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Software Innovations GmbH

eXtended Recovery System (XRS) for z/OS

User's Guide

Information and Recovery Dialog

Version 5.1.0

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1. Introduction

Data Management is a vital activity in a modern data centre. The ever increasing amounts of data make it necessary to find easy solutions to manage the backup and recovery process in a IBM z/OS environment. XRS for z/OS and XRS+ simplify the handling of these demands as part of the data management process.

XRS for z/OS offers a powerful and comfortable method of collecting data from backups created with IBM DFSMSdss. The gathered information can be used to easily find and recover data using the XRS for z/OS ISPF interface.

The functionality can be further enhanced by using XRS+, which can analyse, report and monitor who did what with your corporate z/OS data. GUI based dataset recovery is also possible.

1.1. XRS Documentation

The XRS documentation consists of 3 manuals:

- "XRS Vnnn: General Information"
- "XRS Vnnn: Installation and Operations Guide"
- "XRS Vnnn: Users Guide" (this manual)

This manual describes the XRS ISPF recovery management dialog.

2. XRS Recovery Management Dialog

2.1. Starting the Dialog

Use the sample REXX exec “STARTDLG” to start the XRS ISPF dialog. All datasets required to execute the XRS dialog are allocated in this sample and must be changed to meet the installation standards. If the XCS and XRS loadlibs are concatenated in the Linklist, then remove the corresponding LIBDEF command from the sample.

The output class of the XRSDMSGS sysout file can also be changed in "STARTDLG".

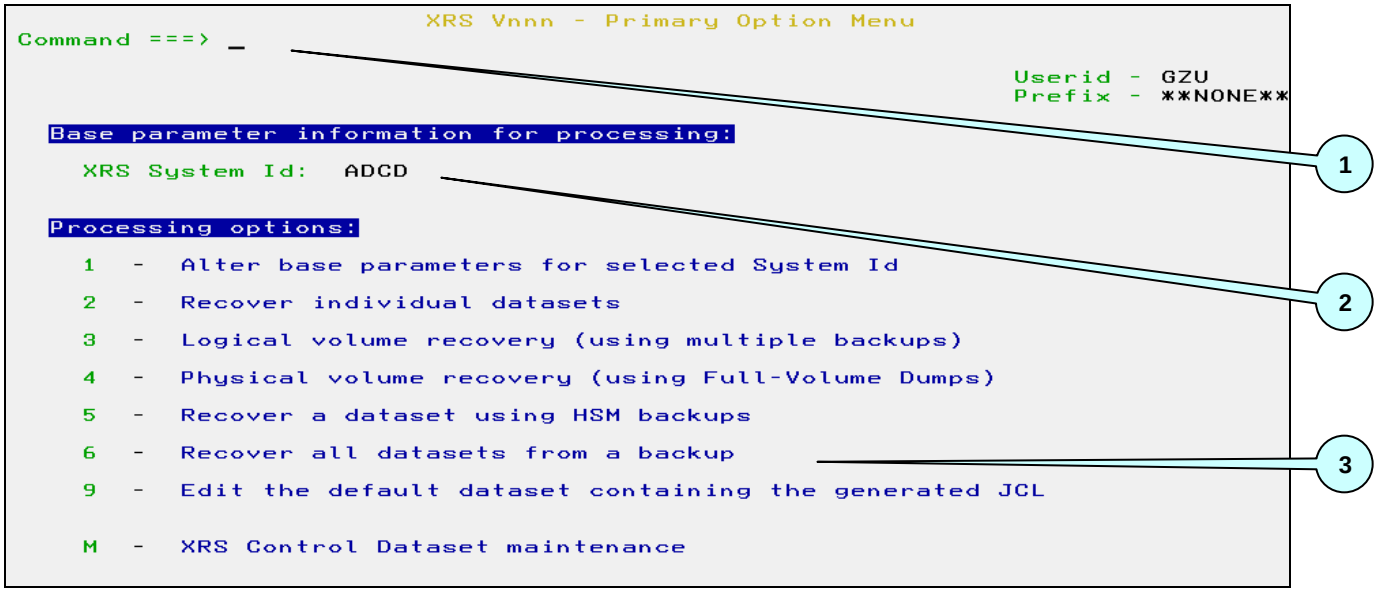
An ISPF Table library is also allocated. This should be changed to reflect the installation dataset, containing the ISPF table with the default XRS options.

If the installation uses the improvIT TSO application management tool eXtended Productivity Facility (XPF), then use the supplied sample application definition Gateway “XRSGATE”.

Note: The terminal must be configured as at least a Model 3 with a minimum display size of 32*80.

2.2. XRS Primary Option Menu

This selection panel is displayed initially. It is possible to change the default processing options, to recover datasets and volumes and perform XRS Control Dataset maintenance.

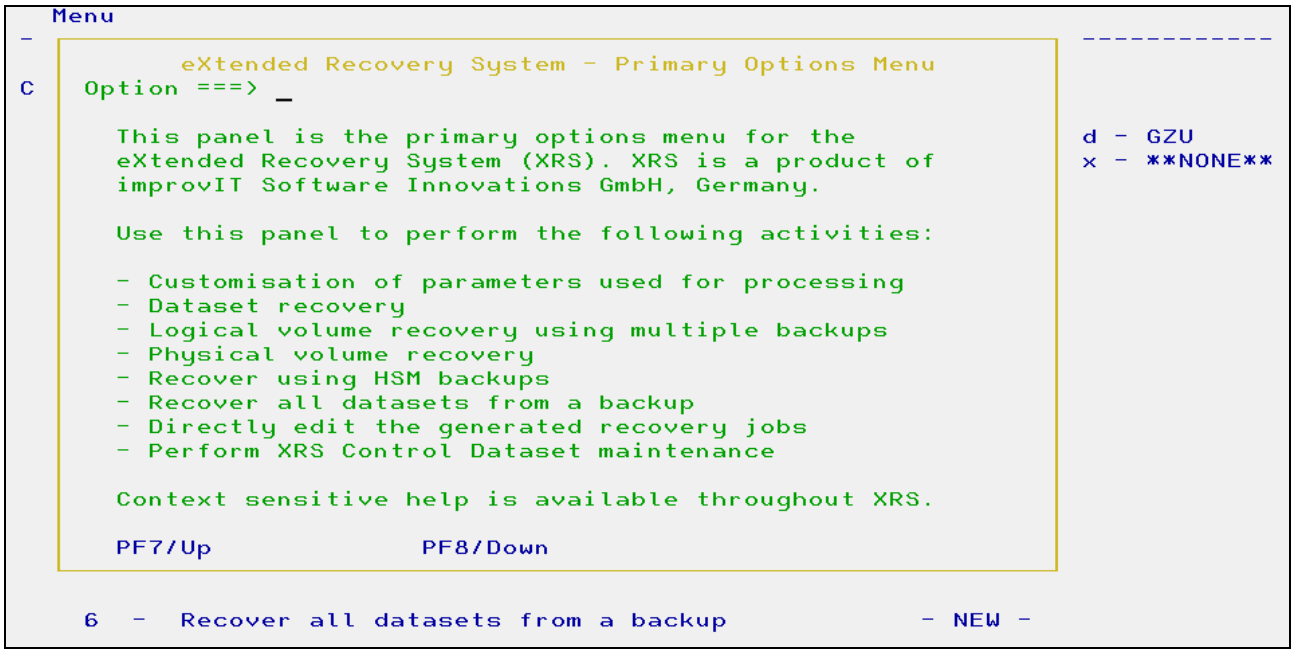


Screen 1: XRS Primary Option Menu

1. Select one of the displayed processing options.
2. Supply the name of the XRS System Id. This value can be used to group various parameter combinations. All processing options use the parameters associated with the currently entered XRS System Id.
3. ***This is a new option in V490.***

2.3. Online Help

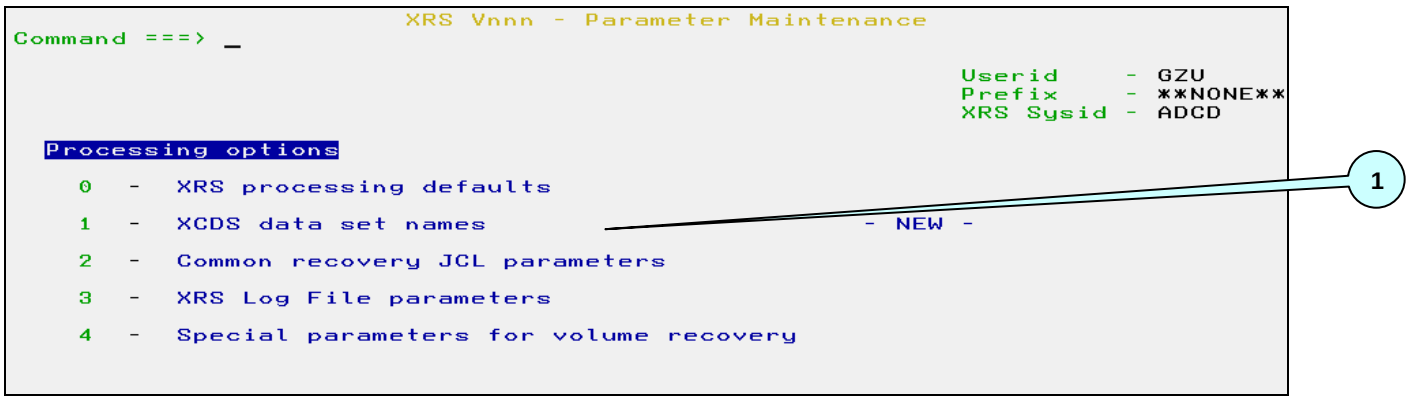
Context sensitive help is available throughout the XRS ISPF dialogs. By pressing PF1/HELP when the cursor is on an input field, specific information is displayed. Otherwise general help information will be shown.



