FDREPORT

CONCEPTS & FACILITIES GUIDE

INNOVATION® DATA PROCESSING

FDREPORT

t a b l e o f c o n t e n t s

INTRODUCTION

For more than 35 years, Innovation Data Processing has been producing high-quality Storage Management Software. During this time, its products have evolved into today's high-speed, safe, reliable storage management solutions for z/OS and non-z/OS data.

It started with the **FDR Storage Management Family**, for which thousands of licenses have now been sold worldwide. The FDR Family is the complete Storage Management solution for z/OS.

- **FDR** has become the industry standard for fast, reliable backups of z/OS data, while **ABR** adds a layer of automation to provide advanced backup facilities like Incremental Backup, Application Backup and Archiving.
- **FDRINSTANT** provides near 24x7 backup of offline volumes created by DASD Subsystem features like Oracle SnapShot Copy, EMC TimeFinder, Hitachi ShadowImage and IBM FlashCopy. FDRINSTANT also enhances the performance of other utilities in the FDR Family, such as FDRCOPY and FDRMOVE.
- **FDRCRYPT** offers encryption services for all FDR and ABR backups, as well as sequential output created by an IDCAMS REPRO. FDRCRYPT protects these backups against unauthorized access by anyone who does not possess the proper encryption keys.
- **FDRDRP** is an extension to ABR, which can reduce full-volume recovery time by up to 80%.
- **FDRPAS** and **FDRMOVE** provide non-disruptive or minimally disruptive movement of data from one disk to another, either within the same disk subsystem or across different subsystems. Data can be moved non-disruptively at the volume level (with FDRPAS), or it can be moved non-disruptively or with minimal disruption at the data set level (with FDRMOVE). These products are particularly useful for migrating and/or consolidating data from smaller disks to larger disks (e.g. 3390-3s to 3390-9/27/54s and EAVs).
- **COMPAKTOR** and **FDRREORG** offer intelligent and powerful reorganization processes for whole DASD volumes and for PDS, VSAM and IAM data sets.
- **FDREPORT** and **FDRViEWS** provide extensive, customized DASD Management Reporting to suit many needs and purposes. You can run your reporting as a z/OS batch job or through TSO/ISPF panels with FDREPORT, or you can use a Windows-based user interface available through FDRViEWS.
- **FDRERASE** V5.4 L70 is an EAL2+ certified product that can be licensed as an option to FDRPAS (or separately). It can quickly and securely erase many z/OS disk volumes in parallel, allowing you to erase your data in the minimum elapsed time. Multiple levels of erasure are available. See also FDRERASE/OPEN.

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IAM, **FATS/FATAR** and **FATSCOPY** complete Innovation's z/OS product range:

- **IAM** is Innovation's alternative to VSAM KSDS, ESDS and (as a cost option) AIX and RRDS files. IAM consistently provides 50-80% reductions in EXCPs, Batch Elapsed Times and Online Response Times, as well as a 20-40% reduction in CPU usage compared to VSAM. Due to its advanced file structure, IAM typically requires 30-70% less DASD space than VSAM to hold the same amount of data.
- **IAM/PLEX** is a cost option to IAM that allows applications to concurrently execute and update IAM files on multiple LPARs/Systems that are part of a z/OS sysplex.
- **FATS/FATAR** is a set of multi-purpose tape subsystem Media Integrity tools that allow for online tape certification, verification, analysis and erasure of tapes.
- **FATSCOPY** provides automated tape stacking and conversion, including Tape-to-VTS, VTS-to-Tape and VTS-to-VTS conversions.

The **UPSTREAM** family builds on the strengths of the FDR Storage Management system, and extends Innovation's range of products beyond the boundaries of z/OS:

- **FDR/UPSTREAM** provides a fast, safe and reliable solution to backing up Open Systems data from file servers and workstations. Backups are transmitted across a network connection to disk or tape on the z/OS host.
- **FDR/UPSTREAM Linux on System z** offers a high performance solution for backing up your Linux on System z clients.
- If the Open Systems data is resident on an EMC Symmetrix DMX or V-Max with Enterprise Storage Platform (ESP), **FDRSOS** and **FDR/UPSTREAM/SOS** provide additional performance enhancements to the backup and restore process by utilizing high-speed mainframe channels.
- **UPSTREAM Reservoir** is designed for those users who wish to take advantage of the many strengths provided by FDR/UPSTREAM, but would prefer to use an Open Systems environment (e.g. Windows, AIX, Linux, SUN Solaris) for hosting the backup management engine.

FDRERASE/OPEN completes the Innovation product range:

FDRERASE/OPEN is an EAL2+ certified product that can quickly and easily erase any disk attached to an Intel (x86) or compatible system, attached via a SCSI, SATA, SAS, FIBRE, or an IDE, ATA or USB connection. The data on these disks may have been created by any one of a range of operating systems, including Windows, UNIX, Linux, Solaris and NetWare. Multiple levels of erasure are available, as well as PRINT and VERIFY options to check that the data has been successfully erased.

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Each of the Innovation products are described in a range of Concepts & Facilities Guides.

In this particular guide, we take a look at **FDREPORT**.

FDREPORT is a z/OS DASD Management reporting tool that reports from a variety of sources, including VTOCS, VVDSs, Catalogs, DFSMS and the control files belonging to ABR and DFSMShsm. It produces customised reports on DASD-related issues, in detail and/or summary format, and in the form of z/OS batch reports or online TSO/ISPF displays.

FDREPORT is a high-performance reporting tool, which makes efficient use of z/OS resources. It can run during the day without any noticeable impact on other z/OS applications or users. It can typically report on 1,000s of DASD volumes in just a few minutes

In **PART ONE** of this guide we discuss why a product like **FDREPORT** is necessary, and then we look at the basic reporting procedures used in the product.

PART TWO looks at **FDREPORT's** advanced reporting capabilities, including using extract files, generating special output, and reporting on DFHSM's control files.

PART THREE provides an overview of the **FDREPORT's** online reporting – the ISPF-based Search Report & Services (SRS) panels.

FDRViEWS

FDRViEWS is a separate cost-option which builds on the foundation of FDREPORT to provide a user-friendly, question-and-answer method of generating reports. It offers a Windows GUI interface, through which reports can be viewed in various graphical formats (graphs, charts, etc.) or as an Excel spreadsheet.

Its automated report distribution and alert system can warn you about certain conditions that could be a potential cause for problems, such as VTOCs nearing 100%.

See the separate FDRViEWS Concepts & Facilities Guide for more details.

Any comments or suggestions regarding this guide can be directed to:
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And don't forget to visit our website for additional and up-to-date information on all Innovation products: **www.innovationdp.fdr.com**

PART ONE
FDREPORT Fundamentals

PART 1

FDREPORT FUNDAMENTALS

1.1 The Importance of DASD Management Reporting

Ideally, every computer installation will actively monitor its DASD usage to ensure that their DASD Management policy is being correctly implemented and that expensive DASD space is being used effectively. A reporting tool is essential to help obtain this information. However, because all installations are different, there is no single approach to DASD Management, and thus no single set of reports that is universally correct and applicable.

In practice, the variety between different installations' DASD Management policies is a result of many factors—including the size and history of the installation, the way it has grown, and the needs of its user community. DASD Management policy is implemented in the number and type of the DASD devices which are installed, by a large variety of local standards, and by the way space is allocated to users—either by a volume-ownership or a pooling scheme. This will be mirrored by the diverse range of reports that need to be run, both on a regular basis to monitor space usage, and for ad-hoc problem solving. For these reasons the report generators employed must be flexible and easy-to-use, but also provide comprehensive and accurate information. With these needs in mind, reports might be described as falling into two categories—summary and detail, as follows:

Summary reports would be used by Management, such as Data Processing Managers, and by Capacity Planners who would need to see overall figures to help them evaluate and predict growth trends. With these summary reports, it should be possible to predict the effect of changes in DASD requirements caused by alterations in the DASD Management policy, or in the general increase (or decrease!) of DASD space usage (i.e. new applications being introduced or removed).

The outcome of using a good DASD Management Reporting Program is that DASD usage can be made as efficient as possible. Purchases of new DASD can be closely matched to requirements, not lagging behind or leading them. Purchasing new DASD too early can be a mistake and prove to be very expensive. Purchasing new DASD too late can be very disruptive.

Detail reports can be used by a wider range of staff, from end-users to Management, to confirm that the DASD Management policy is being correctly implemented on an individual volume or dataset basis. For example, detail reports can show:

- Whether space is being wasted in over-allocated datasets
- If datasets are on incorrect volumes
- Any datasets which do not conform to installation standards
- If freespace on DASD is badly fragmented

Detail reports are also helpful to Performance Analysts. Since the configuration and I/O loading of the DASD subsystem has a fundamental effect on the overall system performance, Performance Analysts need to be aware of DASD contents and their usage. It is sometimes necessary to move data around to balance DASD I/O loads and Channel Utilization and a good reporting tool makes this task much simpler.

At another level, detail reports can also be used by systems programming or support staff to monitor the overall 'health' of the DASD subsystem. Running appropriate reports at regular intervals can help to detect volumes or sensitive datasets (such as VTOCs, VVDSs and VTOC Indexes) which are becoming dangerously full, or which require corrective action.

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1.2 Pooling Systems

The need for a good DASD Management Reporting System is magnified when a DASD Pooling mechanism is being used. Pooling is implemented either by simple UNITNAME specification or, more comprehensively, by DFSMS and other OEM allocation control packages. Pooling has two main effects that are significant.

Firstly, it eliminates the practice of volume ownership, where typically one or more disks are given to a project team for their exclusive use. This 'traditional' volume ownership can result in DASD space being used inefficiently, with volumes being very underutilized. It does, however, have the advantage that applications can be very self-contained and users can be made more directly responsible for the DASD space they consume. For example, a team would have to explicitly request and justify the use of another disk if the first one they were allocating was filled.

Under pooling systems, a larger number of volumes can be shared between many project teams or applications. This has the effect of relieving the space constraints on each team. It also removes their level of responsibility for managing the media. This becomes the responsibility of the DASD Administrator, who will ensure that space is not being wasted and that individual application teams are not using excessive amounts of DASD.

The second effect of pooling is that it makes it difficult to predict exactly where datasets will be allocated at any given time. This can sometimes be regarded as an advantage, but it also presents problems when doing the type of I/O tuning mentioned earlier. Also, in disaster-recovery situations, it becomes harder to recover from DASD problems when it is not clear what data has been lost.

A final point about pooling is that it is essentially a *'pro-active'* system, whereby datasets are allocated in accordance with rules established by the DASD Administrator. However, dataset requirements can be very individual and they can change with time, so it is impossible to eliminate the possibility that datasets will be created that are outside the scope (and capabilities) of the established rules. It is very likely that such exceptional datasets will be allocated on inappropriate DASD volumes or with incorrect attributes. To detect these problems, and to allow them to be corrected, it is essential to use a reporting system on a *'reactive'* basis.

So, in summary, all levels of staff need to be able to obtain information related to DASD usage—from Managers and Capacity Planners, to DASD Management personnel, Performance Specialists, Systems Programmers, Disaster Recovery planners, and pooling or SMS Administrators. FDREPORT is just the tool they need to achieve this.

1.3 FDREPORT Introduction

FDREPORT is an extremely powerful and flexible DASD Management report generator. It is designed to enable users to create their own *customized* DASD Management reports. Unlike other reporting programs, FDREPORT collects the 'raw' data from the various sources *and* it also then performs the actual report generation.

FDREPORT is capable of displaying almost any field from the VTOC, VVDS, and Catalog, and using these fields as the basis for the report selection criteria. Users of Innovation's ABR DASD Management system can utilize FDREPORT to access and report on information contained in the ABR control files. DFHSM users can benefit from the same power and flexibility, by accessing and reporting on information stored in the MCDS and BCDS control datasets. FDREPORT also provides volume-related information and can generate other information that is not directly available from any of the above sources.

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In the report generation process, users have the ability to control the report contents, layout, spacing, control breaks, and summaries. With this wide range of information available and because of the control over report contents, FDREPORT can generate an almost infinite variety of reports that meet the most demanding user requirements.

With this immense power and flexibility, FDREPORT can do simple things, like provide basic information on selected datasets or clusters. Alternatively, it can be used for more complex tasks, such as isolating certain datasets that do not conform to standards, or for Disaster Recovery planning.

Here are just a few examples of the kinds of report that can be generated with FDREPORT:

- A list of datasets with a given prefix
- A list of TSO LIST datasets
- VSAM datasets on selected volumes
- Poorly blocked datasets
- Datasets backed up or migrated by DFHSM
- PDSs that are full
- Poorly organized VSAM clusters
- Datasets likely to suffer Sx37 abends
- Multi-Volume datasets
- Dataset SMS information
- Datasets ineligible for SMS
- DASD volumes with a large amount of spare capacity
- DASD volume Mount and SMS status
- Wasted Space on volumes
- DASD Volumes with potential VTOC or VVDS problems

As FDREPORT has such flexibility, it follows that users will code a number of control statements and parameters to define what the report should contain and what its layout should be. The remainder of this Concepts and Facilities Guide describes how FDREPORT is used and highlights some of its key features.

Sample control statements are shown to illustrate how the reports can be generated and some of the sections of this Guide also show sample report output. Since users can fully control their own report contents and layout, the samples should not be regarded as exactly representing the reports that are generated in practice.

Important: This Guide is not intended to be a complete description of FDREPORT. For full details, users should refer to the FDR user manual, Section 54.

1.4 Sources of Information and Types of Output

As outlined in the preceding section, FDREPORT obtains information from DSCBs in DASD VTOCs, from BCS User Catalogs, and from VVDS datasets. In addition, it can also generate extra information (such as %FREE figures) which may not be directly available in the above locations, but can be derived or calculated.

FDREPORT can also obtain PDS directory information, volume-related information, and information from the ABR Incremental Backup and Archive recording mechanisms and from DFHSM's MCDS and BCDS control datasets.

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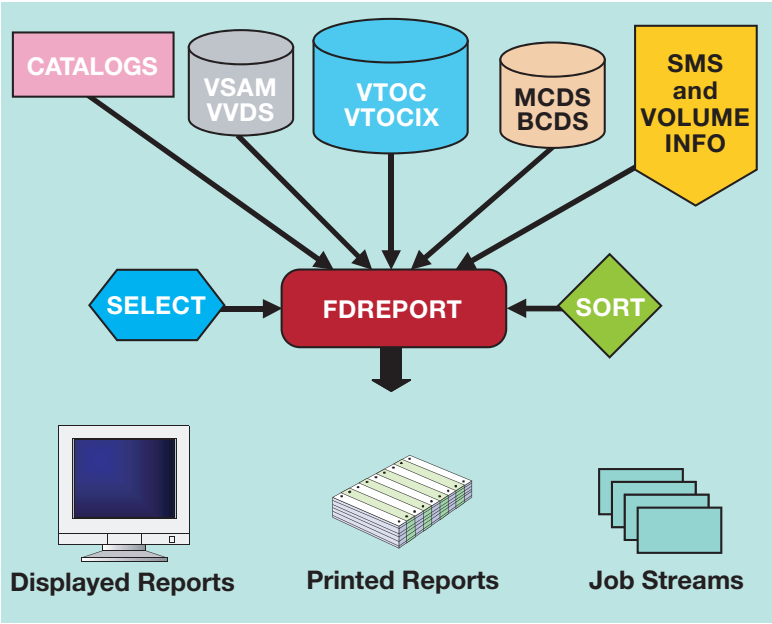
Details of approximately 250 fieldnames that FDREPORT uses and the data entities to which they refer are shown in the Appendix of this guide and in section 54.31 of the FDREPORT manual. These fieldnames represent entities that can be displayed, most of which can also be used as selection or exclusion criteria.

By default, FDREPORT first scans disk VTOCs to obtain dataset records. It then obtains additional information from VVDSs and Catalogs for datasets found in the VTOCs.

As an alternative, users can direct FDREPORT to:

- Extract dataset records directly from the catalog
- Extract dataset records from the catalog, then get additional information from disk VTOCs
- Extract dataset records from the catalog, then get additional information from the ABR Archive Control File
- Extract dataset records directly from the ABR Archive Control File
- Extract volume-related information
- Extract information from the DFHSM MCDS and/or BCDS control datasets
- Use dataset records already collected and accumulated in an **Extract File**

This Guide will primarily deal with the default operation, but some of the alternative sources of information will also be discussed in later sections.



The above diagram summarizes the main FDREPORT facilities. Once extracted, the data can then be sorted and formatted for several types of output:

- Printed as a normal report
- Formatted for display on screen
- Printed in IEHLIST format
- Written to an Extract File or Machine-Readable File
- Used for JCL Creation

This Guide will concentrate on the first of these types of output, but the other types will be discussed in later sections.

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1.5 Basic Selection Criteria

Basic selection criteria can be used to determine which datasets are to be included in the FDREPORT generated report. As has already been mentioned, the Appendix of this Guide and Section 54.31 of the manual show the fieldnames that can be used as selection criteria.

Some additional criteria are also available under the XSELECT control statement, as documented in section 54.13 of the manual.

As an example of using these selection criteria, if a report is required for just a single dataset, the *dataset name* would be used as the main selection criterion:

XSELECT **DSN=ABC.MYDATA**

To display information about a *group* of datasets that have a similar name, a Groupname parameter (DSG) could be used:

XSELECT **DSG=PIK,VOLG=PROD**

The statement above would display information about all datasets that have names starting with the characters 'PIK' (not necessarily as a fully qualified level), and which are on a volume with a volser starting 'PROD'.

