRUE or FALSE.
RMM-LABEL-NL	Label type is NL. Values: TRUE or FALSE.
RMM-LABEL-NUMBER-OF-FIRST-FILE	Label number of first file. Halfword aligned, 2 bytes.
RMM-LABEL-SL	Label type is SL. Values: TRUE or FALSE.
RMM-LABEL-USER	Indicates whether the SL or AL tape has user labels. Values: TRUE or FALSE.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-LAST-CHANGE-DATE	Last change date. Numeric value (no decimal points). Format is YYYYDDD
RMM-LAST-CHANGE-SYSTEM	Last change system ID. Character length is 8 or less.
RMM-LAST-CHANGE-TIME	Last change time. Numeric value (no decimal points). Format is HHMMSST.
RMM-LAST-CHANGE-TOKEN	Volume last change token. Character length is 8 or less.
RMM-LAST-CHANGE-USER-ID	Last change user ID. Character length is 8 or less.
RMM-LAST-DSN	DSNAME of last file on tape. Character length is 44 or less.
RMM-LAST-DSN-LENGTH	Length of last DSNAME on tape. Character length is 44 or less.
RMM-LAST-FILE-END-MEDIA-POSITION	Last file end media position. Numeric value (no decimal points).
RMM-LAST-USED-DEVICE	Last used device. Character length is 4 or less.
RMM-LAST-USER-CHANGE-DATE	Last user change date. Numeric value (no decimal points).
RMM-LAST-USER-CHANGE-TIME	Last user change time. Numeric value (no decimal points).
RMM-LIBRARY-LOCATION-TYPE	Location type, 4 bits, one of the following: B'0000' Shelf location B'0001' Storage location B'0010' Manual library B'0011' Automatic library B'0100' Store with bins B'0101' Store without bins
RMM-LOAN-LOCATION	Loan location. Character length is 8 or less.
RMM-LOCATION	Location name. Character length is 8 or less.
RMM-MANUAL-MOVE	Indicates manual move mode. Value is 0 - AUTOMOVE or 1 - MANUALMOVE.
RMM-MASTER	Volume is master. Values: TRUE or FALSE.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-NEW-LOCATION-TYPE	New location type, 4 bits, one of the following: B'0000' Shelf location B'0001' Storage location B'0010' Manual library B'0011' Automatic library B'0100' Store with bins B'0101' Store without bins
RMM-NEW-STORE-LOCATION-ID	New store location. Character length is 1.
RMM-NEXT-VOLUME	Indicates next volume serial if multi-volume. Character length is 6 or less.
RMM-NO-COMPACTION	From JFCTRTCH - IDRC support. No compaction. Value is TRUE or FALSE, only EQ and NE allowed for relation.
RMM-NUMBER-OF-ACCESS-LIST-ENTRIES	Number of access list entries. Hexadecimal data.
RMM-NUMBER-OF-DATASETS-ON-VOLUME	Number of datasets on volume. Halfword aligned, 2 bytes.
RMM-OLD-BIN-MEDIA-NAME	Old bin media name. Character length is 8 or less.
RMM-OLD-BIN-NUMBER	Old bin number. Fullword aligned, 4 bytes.
RMM-OLD-CONTAINER	Old container. Character length is 16 or less.
RMM-OLD-LOAN-LOCATION	Old loan location. Character length is 8 or less.
RMM-OLD-LOCATION-TYPE	Old location type, 4 bits, one of the following: B'0000' Shelf location B'0001' Storage location B'0010' Manual library B'0011' Automatic library B'0100' Store with bins B'0101' Store without bins
RMM-OLD-PREVIOUS-VOLUME	Old previous volume. Character length is 6 or less.
RMM-ON-LOAN	Tape is on loan. Values: TRUE or FALSE.
RMM-OPEN	Tape is opened and not yet closed. Values: TRUE or FALSE.
RMM-ORIGINAL-EXPIRATION-DATE	Expiration date (original). Numeric value (no decimal points).
RMM-OWNER-USERID	Volume owner user ID. Character length is 8 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-PENDING-NOTIFY-OWNER	Indicates whether the owner should be notified when the volume is pending. Values: TRUE or FALSE.
RMM-PENDING-REINIT	Indicates whether the volume should be re initialized when it is pending. Values: TRUE or FALSE.
RMM-PENDING-RELEASE	Indicates volume pending release. Values: TRUE or FALSE.
RMM-PENDING-REPLACE	Indicates whether the volume should be replaced when it is pending. Values: TRUE or FALSE.
RMM-PENDING-RETURN-TO-OWNER	Indicates whether the volume should be returned to owner when it is pending. Values: TRUE or FALSE.
RMM-PENDING-SCRATCH	Indicates whether the volume should be returned to scratch status when it is pending. Values: TRUE or FALSE.
RMM-PENDING-SECURITY-ERASE	Indicates whether the volume should be degaussed (erased for security) when it is pending. Values: TRUE or FALSE.
RMM-PERM-READ-ERRORS	Permanent read errors. Halfword aligned, 2 bytes.
RMM-PERM-WRITE-ERRORS	Permanent write errors. Halfword aligned, 2 bytes.