Screen 2: Online help

2.4. Parameter Maintenance

This panel allows the user to select which processing options need to be changed.



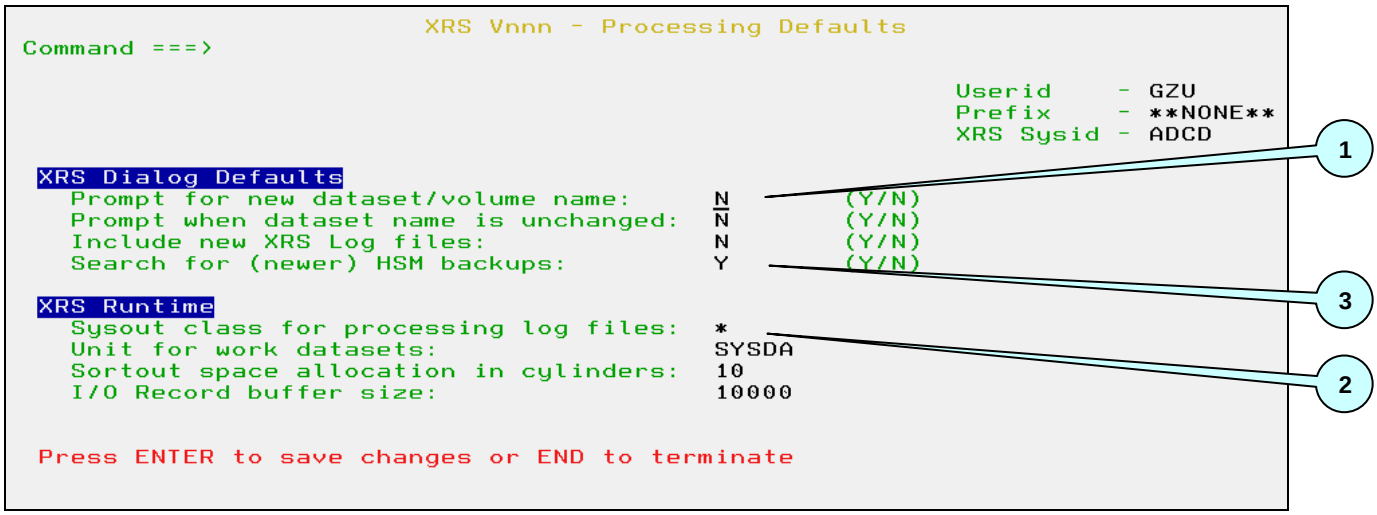
Screen 3: Parameter maintenance

1. ***This is a new option in V510***

2.4.1. XRS Processing Defaults

The following dialog sets some default processing values and controls certain XRS runtime parameters.

Note: Always press enter to save the displayed values before exiting the XRS parameter dialogs!

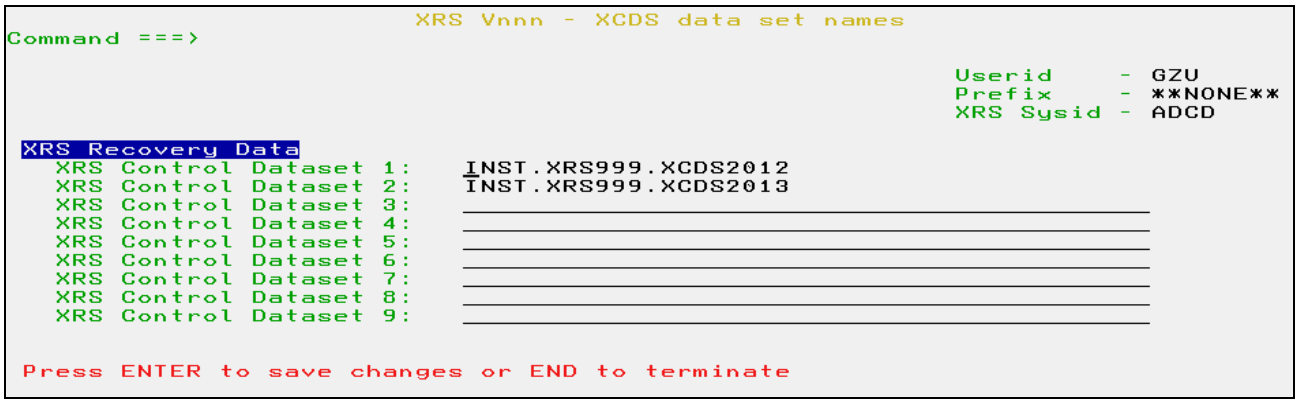


Screen 4: Processing defaults

1. Set the default values to be used in the XRS recovery dialogs. These defaults can be overridden in the corresponding dialogs when recovering files.
2. Specify the class to be used for all XRS sysout message files. A default work unit name is also required. This is used when XRS allocates internal work files. If problems occur, then try increasing the size of the sort allocation. The record buffer size should not be changed unless instructed to do so by the improvIT Software Innovations support team.
3. This is a new option in V490. If specified then for each dataset displayed in the “Dataset Recovery Selection” a check for (newer) HSM backups for this dataset is performed.

2.4.2. XCDS data set names

Use this dialog to specify one or more (up to 9) XCDS data set names.

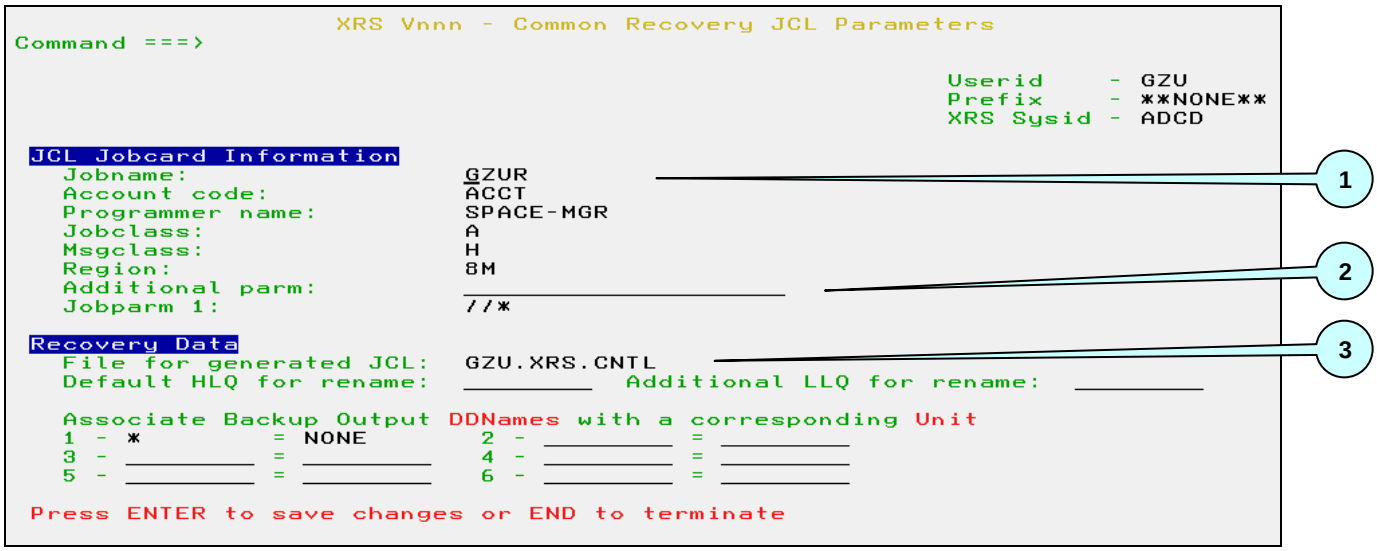


Screen 5: XCDS data set names

It allows the splitting of the XCDS (e.g. one XCDS for each backup year). It is intended for customers with a large XCDS.

2.4.3. Common Parameters

Use this dialog to specify the common processing options for both dataset and volume recovery.



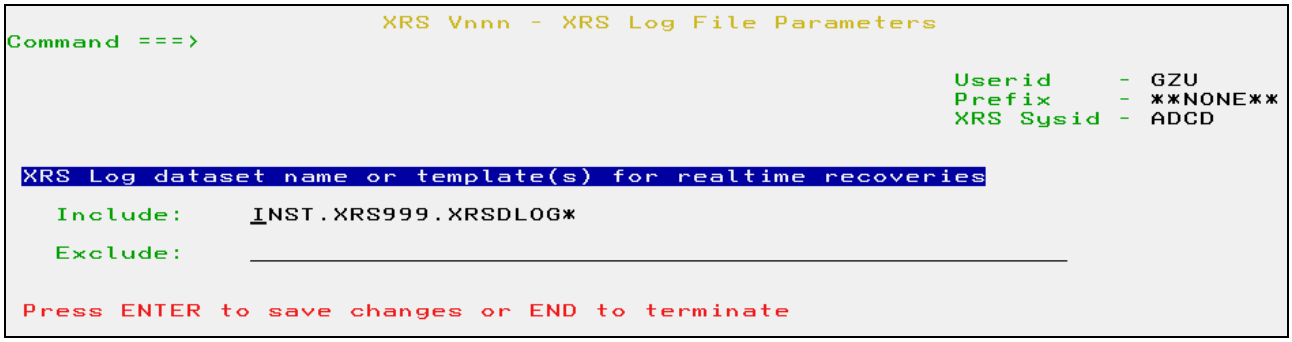
Screen 6: Parameters – Common

1. Supply all necessary JCL job card values. These are used when recovery JCL is generated.
2. Supply an optional JCL parm (e.g. SCHENV=).
3. Specify the name of the dataset which is to contain the generated JCL. A default HLQ and/or an additional LLQ can also be entered. The specified HLQ is used to replace the original dataset HLQ during recovery. This only applies if the user selects the rename option during recovery processing.