Let's now suppose that the user wants to display information about any ICF-VSAM datasets that reside on volumes beginning with PROD, which are 1000 tracks or more in size, and which are in four or more extents.

The XSELECT control statement to locate these datasets would be as follows:

XSELECT DSORG=EF,VOLG=PROD,SIZE>=1000,NOEXTENT>=4

The next example assumes that the user is doing an SMS conversion and he wants to identify any datasets that are ineligible for SMS. He is looking for any datasets on his PROD volumes that are either not cataloged, are cataloged but to the wrong volume, or which are unmoveable:

```
XSELECT CATALOG=NO,VOLG=PROD   (Uncataloged Datasets)
XSELECT CATALOG=ERR,VOLG=PROD (Datasets cataloged to wrong volumes)
XSELECT DSORG=(U),VOLG=PROD    (Unmoveable Datasets)
```

FDREPORT also accepts XEXCLUDE statements. Suppose it has been decided that the volume PRODTS is not going to be converted to SMS. Taking the previous example, the user would alter the report so that it *excludes* datasets from PRODTS:

```
XEXCLUDE VOL=PRODTS
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
```

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1.6 Extended Selection and SMS Information

So far, we have only shown some very basic selection with the XSELECT parameter. However, as described in section 54.13 of the FDREPORT manual, this parameter can also be used to do significantly more complex selection, providing extra facilities in three main areas.

Firstly, in combination with the XDSN operand, XSELECT allows users to select on dataset names by using very powerful 'wild character' and 'wild level' filtering. From something as basic as the following to select all files beginning with 'TAB':

XSELECT XDSN=**TAB****

to more complex filtering, where datasets are being selected if they have a three-character first level qualifier beginning 'T', and the characters 'YM' in any position in any other qualifier:

XSELECT XDSN=**T//.**YM****

Also included in the XSELECT parameter is the ability to select by a specific or masked DASD unit address, or generic or esoteric unit names. Expanding the above example, a user could report on the same filtered dataset name, but only on certain volumes:

XSELECT XDSN=T//.**YM**,**UNIT=140** (Specific Unit Address)
or
XSELECT XDSN=T//.**YM**,**UNIT=14*** (Masked Unit Address)
or
XSELECT XDSN=T//.**YM**,**UNIT=3390** (Generic Unitname)
or
XSELECT XDSN=T//.**YM**,**UNIT=SYSDA** (Esoteric Unitname)

The second type of extended selection in XSELECT is the ability to use logical operators such as 'GT' (greater than), 'LT' (less than), and 'NE' (not equal), rather than just 'equals'. The full set of available operators is given in section 54.13 of the FDREPORT manual, which also confirms which of the logical operators apply to each of the fieldnames. Users should note that this includes DSN, DSG, XDSN, VOL, VOLG, STORGRP and UNIT parameters.

Extending the previous example further, a user could use logical operators to narrow the selection by selecting just those datasets that are between 100 and 200 tracks in size:

XSELECT XDSN=T//.**YM**,**SIZE.GE.100,SIZE.LE.200**

Alternatively, taking the 'ineligible SMS datasets' example from earlier, a 'Not Equal' test (expressed as '.NE.' or '¬=') can be used to select ineligible datasets, including Non-ICF VSAM:

XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),**DSORG¬=(EF)**,VOLG=PROD

The third and final set of extra facilities is related to SMS. XSELECT can use SMS CLASS names and STORAGE GROUP names as selection criteria. Having used FDREPORT to isolate datasets that are ineligible for conversion to SMS, users can then use FDREPORT to confirm that the remaining datasets were correctly converted. Any of the SMS class names stored in a datasets VVDS entry can be used as a selection criterion.

For example, to report on all datasets that now have an SMS Management Class of 'LATEMIG' and which reside on volumes in Storage Group 'DBPROD':

XSELECT **STORGRP=DBPROD,MGMTCLAS=LATEMIG**

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1.7 Specifying Which Fields To Display

The XSELECT statement is used to determine *which datasets* will be included in the report. To specify *what information* is to be printed for those datasets, a REPORT FIELD statement is coded. This allows users to generate reports containing only the information required. Any of the fields in tables 1-7 in the Appendix can be chosen, and they will be displayed in the order listed in the FDREPORT FIELD statement. Fields can be STACKed, so that one column can contain two fields, placed one on top of the other on adjacent lines.

An earlier example showed the isolation of datasets on PROD volumes that were not eligible for SMS management. For these datasets, if the user wished to display the dataset names, the volume they are on, and the last reference date, the full example becomes:

```
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),DSORG¬=(EF),VOLG=PROD
REPORT FIELD=(DSN,VOL,LRDATE)
```

The report produced would resemble:

```
DATA SET NAME      VOLSER      LRDATE
-------------      ------      ------
UNCAT.DATASET      PROD01      2010.100
UNMOVEABLE.DSET    PRODAA      2010.135
```

As another example, consider the report that selected all datasets that are on Storage Group DBPROD and have Management Class LATEMIG. Possibly the user might want to find out what Data Class they have:

```
XSELECT STORGRP=DBPROD,MGMTCLAS=LATEMIG
REPORT FIELD=(DSN,DATACLAS)
```

Or possibly some small datasets have accidentally been assigned a Data Class of 'BIGFILES', which should only apply to sequential files over 500 tracks. The user needs to find out their secondary allocation and type, their DSORG, and the type of DASD they reside on:

```
XSELECT DATACLAS=BIGFILES,SIZE<500
REPORT FIELD=(DSN,SECALLOC,SECAFLAG,DSORG,DEVTYPE)
```

The above XSELECT statement selects datasets that have the Data Class of BIGFILES, and which are less than 500 tracks in size. The report from this would be as follows:

```
DSN              SECAL    SECAF    DSORG    DEVTYPE
---              -----    -----    -----    -------
SMALL.TEST           4      CYL       PS     3390-3
ODD.DATA             0      TRK       PS     3390-9
MY.TEST.LIB         15      CYL       PO     3390-27
```

This final example of an XSELECT shows a report of datasets beginning with 'CRITICAL' that have been used in the last four days. Included in the report are the Creation Date and the Last Reference Date:

```
XSELECT XDSN=CRITICAL**,VOLG=PROD1,LRDAYS<4
REPORT FIELD=(DSN,CRDATE,LRDATE)
```

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1.8 Setting Defaults and the Print Command

FDREPORT has a large number of additional processing options, most which can be controlled by parameters coded on either a DEFAULT or PRINT control statement. These are described in the manual in sections 54.10 and 54.19 respectively. Some options are unique to the DEFAULT statement only.

If no parameters are coded, many will assume a default value which has been defined in the FDREPORT Global Options table, or which has been hard-coded into FDREPORT itself.

Some of the available options are:

BYTEFORMAT	to express dataset size in Bytes, Kb or Mb.
DATEFORMA	to specify the format of printed dates.
LINECNT	to control the number of lines per page.
PAGEWIDTH	to control the number of characters per line.
DATATYPE	to set the source of input data (see section 2.1 later).
RPTYPE	to request the type of report output required (see section 2.4 later).

Users should note that while the DEFAULT statement is optional (and is usually one of the first control statements coded), the PRINT statement is mandatory. PRINT causes the actual data collection and report generation to proceed as controlled by all preceding control statements. For this reason, PRINT is usually the last control statement coded.

So, to continue building our 'ineligible SMS datasets' report example, let's assume that the user wants to print 50 lines per page, left-align the title, but not print a timestamp on the report:

```
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),DSORG¬=(EF),VOLG=PROD
REPORT FIELD=(DSN,VOL,LRDATE)
PRINT LINECNT=50,TITLE=LEFT,TIMESTAMP=NO
```

1.9 Sorting The Listing

We've already seen how the XSELECT and REPORT FIELD control statements are the ones that control most of FDREPORT's processing. However, some additional statements are required to add some extra features and to fully customize the report output.

The SORT control statement is probably the most useful of these, allowing the report output to be sorted in whichever order is required.

Taking the example report from the end of section 1.7, let's suppose that the user now wishes to ensure that the most recently referenced datasets are listed first. This is done by asking for the report to be sorted in descending order (SEQUENCE=D) of the LRDATE:

```
XSELECT XDSN=CRITICAL**,VOLG=PROD1,LRDAYS<4
REPORT FIELD=(DSN,CRDATE,LRDATE)
SORT FIELD=LRDATE,SEQUENCE=D
PRINT
```

Taking another earlier example, this time the 'datasets ineligible for SMS' report, the following alteration will sort the report into dataset name order:

```
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),DSORG¬=(EF),VOLG=PROD
REPORT FIELD=(DSN,VOL,LRDATE)
SORT FIELD=DSN,SEQUENCE=A
PRINT
```

This could produce:

```
DATA SET NAME              VOLSER    LRDATE
-------------              ------    ------
EXISTING.UNCAT.DATA        PRODXX    2010.123
RECENT.WRONG.CAT.DS        PRODCI    2010.142
UNMOVEABLE.FILE            PRODTS    2010.134
VERY.OLD.DATASET           PRODOL    2008.100
```

The SORT control statement has another parameter (BREAK=) with which a user can request the insertion of **Control Breaks**. This parameter also specifies what action occurs at the control break, such as a page eject, a one line space or the printing of summary subtotals. The control break occurs whenever the data in the corresponding SORT FIELD changes.

As an example, suppose a user wishes to list all datasets on a particular volume, sorted by DSORG and dataset name, with control breaks inserted to separate the different DSORGs. In this case the control break just consists of one blank line, as controlled by the BREAK=(SP) parameter:

```
XSELECT VOL=IDPV50
REPORT FIELDS=(DSORG,DSN,SIZE)
SORT FIELDS=(DSORG),SEQUENCE=(A),BREAK=(SP)
PRINT
```

This could produce:

```
DSORG      DSN                          SIZE
-----      ---                          ----
EF         VSAM.DATASET1                100
EF         VSAM.DATASET2                200

IS         PROD.PAYROLL.G001             20
IS         PROD.PAYROLL.G006             30
IS         ALPHA.PARTS.LIST              15
IS         ZERO.INVOICE.REPL             60

PO         MY.DATASET.CNTL1              20
PO         MY.DATASET.LOAD               30
PO         OTHER.PO.DATASET              60

PS         DATA.FILE REAL1               20
PS         OLD.SMALL.FILE                15
PS         BIG.SEQ.FILE                  90
PS         OTHER.PS.FILE                 10
```

1.10 Summaries

FDREPORT also provides the facilities for including **summaries**. A summary consists of column totals for fields that are numeric and occurrence counts for non-numeric fields.

The SUMMARY command, which is used to state the fields that are to be summarized, defaults to printing the summary at the end of the listing. Extra summaries can also be produced as subtotals at control breaks if required. This is controlled by the BREAK parameter on the SORT command.

So, extending the previous example still further, let's alter the report so that it produces a summary on all fields printed in the report—both at control breaks and at the very end of the report. The 'BREAK=(SSP)' parameter on the SORT statement indicates that control breaks are to consist of one blank line and sub-totals. The SUMMARY statement defines which fields are to be summarized each time, and also creates a summary at the end of the report:

```
XSELECT VOL=IDPV50
REPORT FIELDS=(DSORG,DSN,SIZE)
SORT FIELDS=(DSORG),SEQUENCE=(A),BREAK=(SSP)
SUMMARY FIELD=(DSORG,DSN,SIZE)
PRINT
```

The report on this occasion would look like the following example. Notice how the DSORG and DSN fields are summarized by occurrence, while the SIZE field is summarized as a total:

```
DSORG          DSN                          SIZE

EF               VSAM.DATASET1               100
EF               VSAM.DATASET2               200
SUBTOTAL --  DSORG--EF
 DSN---------2     SIZE-------300
IS               PROD.PAYROLL.G001            20
IS               PROD.PAYROLL.G006            30
IS               ALPHA.PARTS.LIST             15
IS               ZERO.INVOICE.REPL            60
SUBTOTAL --  DSORG--IS
 DSN---------4     SIZE-------125
PO               MY.DATASET.CNTL1             20
PO               MY.DATASET.LOAD              30
PO               OTHER.PO.DATASET             60
SUBTOTAL --  DSORG--PO
 DSN---------3     SIZE-------110
PS               DATA.FILE REAL1              20
PS               OLD.SMALL.FILE               15
PS               BIG.SEQ.FILE                 90
PS               OTHER.PS.FILE                10
SUBTOTAL --  DSORG--PS
 DSN---------4     SIZE-------135
FINAL TOTALS
VALUE SUMMARY  OF DSORG --- TOTAL NUMBER OF VALUES ----4
DSORG --- EF ( 2)  IS ( 4)  PO ( 3)  PS ( 4)
DSN--------13     SIZE-------670
```

Another useful application of SORT and SUMMARY is summarizing reports according to the prefix (or other index levels) of the dataset name. This works by a combined use of the INDEX parameter on the SORT/SUMMARY command and the INDEXNUM parameter on the PRINT or DEFAULT statement.

For example, to list some datasets and then summarize by high level prefix:

```
XSELECT VOL=IDPV50
REPORT FIELDS=(DSN,SIZE)
SORT FIELDS=(INDEX  ),SEQUENCE=(A),BREAK=(SSP)
SUMMARY FIELD=(INDEX,SIZE)
PRINT INDEXNUM=1
```

Alternatively, to run the same report but summarize by the third level index:

```
XSELECT VOL=IDPV50
REPORT FIELDS=(DSN,SIZE)
SORT FIELDS=(INDEX),SEQUENCE=(A),BREAK=(SSP)
SUMMARY FIELD=(INDEX,SIZE)
 PRINT INDEXNUM=3
```

1.11 Adding Customized Titles to the Report

Most reports are of little use unless they contain a title. It is sometimes also necessary to provide a better explanation of some/all of the columns in the report. These things can be done with the TITLE and HEADING commands. The report layout can further be improved with the SPn parameter on the REPORT FIELD statement, which can be used to override the default spacing between individual columns.

So, taking the 'ineligible SMS datasets' example we used earlier:

```
TITLE LINE='SMS PROJECT—SUMMARY OF INELIGIBLE DATASETS'
HEADING LINE(1)= 'ODD DATASET                    -
      RESIDES ON    LAST USED ON'
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),DSORG¬=(EF),VOLG=PROD
REPORT FIELD=(DSN,VOL,SP6,LRDATE)
SORT FIELD=LRDATE,SEQUENCE=A
```

A title has now been added to the report and the column headings for the DSN, VOL and LRDATE fields have been altered to 'ODD DATASET', 'RESIDES ON' and 'LAST USED ON' respectively. Up to three heading lines could be used over each column. Note also the use of 'SP6' to request six spaces between the last two columns, to space it correctly under the new (longer) customized heading.

The resulting report is now much clearer and its meaning more apparent:

```
SMS PROJECT - SUMMARY OF INELIGIBLE DATASETS
ODD DATASET              RESIDES ON    LAST USED ON
-----------              ----------    ------------
VERY.OLD.DATASET         PRODOL        2008.100
UNMOVEABLE.DSET          PRODTS        2010.101
EXISTING.UNCAT.DATA      PRODXX        2010.123
RECENT.WRONGCAT.DS       PRODCI        2010.142
```

PART 1

FDREPORT FUNDAMENTALS

1.12 Running The Supplied "Health Check" Reports

When the FDREPORT program library is installed from the product tape, it is also accompanied by another PDS, called the JCL library, which contains a copy of each example job in the product manual.

In addition to the members containing these JCL examples, there are also some members in the library called HCHECKx, where 'x' is a number from 1-9. These contain some additional FDREPORT examples. Their purpose is two-fold:

To provide real-life examples of the facilities available within FDREPORT.

As well as the standard features, like Selection, Sorting and Summarizing, the HCHECKx members also make extensive use of some of the more advanced FDREPORT features that we will be discussing in PART TWO of this Guide.

You'll see examples of various 'DATATYPE=' settings, as discussed in section 2.1 and you'll also see the extensive utilization of the combination of RPTYPE=DATA and DATATYPE=EXTRACT to create and use Extract files, as discussed in section 2.5.

Some of the HCHECKx members also use the Punch facility that we look at in section 2.6 to create complete JCL streams.

To provide a HEALTH CHECK on your installed DASD.

All of the HCHECKx reports have been designed to look for specific problems, both at the *dataset level* and the *volume level*. See the tables on the next page for a list of the type of problems that are reported.

The HCHECKx reports have been created so that they can be run with a minimum of change—they usually only require the addition of an appropriate job card.

All of the reports default to reporting against all ONLINE DASD volumes. However, because they are constructed using standard FDREPORT control statements and JCL, they can easily be tailored to provide more specific or targeted reporting, if required.

When run as a complete suite, the HCHECKx reports really can give your installed DASD System a complete and very thorough Health Check!

PART 1

FDREPORT FUNDAMENTALS

The following lists give you an idea of the types of reports produced by the HCHECKx jobs. See section 54.02 in the FDREPORT manual for complete information on all the Health Check reports.