RMM-PREVIOUS-LOCATION	Previous location name. Character length is 8 or less.
RMM-PREVIOUS-VOLUME	Indicates previous volume serial if multi-volume. Character length is 6 or less.
RMM-PROGRAM-PRODUCT-FEATURE-CODE	Feature code. Character length is 4 or less.
RMM-PROGRAM-PRODUCT-NUMBER	Program product number. Character length is 8 or less.
RMM-PROGRAM-PRODUCT-TAPE	Indicates whether this is a program product tape. Values: TRUE or FALSE.
RMM-PROGRAM-PRODUCT-VER/REL/MOD	Version/Release/Mod number. Character length is 6 or less.
RMM-RACK	Rack number. Character length is 6 or less.
RMM-RD-LEVEL	Record level number. Hexadecimal data.
RMM-RECORD-DELETED	Record deleted. Hexadecimal data.
RMM-RECORDED-BY-OCE	Volume is recorded by O/C/EOV. Values: TRUE or FALSE.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-RECORDING-DENSITY	Recording density: '3' - 1600 BPI '4' - 6250 BPI '9' - 3480 'C' - 3480 compacted (IDRC) '*' - undefined
RMM-RELEASE-NOTIFY-OWNER	Indicates whether the owner should be notified when the volume is released. Values: TRUE or FALSE.
RMM-RELEASE-REINIT	Indicates whether the volume should be re initialized when it is released. Values: TRUE or FALSE.
RMM-RELEASE-REPLACE	Indicates whether the volume should be replaced when it is released. Values: TRUE or FALSE.
RMM-RELEASE-RETURN-TO-OWNER	Indicates whether the volume should be returned to owner when it is released. Values: TRUE or FALSE.
RMM-RELEASE-SCRATCH	Indicates whether the volume should be returned to scratch status when it is released. Values: TRUE or FALSE.
RMM-RELEASE-SECURITY-ERASE	Indicates whether the volume should be degaussed (erased for security) when it is released. Values: TRUE or FALSE.
RMM-REQUIRED-ANSI-LABEL-VERSION	Required label version. Hexadecimal data.
RMM-REQUIRED-LOCATION-PRIORITY	Required location priority. Halfword aligned, 2 bytes.
RMM-RETAINED-BY-SET	Retained by set. Value is TRUE or FALSE, only EQ and NE allowed for relation. Note: For fields with values restricted to TRUE or FALSE, you can also specify T, 1, or ON for TRUE and F, 0, or OFF for FALSE.
RMM-RETENTION-DATE	Retention date. Numeric value (no decimal points).
RMM-SCRATCH	Volume is scratch. Values: TRUE or FALSE.
RMM-SCRATCH-CLAIMED-VIA-GETVOL	Scratch volume claimed via GETVOL command. Values: TRUE or FALSE.
RMM-SCRATCH-INIT-PENDING	Scratch volume with INIT action pending. Values: TRUE or FALSE.
RMM-SCRATCH-NEVER-INITIALIZED	Scratch volume has never been initialized. Values: TRUE or FALSE.
RMM-SCRATCH-WAITING-ENTER-ATL	Scratch volume waiting to enter ATL. Values: TRUE or FALSE.
RMM-SECURITY-LEVEL	Security classification level. Hexadecimal data.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-SELECT/ PROCESSED-BY-SATELLITE-UPDATE	Select /Processed by satellite update. Hexadecimal data.
RMM-SHELF-MANAGED-BIN-NUMBER	Shelf managed store bin number. Character length is 6 or less.
RMM-SHELF-MANAGED-OLD-BIN	Shelf managed store old bin. Character length is 6 or less.
RMM-STACKED-VOLUME	Stacked volume. Character length is 6 or less.
RMM-STORAGE-GROUP-NAME	Storage group name. Character length is 8 or less.
RMM-STORE-BIN-NUMBER	Store bin number. Fullword aligned, 4 bytes.
RMM-STORE-LOCATION-ID	Store location ID, character length 1, one of the following: D - Distant store L - Local store R - Remote store T - Tape library
RMM-STORE-STATUS-DISTANT-TO-LIB	Indicates store status of distant store to tape library. Values: TRUE or FALSE.
RMM-STORE-STATUS-LIB-TO-DISTANT	Indicates store status of tape library to distant store. Values: TRUE or FALSE.
RMM-STORE-STATUS-LIB-TO-LOCAL	Indicates store status of tape library to local store. Values: TRUE or FALSE.
RMM-STORE-STATUS-LIB-TO-REMOTE	Indicates store status of tape library to remote store. Values: TRUE or FALSE.
RMM-STORE-STATUS-LOCAL-TO-DISTANT	Indicates store status of local store to distant. Values: TRUE or FALSE.
RMM-STORE-STATUS-LOCAL-TO-LIB	Indicates store status of local store to tape library. Values: TRUE or FALSE.
RMM-STORE-STATUS-REMOTE-TO-LIB	Indicates store status of remote store to tape library. Values: TRUE or FALSE.
RMM-STORE-STATUS-STORE-LOCATION-VALID	Indicates store status of store location valid. Values: TRUE or FALSE.
RMM-TAPE-COMPACTION	Tape compaction, hexadecimal data, one of the following: X'00' - Unknown X'01' - Not compacted X'02' - Compacted