Finally DDNames and associated Units may be entered. If datasets are recovered from a backup file which was allocated using an entered DDName, then the corresponding values will be used in the generated JCL. If "NONE" is entered as a Unit, then the corresponding statement will not be generated in the recovery JCL. This is useful if the backup file DDNames are linked to a specific storage medium. If DDName "*" is used, then all unmatched DDNames will inherit the corresponding values.

2.4.4. XRS Log Files Parameters

Use this dialog to specify the log file options. These are used for dataset and full volume recovery.



Screen 7: Parameters - XRS Log files

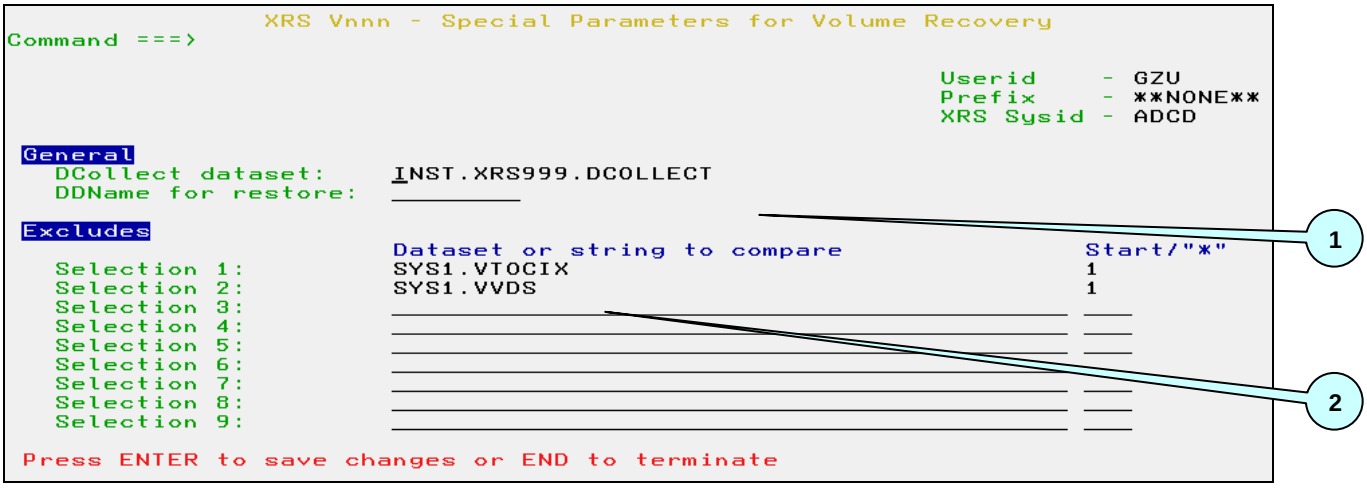
When recovering individual datasets, all information is generally obtained from the XRS Control Dataset. It is however possible to include the currently active XRS Log file(s). This is known as a real-time recovery. Enter either the full name or a template matching the installation XRS Log file naming conventions. Multiple datasets or templates may be entered delimited by a space. The allowed templates are one '*' at the end or at the start of the data set name. In addition to the default XRS Control Dataset all matching XRS Log files are then searched for dataset recovery information.

It is also possible to exclude other file names matching the template in order to avoid processing errors.

Note: It is important that the optional secondary XRS Log file is not found by the "include" template. Otherwise duplicate or outdated dataset backup entries may be shown in the XRS ISPF recovery management dialog. Furthermore templates such as "*.xxxx" should not be used, as they can result in very long response times.

2.4.5. Volume Recovery Parameters

Use this dialog to specify the processing options only used for volume recovery.



Screen 8: Parameters - Volume recovery

1. The datasets required for volume recovery are based upon information created by the IBM IDCAMS DCollect utility. Enter the name or template of the DCollect file. The allowed templates are one '*' at the end or at the start of the data set name. This should be created on a regular basis (e.g. daily). A sample job DCOLLECT can be found in the XRS samplib.

   If volume backups always use the same DDName for the output backup file, then enter the value here. This allows backup information to be more accurately matched during recovery job generation. The shown value can be overridden prior to recovery processing.

2. Enter dataset names or parts thereof which are to be bypassed during volume recovery information. An explicit position of the string in the dataset name can be entered or an "*" can be used to define, that the string may be anywhere within the dataset name. Matching dataset names are then bypassed during recovery processing. This can for example be used to bypass datasets containing the strings VTOC and VVDS.

2.4.6. Saving Parameters

Generally all entered values are only valid for the current user. If you wish to define default installation values for all users, then perform the following steps:

1. Copy the created profile member (e.g. XRSPROF) from your ISPPROF dataset to a common ISPF table library.
2. Allocate the common ISPF table library using LIBDEF with ISPTLIB prior to starting XRS. If you use the product “eXtended Productivity Facility (XPF)”, just add the common table library to the application definition gateway.
3. All users will now use the default values. Changes are only stored in the users private profile dataset.

3. XRS Dataset Recovery Dialog

3.1. Dataset Recovery

Certain IBM DFSMS restrictions apply, when recovering individual datasets from IBM DSS full volume dumps. These must be appropriately handled:

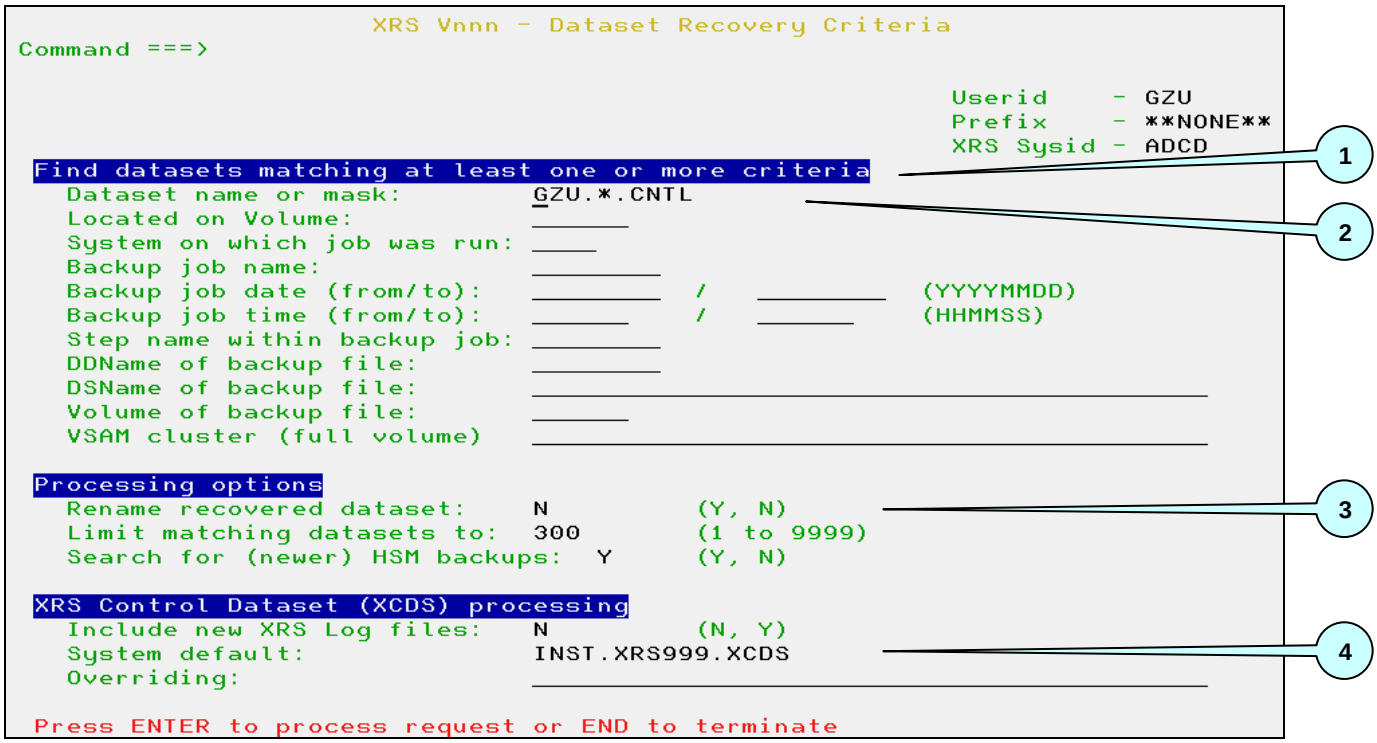
- VSAM datasets are not automatically recataloged
- Multi-Volume datasets are not completely recovered. Only the data on the selected volume is restored. This could result in damaged files

See the IBM documentation for further details. XRS generates an appropriate message in the recovery JCL when datasets are restored from full volume dumps.

We recommend the use of IBM DSS logical backups to avoid these problems.

3.1.1. Dataset Recovery Criteria

This panel is displayed when individual datasets need to be recovered. Datasets can be selected using specific criteria. Processing options and XRS backup information source files can also be specified. The default values for "Rename recovered datasets" and "Include new XRS Log files" may be changed using the options dialog.