HCHECK1
DASD With Potential Problems

- Disk Volumes More Than 80% Full
- IBM Fragmentation Index, Worst First
- Volume Mount & Use Status
- SMS, VTOCIX Status
- VTOC/VVDS/VTOCIXs More Than 80% Full
- VVDS in Multiple Extends
- VTOCs/VVDSs With Logical Errors

HCHECK2
Reports For VSAM Tuning Analyst

- SMS Volume status
- SMS Volumes with disabled VTOCIXs
- Datasets SMS Attributes
- Information On PDSE Datasets
- Uncataloged Datasets On SMS Volumes
- Non-Managed Datasets On SMS Volumes
- Datasets Ineligible For SMS Management

HCHECK3
Reports on PDS Efficiency

- Disks With Potential Performance Problems
- Multi-Extent VSAM Datasets
- Multi-Extent Non-VSAM Datasets
- Multi-Volume Datasets
- Datasets Likely To Get Sx37 Abends

HCHECK4
Reports For Capacity Analyst

- Disks With Potential Wasted Space
- Total Space Available, allocated and used
- Overallocation In All Datasets
- Datasets Not Referenced in 60 Days
- Datasets With Inefficient Blocksizes

HCHECK5
Reports For VSAM Tuning Analyst

- Space Occupied By Largest VSAM Files
- Clusters With High Inserts
- Clusters with high CI/CA Splits
- Clusters With 3 Or More Index Levels
- Multi-Extent, Multi-volume VSAM Files Clusters
- Overallocated VSAM Clusters

HCHECK6
Reports on PDS Efficiency

- Basic Stats On PDS Datasets
- Multi-Extent PDS Datasets
- PDSs With Limited Freespace
- PDSs With Limited Free Directory Blocks
- PDSs With Excess Free Space
- Space Reclaimable By PDS Compression

HCHECK7
Datasets That Offend Standards

- Uncataloged Datasets
- Wrongly Cataloged Datasets
- Datasets With Undefined DSORG
- Empty PS, PO, VSAM Datasets
- Unmoveable Datasets
- Datasets existing as only a catalog entry

HCHECK8
Project or DASD Management Reports

- Summary Of Dataset Types
- Space Occupied By An Application
- Space Summarized By Index
- DASD Utilization By Esoteric Unit Name
- DASD Utilization By SMS Storage Group Name
- DASD Utilization By Volser Group, Devtype

HCHECK9
Miscellaneous Reports

- Reports for the ABR Administrator
- Reports for FDRPAS/FDRMOVE planning
- Reports for the IAM Administrator

PART TWO
Advanced FDREPORT

PART 2

ADVANCED FDREPORT

2.1 Accessing Other Sources Of Information

As discussed earlier, FDREPORT is capable of obtaining information from many sources, in addition to its default of initially scanning disk VTOCs. The user can determine the source of the data by coding a **DATATYPE=** parameter on either a DEFAULT or a PRINT control statement.

The DATATYPE settings that are available for selection are as follows:

DATATYPE=VTOC
This is the default, and it tells FDREPORT to initially scan the contents of VTOCs of the disks selected by either DISKx DD's, the VOL/VOLG parameters coded on XSELECT statements, or all the online volumes, if ENABLE=ONLINE has been coded on a DEFAULT or PRINT statement.

For datasets found in these VTOCs, FDREPORT will then refer to BCS catalog or VVDS, as required, to process the XSELECT, REPORT, and SORT statements.

With this selection, *all* of the report fields in Tables 1-7 in the Appendix are available and the fields from Table 4 that refer to the ABR Incremental Backup system.

DATATYPE=CATALOG
With this setting, FDREPORT will scan the system catalogs for dataset entries that match the selection criteria. Only the information which is in the *catalog entry itself* is available (principally the dataset name, the OWNER, the volume serial and the device type).

DATATYPE=CATVTOC
This option extends DATATYPE=CATALOG by making the same initial scan of the system catalogs, but then extracting additional information from the VTOCs and VVDSs.

DATATYPE=ARCHIVE
ABR users who have implemented an Archiving/Migration system, or who are using Application Backup, can run reports against the control files used in these systems by using DATATYPE=ARCHIVE.

This parameter allows the user to create reports by using the fields in Table 4 in the Appendix, as well as some fields from Tables 1 and 5 that are saved in the control files (*i.e.* the disk volser and the dataset's DSORG, BLKSIZE, LRECL, SIZE and SIZEFREE).

Note: Although ABR incorporates its own utility for reporting information about these datasets (program FDRABRP), FDREPORT has greater flexibility in selection and report layout.

ADVANCED FDREPORT

DATATYPE=CATARCH
ABR users can use this option to select datasets via the catalog (like DATATYPE=CATALOG), but then obtain additional information on those datasets from the ABR Archive Control File.

This option can be useful for cross-checking the information held by the ABR Archiving system against the MIGRAT catalog entries for datasets which have been archived/migrated by ABR and are available for auto-recall.

DATATYPE=EXTRACT
This option allows FDREPORT to obtain its information from an Extract File which has previously been created via RPTYPE=DATA.

For more information on creating and using Extract files, see Section 2.5 later.

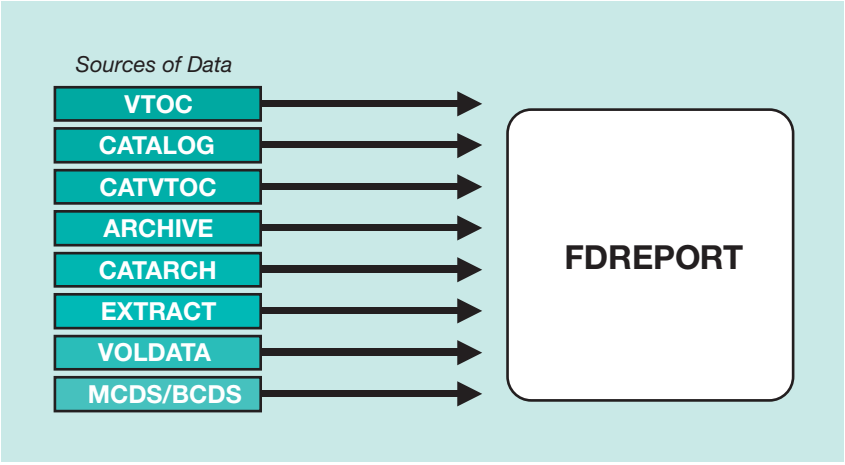
DATATYPE=VOLDATA
All of the previous settings of 'DATATYPE=' involve directing FDREPORT to various sources of information about *individual* datasets. DATATYPE=VOLDATA, on the other hand, allows FDREPORT to gather and report information on whole DASD Volumes.

For more information on using DATATYPE=VOLDATA, see Section 2.2 later.

DATATYPE=MCDS/BCDS
Users of DFHSM can instruct FDREPORT to gather and report on information stored in the MCDS and BCDS control datasets.

This is done by coding DATATYPE=MCDS or DATATYPE=BCDS.

For more information on reporting on DFHSM control files, see Section p2.3 later.



PART 2

ADVANCED FDREPORT

2.2 Volume Level Reporting (Datatype=Voldata)

As mentioned in the previous section, FDREPORT can produce reports for volumes as well as individual datasets. This is done with a combination of DATATYPE=VOLDATA and the 'VLxxxxxx' fields listed in Table 8 in the Appendix.

In this example, DATATYPE=VOLDATA is used to look at production volumes (VOL=PROD*), reporting on the VOLSER, Unit Address and Device Type, together with the percentage used for the VOLUME (%TU), the VTOC (%DU), the VTOCIX (%IU), and the VVDS (%VU):

```
TITLE     LINE='PRODUCTION VOLUME USAGE'
XSELECT   VOL=PROD*
SORT      FIELD=(VLVOLSER)
REPORT    FIELD=(VLVOLSER,VLUNIT,VLDEVTYP,VL%UTRKS,
          V L%UDSCB,VL%UINDX,VL%UVVDS)
PRINT     DATATYPE=VOLDATA
```

PRODUCTION VOLUME USAGE

VOLSER	UAD	DEVTYPE	%TU	%DU	%IU	%VU
PROD07	143	3390	37	42	12	45
PROD12	148	3390	76	17	6	15
PROD18	14F	3390	66	35	23	78

In this next example, we are reporting on the MOUNT, the USAGE and the SMS volume STATUS of every online volume:

```
TITLE     LINE='VOLUME STATUS REPORT'
REPORT    FIELD=(VLVOLSER,VLUNIT,VLDEVTYP,VLUUSEATR,
          VLMOUSTA,VLSMSTAT,VLSMSVST)
PRINT     ENABLE=ONLINE,DATATYPE=VOLDATA
```

VOLUME STATUS REPORT

VOLSER	UADR	DEVTYPE	USEATTR	MOUNT	SMSSTATUS	VOLUME_STATUS
TSO123	0252	3390	STORAGE	RESIDENT	NONE	NONE
DBLRG1	3175	3390	PRIVATE	RESIDENT	MANAGED	ENABLED
DBLRG3	3176	3390	PRIVATE	RESIDENT	MANAGED	ENABLED

In this final example, we look at volumes with disabled VTOC Indexes (VLINDSTA=YES):

```
TITLE     LINE='DISABLED VTOC INDEXES'
XSELECT   VLINDSTA=YES
REPORT    FIELD= (VLVOLSER,VLINDSTA)
PRINT     ENABLE=ONLINE,DATATYPE=VOLDATA
```

DISABLED VTOC INDEXES

VOLSER	VTOCIX
TSO134	YES
MVS002	YES
DB2RES	YES

PART 2

ADVANCED FDREPORT

2.3 Reporting on the DFHSM control files (Datatype=MCDS/BCDS)

As mentioned earlier, users of DFHSM can also use FDREPORT to report on information stored in the DFHSM control datasets—the MCDS and the BCDS. This is done using the DATATYPE=MCDS or DATATYPE=BCDS parameters, together with the fields listed in Tables 9 and 10 in the Appendix.

In this first example, we are using DATATYPE=MCDS to instruct FDREPORT to report on DFHSM migrated datasets, as recorded in the MCDS (Table 9).

Information such as the date and time that the dataset was migrated by HSM is included in the report, together with details of the original dataset's DSORG and allocation. Only datasets beginning with 'USER1' will be included in the report. The MCDS, which has been named on the MCDSCLUSTER parameter, will be dynamically allocated:

```
TITLE      LINE='HSM MIGRATED DATASETS'
DEFAULT    MCDSCLUSTER=HSM.MCDS
XSELECT    XDSN=USER1**
REPORT     FIELD=(DSN,VOL,DSORG,SIZE,SIZEFREE,ADATE,ATIME,ADAYS)
PRINT      DATATYPE=MCDS
```

HHSM MIGRATED DATASETS

DATASET_NAME	VOLSER	ORG	ALLOC	FREE	ADATE	ATIME	ADAYS
USER1.TEST.ESDS	SMS802	EF	1	0	2009.116	11.54.49	1055
USER1.OTHER	SMS001	PS	100	95	2009.101	13.02.45	1070

And in the next example, we are using DATATYPE=BCDS to instruct FDREPORT to report on datasets backed up by DFHSM, as recorded in the BCDS (Table 10).

Information such as the date and time that the dataset was backed up by HSM is included in the report, together with details of the original dataset's DSORG and allocation and the volume on which it resided when it was backed up. Again, only datasets beginning with 'USER1' will be included in the report.

The BCDS has been named on the BCDSDD card within the JCL:

```
//BCDSDD  DD   DISP=SHR,DSN=HSM.BCDS
//SYSIN   DD   *
  TITLE   LINE='HSM BACKUP OF DATASETS'
  XSELECT XDSN=USER1**
  REPORT  FIELD=(DSN,VOL,DSORG,SIZE,ADATE,ATIME,ADAYS)
  PRINT   DATATYPE=BCDS
```

HSM BACKUP OF DATASETS

DATASET_NAME	VOLSER	ORG	ALLOC	ADATE	ATIME	ADAYS
USER1.FILE1	SMS800	PS	5	2010.048	20.15.35	16
USER1.ANOTHER	SMS010	EF	4	2010.044	18.23.55	20

PART 2

ADVANCED FDREPORT

2.4 Other Forms Of Output

As well as a traditional printed report, FDREPORT also allows for other forms of output to be created. This is controlled with the RPTYPE= parameter on either a DEFAULT or a PRINT command. The RPTYPE settings that are available for selection are as follows:

RPTYPE=GENERATE
This is the default (and hence rarely coded). It causes FDREPORT to generate the report as specified by the REPORT FIELDS and other formatting statements.

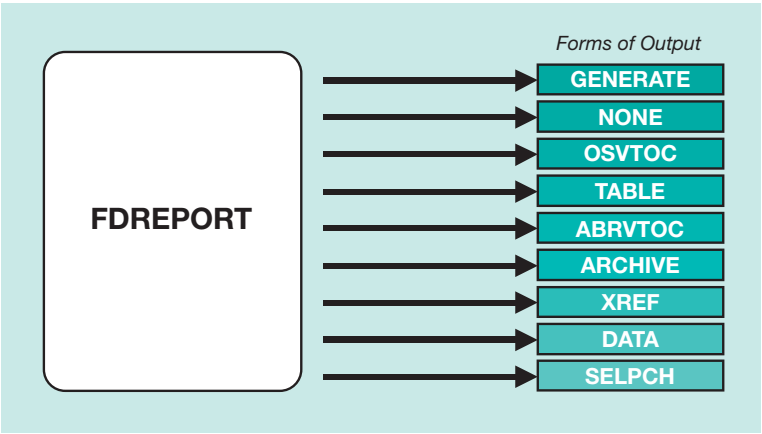
RPTYPE=NONE
RPTYPE=NONE causes the detail report to be suppressed. Only the summaries are printed.

RPTYPE=OSVTOC
With this option, the detail report of the selected datasets is printed showing the same information as shown on IEHLIST LISTVTOC (although the layout is different).

RPTYPE=TABLE
This generates a report that is designed to be written to a dataset and later read by some other text-processing program. The XSELECT and REPORTFIELD statements are still honored, but the report is written without page titles and column headings and with just a single space between columns.

RPTYPE=ABRVTOC
This produces a report in the same format as the PRINT VTOC command of the FDRABRP program (one of the reporting utilities of ABR). XSELECT statements are honored but REPORT FIELDS and other formatting statements are ignored.

RPTYPE=ARCHIVE
This option is intended for use when DATATYPE=ARCHIVE is also specified, and results in the report being generated in the same format as the PRINT ARCHIVE command of FDRABRP. As above, XSELECT statements are honored but REPORT FIELDS and other formatting statements are ignored.



RPTYPE=XREF
RPTYPE=XREF causes FDREPORT to print the report in the same format as the PRINT BACKUP,XREF command of FDRABRP. Again, XSELECT statements are honored but REPORT FIELDS and other formatting statements are ignored. Users may refer to the FDR User Manual (section 53) for examples of the FDRABRP report layouts.

RPTYPE=DATA
This is similar to RPTYPE=NONE in that no actual report is produced. However, FDREPORT creates an EXTRACT FILE containing the dataset records of all datasets selected in this execution. The extract file is written to SYSUT2 in an internal Innovation format.

See section 2.5 for more information on creating and using Extract Files.

RPTYPE=SELPCH
This is also similar to RPTYPE=NONE and RPTYPE=DATA in that no actual report is produced. However, with this option, you can write (or *punch*, as it is known) information on each dataset selected within the report. This information can then be combined with additional pieces of free format text.

See section 2.6 for more information on creating and using Punch Output.

2.5 Using Extract Files To Generate Multiple Reports

So far, this Guide has only shown examples of creating one report per execution of FDREPORT. Several reports can, however, be printed each time. This is achieved by coding additional sets of PRINT and other control statements.

The following example prints a 'disaster recovery' report and then an 'ineligible SMS datasets' report, in one execution of FDREPORT. Notice the presence of the CANCEL command between the two reports. This cancels all of the previous FDREPORT statements:

```
TITLE LINE='DISASTER RECOVERY PROJECT – RECENTLY   USED DATASETS'
HEADING LINE(1)= 'DATASET NAME     CREATION DATE     WHEN USED LAST'
XSELECT XDSN=CRITICAL**,VOLG=PROD1,LRDAYS<4
REPORT FIELD=(DSN,CRDATE,LRDATE)
SORT  FIELD=LRDATE,SEQUENCE=D
PRINT
CANCEL
TITLE LINE='SMS PROJECT - SUMMARY OF INELIGIBLE DATASETS'
HEADING LINE(1)= 'ODD DATASET  -
              RESIDES ON    LAST USED ON'
HEADING LINE(2)= '————————————————————————————————————-'
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
XSELECT DSORG=(AM),DSORG¬=(EF),VOLG=PROD
REPORT FIELD=(DSN,VOL,SP6,LRDATE)
SORT  FIELD=CRDATE,SEQUENCE=A
PRINT LINECNT=50,SUM=INDEX,TITLE=LEFT,TIMESTAMP=NO
```

When running several reports that use the same source of information and which select the same datasets, it is better to reduce the overheads by creating and using an **Extract File.**

PART 2

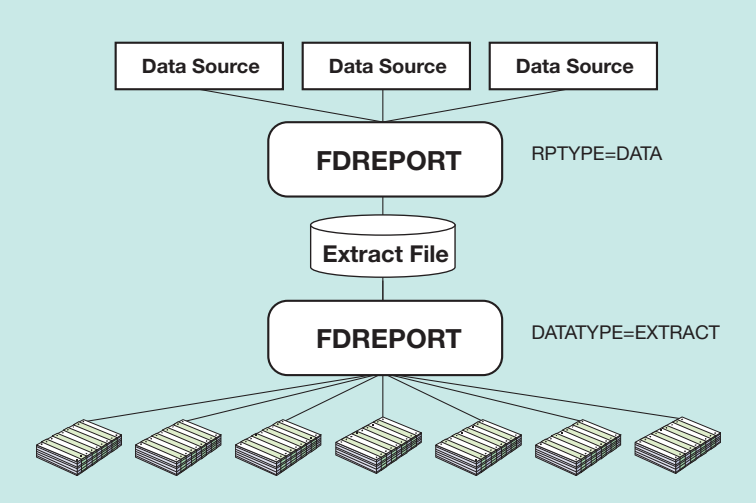
ADVANCED FDREPORT

Let's suppose that an SMS administrator wishes to isolate some critical uncataloged datasets from volumes beginning PROD1. He wants to list them by dataset name, showing the volume they reside on and sorting them by dataset name. However, he also then wants to list them *again*, but this time showing the dataset organization and sorted by creation date:

```
XSELECT XDSN=CRITICAL**,VOLG=PROD1,CATALOG=NO
PRINT RPTYPE=DATA                    <--- to create the Extract File

REPORT FIELD=(DSN,VOL)
SORT FIELD=DSN,SEQUENCE=A
PRINT DATATYPE=EXTRACT               <--- to use the Extract File

REPORT FIELD=(DSN,DSORG,CRDATE)
SORT FIELD=CRDATE,SEQUENCE=A
PRINT DATATYPE=EXTRACT               <--- to use the Extract File again
```



2.6 Punch Output

Another extremely useful feature in FDREPORT is the ability to create card images as output, instead of a printed report. These card images can contain a mixture of fixed text & data extracted from report fields. There are numerous potential uses for this, including the generation of simple control statements for later processing by other utilities, or the creation of complete JCL streams.