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-TAPE-MEDIA-TYPE	Tape media type, hexadecimal data, one of the following: X'00' - Non cartridge X'01' - CST X'02' - ECCST X'03' - HPCT X'04' - EHPCT
RMM-TAPE-SPECIAL-ATTRIBUTES	Tape special attributes, hexadecimal data, one of the following: X'00' - None X'01' - 18 track read only
RMM-TEMP-READ-ERRORS	Temporary read errors. Halfword aligned, 2 bytes.
RMM-TEMP-WRITE-ERRORS	Temporary write errors. Halfword aligned, 2 bytes.
RMM-UCB-TYPE	Copy of UCBTYP field from UCB. Hexadecimal data.
RMM-USER-DATA	User description. Character length is 30 or less.
RMM-USER-DATA-LENGTH	Length of user data (or zero). Hexadecimal data.
RMM-USER-TAPE	Indicates user tape (assigned by LIB). Values: TRUE or FALSE.
RMM-VITAL-RECORD	Indicates vital record - do not release. Values: TRUE or FALSE.
RMM-VOL1-LABEL-VOLSER	Vol1 label volume serial. Character length is 6 or less.
RMM-VOLUME-CAPACITY-MB	Volume capacity in megabytes (for uncompressed data). Numeric value (no decimal points).
RMM-VOLUME-COUNT	Volume count. Fullword aligned, 4 bytes.
RMM-VOLUME-RECORDING-FORMAT	Volume recording format, hexadecimal data, one of the following: X'00' - Non cartridge X'01' - 18 track X'02' - 36 track X'03' - 128 track X'04' - 256 track X'05' - 384 track
RMM-VOLUME-SEQUENCE-NUMBER	Volume sequence number. Halfword aligned, 2 bytes.
RMM-VOLUME-TYPE	Volume type. Hexadecimal data.
RMM-VOLUME-USE-COUNT	Volume use count. Halfword aligned, 2 bytes.
RMM-VRS-RELEASE-EXPIRY-DATE-IGNORE	VRS release options: expiry date ignore. Hexadecimal data.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
RMM-VRS-RELEASE-SCRATCH-IMMEDIATE	VRS release options: scratch immediate. Hexadecimal data.
ROBOTIC	Tape in robot device Y Tapes marked in a robot device N Tapes not in a robot device
SCRATCH	Y Scratch tape N Not classified as scratch tape
SYSTEM	Specific system for tapes. You can use wildcards. Character length is 8 or less. Example: PRO* - Shows tapes that were created on a computer with a system ID starting with PRO.
TEMPORARY	Tape is temporary. Character length is 1.
TEMP-READ-ERRORS-SINCE-CLEANING	Temporary read errors since tape was last cleaned. Numeric value (no decimal points).
TEMP-READ-ERRORS-SINCE-INIT	Temporary read errors since tape was initialized. Numeric value (no decimal points).
TEMP-WRITE-ERRORS-SINCE-CLEANING	Temporary write errors since tape was last cleaned. Numeric value (no decimal points).
TEMP-WRITE-ERRORS-SINCE-INIT	Temporary write errors since tape was initialized. Numeric value (no decimal points).
TIME-LAST-USED	Last use time. Character length is 5 or less.
TIMES-CLEANED	Number of times the tape has been cleaned. Numeric value (no decimal points).
TIMES-OPENED	Number of times a tape has been opened. Numeric value (no decimal points).
TMS-READ-PROTECTED	Indicates whether the tape is read protected by a tape management system.
TMS-SECURITY-PROTECTED	Indicates whether the tape is security protected by a tape management system.
TMS-WRITE-PROTECTED	Indicates whether the tape is write protected by a tape management system.
UPDATED-BY-USER	Y/N if the volume record was updated by the user.
USE-COUNT-AT-LAST-CLEANING	Use count at last cleaning. Numeric value (no decimal points).
USER-CHANGE	Internal field that indicates changed by user. Character length 1.
VAULT-SLOT-NUMBER	Specifies the vault slot number. Numeric value (no decimal points).
VENDOR	Tape vendor name. Character length is 8 or less.