Screen 9: Dataset recovery criteria

1. Enter at least one of the selection criteria to find matching datasets from the XRS

Control Dataset. If more than one criterion is entered, then only datasets matching all criteria are displayed. If "Volser of Backup file" is less than 6 bytes long, then a generic search is performed (equivalent to XXX*).

2. A template (like in ISPF 3.4) is possible for the dataset name: it may contain a single asterisk, a double asterisk or a percent sign.

   The following rules apply:

   The single asterisk '*' is used in place of exactly one qualifier (e.g. SYS1.*.LINKLIB). In addition, it can be used to indicate that only the beginning/middle/end of a qualifier has been specified (e.g. SYS1.*LIB, SYS*.LINKLIB, S*1.L*B).

   Two asterisks are the maximum permissible in a qualifier. If there are two asterisks in a qualifier, they must be the first and last characters.

   The double asterisk '**' indicates either the nonexistence of a qualifier or the fact that any number of qualifiers play no role in the selection process (e.g. IBMUSER.**.PROFILE).

   R e s t r i c t i o n : The double asterisk may only occur once in the mask (e.g. SYS1.**.*LIB.** is not allowed).

   A '*' in the beginning and at the end is allowed. In this case a string search in the dataset name is performed (new in V290).

   The percent sign '%' acts as a place holder for exactly one single character. A '%' can be specified more than once, in any level of the qualifier (e.g. SY%1.LI%%LI%). A '%' cannot match a null string '' or a period '.'.

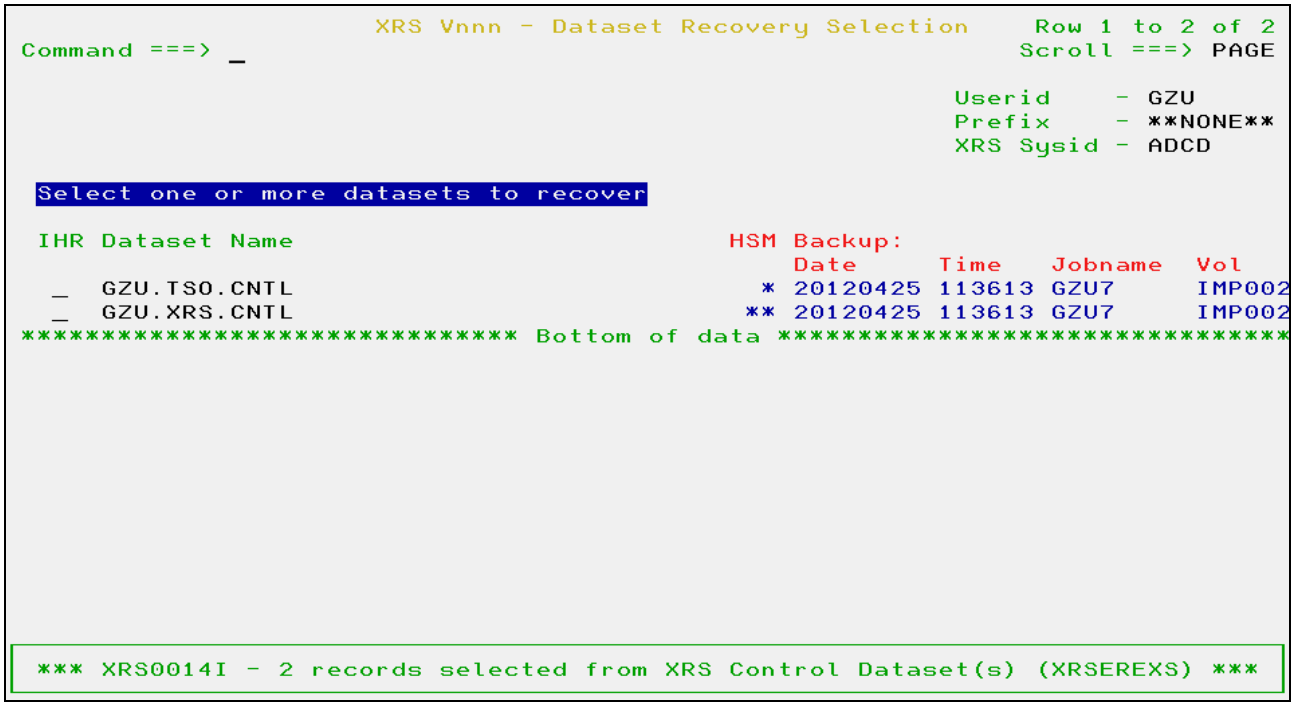
   Specify a '**' to see all records in the XCDS data set.

3. Selected datasets can be automatically renamed during recovery processing. The user is prompted during JCL generation and can then specify a new name for the dataset being recovered. If a default HLQ was defined in the dataset recovery options, then this value will be used in the suggested new dataset name. The number of displayed matching backup records can also be restricted here.

4. The default XRS Control Dataset can be overridden here. Optionally enter the name of an alternate XRS Control Dataset. If the required backup information has not yet been copied from the current XRS Log file, then activate the corresponding option to include these files in the search for recovery information. ***If you have specified more than one XCDS dataset in the options then only the first XCDS will be displayed***.

3.1.2. Dataset Recovery Selection

This panel displays all datasets found in the XRS Control Dataset and optionally the XRS Log file(s) matching the entered selection criteria. Detailed information for each dataset backup may be displayed or dataset recovery JCL can be generated.



Screen 10: Dataset backup information

Enter either an “I” to display detailed backup information or “R” to recover the dataset. More than one dataset may be processed at any one time. An "H" may also be entered. In this case the HSM recovery dialog is started. This function is described later.

The primary dialog command "*R" may be used to set the processing option "R" for all shown datasets. To reverse the selection use "**".

The HSM column is new in V490:

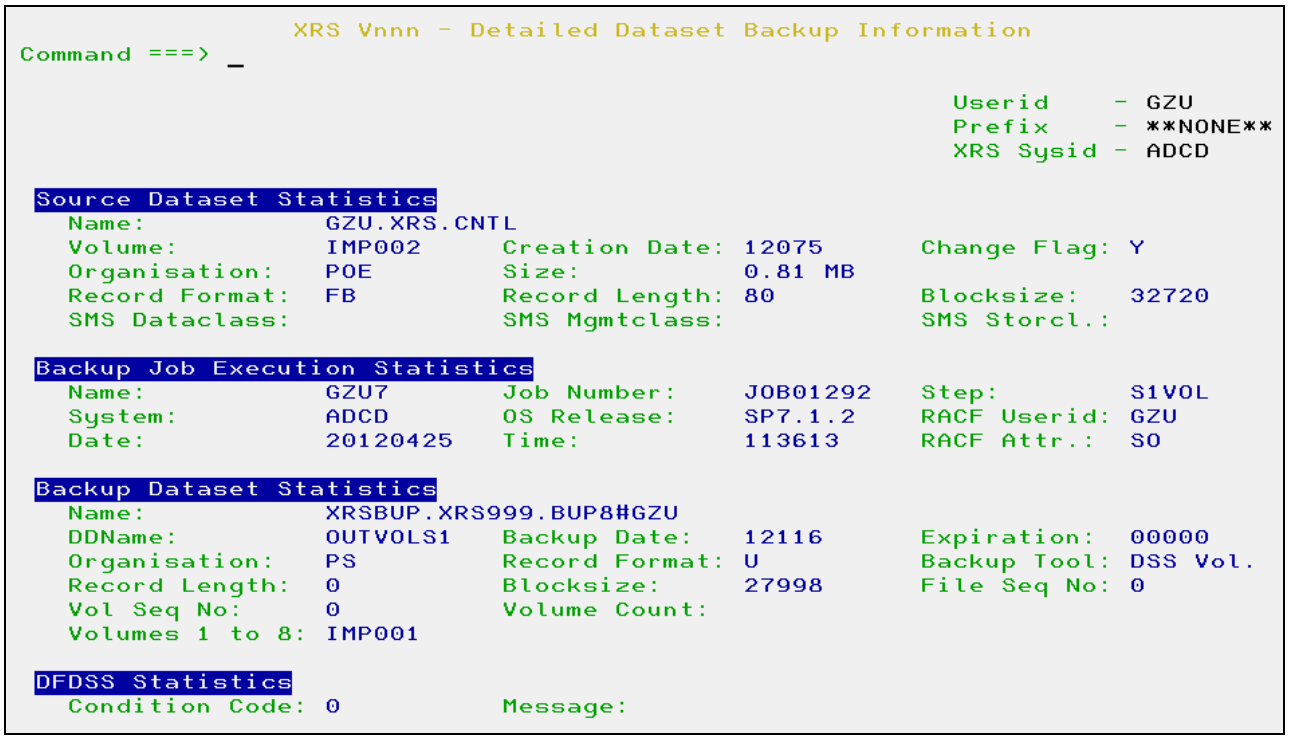
A “*” indicates that a HSM backup exists for this dataset.

A “**” in this column indicates that a newer HSM backup exists for this dataset.

To check, enter an “H” in front of the dataset.

3.1.3. Backup Dataset Details

If an “I” is entered in front of one of the displayed dataset names, then all available backup information is shown.