In this next example, a user wants to catalog all of his currently non-cataloged datasets. He will run FDREPORT to find these uncataloged datasets (using CATALOG=NO) and then, instead of producing a report, he will use the Punch feature to automatically generate the IDCAMS 'DEFINE NONVSAM' control statements required to catalog them. In his FDREPORT JCL, he will code a SYSPUNCH to point to a Punch dataset where the card images will be written:

```
//SYSPUNCH DD DSN=punch.output,DISP=( ,CATLG),
//            SPACE=(TRK,(5)),UNIT=SYSALLDA
```

His control statements would then be as follows…

RPTYPE=SELPCH instructs FDREPORT to create Punch output instead of a normal report:

```
XSELECT CATALOG=NO,VOLG=DEV
REPORT FIELD=(DSN,VOL,DEVTYPE)
PRINT RPTYPE=SELPCH
```

PART 2

ADVANCED FDREPORT

By default, card images for datasets selected would be written to SYSPUNCH in the format:

SELECT DSN=datasetname,VOL=volser

These statements could be used by ABR. However, the format can be altered using a **Punch Mask**. Below we see a Punch Mask being used to create the DEF NVSAM statements our user requires to catalog his non-cataloged datasets:

DEF NVSAM (NAME(<**DSN**>),DEVICETYPE(<**DEVTYPE**>),VOLUMES(<**VOL**>))

When the card images are written to SYSPUNCH, the values between the chevrons ('<' and '>') will be substituted with the FDREPORT supplied data. If, for example, one of the uncataloged datasets was called 'UNCAT.DSET' and it resided on volume SCR999 (which is a 3390), then the following card image would be written to the Punch dataset:

DEF NVSAM (NAME(**UNCAT.DSET**),DEVICETYPE(**3390**),VOLUMES(**SCR999**))

Several hundred of the above control statements may have been created. These statements can then be used as SYSIN to an IDCAMS job to actually perform the cataloging operation.

Punch Mask definitions can be stored as members in a PDS. To use a Punch Mask, the user simply has to code an FDRLIB DD in the JCL to point to the PDS and a PUNCH MASK statement in the FDREPORT control statements to select the actual Punch Mask member:

```
//SYSPUNCH   DD   DSN=punch.output,DISP=(,CATLG),SPACE=(TRK,(5)),UNIT=SYSALLDA
//FDRLIB     DD   DSN=punch.masks.file,DISP=SHR
//SYSIN      DD   *
     XSELECT CATALOG=NO,VOLG=DEV
     REPORT  FIELD=(DSN,VOL,DEVTYPE)
     PUNCH   MASK=MASK1,ECHO
     PRINT   RPTYPE=SELPCH
```

In our next example a user wants to create the IDCAMS JCL to delete some old VSAM files:

```
//IDCDEL      EXEC  PGM=FDREPORT,REGION=0M
//SYSPRINT     DD   SYSOUT=*
//SYSPUNCH     DD   SYSOUT=(A, INTRDR)
//FDRLIB       DD   DSN=USER1.FDREPORT,DISP=SHR
//SYSIN        DD   *
     XSELECT  XDSN=OLDFILES.**
     PUNCH    MASK=IDCDEL,ECHO
     PRINT    DATATYPE=CATALOG,RPTYPE=SELPCH
```

The IDCDEL member in the USER1.FDREPORT library would contain the following statements which would produce one occurrence of the lines between the ')*PREFIX*' and ')*ENDPREFIX*' commands and then one 'DELETE PURGE' line for each selected dataset, thus creating a single IDCAMS job to do all the deletes.

```
)PREFIX
//DELETE     JOB   (ACCT),CLASS=M,MSGCLASS=X
//DELETE     EXEC  PGM=IDCAMS
//SYSPRINT    DD   SYSOUT=*
)ENDPREFIX
     DELETE <NAME> PURGE.
```

PART 2

ADVANCED FDREPORT

2.7 Using Pre-Defined Reports

Another advanced function of FDREPORT is the ability to allow users to generate comprehensive reports by specifying only one control statement. This is done using the 'EXECUTE' statement, which causes FDREPORT to execute a set of control statements that have previously been created and then stored in a PDS member.

This facility allows DASD Administrators, for example, to set up a wide range of different report definitions that can then be run by end-users, without requiring them to have any special training in FDREPORT.

The EXECUTE statement has only two parameters:

EXECUTE REPORT=reportname,FDRLIB=libraryddname

The *'reportname'* is the name of a member within a library, which is named on a DD statement pointed to by FDRLIB=libraryname (defaults to FDRLIB). The member can contain any FDREPORT control statements.

As an example, an SMS administrator could easily obtain a report of datasets that are ineligible for SMS conversion, sorted by dataset name, simply by specifying:

EXECUTE REPORT=NOTSMS

The NOTSMS member in the library pointed to by the FDRLIB DD would contain all the FDREPORT statements required to locate the ineligible datasets and print the sorted list:

```
XSELECT CATALOG=NO,VOLG=PROD
XSELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
REPORT FIELD=(DSN,VOL,LRDATE)
SORT FIELD=DSN,SEQUENCE=A
PRINT
```

The EXECUTE statement can be preceded by XSELECT statements, allowing for the flexible selection of datasets, but in a fixed and pre-determined report format:

```
XSELECT CATALOG=NO,VOLG=PROD
SELECT CATALOG=ERR,VOLG=PROD
XSELECT DSORG=(U),VOLG=PROD
EXECUTE REPORT=NOTSMS
```

In this case, the NOTSMS member would only contain:

```
REPORT FIELD=(DSN,VOL,LRDATE)
SORT FIELD=DSN,SEQUENCE=A
PRINT
```

As well as simplifying FDREPORT control statements and JCL, this facility can also be used to run reports in TSO foreground. A set of ISPF panels is supplied with ABR and it includes a reporting option (panel A.1). Option 6 on the reporting panel permits a TSO user to enter the name of a 'canned' report, much like the REPORT= parameter in the examples above. The FDRLIB library defaults to an installation determined library name, and FDREPORT output is displayed on the screen.

Any dataset name or groupname parameters, and any volume or volume group parameters that are specified in other fields on the reporting panel are used as additional XSELECT statements to the FDREPORT execution.

PART THREE
FDREPORT/SRS Panels

PART 3

FDREPORT/SRS PANELS

FDRViEWS is a separate cost-option which builds on the foundation of FDREPORT and SRS to provide a user-friendly, question-and-answer method of generating reports. It offers a Windows GUI interface, through which reports can be viewed in various graphical formats (graphs, charts, etc.) or as an Excel spreadsheet. See the separate FDRViEWS Concepts & Facilities Guide for more details.

3.1 Introduction To S.R.S.

In section 2.7 we mentioned the basic ISPF panels that allow end-users to run 'canned' reports. We are now going to take a look at a much more powerful & flexible way of running FDREPORT in TSO foreground—the ***Search, Reporting and Services*** dialog, or ***SRS*** for short.

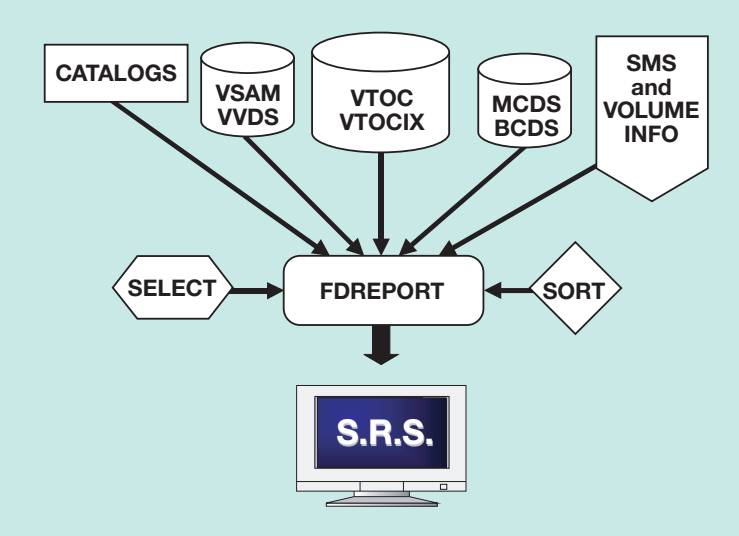
The SRS panels permit a 'menu-driven' execution of FDREPORT, and enable the end-user to exploit the same wide range of selection criteria as a batch-driven FDREPORT. Data can be extracted from the same sources and the user has the same control over the layout of the report, the data that is displayed, and the sort order.

A report containing the selected datasets and the desired information is immediately presented to the user as a Dataset List panel (rather than being printed, as in the case with a standard batch-driven report). The Dataset List panel contains a command field, allowing TSO commands such as EDIT or BROWSE, Clists, or ABR backup/restore commands to be entered & executed.

The SRS user can save his selection criteria and re-use them later. The Dataset List can also be saved and re-displayed, as well as being printed.

As an alternative to obtaining dataset information, SRS can also use the volume-related criteria that we looked at in section 2.2 (DATAYPE=VOLDATA) to display information in a Volume List. Again, the user can determine the information that is to be displayed in the list, together with the eventual layout of the list and the order of entries contained within it.

It is not possible in a document such as this to present SRS in any great detail, or to show many samples of the panels that can be used. However, although a comprehensive description can be found in sections 54.50 to 54.60 of the product manual, we will now attempt to give you a brief introduction to its power and flexibility.



PART 3

FDREPORT/SRS PANELS

3.2 Dataset Reporting

Producing a dataset report with SRS begins at the **SRS Dataset Selection Panel**. This is a multi-screen menu that has the dataset name and the other FDREPORT selection field names (from tables 1-7 in the Appendix) in the form of prompts in the left-hand column:

```
        -------  S R S DATASET SELECTION  -------
COMMAND ==>                                SCROLL ==> PAGE
FIELD          SELECTION VALUE             REPORT     SORT
-----          --------- -----             ------     ----
SOURCE/FIELDS
DSNAME         ==>  ____________________     _____     ____
VOL            ==>  ____________________     _____     ____
SOURCE         ==>  CATALOG (Catalog Volume Arc..)
CATALOGN       ==>  ____________________     _____     ____
ARCDSN         ==>  ____________________     _____     ____
VTOC FIELDS
DEFAULTS       ==>
UNIT           ==>  ____________________     _____     ____
DEVTYPE        ==>  ____________________     _____     ____
VOLSQ          ==>  ____________________     _____     ____
DATES          ==>  ____________________     _____     ____
CRDATE         ==>  ____________________     _____     ____
```

To use a particular selection criterion, the user just enters the desired value against the appropriate prompt under the SELECTION VALUE heading. This includes the use of a full or masked dataset name. For example, on the panel below the user selects all those datasets that have a name beginning RTS and that reside on 3390 EAVs (identified by FDREPORT as 3390-A).

The SOURCE field allows the user to state the source of the data, equivalent to the DATATYPE parameter. Available settings are CATALOG (CATVTOC), VOLUME (VTOC), EXTRACT (EXTRACT), and ARCHIVE (ARCHIVE). In the last two cases, the user can name the Extract File or ABR Archive Control File he wishes to report from. This has an added advantage in that users can also report from a named ABR Application Control File.

As in batch FDREPORT, the SRS user can specify the information that is to be displayed and the order in which it is to be sorted. This is achieved by entering a report position in the REPORT field and a sort parameter in the SORT field. In the panel below, the report will contain the dsname, creation date and volser (with the columns in that order) and the report will be sorted by creation date in ascending order (oldest-to-newest).

```
        -------  S R S DATASET SELECTION  -------
COMMAND ==>                                SCROLL ==> PAGE
FIELD          SELECTION VALUE             REPORT     SORT
-----          --------- -----             ------     ----
SOURCE/FIELDS
DSNAME         ==>  RTS**_______________     __1__     ____
VOL            ==>  ____________________     __3__     ____
SOURCE         ==>  CATALOG (Catalog Volume Arc..)
CATALOGN       ==>  ____________________     _____     ____
ARCDSN         ==>  ____________________     _____     ____
VTOC FIELDS
DEFAULTS       ==>
UNIT           ==>  ____________________     _____     ____
DEVTYPE        ==>  3390-A______________     _____     ____
VOLSQ          ==>  ____________________     _____     ____
DATES          ==>  ____________________     _____     ____
CRDATE         ==>  ____________________     __2__     _1A_
```

FDREPORT/SRS PANELS

The result of the selections in the previous panel would then be displayed on the user's screen in the **SRS Dataset List Panel**. Note that the selected fields of Dsname, Crdate and Volser are being displayed and the entries are sorted by ascending Crdate, as requested.

```
            -------  S R S DATASET SELECTION  -------
COMMAND ==>                                    SCROLL ==> PAGE
COMMAND       DATASET NAME                  CRDATE          VOLSER
-------       ------- ----                  ------          ------
              RTSAL.FDREPORT.CNTL           2008.036        MVS001
              RTS.JOB.CNTL                  2008.234        TSO004
              RTS.OLD.FILE                  2009.010        DEV020
              RTS.VSAM.FIL                  2009.156        MIGRAT
              RTS.DUMP.DSN                  2009.254        DEV017
              RTS1.OTHER.FILE               2009.315        TSO010
              RTS.PDS                       2010.003        DEV012
              RTS.PDSE.DSN                  2010.121        MIGRAT
```

On the far left-hand side of the panel, you will see that there is a COMMAND field, just like a normal ISPF display. This command field can be used to invoke a variety of functions for one or more of the datasets that are being displayed on the dataset list.

These commands include:

- SRS services, such as 'I' (Info), 'M' (Member List).
- FDR/ABR services, such as REORG, RECALL, COPY
- Normal ISPF functions, like Edit and Browse.
- TSO commands, including DELETE, LISTDS, LISTCAT and RENAME
- CLISTs and REXX execs.

These commands can all be used in the left-hand 'command' column:

```
            -------  S R S DATASET SELECTION  -------
COMMAND ==>                                    SCROLL ==> PAGE
COMMAND       DATASET NAME                  CRDATE          VOLSER
-------       ------- ----                  ------          ------
DELETE        RTSAL.FDREPORT.CNTL           2008.036        MVS001
RECALL        RTS.JOB.CNTL                  2008.234        MIGRAT
I             RTS.OLD.FILE                  2009.010        DEV020
REORG         RTS.VSAM.FILE                 2009.156        MVS023
BACKUP        RTS.DUMP.DSN                  2009.254        DEV017
EDIT          RTS1.OTHER.FILE               2009.315        TSO010
LISTCAT       RTS.OTHER.VSAM                2010.003        DEV012
RECALL        RTS.PDSE.DSN                  2010.121        MIGRAT
```

PART 3

FDREPORT/SRS PANELS

3.3 Volume Reporting

The other category of information available via SRS is volume data, and is equivalent to a DATATYPE=VOLDATA report in a batch execution of FDREPORT.

To create volume data reports under SRS, the user goes to the SRS Volume Selection Panel, which is a multi-screen menu containing volser and other volume selection field names (from Table 8 in the Appendix).