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Table E–25. Automation Fields for TAPE-VOL

Field Name	Description
VOLSER	Name of the volume serial that is on tape. Character length is 6 or less.
VOLUME-BYTES	Bytes on tape volume. Numeric value (no decimal points).
VOLUME-MB	Megabytes on tape volume. Numeric value, decimal points allowed.
VOLUME-PCT-USED	Percent of volume used. Numeric value, decimal points allowed. Format is 999.99.
VOLUME-POOL	This field is user created in the PARMLIB library. The user may assign an 8 character volume pool name based on a Volser naming convention. You can then report on various volumes using the volume pool filter. The volume pool name can be from 1 to 8 characters in length. Example: PAYROLL - Returns all Volsers that have been assigned to the PAYROLL system or application.
VOLUME-SEQ-NUMBER	Volume sequence number. Numeric value (no decimal points).

Automation Record Type: OMVS File System Data

Table E–26. Automation Fields for UNIX

Field Name	Description
BLOCKSIZE	Block size. Numeric value, no decimal points.
BYTES	Number of bytes used. Numeric value, no decimal points.
CHANGE-DATE	Data change date, Gregorian format. Character length is 10 or less.
CHANGE-TIME	Data change time, Gregorian format. Character length is 8 or less.
CREATION-DATE	Create date, Gregorian format. Character length is 10 or less.
CREATION-TIME	Create time, character format, length is 8 or less.
ENTRY-NAME	Entry name. Character length is 256 or less.
FILE-SYSTEM-MOUNTED	Y/N if the file system was mounted.
HFS-DSN	HFS DSN, character length is 44 or less.
LAST-REFERENCE-DATE	Last reference date, Gregorian format, character length is 10 or less.
LAST-REFERENCE-TIME	Last reference time, character length is 8 or less.
MEGABYTES	Number of megabytes used. Numeric value, no decimal points.
NAME-EXCEEDS-SHORT-NAME	* if the name exceeds the short name.
PATH-NAME	Path name, character length is 256 or less.
SHORT-NAME	Short name, character length is 70 or less.