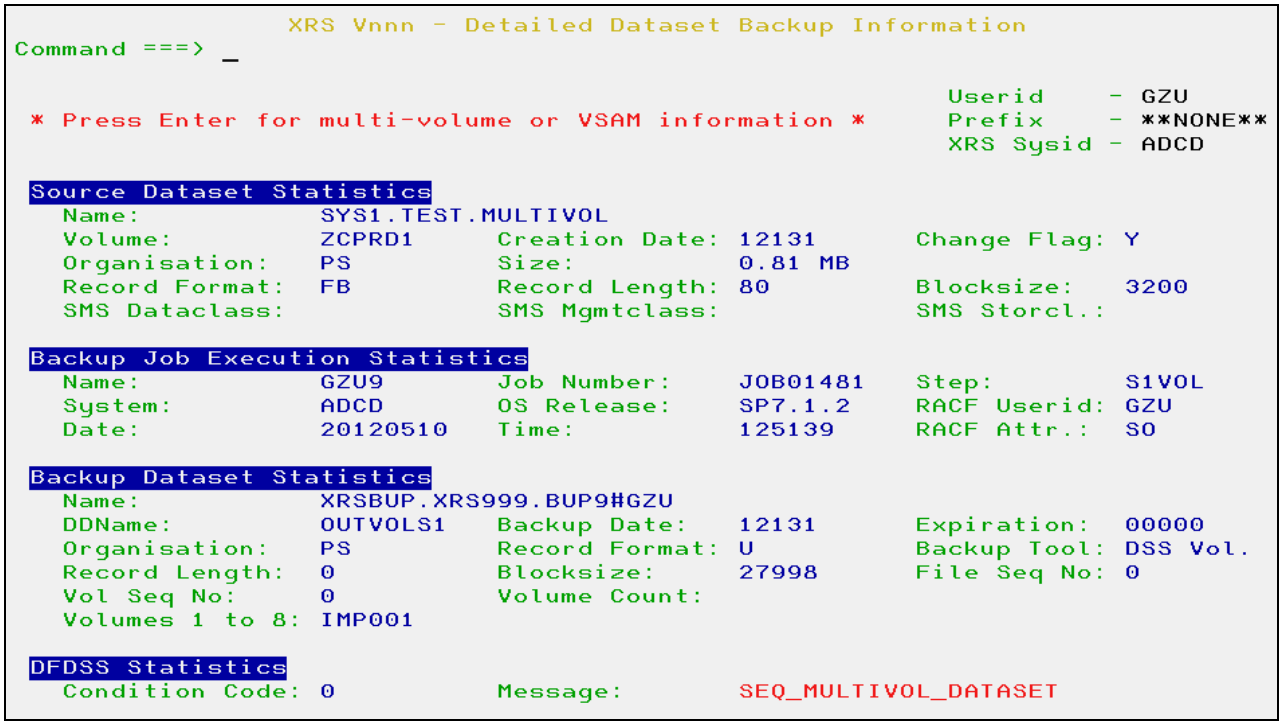
Screen 11: Detailed dataset backup information

The detailed dataset information is divided into four categories:

- Source dataset statistics
- Backup job details
- Backup dataset statistics
- DFSMSdss backup info

3.1.3.1. Multi-Volume or VSAM Backup Dataset Details

If the backed up file was a multi-volume dataset, which was backed up using a DFSMSdss physical volume dump, then additional information is shown in red. Multi-volume information may be displayed by pressing Enter.

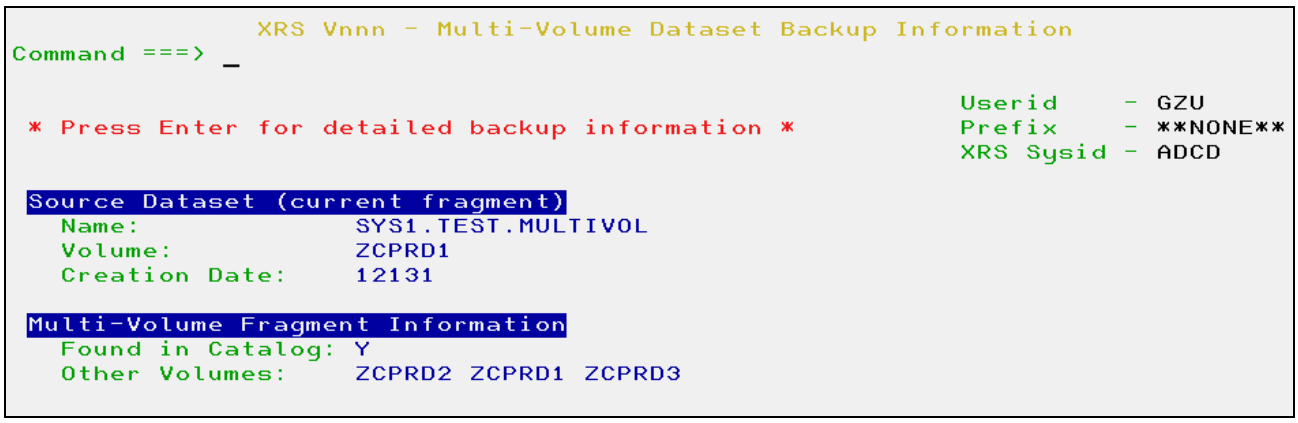


Screen 12: Detailed dataset backup information for multi-volume datasets

There are two possible multi-volume display variations:

– Details for sequential or VSAM multi-volume files

In the following example, additional information for a multi volume sequential dataset is displayed:

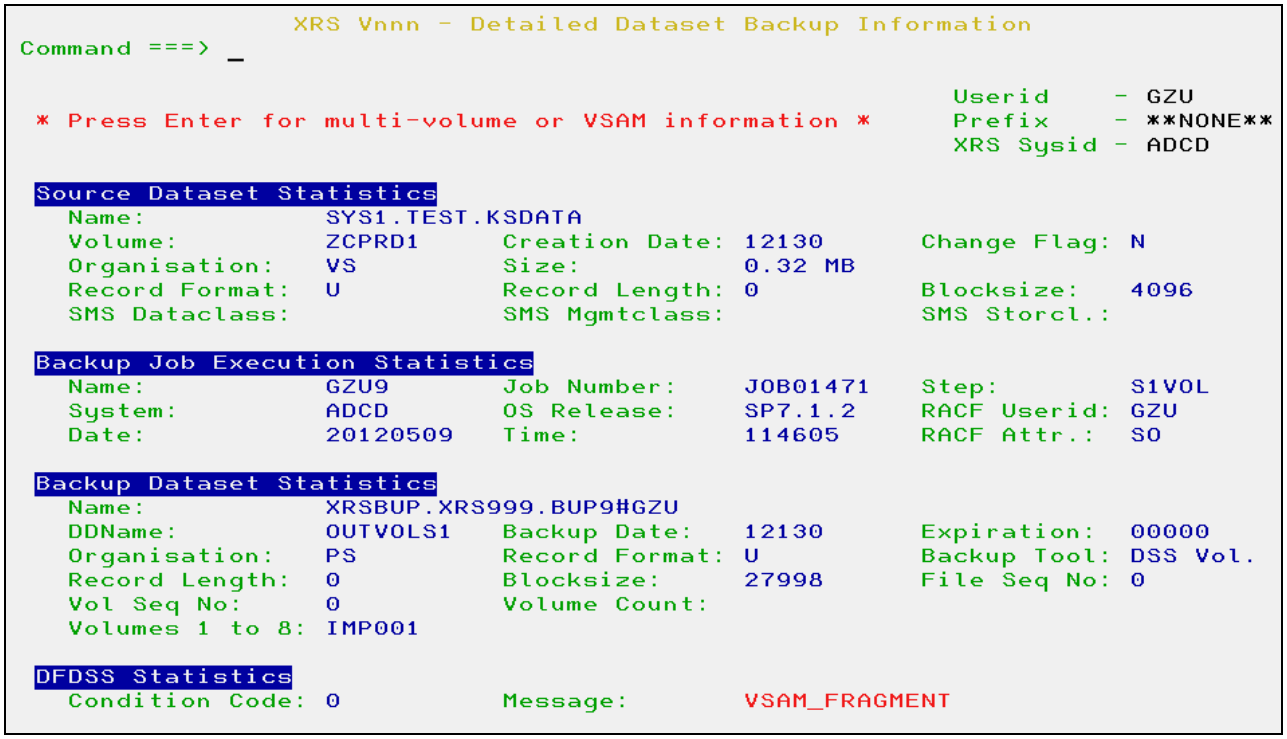


Screen 13: Multi-volume dataset backup information

All volumes on which dataset fragments were located at the time of the backup are displayed.