As before, the user can insert selection criteria and report layout and sorting parameters in the various Volume Selection panel fields. The following example reports on all volumes in SMS storage group GENERAL that have a volser starting PROD. The report will show the disk volser, the percentage of free space on the volume and the percentage of free space within the VTOC. The report will be sorted so that volumes with most freespace appear first.

```
        -------  S R S DATASET SELECTION  -------
COMMAND ==>                                SCROLL ==> PAGE

FIELD              SELECTION VALUE         REPORT      SORT

VLVOLSER     ==>  PROD*_____________       __1__       _____
VLUNIT       ==>  ______________________   ______      _____
VLDEVTYP     ==>  ______________________   ______      _____
STORGRP      ==>  GENERAL_______________   ______      _____

VL%FTRKS     ==>  ______________________   __2__       _1D_
VL%UTRKS     ==>  ______________________   ______      _____
VL%FDSCB     ==>  ______________________   __3__       _____
VL%UDSCB     ==>  ______________________   ______      _____
VL%FINDX     ==>  ______________________   ______      _____
VL%UINDX     ==>  ______________________   ______      _____
VLBYTRK      ==>  ______________________   ______      _____
VLALOTRK     ==>  ______________________   ______      _____
```

The resulting report will look like the one below. Clearly, the three volumes at the top of the report are very under-allocated and represent a potential waste of disk space. Another volume (PROD21) is only about half-full, but it has very limited free space remaining in the VTOC. It will soon be impossible to allocate new datasets on this volume, even though there are ample free tracks.

```
            -------  S R S DATASET SELECTION  -------
COMMAND ==>                                  SCROLL ==> PAGE

COMMAND          VOLSER        %FTRKS         %FDSCB

                 PROD42        95             80
                 PROD83        91             67
                 PROD03        89             54
                 PROD82        56             36
                 PROD21        46             03
                 PROD45        31             25
                 PROD03        25             76
                 PROD05        20             11
```

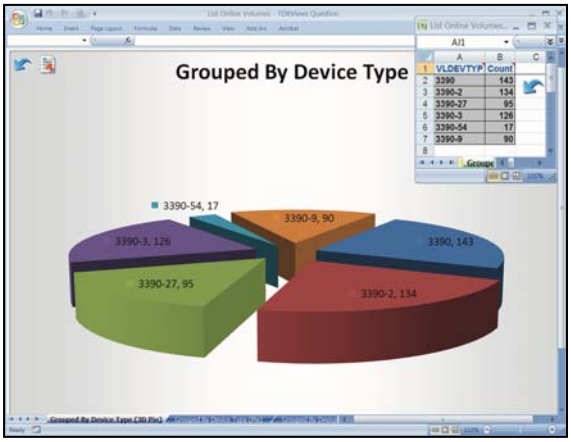
PART 3

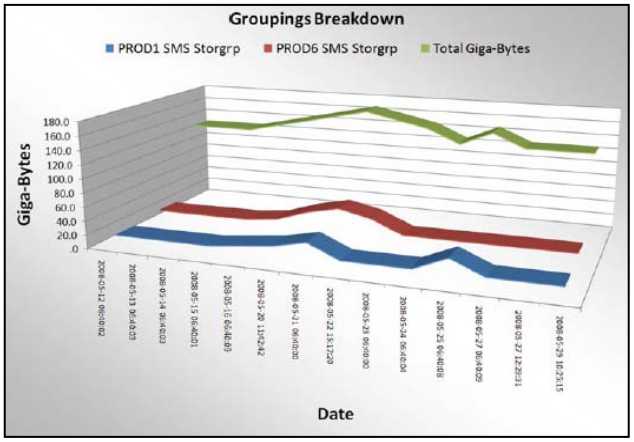
FDREPORT/SRS PANELS

3.4 FDRViEWS

FDRViEWS is a separate cost-option which builds on the foundation of FDREPORT to provide a user-friendly, question-and-answer method of generating reports. It offers a Windows GUI interface, through which reports can be viewed in various graphical formats (graphs, charts, etc.) or as an Excel spreadsheet.

Its automated report distributions and alert system can warn you about certain conditions that could be a potential cause for problems, such as VTOCs nearing 100% or DFSMS Storage Groups approaching a pre-determined threshold.

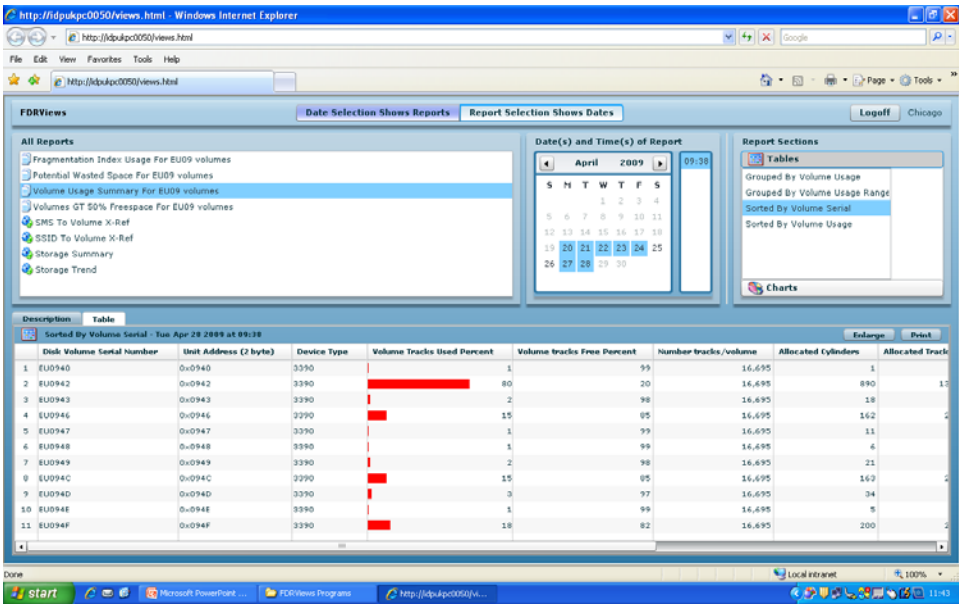




Report Distribution

The reports generated by FDRViEWS can be made available to key personnel within your organization without the need to give them access to the main GUI interface.

Application administrators, department managers, programmers etc., can all be granted access to view reports through the web-based Report Distribution feature, which is accessed through a standard internet browser.



PART 3

FDREPORT/SRS PANELS

3.5 Summary

The FDREPORT product enables a huge range of DASD Management reports to be generated, for use by:

- End Users
- DASD Administrators
- Disaster Recovery Planners
- Capacity Planners
- MIS Managers

It provides technical reports that describe:

- The current status of data on DASD
- The current status of the DASD themselves

Free format reports:

- Are easy to produce
- Provide customized reports
- Meet exact user needs
- Can be run as batch reports or under TSO via SRS

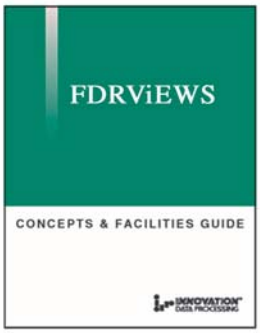
The FDREPORT report generator:

- Ensures DASD is used efficiently
- Minimizes waste
- Is Simple, Powerful And Comprehensive

The separately licensed FDRViEWS product builds on the foundation of FDREPORT to provide:

- Windows GUI interface
- Reports in various graphical formats
- Alerts
- Report Distribution

(See the FDRViEWS Concepts & Facilities Guide for more details).



PART 3

FDREPORT/SRS PANELS

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PART FOUR
Appendix

PART 4 APPENDIX

The following tables show the fields that can be used by FDREPORT and their primary source of information. ***See section 54.31 in the FDR User Manual for full details and a description*** *of how each of these fields can be used for the various FDREPORT functions, such as Selection, Sorting, Summarizing and Punching.*

Note: Some of the values in the 'Len' column are blank because the lengths of these fields (e.g. dates, byte, etc.) can be tailored by optional FDREPORT formatting Parameters.

TABLE 1 lists the FIELDs available from the dataset's DSCB in the VTOC. If a VSAM cluster is being reported, some of the information may be found in the VVDS or catalog.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
DSN	Dataset Name/VSAM Component Name	44	CHAR	VTOC VVDS	E	A	X	X	C
SPLDSN	Dataset Name on Two Lines	27	CHAR	VTOC					
SDSN	Dataset Name (First 20 bytes only)	20	CHAR	VTOC					
NAME	Dataset Name or VSAM Cluster Name	44	CHAR	VTOC VVDS			X	X	
SPLNAME	Dataset Name or VSAM Cluster Name on Two Lines	27	CHAR	VTOC VVDS					
SNAME	Dataset Name or VSAM Cluster Name (First 20 bytes only)	20	CHAR	VTOC VVDS					
GDGBASE	Generation Data Group Base Name	44	CHAR	CAT			X	X	
SPLGDGB	GDG Base Name on Two Lines	27	CHAR	CAT					
SGDGBASE	GDG Base Name (First 20 bytes only)	20	CHAR	CAT					
DEFAULTS	Includes: SPLDSN VOL DSORG RECFM BLKSIZE LRECL SIZE SIZEFREE %FREE	(4)	MIX						
DSSN	Volume Serial – Stored in DSCB (3)	6	CHAR	VTOC TVTC	E	A	X	X	V
VOLSQ	Dataset Volume Sequence Number	3	NUM	VTOC CAT	E	A	X	X	V
DATES	Includes: CRDATE EXPDATE LRDATE	(1)	NUM						
CRDATE	Creation Date	(1)	NUM	VTOC CAT	G	A	X	X	V
EXPDATE	Expiration Date	(1)	NUM	VTOC CAT	G	A	X	X	V
LRDATE	Last Reference Date	(1)	NUM	VTOC VVDS	G	A	X	X	V
NOEPV	Number of Extents for Dataset	3	NUM	VTOC TVTC	G	A	X	X	S
NOBDB	Number of Bytes in Last Directory Block	3	NUM	VTOC TVTC	G	A	X	X	
SYSCODE	System Code Field in DSCB (3)	13	CHAR	VTOC TVTC	E	A		X	V
DCBINFO	Includes: DSORG RECFM BLKSIZE LRECL		MIX						

Continued...

PART 4

APPENDIX

TABLE 1 lists the FIELDs available from the dataset's DSCB in the VTOC. If a VSAM cluster is being reported, some of the information may be found in the VVDS or catalog.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
DSORG	Dataset Organization: AM All VSAM DA BDAM EF ICF VSAM HFS Hierarchical File System (Open Edition) IAM Innovation Access Method IS ISAM PO Partitioned (PDS) POE PDSE (PDS Extended) PS Physical Sequential PSE PS Extended Format (Large Sequential) U Unmovable (may be appended to all other forms) UN Undefined	3	CHAR	VTOC TVTC	E	E	X	X	V
RECFM	Record Format	5	CHAR	VTOC TVTC	E	E	X	X	V
OPTCD	Option Code Byte	2	HEX	VTOC TVTC	E	E	X	X	V
BLKSIZE	Dataset Block Size	5	NUM	VTOC TVTC	E	A	X	X	V
LRECL	Dataset Logical Record Size	5	NUM	VTOC TVTC	E	A	X	X	V
KEYLEN	Dataset Key Length	3	NUM	VTOC VVDS	E	A	X	X	V
RKP	Dataset Relative Key Position	4	NUM	VTOC TVTC	E	A	X	X	V
DSIND	Dataset Indicators – Printed in Hex; for Selection Use: LASTV x'80' Last Volume RACF x'40' Discrete Profile PASSA x'10' Read/Write Password PASSW x'14' Write Password UPDAT x'02' Dataset Updates	2	HEX	VTOC TVTC	E	E		X	V
SECALLOC	Secondary Allocation Quantity	8	NUM	VTOC TVTC	E	A	X	X	V
SECAFLAG	Secondary Allocation Flags: BLK Allocated in Blocks CON Contiguous (CONTIG) CYL Allocated in Cylinders FIV 5 largest Extents (ALX) MAX Largest Extend (MXIG) RND Rounded to Cylinders (ROUND) TRK Allocated in Tracks	5	CHAR	VTOC TVTC	E	A	X	X	V

Continued…

PART 4 APPENDIX

	TABLE 1 lists the FIELDs available from the dataset's DSCB in the VTOC. If a VSAM cluster is being reported, some of the information may be found in the VVDS or catalog.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
SECXFLAG	Secondary Allocation Extension Flag: ABL Average Block Length BYT Bytes KBY Kilobytes MBY Megabytes	3	CHAR	VTOC TVTC				X	V
SECXVALU	Secondary Allocation Extension Value	11	NUM	VTOC TVTC				X	V
FLAG1	Dataset Flag Byte (Extended Format) CHKPTDSN Checkpointed Dataset COMPRESS Dataset is Compressable LARGE Dataset May Exceed 65535 Tracks	7	CHAR	VTOC TVTC		E		X	V
LSTAR	Dataset Last Block Pointer; Specify as LSTAR=X'*ttttrr*'	6	HEX	VTOC TVTC	E	A	X	X	
XLSTAR	Extended Last Block Pointer; Specify as XLSTAR='*tttttttrrr*'	8	HEX	VTOC	E	A	X	X	
TRKBAL	Dataset Track Balance; Remaining Bytes on Last Track Used	5	NUM	VTOC	G	A	X	X	
EXTENTS	Dataset Extents; each Extent will be Stacked; up to 123 Extents May be Printed	15(2)	CHAR	VTOC TVTC		A			
EXTENTSX	Dataset Extents (with extent type); each Extent will be Stacked; up to 123 Extents May be Printed	17(2)	CHAR	VTOC TVTC					
CTFLD	Count Field of Dataset DSCB (CCHHR)	10	HEX	VTOC TVTC		A	X	X	
BPTR	Format 1 DSCB Pointer to Format 2/3 DSCB	10	HEX	VTOC				X	
LMJOB	Last Modifying JOB (for ASM2 users) (3)	8	CHAR	VTOC TVTC		A		X	
RSVD1	Reserved Field (offset 61 x'3D')	2	HEX	VTOC TVTC			X	X	V
RSVD2	Reserved Field (offset 78 x'4E')	8	HEX	VTOC TVTC			X	X	V

(1) the format and width of date fields varies depending on the value of the DATEFORMAT= operand.
(2) these fields will be two columns larger if the FATDISK option is enabled.
(3) this field supports selection via a mask; see the VOL= operand in Section 54.13.
(4) the length of the DEFAULTS field is either 72, 74, or 76, depending on whether FATDISK and LARGEDISK are both disabled (72), FATDISK is ENABLED, LARGEDISK is DISABLED (74), or both are ENABLED (76).

	TABLE 2 lists the FIELDs available from the VVDS or ICF catalog for ICF VSAM clusters. This is in addition to the FIELDs available from the VTOC (TABLE 1). For non-VSAM datasets, these fields will contain blanks. Those fields that show a source of IAM are also valid for IAM files; those that show IAM+ are valid only for enhanced IAM files.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
CLUSTER	ICF VSAM Cluster Name	44	CHAR	VTOC VVDS	E	A	X	X	V
SPLCLS	ICF VSAM Cluster Name on Two LInes	27	CHAR	VVDS					
SCLUSTER	Cluster Name (First 20 bytes only)	20	CHAR	VVDS					
VSAMID	Includes: SPLCLS SPLDSN VOLSER	62	CHAR	VVDS CAT					
VSAMINFO	Includes: DSORG RECFM MAXLRECL LRECL CISIZE TRKSCA CICA %CI %CA COMPATTR	68	MIX						
VSAMUSE	Includes: RECORDS RETRIEVE UPDATES INSERTS DELETES HIALORBA HIUSERBA CISPLIT CASPLIT	85	NUM						
TIMES	Includes: CRTIME LRTIME	17	NUM						
CRTIME	Time of Creation (hh.mm.ss)	8	NUM	VVDS IAM				X	
LRTIME	Time of Last Reference (hh.mm.ss)	8	NUM	VVDS IAM				X	
CATNAME	Name of the Catalog**	44	CHAR	VVDS IAM	E	A	X	X	V
%CA	Free Percent in Control Area (CA)	3	NUM	VVDS IAM+	G	A	X	X	V
%CI	Free Percent in Control Interval (CI)	3	NUM	VVDS IAM+	G	A	X	X	V
CICA	Number of Control Intervals per CA	3	NUM	VVDS	G	A	X	X	V
CISIZE	Control Interval (CI) Size	5	NUM	VVDS IAM	E	A	X	X	V
BUFSIZE	VSAM Buffer Size	6	NUM	VVDS IAM	E	A	X	X	V
MAXLRECL	VSAM Maximum Record Length	6	NUM	VVDS IAM	E	A	X	X	V
TRKSCA	VSAM Number Tracks per Control Area	3	NUM	VVDS	G	A	X	X	
CLUSATTR	VSAM Cluster Attributes ATL Tape Volume Catalog ATTREXT Extended Attribute (EA) EXTEND Extended Format (EF) FORMAT Formatted Pagespace PAGESPACE Pagespace SWAPSPACE Swapspace TIMESTAMP Timestamps Exist VERIFYREQ Verify is Required	24	CHAR	VVDS CAT		E		X	
COMPTYPE	VSAM Component type: DATA Base Cluster Data INDEX Base Cluster Index AIXDATA (AIXDA) Alternate Index Data AIXINDEX (AIXIN) Alternate Index Index	5	CHAR	VVDS CAT		E	X	X	C