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Automation Record Type: Volume Pool

Table E–27. Automation Fields for VOL-POOL

Field Name	Description
POOL	Name of the pool. Character length is 8 or less.
POOL-BACKUP-TAPE-MB-ALLOCATED	Number of megabytes allocated to backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-MB-FREE	Number of megabytes free in backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-MB-USED	Number of megabytes used by backup tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-BACKUP-TAPE-PERCENT-FREE	Percent of space free in backups. Numeric value (no decimal points).
POOL-BACKUP-TAPE-PERCENT-USED	Percent of space used in backups. Numeric value (no decimal points).
POOL-BACKUP-TAPE-VOLUME-COUNT	Number of backups. Numeric value (no decimal points).
POOL-CA-SPLITS	Number of control access splits for a volume pool. This column information only applies to VSAM databases. Numeric value (no decimal points).
POOL-CI-SPLITS	Number of control interval splits for a volume pool. This column information only applies to VSAM databases. Numeric value (no decimal points).
POOL-DUMP-TAPE-MB-ALLOCATED	Capacity of dump tapes in megabytes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-MB-FREE	Number of megabytes free in dump tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-MB-USED	Number of megabytes used by dump tapes. Numeric value, decimal points allowed. Format is 9.99.
POOL-DUMP-TAPE-PERCENT-FREE	Percent of dump tapes that are free. Numeric value (no decimal points).
POOL-DUMP-TAPE-PERCENT-USED	Percent of dump tapes that are used. Numeric value (no decimal points).
POOL-DUMP-TAPE-VOLUME-COUNT	Number of dump tapes. Numeric value (no decimal points).
POOL-MB-ALLOACTED	Number of allocated megabytes for a volume pool. Numeric value, decimal points allowed. Format is 9.99.
POOL-MB-FREE	Number of free megabytes for a volume pool. Numeric value, decimal points allowed. Format is 9.99.
POOL-MB-USED	Number of megabytes being used by a volume pool. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-BACKUP-MB-ALLOCATED	Number of megabytes allocated to backup level 1. Numeric value, decimal points allowed. Format is 9.99.

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Table E–27. Automation Fields for VOL-POOL

Field Name	Description
POOL-ML1-BACKUP-PERCENT-USED	Percent of backup used in migration level 1. Numeric value (no decimal points).
POOL-ML1-BACKUP-VOLUME-COUNT	Number of volumes in a pool that are used for ML1 backup. Numeric value (no decimal points).
POOL-ML1-MB-ALLOCATED	Number of megabytes allocated to migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-MB-FREE	Number of megabytes free in migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-MB-USED	Number of megabytes used in migration level 1. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML1-PERCENT-FREE	Percent of space free in migration level 1. Numeric value (no decimal points).
POOL-ML1-PERCENT-USED	Percent of space used in migration level 1. Numeric value (no decimal points).
POOL-ML1-VOLUME-COUNT	Number of volumes in a pool that are used for migration level 1. Numeric value (no decimal points).
POOL-ML2-MB-ALLOCATED	Number of megabytes allocated to migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-MB-FREE	Number of megabytes free in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-MB-USED	Number of megabytes used in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-PERCENT-FREE	Percent of space free in migration level 2. Numeric value (no decimal points).
POOL-ML2-PERCENT-USED	Percent of space used in migration level 2. Numeric value (no decimal points).
POOL-ML2-TAPE-MB-ALLOCATED	Number of megabytes of tape capacity in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-MB-FREE	Number of megabytes free in tapes that reside in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-MB-USED	Number of megabytes used by tapes in migration level 2. Numeric value, decimal points allowed. Format is 9.99.
POOL-ML2-TAPE-PERCENT-FREE	Percent of space free in tapes that reside in migration level 2. Numeric value (no decimal points).
POOL-ML2-TAPE-PERCENT-USED	Percent of used space by tapes in migration level 2. Numeric value (no decimal points).
POOL-ML2-TAPE-VOLUME-COUNT	Number of tapes that reside in migration level 2. Numeric value (no decimal points).
POOL-ML2-VOLUME-COUNT	Number of volumes in a pool that are used for migration level 2. Numeric value (no decimal points).