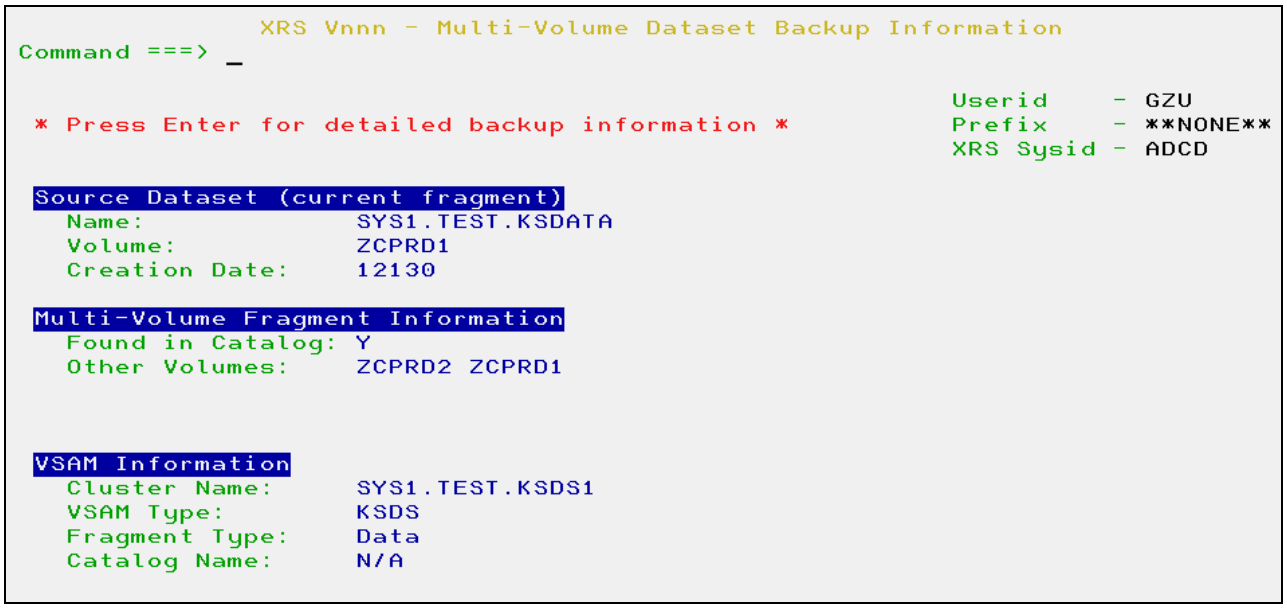
Note: Volume information is only available, if the system on which the backup was executed, could access the corresponding dataset catalog. Otherwise a message is displayed.

If the backed up file was a VSAM multi-volume dataset, which was backed up using a DFSMSdss physical volume dump, then additional information is shown in red. Multi-volume information may be displayed by pressing Enter.



Screen 14: Detailed dataset backup information for VSAM datasets

After pressing ENTER the additional information for VSAM datasets is displayed:



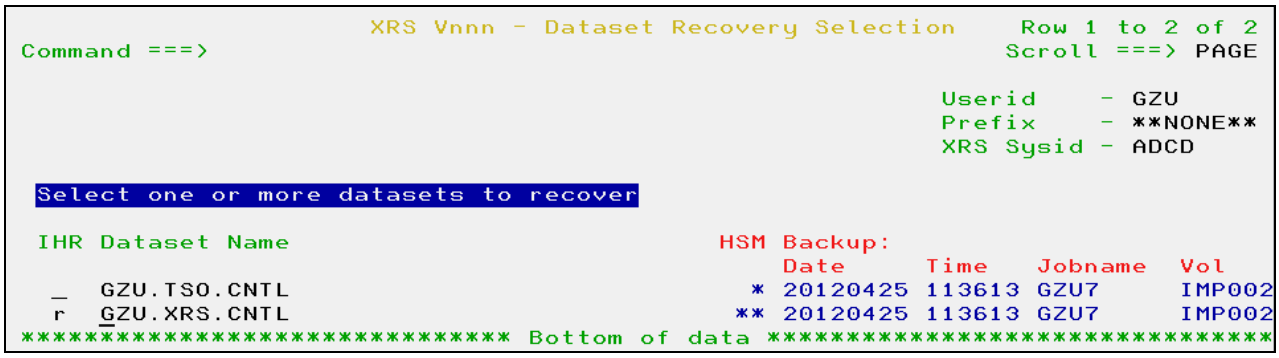
Screen 15: VSAM dataset backup information

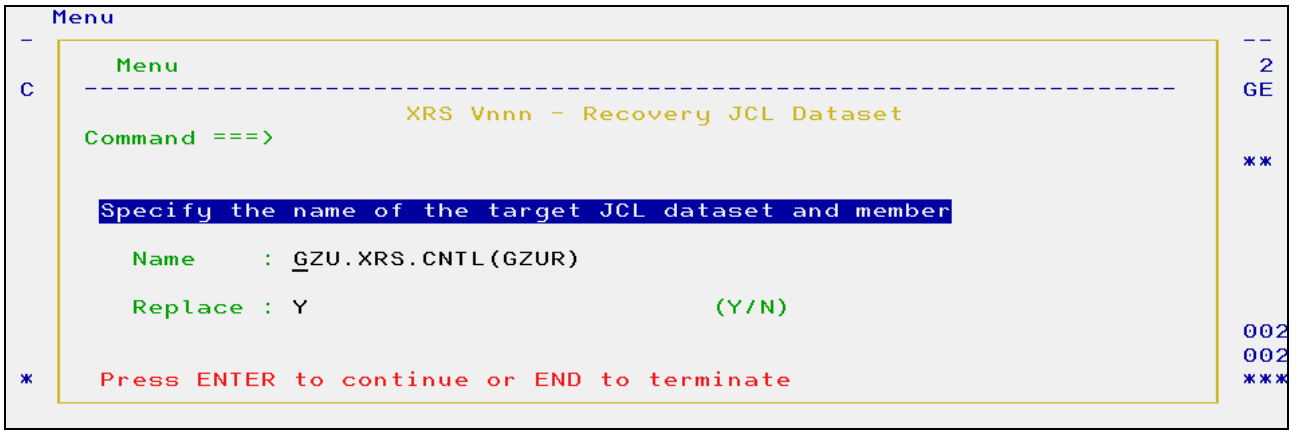
The multi-volume information corresponds to that of the sequential files. The VSAM values are also shown.

Note: When a recovery is performed on a multi-volume fragment, only that fragment is recovered by XRS. The recovery JCL however contains further information about other fragments at the time of the backup. This can be used to perform a separate recovery. We recommend that the cluster name is used to identify all available backups within XRS.

3.1.4. Dataset Recovery Processing

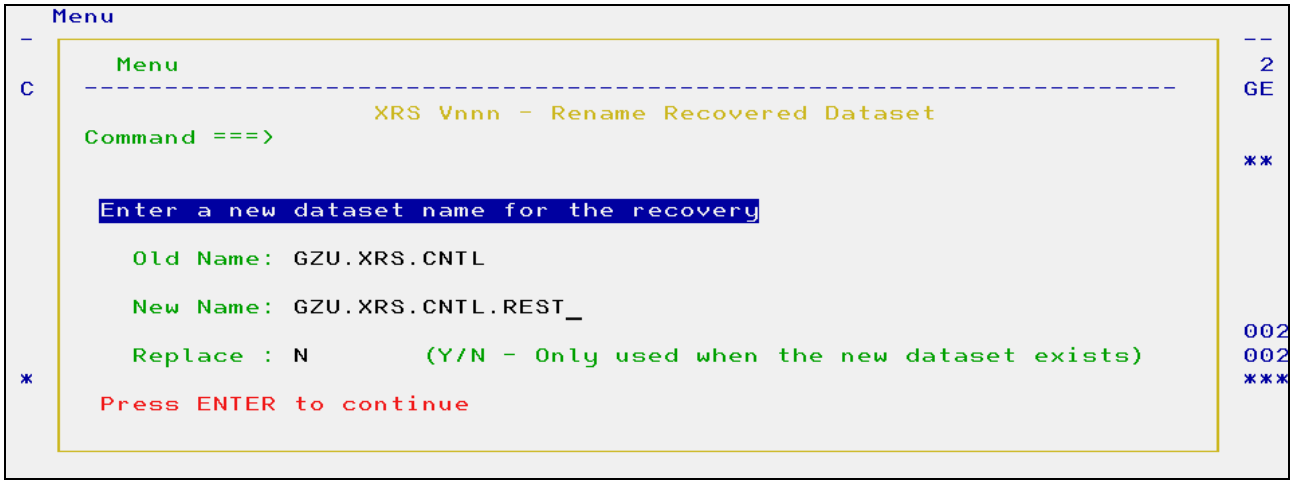
The following window is displayed when one or more datasets were selected for recovery. The name of the default dataset and member containing the generated JCL can be overridden. Replace must be specified if the member already exists.





Screen 16: Specify JCL dataset

This panel is shown if the rename option was activated in the dataset recovery processing dialog. Optionally enter a new name for each dataset to be recovered. The overriding rename HLQ is used here, if specified in the default options.



Screen 17: Rename recovered dataset

3.1.5. Dataset Recovery JCL

After all information has been entered, the JCL needed to recover the selected datasets is created and displayed. The unit name is substituted, if the DDName used during the backup matches a value in the common options.

You must type ‘SUB’ in the command line to submit the job.

```
//*********************************************************************
//*                                                                   *
//* Job generated on the 8 May 2012 at 16:41:19 by GZU                *
//*                                                                   *
//*********************************************************************
//*                                                                   *
//* Recovering -                                                      *
//*   Dataset:    GZU.XRS.CNTL                                        *
//*   Old Volume: IMP002                                              *
//*                                                                   *
//* Backup Information -                                              *
//*   Date:       20120425                                            *
//*   Time:       11361394                                            *
//*   Method:     DSS - Full Volume                                   *
//*                                                                   *
//*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
//*                                                                   *
//* NOTE: The selected dataset is being recovered from a              *
//*       DSS physical backup. If the dataset is VSAM,                *
//*       then it needs to be manually cataloged. If it is            *
//*       a multi-volume file, then all parts need to be              *
//*       manually recovered.                                         *
//*                                                                   *
//*********************************************************************
//RECOV001 EXEC PGM=ADRDSSU
//SYSPRINT DD  SYSOUT=*
//BACKUPDS DD  DSN=XRSBUP.XRS999.BUP8#GZU,
//             DISP=OLD,
//             VOL=SER=(IMP001)
//TRGTVOL  DD  UNIT=SYSDA,DISP=OLD,VOL=SER=IMP002
//SYSIN    DD  *
  RESTORE DATASET(INCLUDE( +
          GZU.XRS.CNTL)) +
          RENAMEU(GZU.**, +
                  GZU.XRS.CNTL.REST) +
          CATALOG +
          SPHERE +
          FORCECP(0) +
          OUTDD(TRGTVOL) +
          INDD(BACKUPDS)
/*
```

Listing 1: Dataset Recovery JCL

3.1.6. DSS Dataset Recovery Options

When generating recovery jobs, XRS assumes that the target datasets can be found in the catalog. The following table shows the possible dataset recovery combinations and options with the corresponding DSS recovery parameter.