Continued…

TABLE 2 lists the FIELDs available from the VVDS or ICF catalog for ICF VSAM clusters. This is in addition to the FIELDs available from the VTOC (TABLE 1). For non-VSAM datasets, these fields will contain blanks. Those fields that show a source of IAM are also valid for IAM files; those that show IAM+ are valid only for enhanced IAM files.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
COMPATTR	VSAM Component Attributes ERAS Erase IMBD Imbedded IXD Indexed KRNG Keyrange NIXD Non-Indexed NUMD Relative ORD Ordered RCVY Recovery REPL Replicate RUS Reusable SPED Speed SPND Spanned WCK Write check	24	CHAR	VVDS			X		
VOLCFLAG	VSAM Volume Flag: CANDWSPACE C Candidate with Space EXTENTSYNC S Extents Do Not Match VTOC GUARSPACE G SMS Guaranteed Space OVERFLOWVOL O Overflow Volume PRIMEVOLUME P Prime Volume RELCIADDR R Relative CI Addressing	8	CHAR	VVDS CAT		E		X	X
DSNEIFLG	VSAM Dataset Extended Info Flag: G Extended Addressability (>4GB) R Relative CI Addressing	2	CHAR	VVDS		E		X	X
AMDATTR	VSAM Cluster Attributes from AMDSB: ESDS ES IMBED IM KEYRANGE KE KSDS KS ORDERED OR RRDS RR REPLICATE RE SPANNED SP WRITECHECK WR	24	CHAR	VVDS IAM		E		X	
AMDATTR3	VSAM Cluster Attributes from AMDSB: LINEAR LI LOADED LO NONUNIQUE NO SHRBCS SH Shared Catalog VARIABLE VA Variable RRDS	24	CHAR	VVDS IAM+		E		X	
AIXATTR	Attribute of Alternate Index: AIX This is an AIX UPGRADE AIX with UPGRADE Attribute	7	CHAR	VVDS IAM+		E		X	V

Continued…

	TABLE 2 lists the FIELDs available from the VVDS or ICF catalog for ICF VSAM clusters. This is in addition to the FIELDs available from the VTOC (TABLE 1). For non-VSAM datasets, these fields will contain blanks. Those fields that show a source of IAM are also valid for IAM files; those that show IAM+ are valid only for enhanced IAM files.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
ATTR1	Attribute Byte One ERASE Erase when Deleted INHIBIT Access for Read Only RECOVERY Control Areas Preformatted REUSEABLE Can be Reopened as New SPEED Control Areas Not Preformatted TEMPEXPORT Portable Copy Has Been Made TRACKOVER Track Overflow UNIQUE	24	CHAR	VVDS CAT		E		X	
ATTR2	Attribute Byte Two CATALOGBUSY Catalog Busy CATALOGLOCK Catalog is Locked COMPNOTUSE Component is Not Usable INTERNALDSN Internal System Dataset REGSHROPT1 Share Options 1 REGSHROPT2 Share Options 2 REGSHROPT3 Share Options 3 REGSHROPT4 Share Options 4	24	CHAR	VVDS CAT		E		X	
AXRKP	Alternate Key RKP	4	NUM	VVDS		A	X	X	V
SHROPT	VSAM Share Options	3	CHAR	VVDS IAM			X		V
PRIALLOC	VSAM Primary Allocation Quantity	8	NUM	VVDS IAM	E	A	X	X	V
HIALORBA	VSAM High Allocated Relative Byte Address	10	NUM	VVDS IAM+	G	A	X	X	
HIKEYRBA	VSAM High Key Relative Byte Address	10	NUM	VVDS IAM+	G	A	X	X	
HIUSERBA	VSAM High Used Relative Byte Address	10	NUM	VVDS IAM+	G	A	X	X	
EXCPEXIT	VSAM Exception Exit (1)	8	CHAR	VVDS	E	A			V
OWNER	VSAM Owner Identification	8	CHAR	VVDS CAT	E	A	X	X	V
TIMESTMP	VSAM Time Stamp	16	HEX	VVDS IAM				X	
CASPLIT	Number of Control Area (CA) Splits	8	NUM	VVDS	G	A	X	X	S
CASPLITR	CA Split Ratio (splits per 100 CAs)	6	NUM	GEN		A	X	X	S
CISPLIT	Number of Control Interval (CI) Splits	8	NUM	VVDS	G	A	X	X	S
CISPLITR	CI Split Ratio (splits per 100 CIs)	6	NUM	GEN		A	X	X	S
INDEXLEV	VSAM Number of Index Levels	5	NUM	VVDS		A	X	X	V
EXCPS	VSAM Number of EXCPs	10	NUM	VVDS	G	A	X	X	S
DELETES	VSAM Number of Records Deleted	10	NUM	VVDS IAM	G	A	X	X	S
INSERTS	VSAM Number of Records Inserted	10	UM	VVDS IAM	G	A	X	X	S
RECORDS	VSAM Number of Records in Cluster	10	NUM	VVDS IAM	G	A	X	X	S
RETRIEVE	VSAM Number of Records Retrieved	10	NUM	VVDS IAM	G	A	X	X	S
UPDATES	VSAM Number of Records Updated	10	NUM	VVDS IAM	G	A	X	X	S
VSFREBYT	VSAM Number of Bytes Free	10	NUM	VVDS	G	A		X	S
CATVRBA	Relative Byte Address of VVR from Catalog	8	HEX	CAT	G	A	X	X	V
VVRVRBA	Actual Relative Byte Address of VVR in VVDS	8	HEX	VVDS	G	A		X	V

Continued…

	TABLE 2 lists the FIELDs available from the VVDS or ICF catalog for ICF VSAM clusters. This is in addition to the FIELDs available from the VTOC (TABLE 1). For non-VSAM datasets, these fields will contain blanks. Those fields that show a source of IAM are also valid for IAM files; those that show IAM+ are valid only for enhanced IAM files.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
VVRSTATS	Indicates VVDS errors for this Dataset (up to 2 may be displayed): NONE No Errors DPLR Multiple Identical VVR/NVR Records MLTR Multiple Non-Identical VVR/NVR Records MLTQ Multiple VVR "Q" Records EXTM Extent Mismatch Between VVR/DSCB NVVR No VVR/NVR Record (or all matching records have errors)	9	CHAR	VVDS		E	X	X	V
CMPCANDV	Number Candidates Cataloged to Component	3	NUM	CAT		A	X	X	V
CMPVOLCT	Number Volumes Cataloged to this Component	3	NUM	CAT		A	X	X	V
CMPVOLTL	Total Volumes Cataloged to this Component	3	NUM	CAT		A	X	X	V
SECURFLG	Security Flags RACF Discrete RACF Profile OWNC Ownership Cluster	4	CHAR	VVDS				X	V
SECVERMO	Security Verification Module	8	CHAR	VVDS		E			V
SPACEFLG	Space Allocation Flag CYLINDERS KILOBYTES MEGABYTES RECORDS TRACKS	3	CHAR			E	X	X	V
VVREXTCT	Extent Count from VVR Type 60 Cell	4	CHAR	VVDS				X	V

(1) this field supports selection via a mask; see the VOL= operand in Section 54.13.

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TABLE 3 lists the additional FIELDs available for a dataset on an SMS-managed volume. For non-SMS datasets, these fields will be blank.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
SMSCLASS	Includes: STORCLAS DATACLAS MGMTCLAS	26	CHAR						
STORCLAS	SMS Storage Class (1)	8	CHAR	VVDS CAT		E	X	X	V
MGMTCLAS	SMS Management Class (1)	8	CHAR	VVDS CAT		E	X	X	V
DATACLAS	SMS Data Class (1)	8	CHAR	VVDS CAT		E	X	X	V
STORGRP	SMS Storage Group on which the Dataset Resides (1)	8	CHAR	GEN		E	X	X	V
SMSFLAGS	SMS flag byte in DSCB: MANAGED S SMS-Managed NOBCS N Not Cataloged REBLOCK R Reblockable DADSMCRT D DADSM Assigned Blksize PDSE I PDS Extended PDSEX X HFS (Hierarchial File System) STRIPE Z Extended Format (EF) ATTREXTN E Extended Attribute (EA)	4	CHAR	VTOC		E		X	V
LASTBKUP	SMS Last Backup Date and Time (HSM)	13	CHAR	VVDS		A		X	
NVSAMATR	SMS NONVSAM Attributes: ACTGDG Active GDG Generation DEFGDG Deferred GDG Generation ROLGDG Rolled-out GDG gGeneration PDSE PDS Extended POSIX HFS (Hierarchial File Sys)	7	CHAR	VVDS		E		X	V
NVSAMFLG	SMS NONVSAM Flags: ATTREXT Extended Attribute (EA) EXTEND Extended Format (EF)	7	CHAR	VVDS		E		X	V
STRIPECT	Stripe Count, for Extended Format (EF)	3	CHAR	VVDS		E		X	V
RECOVDTA	SMS Recovery Data	8	CHAR	VVDS		E		X	V
RESOROWN	SMS Resource Ownership	16	CHAR	VVDS		E		X	V
SUBCFLAG	SMS Subcell Flag Byte	17	CHAR	VVDS		E		X	V
SUBCVERS	SMS Subcell Version Number	3	NUM	VVDS		A		X	V
COMPUSER	Compressed Dataset Size	10	NUM	VVDS		A	X	X	S
USERDATA	Original Size of Compressed Dataset	10	NUM	VVDS		A	X	X	S

(1) this field supports selection via a mask; see the VOL= operand in Section 54.13.

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TABLE 4 lists dataset backup information from the ABR system.
If DATATYPE=ARCHIVE was specified, this information is from the archive control file, otherwise it is from the ABR backup subsystem. If COPY= or OLDBACKUP= was specified, there may be more than one line of this information available; REPORT will list them on multiple lines, SELECT/XSELECT will test against all copies of the fields.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
ABRGEN	Current ABR Generation Number	4	NUM	MODL	E	A	X	X	V
ABRCYCLE	Current ABR Cycle Number	3	NUM	MODL	E	A	X	X	V
ABRIND	ABR Indicators: A Always Backup/Never Archive B Current ABR Backup Exists N Normal Backup/Never Archive R Archive Requested X Exclude from ABR Processing For Reports Only, Not for Selection: C No Current ABR Backup Exists I Instant backup is pending – SNAP/SPLIT/PSPLIT/FCOPY has been done, but the point-in-time image has not yet been copied to a backup file (only in a report line for an ABR model DSCB) M Multi-Volume Dataset T Old Backup Recording is Enabled U Updated Since Last ABR Backup	5	CHAR	VTOC	E	E		X	V
ABRHITRS	ABR High Volume Threshold	3	NUM	MODL		A	X	X	V
ABRLOTRS	ABR Low Volume Threshold	3	NUM	MODL		A	X	X	V
ABRVPOPT	ABR Volume Processing Options	7	CHAR	MODL		E		X	V
ADATE	Archive Date	(1)	NUM	ARCH	G	A	X	X	V
ATIME	FDRAPPL Archive Time (*hhmmss*)	8	NUM	ARCH	G	A	X	X	V
BKTIME	FDRAPPL Backup time (*hhmmss*)	8	NUM	ARCH	G	A	X	X	V
ADAYS	# Days Since Archive	5	NUM	ARCH	G	A	X	X	V
ARCDSN	Archive Control File Name	44	CHAR	GEN			X	X	V
ARCFLAGS	Includes: ARCFLAG1 ARCFLAG2								
ARCFLAG1	ARCHIVE Control File Flag 1 FIVEVOL F Backup Over 5 Vols MULTIVOL M Multi-Volume Dataset RESTORED R Restored from ARCHIVE	5	CHAR	ARCH		E		X	V
ARCFLAG2	ARCHIVE Control File Flag 2 CLUSTER C Entry for ICF Cluster DELETE D Entry Flagged for Deletion NOTCAT N Backup Not Cataloged RECALL A Archived for Auto-Recall	5	CHAR	ARCH		E		X	V
ARCTTR	TTR Used for Auto-Recall	6	HEX	ARCH		A	X	X	V
ACTTTR	Actual TTR of Record in ARCHIVE Control File	6	HEX	ARCH		A	X	X	V
BKINFO	Includes: BKDATE BKSUFFIX BKFILENO BKVOL	(1)	CHAR						

Continued…

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TABLE 4 lists dataset backup information from the ABR system.
If DATATYPE=ARCHIVE was specified, this information is from the archive control file, otherwise it is from the ABR backup subsystem. If COPY= or OLDBACKUP= was specified, there may be more than one line of this information available; REPORT will list them on multiple lines, SELECT/XSELECT will test against all copies of the fields.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
TVTOCDSN	Input Backup DSN, for RPTYPE=TVTOC	44	CHAR	GEN			X	X	V
OLDBKUP	ABR Old Backup # of ABR Backup Displayed	2	NUM	GEN				X	V
BKCYCLE	Cycle # of ABR Backup Displayed	3	NUM	VTOC CAT		A	X	X	V
BKGEN	Generation # of ABR Backup Displayed	4	NUM	VTOC CAT		A	X	X	V
BKDATE	Backup Date	(1)	NUM	ARCH CAT	G	A	X	X	V
BKDAYS	# Days Since Backup	5	NUM	GEN	G	A	X	X	V
BKEXDATE	Backup or Archive Expiration Date	(1)	NUM	ARCH CAT		A	X	X	V
BKEXDAYS	# Days Until Expiration of Backup or Archive (2)	5	NUM	GEN		A	X	X	V
BKFILENO	File Seq Number of Backup or Archive	4(4)	NUM	ARCH CAT	E	A	X	X	V
BKSUFFIX	Backup or Archive Dataset Name Suffix. This is the Last Index Level in the Name (3)	8	CHAR	ARCH CAT	E	A	X	X	V
BKTAPCNT	Number of Backup or Archive Volumes	2	NUM	GEN	E	A	X	X	V
BKVOL	Volume Serials for the Backup/Archive (5) (3)	34	CHAR	ARCH CAT	E	A	X	X	V
BKXVOL	Volume Serials for the Backup/Archive (20)	139	CHAR	ARCH CAT	E	A			V
BKDEVCLS	Device Class of Backup (TAPE or DISK)	4	CHAR	ARCH CAT		E	X	X	V
BKDEVTYP	Device Type of Backup	7	CHAR	GEN		E	X	X	V
BKDSNS	Number of Active Backup Datasets	3	NUM	GEN		A	X	X	V
ENCRDEF	Includes: ENCRPROF ENCRDATE ENCRFLGS ENCRTYPE ENCRBVOL ENCRBDSN								
ENCRBDAY	Days Since Encrypted	5	NUM	CRYP		A	X	X	V
ENCRBDSN	Encryption Original Backup Dataset Name	44	CHAR	CRYP		E	X	X	V
ENCRBVOL	Original First Backup Volume	6	CHAR	CRYP		E	X	X	V
ENCRDATE	Backup Date (yyyyddd)	(1)	NUM	CRYP		E	X	X	V
ENCRFLGS	Encryption Flag Byte MASTERKEYAPPLIED Master Key Used DELETE Record Marked for Deletion FDRCAMS Encrypted by FDRCAMS GENERATEDKEY Key was Generated PUBLICKEYAPPLIED Public Key Used TAPEFILE Backup File Resides on Tape UPSTREAM Created with FDR/UPSTREAM	5	CHAR	CRYP		E	X	X	V
ENCRFLSQ	Encryption Original Backup File Seq	5	NUM	CRYP		A	X	X	
ENCRKEY	Encryption Key	32	CHAR	CRYP					
ENCRPROF	Upstream Profile Name	8	CHAR	CRYP		E	X	X	V
ENCRTIME	Backup Time (hhmmss)	8	NUM	CRYP		A		X	

Continued…

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	TABLE 4 lists dataset backup information from the ABR system. If DATATYPE=ARCHIVE was specified, this information is from the archive control file, otherwise it is from the ABR backup subsystem. If COPY= or OLDBACKUP= was specified, there may be more than one line of this information available; REPORT will list them on multiple lines, SELECT/XSELECT will test against all copies of the fields.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
ENCRTYPE	Encryption Type AES128 AES with 128 Bit Key AES192 AES with 192 Bit Key AES256 AES with 256 Bit Key AESFAST AES with 128 Bit Key CIPHER Transformation/Substitution SUBSTITUTE Character Substitution	6	CHAR	CRYP		E		X	V
ENCRVOL	Volume Serial Number Encrypted	6	CHAR	CRYP		E	X	X	V
SPLEBDSN	Encrypt Bkup Dsname – ABR Split Format	27	CHAR	CRYP					

(1) the format and width of date fields varies depending on the value of the DATEFORMAT= operand.
(2) if the expiration date is 99.000 or 99.365 or above, this is set to 65535.
(3) this field supports selection via a mask; see the VOL= operand in Section 54.13.
(4) this field is four bytes by default, or five bytes if FIVEBYTESBKFS is enabled.