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Table E–27. Automation Fields for VOL-POOL

Field Name	Description
POOL-PERCENT-FREE	Percentage of free space for a volume pool. Numeric value (no decimal points).
POOL-PERCENT-USED	Percentage of space used by a volume pool. Numeric value (no decimal points).
POOL-TAPE-MB-ALLOCATED	Number of megabytes of tape capacity. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-MB-FREE	Number of megabytes with space free in tape. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-MB-USED	Number of megabytes used by tape. Numeric value, decimal points allowed. Format is 9.99.
POOL-TAPE-PERCENT-FREE	Percent of tapes that are free. Numeric value (no decimal points).
POOL-TAPE-PERCENT-USED	Percent of tapes that are used. Numeric value (no decimal points).
POOL-TAPE-VOLUME-COUNT	Number of tapes. Numeric value (no decimal points).
POOL-TOTAL-MB-ALLOCATED	Total number of megabytes. Numeric value, decimal points allowed. Format is 9.99.
POOL-TOTAL-VOLUME-COUNT	The total number of volumes, depending on the type of pool. Numeric value (no decimal points).
POOL-TRACKS-ALLOCATED	Number of allocated tracks for a volume pool. Numeric value (no decimal points).
POOL-TRACKS-FREE	Number of free tracks for a volume pool. Numeric value (no decimal points).
POOL-TRACKS-USED	Number of tracks that are being used by a volume pool. Numeric value (no decimal points).
POOLTYPE	The type of pool record: A Mount attribute (public, storage, or private) E Esoteric unit pool G Generic unit pool H High level qualifier pool L Logical pool M SMS management class pool O DSORG pool P Physical device type pool S SMS storage group pool V Volume logical pool
POOL-VOLUME-COUNT	Total number of volumes associated with a particular volume pool name. Numeric value (no decimal points).

Table E–27. Automation Fields for VOL-POOL

Field Name	Description
RECORD-DATE	Date when the record was created. Hexadecimal data, format is YYYYMMDD.
RECORD-TIME	Time when the record was created. Hexadecimal data, format is HHMMSSTH.

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APPENDIX

F

LIST OF LOAD MODULES

The following modules are found in the LOADLIB dataset, which contains REXX functions that you can use in Batch mode or in CLISTs to manipulate records. For example, you can use the REXX function TSFARXRT <FIELD-NAME>, where FIELD-NAME is from the IF Wizard, to pull out any field from the record (once you have a record). The correct syntax for using these functions is as follows:

```
TSFARXR1(KEY-TYPE, DSN)
```

Below is a table that displays a list of the LOAD module files that are included with Automation

Table F–1. LOAD Module Files

Member Name	Description
TSFACONS	MVS Console Command Handler
TSFACTST	Handles Actions From GUI
TSFADCSB	Volume data collection - subtask
TSFADCUD	Control unit data collector
TSFADGST	Volume and Pool Collector - main task
TSFADWRT	Writes Volume and Pool information to STORDATA
TSFAIFW	IF Wizard - Allows user to enter IF statements through Wizard UI.
TSFAINIT	Initializer. Collects TSFPRMS.
TSFALTSF	Locates which TSF task you want to use if more than one is running
TSFARXE2	Executed in tsfarexx address space (runs REXX Execs)
TSFARXE3	Runs the Exec and terminates the monitor program
TSFARXLD	Loads REXX functions into memory (useful for improved performance)
TSFASCHD	Collector Scheduler
TSFATLIS	ISPF task log viewer
TSFATLPT	Print task log
TSFATLST	Handles Task Log creation

Table F–1. LOAD Module Files

Member Name	Description
TSFATPRT	Print debug trace
TSFAUTST	Automation subtask (runs Execs)
TSFBRFR	Frees all REXX batch buffers not currently being used
TSFCAINI	Collection scheduler address space init
TSFCPTMP	Collection scheduler - invokes TMP
TSFIOXFM	Removes the I/O Error hook planted by the Data Collection subtask (TSADGST). Only gets called in an error condition.
TSFSVC76	Automation Module: alias of tsfsvc76
TSFSVC7A	Automation Module: I/O error data gathering module

Volume Functions

The following members read a volume record out of a data space.