Source and recovery target datasets	Option "Rename" selected?	Target dataset found in catalog?	Option "Replace" selected in Rename dialog?	Generated DSS option
Same	No	Yes	n/a	Replace
Same	No	No	n/a	Catalog
Same	Yes	Yes	No	No job is generated – user is prompted to change the "Replace" option
Same	Yes	Yes	Yes	Replace
Different	Yes	Yes	No	No job is generated – user is prompted to change the "Replace" option
Different	Yes	Yes	Yes	Replace
Different	Yes	No	No	Catalog
Different	Yes	No	Yes	Catalog

Table 1: DSS Dataset Recovery Options

Under certain circumstances an invalid parameter may be generated (e.g. the target dataset exists but is not catalogued). In such special situations, the DSS parameter must be manually validated prior to restoring the dataset.

4. XRS Logical Volume Recovery Dialog

4.1. Logical Volume Recovery

Certain IBM DFSMS restrictions apply, when recovering individual datasets from IBM DSS full volume dumps. These must be appropriately handled:

- VSAM datasets are not automatically recataloged
- Multi-Volume datasets are not completely recovered. Only the data on the selected volume is restored. This could result in damaged files

See the IBM documentation for further details. XRS generates an appropriate message in the recovery JCL when datasets are restored from full volume dumps.

We recommend the use of IBM DSS logical backups to avoid these problems.

4.1.1. DCollect Selection

The following panel is shown when volume recovery is selected from the XRS primary option menu. All DCollect datasets matching the template in the volume recovery options are displayed.

```
                    XRS Vnnn - DCollect Dataset Selection    Row 1 to 1 of 1
Command ===> _                                             Scroll ===> PAGE

                                                  Userid    - GZU
                                                  Prefix    - **NONE**
                                                  XRS Sysid - ADCD

 Select a DCollect dataset which contains the required volume information

 S/B Dataset Name                                 Volume    Crt. Date
  _  INST.XRS999.DCOLLECT                         IMP002    2012/117
********************************* Bottom of data ********************************

 *** XRS0028D - 1 DCollect dataset(s) found matching template
 "INST.XRS999.DCOLLECT" (XRSERVOL) ***
```

Screen 18: DCollect dataset selection

Enter “S” in front of the required DCollect dataset name to use this for volume recovery processing. If “B” is entered then the raw contents of the DCollect file are displayed.

4.1.2. Volume Criteria

Use this dialog to enter the logical volume recovery selection criteria. These are then used to select the volumes and the corresponding datasets for recovery.

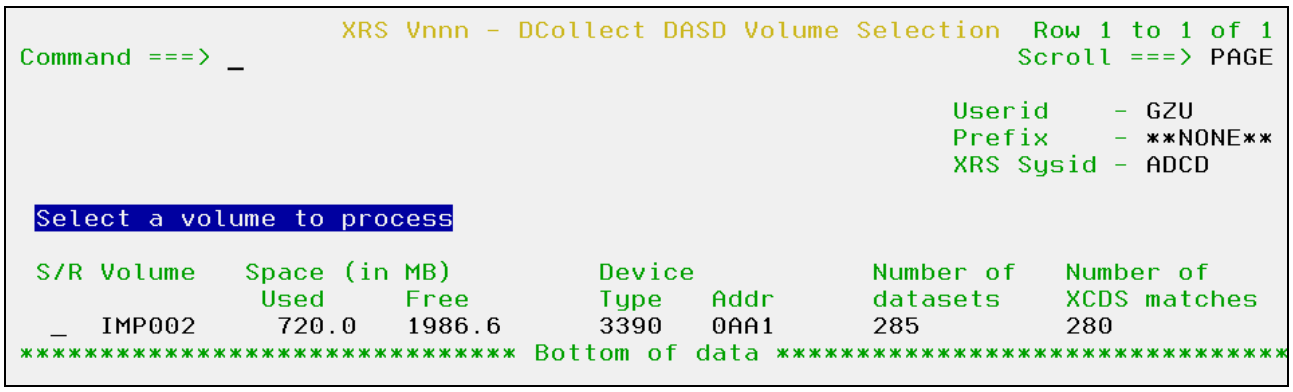
```
                          XRS Vnnn - Volume Selection
Command ===>

                                                        Userid    - GZU
                                                        Prefix    - **NONE**
                                                        XRS Sysid - ADCD

 Selection Criteria

  Volume(s) to recover:                IMP*__

  Recover using newest backup files: Y          (Y/N)

  DDName of backup file:               ________

 Press ENTER to process request or END to terminate
```

Screen 19: Volume selection criteria

Enter a volume or a volume template to recover. The selected DCollect dataset is then searched for datasets on matching volumes. After all datasets on the required volumes have been extracted, matching entries in the default XRS Control Dataset are selected. If “exclude datasets” were specified in the volume recovery options, then these will be bypassed. Generally the newest matching backup file entry found in the XRS Control Dataset is used to recover a dataset. Otherwise change the “newest backup file” option to use backups not newer than the creation date of the DCollect dataset. Optionally enter a ddname to recover volumes only using backup files created with the specific ddname. This can be useful if individual dataset backups are not to be included in a volume recovery.

4.1.3. Volume Selection

This panel displays a list of matching volumes found in the selected DCollect dataset. Volume statistics are also shown. Datasets on the volumes may now be displayed or volume recovery JCL generated.



Screen 20: Volume selection

Enter “S” in front of the required volume to display all matching datasets. If “R” is entered then a job is generated to recover the datasets on the volume using the information found in the XRS Control Dataset.

4.1.4. Volume Contents

This dialog shows all datasets on the volume based upon the records from the DCollect file. Corresponding backup dataset information is shown if a matching record was found in the XRS Control Dataset.

```
                    XRS Vnnn - Volume Dataset Selection Row 28 to 36 of 285
Command ===> _                                            Scroll ===> PAGE

                                                    Userid    - GZU
                                                    Prefix    - **NONE**
                                                    XRS Sysid - ADCD

 Exclude one or more datasets on volume: IMP002 (Status: 2012/117)

 IH  Dataset Name                                        Created   RefDate   Dsorg
 XD  Backup: Date      Time    Jobname   Stepname        DDName    SysId  CC
  _  GZU.DFDSS.BOH                                      2012068   2012068   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.DFDSS.SMM                                      2012068   2012068   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.DFDSS.XIT                                      2012102   2012102   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.HCD.MSGLOG                                     2012075   0000000   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.HCD.TERM                                       2012075   0000000   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.HCD.TRACE                                      2012075   0000000   PS
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.HSMLIST.N8341237                               2012116   2012117   PS
            n/a       n/a     n/a       n/a             n/a       n/a    n/a
  _  GZU.ISPF.ASM                                       2002192   2011234   PO
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
  _  GZU.ISPF.CEXEC                                     2004072   2010201   PO
            20120425  113613  GZU7      S1VOL           OUTVOLS1  ADCD   0
```

Screen 21: Volume content list

Detailed backup dataset information is displayed if an “I” is entered in front of the dataset name. Enter “X” in front of the dataset name if it is not to be included in the recovery. Entering an "H" will start the HSM recovery dialog. If “D” is entered, then the XRS Individual Dataset Recovery dialog is started using this dataset name and the current volume as search criteria.

Note: The line command "I" is only available for datasets with backups. This function is not available for unmatched datasets (with status "n/a").

4.1.5. Backup Dataset Details

If an “I” is entered in front of one of the displayed dataset names, then all available backup information is shown.

```
                XRS Vnnn - Detailed Dataset Backup Information
Command ===> _

                                                        Userid    - GZU
                                                        Prefix    - **NONE**
                                                        XRS Sysid - ADCD

 Source Dataset Statistics
   Name:            GZU.HCD.TRACE
   Volume:          IMP002      Creation Date: 12075      Change Flag: N
   Organisation:    PS          Size:          0.16 MB
   Record Format:   FB          Record Length: 80         Blocksize:   6160
   SMS Dataclass:               SMS Mgmtclass:            SMS Storcl.:

 Backup Job Execution Statistics
   Name:            GZU7        Job Number:    JOB01292   Step:        S1VOL
   System:          ADCD        OS Release:    SP7.1.2    RACF Userid: -
   Date:            20120425    Time:          113613     RACF Attr.:  -

 Backup Dataset Statistics
   Name:            XRSBUP.XRS999.BUP8#GZU
   DDName:          OUTVOLS1    Backup Date:   12116      Expiration:  00000
   Organisation:    PS          Record Format: U          Backup Tool: DSS Vol.
   Record Length:   0           Blocksize:     27998      File Seq No: 0
   Vol Seq No:      0           Volume Count:
   Volumes 1 to 8:  IMP001

 DFDSS Statistics
   Condition Code:  0           Message:
```