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	TABLE 5 lists the FIELDs that can be generated by ABR from information contained in the VTOC, Catalog, or the VVDS.				SELECT	XSELECT	PUNCH	SORT	SUMMARY
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
SIZEINFO	Includes: SIZE SIZEFREE %FREE	15[1]	NUM						
SIZE	Size of the Dataset in Tracks	5[1]	NUM	GEN	G	A	X	X	S
BYTES	Size of the Dataset in Bytes/KB/MB	[2]	NUM	GEN		A	X	X	S
MAXSIZE	Maximum Size of Dataset in Tracks if All Secondary Allocations Taken	5[1]	NUM	GEN	G	A	X	X	S
SIZEFREE	Number of Tracks Unused for Dataset ❖ PS, PO, and VSAM Actual Free Tracks ❖ All Others Zero (0)	5[1]	NUM	GEN	G	A	X	X	S
BYTESFRE	Bytes Unused in the Dataset	[2]	NUM	GEN		A	X	X	S
SIZEUSED	Number of Tracks Used for Dataset ❖ PS, PO, and VSAM Actual Used Tracks ❖ All Others Total Allocated Space	5[1]	NUM	GEN	G	A	X	X	S
BYTESUSE	Bytes Used in the Dataset	[2]	NUM	GEN		A	X	X	S
BLKSTRK	Number of Blocks per Track	4	NUM	VVDS TRKC	G	A	X	X	V
BYTESTRK	Bytes per Track (BLKSIZE times BLKSTRK)	5	NUM	GEN		A	X	X	V
TRKCYL	Number of Tracks/Cylinder	3	NUM	GEN			X	X	V
PRIBYTES	Bytes in Primary Allocation (ICF VSAM Only)	[2]	NUM	GEN		A	X	X	S
SECBYTES	Bytes/KB/MB Size of Secondary Allocation	[2]	NUM	GEN		A	X	X	S
TRACKCAP	Max Track Capacity of Device in Bytes	5	NUM	VTOC			X	X	V
CAPBYTES	Bytes Size of Allocated Space if Used at Track Capacity	[2]	NUM	GEN		A	X	X	S
%FREE	Percentage of Free Space in Dataset	3	NUM	GEN	G	A	X	X	V
%USED	Percentage of Used Space in Dataset	3	NUM	GEN	G	A	X	X	V
FREEEXT	Number of Allocated Extents Containing No Data	3	NUM	GEN		A	X	X	V
USEDEXT	Number of Allocated Extents Containing Data	3	NUM	GEN		A	X	X	V
%CAPUSED	Percentage of Capacity Utilization (based on allocation and BLKSIZE)	3	NUM	GEN		A	X	X	V
CATALOG	Indicates if Dataset is Cataloged This can be Expensive to Collect if a Large Number of Datasets are to be Reported. YES Cataloged to this Volume NO Not Cataloged at All ERR Cataloged to Another Volume ONL Only Cataloged, Not in VTOC UNK Error Reading Catalog CAN Cataloged to Candidate Volume DRF Disk Read Failure	3	CHAR	CAT	E	E	X	X	V
CATTTR	DSCBTTR from Catalog (used by ABR to indicate auto recall)	6	HEX	CAT		A	X	X	X
CATVOL	Volume Where the Dataset is Cataloged	6	CHAR	CAT		E	X	X	X
CATVOLCT	Number of Unique Non-Candidate Volumes Where the Dataset is Cataloged	3	NUM	CAT		A	X	X	V

Continued...

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	TABLE 5 lists the FIELDs that can be generated by ABR from information contained in the VTOC, Catalog, or the VVDS.				SELECT	XSELECT	PUNCH	SORT	SUMMARY
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
CANDVOLC	Number of Unique Candidate Volumes where the Dataset is Cataloged	3	NUM	CAT		A	X	X	V
CATVOLTL	Total Number of Unique Volumes where the Dataset is Cataloged	3	NUM	CAT		A	X	X	V
DSNALCNT	Number of Catalog Aliases for this Dataset	5	NUM	CAT		A	X	X	S
DSNALIAS	An Alias for This Dataset(indexed by RELALCNT)	44	CHAR	CAT		A	X	X	V
RELALCNT	Relative Alias Number	5	NUM	CAT		A	X	X	V
GDGENTRY	GDG Active Entry Count	3	NUM	CAT		A	X	X	V
GDGFLAGS	GDG Base Flags: EMPTY NOEMPTY SCRATCH NOSCRATCH	9	CHAR	CAT		E	X	X	V
GDGGENER	GDG Generation Number	4	NUM	VTOC		A	X	X	V
GDGLIMIT	GDG Generation Limit	3	NUM	CAT		A	X	X	V
GDGRELGN	GDG Relative Generation Number	3	NUM	GEN		A	X	X	V
GDGVERSN	GDG Version Number	2	NUM	VTOC		A	X	X	V
GDGLADAT	Last Altered Date (GDGBASE only) (yyddd)	6	NUM	CAT		A	X	X	V
GDGLADAY	Days Since Last Altered (GDGBASE only)	5	NUM	GEN		A	X	X	V
CRDAYS	Number of Days Since Creation	5	NUM	GEN	G	A	X	X	V
EXPDAYS	Number of Days Until Expiration [4]	5	NUM	GEN	G	A	X	X	V
LRDAYS	Number of Days Since Last Reference	5	NUM	GEN	G	A	X	X	V
NOEXTENT	Number of Extents Used for Dataset	3/4	NUM	GEN	G	A	X	X	S
PROTECT	Reports on Type of Protection Indicates if RACF or PASSWORD Protected	4	CHAR	VTOC				X	V
RUNDATE	Date of FDREPORT Execution	[3]	NUM	GEN		A	X	X	V
RUNTIME	Time of FDREPORT Execution (*hh.mm.ss*)	8	NUM	GEN		A	X	X	
VOL	Volume Serial Dataset Resides on [5]	6	CHAR	VTOC	E	A	X	X	V
FILESEQ	File Sequence Number (tape only)	4	NUM	CAT		A	X	X	
UNIT	Device address the Dataset is on	3/4	CHAR	GEN		A	X	X	V
DEVTYPE	Type of Device Dataset Resides on	7	CHAR	GEN	E	E	X	X	V
DEVCLASS	Class of Device Dataset Resides on: TAPE/DISK	4	CHAR	GEN		E	X	X	V
UCBSTATS	UCB Status: ONLINE/OFFLINE	7	CHAR	UCB		E	X		V
UCBID	4-byte UCB Device Type	8	HEX	CAT UCB		E	X		V
UNITNAME	Generic Unit Name	8	CHAR	SYS	E	E	X	X	V
VOLID	Disk Volume ID	4	CHAR	LBL Trk		E	X	X	V
INDEXNUM	# of Index Level in the Dataset or Cluster Name that is Extracted into Field INDEX	3	NUM	USER			X	X	V
INDEX	Extracted Level from Dataset or Cluster Name	8	CHAR	DSN CLUS			X	X	V
NTMIGRAT	HSM Only: Number of Times Dataset has been Migrated (MCDS) or Backed Up (BCDS)	8	CHAR		E	E		X	
SYSID	SMF System ID Where FDREPORT was Run	4	CHAR			A	X	X	X

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	TABLE 5 lists the FIELDs that can be generated by ABR from information contained in the VTOC, Catalog, or the VVDS.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
SOURCE	Source of this Data Record ARCHIVE BCDS CATALOG MCDS VTOC VVDS	8	CHAR		E	E		X	
TRKSVOL	Number of Tracks on this Volume	6	NUM	VTOC TVTC			X	X	S
RANK	Rank Within Sorted Data	6	NUM	GEN	A	A	X	X	
CCA	Channel Connect Address	2	HEX	DCE		A	X	X	
CTLSERNO	Controller Serial Number	5	CHAR	CDR		A	X	X	V
MFRCODE	Manufactures Code	3	CHAR	CDR		E	X	X	V
SSID	Control Unit Subsystem Identifier	4	CHAR	CDR		E	X	X	V
RECONFLG	FDREPORT Product Version	5	CHAR	GEN				X	V
RECTYPE	FDREPORT Data Record Type 1 Volume Record 2 Dataset/Component Record 4 Volume Summary Record 8 Prior Compressed Data Record 9 Prior Active Fields Record 64 Compressed Data Record 128 Active Fields Record	3	NUM	GEN				X	V
RECVER	FDREPORT Product Version Record Format	4	CHAR	GEN			X	X	V
TODAY	Today's Date	5		GEN			X		
ACTIVE	ENQUEUE Status (YES or NO)	3	CHAR	GEN		E			C
ALILEVEL	Alias Level	2	NUM	BCS		E	X		C
ALISTATS	Alias Stats YES Alias is Currently Active NO Alias is Not Currently Active	3	CHAR	BCS		E			C
SECURITY	Dataset RACROUTE Status DSCB Dataset Protected by a Specific Profile NODS No Decision Returned by SAF NONE No Protection PROFILE Dataset Protected by a Generic Profile					E			
DSNFLAGS	Dataset attributes RLS Record Level Sharing Supported	4	CHAR			E			C

(1) the width of the size (in tracks) fields will be 6 if the FATDISK option is enabled.
(2) the format and width of byte fields varies depending on the value of the BYTEFORMAT= operand.
(3) the format and width of date fields varies depending on the value of the DATEFORMAT= operand.
(4) if the expiration date is 99.000 or 99.365 or above, this is set to 65535.
(5) this field supports selection via a mask; see the VOL= operand in Section 54.13.

	TABLE 6 lists the FIELDs that can be obtained from the directory of a Partitioned Dataset or an Extended Partitioned Dataset (via FAMS).				SELECT	XSELECT	PUNCH	SORT	SUMMARY
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
DIRBINFO	Includes: DIRBLOCK DIRBFREE %DIRFREE		NUM						
DIRBLOCK	Number of PDS Directory Blocks	5	NUM	DIRB FAMS		A	X	X	V
DIRBFREE	Number of Free PDS Directory Blocks	5	NUM	DIRB FAMS		A	X	X	V
DIRBUSED	Number of Used PDS Directory Blocks	5	NUM	DIRB FAMS		A	X	X	V
%DIRFREE	Percentage of PDS Directory Blocks Not Used	3	NUM	GEN		A	X	X	V
%DIRUSED	Percentage of PDS Directory Blocks In Use	3	NUM	GEN		A	X	X	V
MEMBERS	Number of Members in PDS	6	NUM	DIRB FAMS		A	X	X	S
DIRISPF	ISPF Member List Equivalent Activates: MEMNAME MEMBABAS MEMBCURR MEMBCRDT MEMBLMDT MEMBLMTI MEMBINTR MEMBMODR MEMBVFM MEMBID			GEN					
DIRLKED	Load Module Member List Activates: MEMNAME MEMBABAS MEMBSTOR MEMBTTR MEMBAMOD MEMBRMOD MEMBATTR MEMBSSI			GEN					
DIRPDS	PDS Member List Equivalent Activates: MEMNAME MEMBABAS MEMBTTR MEMBVFM MEMBCRDT MEMBLMDT MEMBLMTI MEMBCURR MEMBINTR MEMBMODR MEMBID			GEN					
MEMBABAS	PDS/PDSE Member Name Alias Base	8	CHAR	DIRB		E	X	X	V
MEMBAMOD	PDS/PDSE Member Load Module AMODE	3	CHAR	DIRB		E		X	V
MEMBATTR	PDS/PDSE Member Load Module Attributes AC1 Authorization Code 1 NOEX Not Executable OL Only Loadable REFR Refreshable RENT Reentrant REUS Serially Reusable	19	CHAR	DIRB		E		X	V
MEMBCRDT	PDS/PDSE Member Creation Date (yyddd)	6	NUM	DIRB		E	X	X	V
MEMBCURR	PDS/PDSE Member Current Record Count	5	NUM	DIRB		E	X	X	V
MEMBENTR	PDS/PDSE Member Load Module Entry Point	8	NUM	DIRB		E	X	X	V

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TABLE 6 lists the FIELDs that can be obtained from the directory of a Partitioned Dataset or an Extended Partitioned Dataset (via FAMS).

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
MEMBID	PDS/PDSE Member Id	8	CHAR	DIRB		E	X	X	V
MEMBINTR	PDS/PDSE Member Initial Record Count	5	NUM	DIRB		E	X	X	V
MEMBLMDT	PDS/PDSE Member Last Mod Date (yyddd)	6	NUM	DIRB		E	X	X	V
MEMBLMTI	PDS/PDSE Member Last Mod Time (hhmmss)	8	NUM	DIRB		E	X	X	V
MEMBMOD	PDS/PDSE Member Last Mod Number	2	NUM	DIRB		E	X	X	V
MEMBMODR	PDS/PDSE Member Modified Record Count	5	NUM	DIRB		E	X	X	V
MEMBRMOD	PDS/PDSE Member Load Module RMODE	3	CHAR	DIRB		E		X	V
MEMBSSI	PDS/PDSE Member SSI	8	CHAR	DIRB		E	X	X	V
MEMBSTOR	PDS/PDSE Member Load Module Storage	8	NUM	DIRB		E	X	X	V
MEMBTTR	PDS/PDSE Member TTR	6	Mixed	DIRB		E	X	X	
MEMBVER	PDS/PDSE Member Version Number	2	NUM	DIRB		E	X	X	V
MEMBVFM	PDS/PDSE Member Formatted Version/Mod	5	CHAR	DIRB			X		V
MEMNAME	PDS/PDSE Member Name	8	CHAR	DIRB		E	X	X	V

TABLE 7 lists the FIELDs available from IAM dataset Control Block for IAM datasets. These are in addition to the FIELDs available from the VTOC (TABLE 1) and the fields that are normally reserved for VSAM.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
IAMINFO	Includes: DSORG RECFM MAXLRECL LRECL BLKSIZE CISIZE	33	MIX						
IAMUSE	Includes: RECORDS UPDATES INSERTS DELETES OVERFLOW OVERUSED %OVER	69	NUM						
IAMINDIC	IAM Indicators: ENHANCED E Enhanced IAM format DATACOMP D Data Compressed KEYCOMP K Keys Compressed	5	CHAR	IAM		E		X	V
%PRIMEXT	Used Percent of the Prime Extension	3	NUM	IAM			X	X	V
PRIMEXTN	Number of Prime Extension Blocks Allocated	8	NUM	IAM			X	X	S
PRIMEUSE	Number of Used Prime Extension Blocks	8	NUM	IAM			X	X	S
%OVER	Used % of the Independent Overflow Records	3	NUM	IAM		A	X	X	V
OVERFPER	Overflow Percent of User Blocks	3	NUM	IAM		A	X	X	V
OVERFBLK	Number of Overflow Blocks	10	NUM	IAM		A	X	X	S
OVERFLOW	# of Independent Overflow Records Allocated	10	NUM	IAM		A	X	X	S
OVERUSED	# of Used Independent Overflow Records	10	NUM	IAM		A	X	X	S
HIALOBLK	High Allocated Block	10	NUM	IAM		E	X	X	V
HIUSEBLK	High Used Block	10	NUM	IAM		E	X	X	V

	TABLE 8 lists the FIELDs that can be obtained from the volume-level record. Data is gathered and summarized from the LSPACE SVC, VTOC, VTOC index, and VVDS.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
VLDEFAUL	Volume report defaults, includes: VLVOLSER VLDEVTYP VLUNIT VLINDSTA VLUSEATR VLUSERS VLALOTRK VL%UTRKS VLFRETRK VLLRGCYL VLLRGTRK VLFREEXT VLFRAGIN	83	MIX						
VLVOLSER	Volume Serial Dataset Resides On [3]	6	CHAR	VTOC		A	X	X	V
VLUNIT	Device Address the Volume is On	3/4	CHAR	GEN		E	X	X	V
VLUNITNA	Generic Unit Name	8	CHAR	SYS		E	X	X	X
VLUCBID	4-byte UCB Device Type	8	HEX	UCB		E	X		V
VLVOLID	Disk Volume ID	4	CHAR	LBL Trk		E	X	X	V
VLDEVTYP	Type of Device Dataset Resides On	7	CHAR	GEN		E	X	X	V
VL%FTRKS	Percentage of Disk Volume Free	3	NUM	VTOC		A	X	X	V
VL%UTRKS	Percentage of Disk Volume in Use	3	NUM	VTOC		A	X	X	V
VL%FDSCB	Percentage of DSCBs Free Within the VTOC	3	NUM	VTOC		A	X	X	V
VL%UDSCB	Percentage of DSCBs Used Within the VTOC	3	NUM	VTOC		A	X	X	V
VL%FINDX	Percentage of VTOC Index Records Free	3	NUM	VTIX		A	X	X	V
VL%UINDX	Percentage of VTOC Index Records Used	3	NUM	VTIX		A	X	X	V
VL%FVVDS	Percentage of VVDS Control Intervals Free	3	NUM	VVDS		A	X	X	V
VL%UVVDS	Percentage of VVDS Control Intervals Used	3	NUM	VVDS		A	X	X	V
VLALOCYL	Number of Allocated Cylinders	5	NUM	VTOC		A	X	X	S
VLALOTRK	Number of Allocated Tracks	5[1]	NUM	VTOC		A	X	X	S
VLALOBYT	Number of Allocated Bytes	[2]	NUM	VTOC		A	X	X	S
VLALTRKS	Number of Alternate Tracks on the Volume	5	NUM	DEVT		A	X	X	S
VLAVGTRK	Average File Size in Tracks	5[1]	NUM	VTOC		A	X	X	V
VLAVGBYT	Average File Size in Bytes	[2]	NUM	VTOC		A	X	X	V
VLBYTRK	Track Capacity in Bytes	5	NUM	DEVT			X	X	V
VLCYLVOL	Number of Cylinders per Volume	5	NUM	DEVT			X	X	S
VLTRKCYL	Number of Tracks per Cylinder	3	NUM	DEVT			X	X	V
VLBYTCYL	Number of Bytes per Cylinder	[2]	NUM	DEVT			X	X	V
VLTRKVOL	Number of Tracks per Volume	5[1]	NUM	DEVT		A	X	X	S
VLBYTVOL	Number of Bytes per Volume	[2]	NUM	DEVT			X	X	S
VLDIRBTR	Number of PDS Directory Blocks per Track	3	NUM	DEVT			X	X	V
VLDSCBTR	Number of VTOC DSCBs per Track	3	NUM	DEVT			X	X	V
VLDSCB	Total Number of DSCBs	5[1]	NUM	VTOC		A	X	X	S
VLDSCBU	Number of Used DSCBs	5[1]	NUM	VTOC		A	X	X	S
VLDSCB0	Number of FORMAT–0 DSCBs	5[1]	NUM	VTOC		A	X	X	S