Table F–2. Read a volume record

Member	Description
TSFARXVF	Reads first volume record (lowest volser).
TSFARXVL	Reads last volume record.
TSFARXVN	Reads next volume record (in volser order).
TSFARXVP	Reads previous volume record (in volser order)
TSFARXVS	Reads a specific volume record.

Retrieve Functions

The following members return a record or field from any datasets that we produce.

Table F–3. Retrieve a record

Member	Description
TSFARXRT	Returns the value held in a named record field for the record matched by the IF statement, for example, TSFARXRT(VOLSER).
TSFARXRN	Reads the next record of the indicated type and returns the same as TSFARXR1 (null being returned when there is no next record).
TSFARXR1	This function will return the record type of the record (DASD-VOL or BACKUP and so on) and actually put the first record of that type in the record area for retrieval using TSFARXRT. It returns null if there are no such records.

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Pool Functions

The following members read a pool volume record out of a data space.

Table F–4. Pool functions

Member	Description
TSFARXPF	(optional pool type) - Reads first pool record or first pool record of given type if type is specified.
TSFARXPL	(optional pool type) - Reads last pool record or last pool record of given type if type is specified.
TSFARXPN	Reads next pool record (in order by pool type and pool name).
TSFARXPP	Reads previous pool record (in order by pool type and pool name).
TSFARXPS	Reads a specific pool record. Optionally, one parm can be passed instead of two; if one, format is pool type and pool name concatentated together (the same format as the data returned by the TSFARXPx functions).

Task Control Functions

The following task control functions for Automation are used to manipulate IF and COLLECT statements

Table F–5. Task Control Functions

Member	Description
TSFARXAC	The load module for task control functions; contains all of the REXX functions for task control listed below.
TSFARXCH	This function causes a named Collect statement (By ID) to be put on hold in the COLLECT member, for example, TSFARXCH(ID).
TSFARXCA	This function causes a hold statement previously placed on a Collect statement (By ID) to be cleared in the COLLECT member (e.g. TSFARXCL (ID)).
TSFARXCR	This function causes a named Collect statement (BY ID) to be run immediately rather than at the specified collect time, for example, TSFARXCR(ID).
TSFARXDC	This function causes data collection (DASD Volume and Pool) to be executed immediately via TSFADGST.
TSFARXID	This function causes a named IF statement (by label) to be disabled in the IFS member, for example, TSFARXID(TESTIF).
TSFARXIE	This function causes a previously disabled IF statement (by label) to be enabled in the IFS member, for example, TSFARXIE(LABEL).
TSFARXIR	This function causes a named IF statement (By Label) to be Reset in the IFS member, for example, TSFARXIR(TESTIF).

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Message Functions

Below is a table that displays a list of the message functions that are included with Automation

Table F–6. Message Functions

Member	Description
TSFARXSM	Used to send messages to a named TSO User.
TSFARXWT	Sends a message to the Operator. Similar to TSFARXSM, except there is no USER ID.

Control Unit Functions

The following members read a control unit record out of a data space.

Table F–7. Control Unit Functions

Member	Description
TSFARXCF	Reads first control unit record.
TSFARXCL	Reads last control unit record.
TSFARXCN	Reads next control unit record.
TSFARXCP	Reads previous control unit record.

SMS Data Functions

The following members read SMS records out of a databases.

Table F–8. SMS Data Functions

Member	Description
TSFARXSF	Reads first SMS data record.
TSFARXSL	Reads last SMS data record.
TSFARXSN	Reads next SMS data record.
TSFARXSP	Reads previous SMS data record.
TSFARXSS	Reads a specific SMS data record.

Miscellaneous Functions

The following members are REXX functions.

Table F–9. SMS Data Functions

Member	Description
TSFARXBF	Frees batch REXX buffer area
TSFARXLD	Loads REXX functions into memory (useful for improved performance when you are repeatedly calling the TSF REXX functions)

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APPENDIX

G

TSFPRMXX DEFINITIONS

The following table describes the TSFPRMxx parameters that apply to Automation. These parameters are found in <HLQ>.TSF.PARMLIB. The Group column in the table refers to the general parameter area.