Continued…

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TABLE 8 lists the FIELDs that can be obtained from the volume-level record. Data is gathered and summarized from the LSPACE SVC, VTOC, VTOC index, and VVDS.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
VLDSCB1	Number of FORMAT–1 DSCBs	5(1)	NUM	VTOC		A	X	X	S
VLDSCB2	Number of FORMAT–2 DSCBs	5(1)	NUM	VTOC			X	X	S
VLDSCB3	Number of FORMAT–3 DSCBs	5(1)	NUM	VTOC		A	X	X	S
VLDSCB4	Number of FORMAT–4 DSCBs	5	NUM	VTOC			X	X	S
VLDSCB5	Number of FORMAT–5 DSCBs	5	NUM	VTOC			X	X	S
VLDSCB6	Number of FORMAT–6 DSCBs	5	NUM	VTOC			X	X	S
VLDSCB7	Number of FORMAT–7 DSCBs	5	NUM	VTOC			X	X	S
VLDSOAM	Number of Non-ICF VSAM Data Spaces	5(1)	NUM	VTOC		A	X	X	S
VLDSODA	Number of Direct Access Datasets	5(1)	NUM	VTOC		A	X	X	S
VLDSOEF	Number of ICF/VSAM Components	5(1)	NUM	VTOC		A	X	X	S
VLDSOHFS	Number of HFS Datasets	5	NUM	VTOC		A	X	X	S
VLDSOIAM	Number of IAM Datasets	5	NUM	VTOC		A	X	X	S
VLDSOIS	Number of Indexed Sequential Datasets	5(1)	NUM	VTOC		A	X	X	S
VLDSOPO	Number of Partitioned Datasets	5(1)	NUM	VTOC		A	X	X	S
VLDSOPOE	Number of PDSE Datasets (SMS volumes)	5(1)	NUM	VTOC		A	X	X	S
VLDSOPS	Number of Physical Sequential Datasets	5(1)	NUM	VTOC		A	X	X	S
VLDSOPSE	Number of Physical Sequential Extended Datasets	5	NUM	VTOC		A	X	X	S
VLDSOUN	Number of Datasets with an Unknown Dataset Organization	5(1)	NUM	VTOC		A	X	X	S
VLFRAGIN	IBM Fragmentation Index	4	NUM	LSPC		A	X	X	V
VLFRECYL	Number of Unused Cylinders	5	NUM	LSPC		A	X	X	S
VLFREBYT	Number of Unused Bytes	(2)	NUM	VTOC			X	X	S
VLFREEXT	Number of Unused Extents	5(1)	NUM	LSPC		A	X	X	S
VLFRETRK	Number of Unused Tracks	5(1)	NUM	VTOC		A	X	X	S
VLFREVCI	Number of Unused VVDS Control Intervals	5	NUM	VVDS		A	X	X	S
VLUSEVCI	Number of Used VVDS Control Intervals	5	NUM	VVDS			X	X	S
VLTOTVCI	Total Number of VVDS Control Intervals	5	NUM	VVDS			X	X	S
VLFREVIR	Number of Unused VTOC Index Records	5	NUM	LSPC		A	X	X	S
VLUSEVIR	Number of Used VTOC Index Records	5	NUM	GEN			X	X	S
VLTOTVIR	Total Number of VTOC Index Records	5	NUM	GEN			X	X	S
VLALOSTA	Volume Allocation Status: ALLOC Allocated ONLINE Online, Not allocated, or SYSRES SYSRES System Residence Volume UNLOAD Unload pending	6	CHAR	UCB				X	X
VLINDSTA	Status of Indexed VTOC ACTIVE Indexed VTOC Active NONE No Indexed VTOC YES Indexed VTOC Not Active	6	CHAR	LSPC		E		X	V

Continued…

	TABLE 8 lists the FIELDs that can be obtained from the volume-level record. Data is gathered and summarized from the LSPACE SVC, VTOC, VTOC index, and VVDS.				SELECT	XSELECT	PUNCH	SORT	SUMMARY
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
VLMOUSTA	Volume Mount Status RESERVED Volume Dismountable RESIDENT Volume Non Dismountable	8	CHAR	UCB				X	V
VLUSEATR	Volume Use Attribute PRIVATE Allocated if specific PUBLIC Temporary non-specific STORAGE Non-temporary non-specific	7	CHAR	UCB		E		X	V
VLSMSTAT	Volume SMS State INITIAL Volume Initialized for SMS MANAGED Volume SMS Managed NONE No SMS Processing	7	CHAR	VTOC		E		X	V
VLSMSVST	Volume SMS Status DISABLED ALL DISABLED NEW ENABLED NONE QUIESCED ALL QUIESCED NEW	12	CHAR	SMS				X	V
VLSMSGST	Volume SMS Storage Group Status (Same Values as VLSMSVST)	12	CHAR	SMS				X	V
VLSMSSTG	Volume SMS Storage Group name	8	CHAR	SMS		A	X	X	V
VLSMSHTR	Volume SMS High Threshold	3	NUM	SMS		A	X	X	V
VLSMSLTR	Volume SMS Low Threshold	3	NUM	SMS		A	X	X	V
VLOPENDC	Number of Open DCBs	3	NUM	UCB				X	S
VLLRGCYL	Number of Cylinders in Largest Free Extent	5	NUM	LSPC		A	X	X	S
VLLRGTRK	Number of Tracks in Largest Free Extent	5(1)	NUM	LSPC		A	X	X	S
VLLRGBYT	Number of Bytes in Largest Free Extent	(2)	NUM	LSPC		A	X	X	S
VLUSERS	Number of Current Allocations to Volume	5	NUM	UCB		A		X	S
VLVTIXTR	Number of Tracks Allocated to the VTOC Index	5	NUM	VTOC		A		X	S
VLVTOCTR	Number of Tracks Allocated to VTOC	5	NUM	VTOC		A		X	S
VLVVDSTR	Number of Tracks Allocated to VVDS	5	NUM	VTOC		A		X	S
VLVVDSXT	Number of Extents Allocated to VVDS	3	NUM	VTOC		A		X	S
VLABRGEN	Current ABR Backup Generation Number	4	NUM	MODL		A	X	X	V
VLABRCYC	Current ABR Backup Cycle Number	2	NUM	MODL		A	X	X	V
VLABRHTR	Volume ABR High Threshold	3	NUM	MODL		A	X	X	V
VLABRLTR	Volume ABR Low Threshold	3	NUM	MODL		A	X	X	V
VLABRINT	Initialized for ABR Processing – YES or NO	3	CHAR	VTOC		E		X	V
VLABROPT	ABR Volume Processing Options: C Cycle Table is Active N Never Archive from this Volume S Scratch Permitted T ABR Thresholds are Enabled X Copy 1 Expiration Date from RETPD Y Copy 2 Expiration Date from RETPD I Instant Backup Attempted 0 (zero) Volume Not Initialized for ABR	7	CHAR	MODL		A	X	X	V

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APPENDIX

TABLE 8 lists the FIELDs that can be obtained from the volume-level record. Data is gathered and summarized from the LSPACE SVC, VTOC, VTOC index, and VVDS.

NAME	DESCRIPTION	LEN	ATTR	SOURCE	SELECT	XSELECT	PUNCH	SORT	SUMMARY
VLCCA VLCTLMDL	Channel Connect Address DASD Controller Model Number	2	HEX	CDT		A	X	X	
VLCTLSER	Controller Serial Number	5	CHAR	CDT		E	X	X	V
VLCTLTYP	DASD Controller Type								
VLDCEACT	Device Characteristics – Active Features CCC Extended Remote Copy CFW Cache Fast Write DCA Dual Copy Active DFW DASD Fast Write TKC Track Caching	19	CHAR	DCE		E		X	V
VLDCEFLG	Device Characteristics – Flag 2 CSW Compare Swap Bit DPX Duplex Device PKC Pack Change in Process PRI Primary Duplex Device PVM Non-Full Pack VM Minidisk SEC Secondary Duplex Device SHR Device Sysgen'd Shared SSV Subsystem is Valid	19	CHAR	DCE		E		X	V
VLDCEFL8	Device Characteristics – Flag 8 CYMG Cylinder Managed Space Exists F8F9 Format 8 & Format 9 can Exist		CHAR	DCE		E			
VLMFRCOD	Manufactures Code	3	CHAR	CDT	E	E	X	X	V
VLSSID	SSID	4	CHAR	CDT		E	X	X	V
VLDEVCLS	Device Class	4	CHAR	DVTB			X	X	V
VLIDLBYT	Idle (Waste) Bytes	15	NUM	VTOC		A	X	X	V
VLIDLTRK	Idle (Waste) Tracks	6	NUM	VTOC		A	X	X	V
VLRANK	Rank within Sorted Data	6	NUM	GEN		A		X	V
VLXTFLAG	Extended fFile flags	3	CHAR	EAS		E		X	V
VLCM%FTK	Cylinder Managed – Free Track Percentage	3	NUM	GEN		A			
VLCM%TOT	Cylinder Managed – Percent of Total Tracks	3	NUM	GEN		A			
VLCM%UTK	Cylinder Managed – Used Track Percentage	3	NUM	GEN		A			
VLCMABYT	Cylinder Managed – Allocated Bytes	10	NUM	EAS		A			
VLCMALOC	Cylinder Managed – Allocated Cylinders	10	NUM	EAS		A			
VLCMALOT	Cylinder Managed – Allocated Tracks	10	NUM	EAS		A			
VLCMFBYT	Cylinder Managed – Free Bytes	10	NUM	EAS		A			
VLCMNFCY	Cylinder Managed – Number of Free Cylinders	10	NUM	EAS		A			
VLCMNFTK	Cylinder Managed – Number of Free Tracks	10	NUM	EAS		A			
VLCMNFXT	Cylinder Managed – Number of Free Extents	10	NUM	EAS		A			

Continued…

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	TABLE 8 lists the FIELDs that can be obtained from the volume-level record. Data is gathered and summarized from the LSPACE SVC, VTOC, VTOC index, and VVDS.				**SELECT**	**XSELECT**	**PUNCH**	**SORT**	**SUMMARY**
NAME	**DESCRIPTION**	**LEN**	**ATTR**	**SOURCE**					
VLCMTBYT	Cylinder Managed – Number of Total Bytes	10	NUM	EAS		A			
VLCMTCMG	Cylinder Managed – Number of Total Managed Cylinders	10	NUM	EAS		A			
VLCMTTMG	Cylinder Managed – Number of Total Managed Tracks	10	NUM	EAS		A			
VLCYLADR	Address of Start of Cylinder Managed Space								
VLDSCB8	Format 8 DSCB Count	12	NUM			A			
VLDSCB9	Format 9 DSCB Count	12	NUM			A			
VLMINACY	Cylinder Managed – Minimum Cylinder Allocation								
VLSPRETN	SPACE DSCB0 FRVIR FRAGI CYLMS Type of Information Returned by LSPACE	29	CHAR	LSPACE					
VLTM%FTK	Track Managed – Free Track Percentage	3	NUM	GEN		A			
VLTM%TOT	Track Managed – Percent of Total Tracks	3	NUM	GEN		A			
VLTM%UTK	Track Managed – Used Track Percentage	3	NUM	GEN		A			
VLTMABYT	Track Managed – Allocated Bytes	10	NUM	BAS		A			
VLTMALOC	Track Managed – Allocated Cylinders	10	NUM	BAS		A			
VLTMALOT	Track Managed – Allocated Tracks	10	NUM	BAS		A			
VLTMFBYT	Track Managed – Free Bytes	10	NUM	BAS		A			
VLTMFRAG	Track Managed – Fragmentation Index	4	NUM	LSPACE		A			
VLTMLFCY	Track Managed – Largest Free Cylinder Extent	10	NUM	BAS		A			
VLTMLFTK	Track Managed – Largest Free Track Extent	10	NUM	BAS		A			
VLTMNFCY	Track Managed – Number of Free Cylinders	10	NUM	BAS		A			
VLTMNFTK	Track Managed – Number of Free Tracks	10	NUM	BAS		A			
VLTMNFXT	Track Managed – Number of Free Extents	10	NUM	BAS		A			
VLTMTBYT	Track Managed – Number of Total Bytes	10	NUM	BAS		A			
VLTMTCMG	Track Managed – Number of Total Managed Cylinders	10	NUM	BAS		A			
VLTMTTMG	Track Managed – Number of Total Managed Tracks	10	NUM	BAS		A			
VLTMTTRK	Track Managed – Number of Tracks Per Volume	10	NUM	BAS		A			

(1) the width of these fields will be 6 if the FATDISK option is enabled or 7 if the LARGEDISK option is enabled.
(2) the format and width of byte fields varies depending on the value of the BYTEFORMAT= operand and the FATDISK option and whether the LARGEDISK option is enabled.
(3) this field supports selection via a mask; see the VOL= operand in Section 54.13.

PART 4

APPENDIX

FDREPORT HSM REPORTING

HSM REPORTING

FDREPORT customers who are also using IBM's DFSMShsm DASD management system (or its older version DFHSM), can use FDREPORT to read the database files created by HSM and report on their contents. The HSM datasets supported by FDREPORT are:

MCDS - information on migrated datasets
BCDS - information on backups of current datasets

This allows you to use all the power and flexibility of FDREPORT to generate reports about the data that HSM is managing. With the exception of HSMCECSZ, HSMIGVOL, and NTMIGRAT, there are no new field names defined when reporting from HSM data. Instead, data fields from the HSM records and calculated values are mapped into standard FDREPORT field names. For DATATYPE=MCDS, the MCDS dataset record is described by the IBM MCD macro and the mapping is:

MCDS Field Name	FDREPORT Field Name	Field Description
MCK	DSN	Dataset Name
MCDFRVSN	VOL	Volume Serial Number
MCDUCBTY	UCBID	UCB 4-byte Device Type(hex)
	DEVTYPE	Disk Device Type (e.g., 3390)
MCDFLGS	DSSN	MGRAT*x* (*x*=migration level)
MCDDLC	CRDATE	Creation Date
	CRDAYS	Days since Creation (calculated)
MCDEXPDT	EXPDATE	Expiration Date
	EXPDAYS	Days since Expiration (calculated)
MCDDLR	LRDATE	Last Reference Date
MCDTLR	LRTIME	Last Referenced Time
	LRDAYS	Days since Last Reference (calculated)
MCDDMIG	ADATE	Date Archived (Migrated)
MCDTMIG	ATIME	Time Archived (Migrated)
	ADAYS	Days since Migration (calculated)
MCDDSORG	DSORG	Dataset Organization
MCDRECFM	RECFM	Record Format
MCDOPTCD	OPTCD	Option Code
MCDBLKSZ	BLKSIZE	Block Size
	BLKSTRK	Blocks/track (calculated)
	BYTESTRK	Bytes/track (calculated)
MCDKEYLN	KEYLEN	Key Length
MCDDSIND	DSIND	Dataset Indicators
MCDSIZE	SIZE	Allocated Tracks
	SIZEUSED	Used Tracks (calculated)
	SIZEFREE	Free Tracks (calculated)
MCDSIZEB	BYTES	Bytes Allocated
	BYTESUSE	Bytes Used (calculated)
	BYTESFRE	Bytes Free (calculated)

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MCDS Field Name	FDREPORT Field Name	Field Description
	%USED	Percentage Used (calculated)
	%FREE	Percentage Free (calculated)
MCDSCNAM	LSTAR	Last Used *ttttrr*
MCDMCNAM	STORCLAS	SMS Storage Class
MCDMDNAM	MGMTCLAS	SMS Management Class
MCDSMSFG	DATACLAS	SMS Data Class
MCDSCAL1	SMSFLAGS	SMS Dataset Flag Byte
MCDSCAL3	SECAFLAG	Secondary Allocation Flags
MCDNMIG	SECALLOC	Secondary Allocation Quantity
MCDVSN	NTMIGRAT	Number of Times Dataset was Migrated
MCDCSZ	HSMIGVOL	First Migration Volser
MCDMCANM	HSMCECSZ	Size on Migration Volume
	TVTOCDSN	Name of Migration Copy
	SOURCE	'MCDS'

For DATATYPE=BCDS, the BCDS dataset record is described by the IBM MCB macro and the mapping is:

BCDS Field Name	FDREPORT Field Name	Field Description
MCK	DSN	Dataset Name
MCBFRVOL	VOL	Volume Serial Number
MCBDBU	ADATE	Date Backed Up
MCBTBU	ATIME	Time Backed Up
	ADAYS	Days since Backup (calculated)
MCBDLRPD	LRDATE	Last Reference Date
	LRDAYS	Days since Last Reference (calculated)
MCBDSORG	DSORG	Dataset Organization
MCBRECFM	RECFM	Record Format
MCBBLKSZ	BLKSIZE	Block Size
MCBKEYLN	KEYLEN	Key Length
MCBDSIND	DSIND	Dataset Indicators
MCBSIZE	SIZE	Allocated Tracks
MCBSIZEB	BYTESUSE	Bytes Used
	BYTES	Bytes Allocated (calculated)
MCBNBC	NTMIGRAT	Number of Times Dataset was Backed Up
MCBVSN	HSMIGVOL	First Backup Volume
MCCFRUCB	UCBID	UCB 4-byte Device Type (hex)
MCCSCNAM	STORCLAS	SMS Storage Class
MCCMCNAM	MGMTCLAS	SMS Management Class
MCCMDNAM	DATACLAS	SMS Data Class
MCCSMSFG	SMSFLAGS	SMS Dataset Flag Byte
MCBBDSN	TVTOCDSN	Name of Backup Copy
	SOURCE	'BCDS'

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C O N C E P T S & F A C I L I T I E S G U I D E