Note: The recommended way to edit these parameters is by selecting option **S** (Settings) from the TSF Primary Selection menu. Although you can edit TSFPRMxx directly, the Settings panel generates PARMLIB and JCL. Any changes that you make outside the Settings panel may not be saved in PARMLIB.

Table G–1. TSFPRMxx Definitions

Group	Attribute	Default Value	Description
AUTOMATN	CELLS	250	Max number of automation requests which can be queued at one time
AUTOMATN	IFDSN	<HLQ>.PARMLIB	Dataset that holds the IFS member
AUTOMATN	IFMBR	<HLQ>.IFS	Name of the IFS member
AUTOMATN	JOBNAME	TSFAREXX	Name of the address space used to execute REXX execs. If not specified, JOBNAME will be the same as the PROC name.
AUTOMATN	MAXEXEC	5	Maximum number of execs which can execute simultaneously
AUTOMATN	MAXSECS	0	Maximum wall-clock (elapsed) time that an automation exec is allowed to run. Zero means no limit.
AUTOMATN	PROC	TSFAREXX	Name of the PROC used to start the address space used to execute REXX execs.

Table G–1. TSFPRMxx Definitions

Group	Attribute	Default Value	Description
AUTOMATN	SYSMDUMP	<HLQ>.TSF. SYSMDUMP	Data set name of the SYSMDUMP data set (dynamically allocated)
AUTOMATN	SYSXDSN	<HLQ>.CLIST	Name of the data set that contains the REXX execs (the SYSEXEC data set)
SCHEDULE	CLISTLIB	<HLQ>.TSF.CLIST	Name of the CLIST library containing the CLISTs or execs which are to be executed
SCHEDULE	COLLDSN	<HLQ>.PARMLIB	Dataset that holds the COLLECT member
SCHEDULE	COLLMBR	COLLECT	Name of the COLLECT member
SCHEDULE	MAX DAYS	31	Maximum number of days ahead to schedule a collection
SCHEDULE	MAX TASKS	5	Max number of collections which can run at one time
TASKLOG	HLQ	<HLQ>	HLQ to use for Task Logs
TASKLOG	UNIT	SYSALLDA	Unit named to allocate task log data sets
TASKLOG	INTERVAL	8	Interval in hours when task logs should be written
TASKLOG	RECORDS	5000	How many records a task log data set should hold
TASKLOG	THRESHOLD	50	Threshold of records which, when reached, causes the data to be written out even if the interval has not expired
VOLSCAN	BATCHREXX	10	Number of record areas set aside in the data space for use by REXX execs executed in batch using the TSF REXX functions
VOLSCAN	CNTRLSTATS	N	Indicates whether to collect DASD control unit statistics, including DASD device performance statistics
VOLSCAN	DSNAME	<HLQ>.STORDATA	Name of the VSAM database to contain the collected data

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Table G–1. TSFPRMxx Definitions

Group	Attribute	Default Value	Description
VOLSCAN	EXCLUDETABLE	EXCLUDE	Same as UCB Scan exclude.
VOLSCAN	ID		ID(xxxxxxxx) 1-8 characters. First character must be Alpha. Is optional and gives the ID of the TSF task. If it's not present, the job name of the TSF task becomes its ID. Multiple tasks with the same ID cannot be active on the same system.
VOLSCAN	INTERVAL	10	Interval in minutes between volume and volume pool data collections
VOLSCAN	IOERROR	NO	Collect I/O error statistics (Yes or No)
VOLSCAN	MAXTASKS	16	Max number of data collection subtasks
VOLSCAN	RESERVE	2	Max seconds a reserve should be held on a shared DASD volume
VOLSCAN	SYNCHRONIZE	NO	Whether or not data collection times should be synchronized with the 24-hour clock or start when the TSF task starts
VOLSCAN	TYPEMB	S	Type of Megabyte (I or S) to use when calculating Megabyte values
VOLSCAN	VOLUMEPOOLTABLE	POOLVOL	Same as UCB Scan volume pool table

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