Screen 22: Detailed dataset backup information

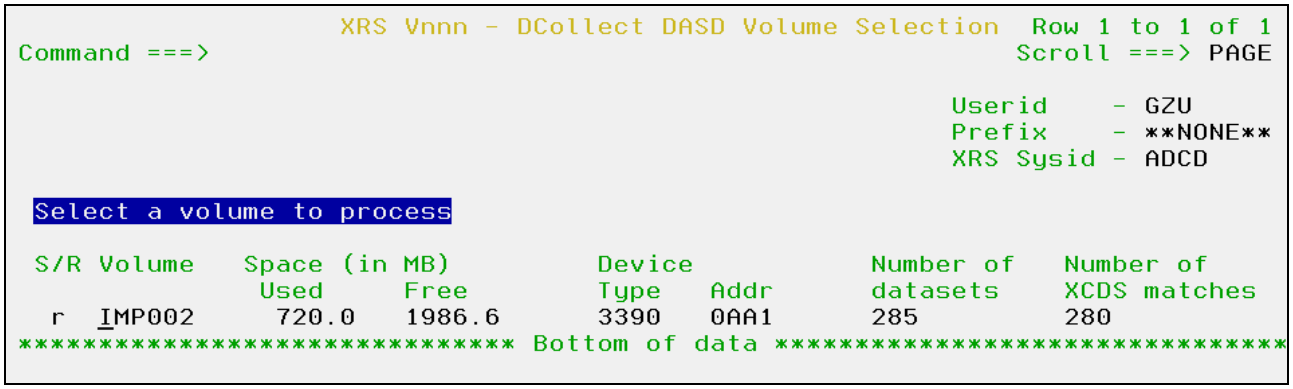
The detailed dataset information is divided into four categories:

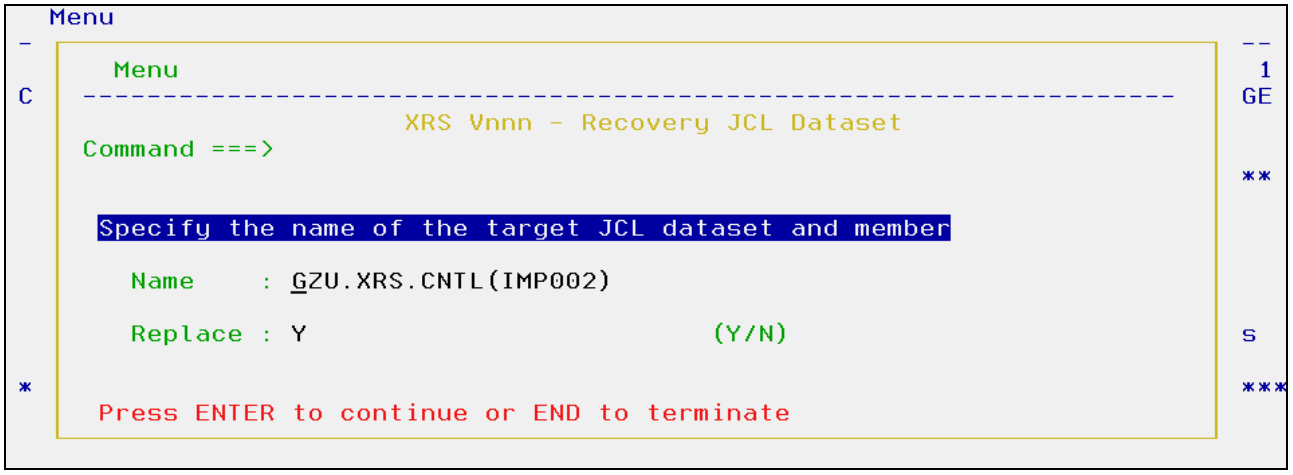
- Source dataset statistics
- Backup job details
- Backup dataset statistics
- DFSMSdss backup info

If the dataset is a multi-volume sequential or VSAM dataset which was backed up by a DFSMSdss physical volume dump, then the above screen shows 2 more information (see 3.1.3.1 Multi-Volume or VSAM Backup Dataset Details on page 22).

4.1.6. Volume Recovery Processing

After a volume has been selected for recovery, optionally override the name of the dataset and member to contain the generated JCL. Replace must be specified if the member already exists.





Screen 23: Select JCL dataset

The generated JCL needed to recover the selected volume using the available dataset backups is created and displayed. The unit name is substituted, if the DDName used during the backup matches a value in the common options.

Note: JCL is only generated, if datasets were found for recovery processing.

4.1.7. Volume Recovery JCL

```
//*******************************************************************
//*                                                                 *
//* Job generated on the 8 May 2012 at 17:04:21 by GZU              *
//*                                                                 *
//*                                                                 *
//* The following datasets on volume IMP002 do not have a backup:   *
//*      1 - GZU.HSMLIST.N8341237                                   *
//*      2 - INST.XRS999.DCOLLECT                                   *
//*      3 - SYS2.HSM.BCDS                                          *
//*      4 - SYS2.HSM.MCDS                                          *
//*      5 - SYS2.HSM.OCDS                                          *
//*                                                                 *
//*******************************************************************
//*******************************************************************
//* Recovering -                                                    *
//*   Target Volume: IMP002                                         *
//*                                                                 *
//* Backup Information -                                            *
//*   Date:          20120425                                       *
//*   Time:          11361394                                       *
//*   Method:        DSS - Full Volume                              *
//*                                                                 *
//*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
//* NOTE: The selected datasets are being recovered from a          *
//*       DSS physical backup. If the datasets are VSAM,            *
//*       then they need to be manually cataloged. If there         *
//*       are multi-volume files, then all parts need to be         *
//*       manually recovered.                                       *
//*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
//*******************************************************************
//RECOV001 EXEC PGM=ADRDSSU
//SYSPRINT DD  SYSOUT=*
//FILTERDS DD  DSN=GZU.XRS.CNTL(IMP00201),DISP=SHR
//BACKUPDS DD  DSN=XRSBUP.XRS999.BUP8#GZU,
//             DISP=OLD,
//             VOL=SER=(IMP001)
//TRGTVOL  DD  UNIT=SYSDA,DISP=OLD,VOL=SER=IMP002
//SYSIN    DD  *
  RESTORE DATASET(FILTERDD(FILTERDS)) +
  DELCATE +
  CATALOG +
  SPHERE +
  FORCECP(0) +
  BYPASS(**) +
  OUTDD(TRGTVOL) +
  INDD(BACKUPDS)
/*
```

Listing 2: Logical volume recovery JCL

5. XRS Physical Volume Recovery Dialog

5.1. Physical Recovery

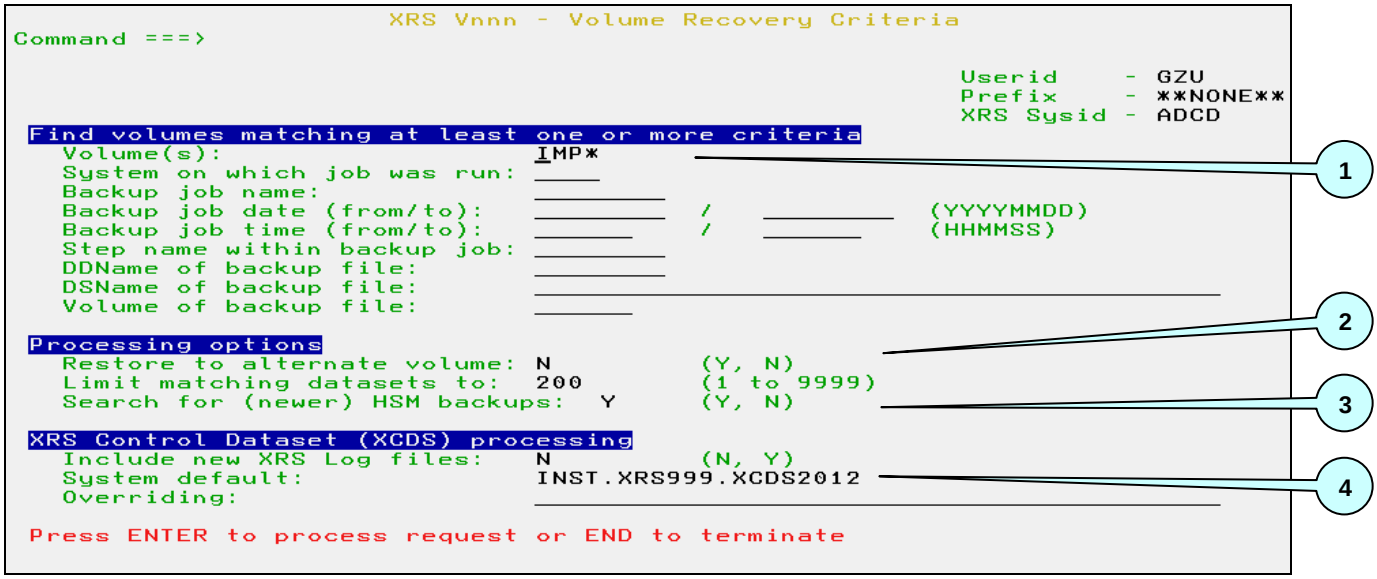
Certain IBM SMS restrictions apply, when recovering disks from IBM DSS full volume dumps. These must be appropriately handled.

- VSAM datasets are not automatically recataloged
- Multi-Volume datasets are not completely recovered. Only the data on the selected volume is restored. This could result in damaged files

See the IBM documentation for further details.

5.1.1. Volume Recovery Criteria

This panel is displayed when physical volumes need to be recovered. Volumes can be selected using specific criteria. Processing options and XRS backup information source files can also be specified.



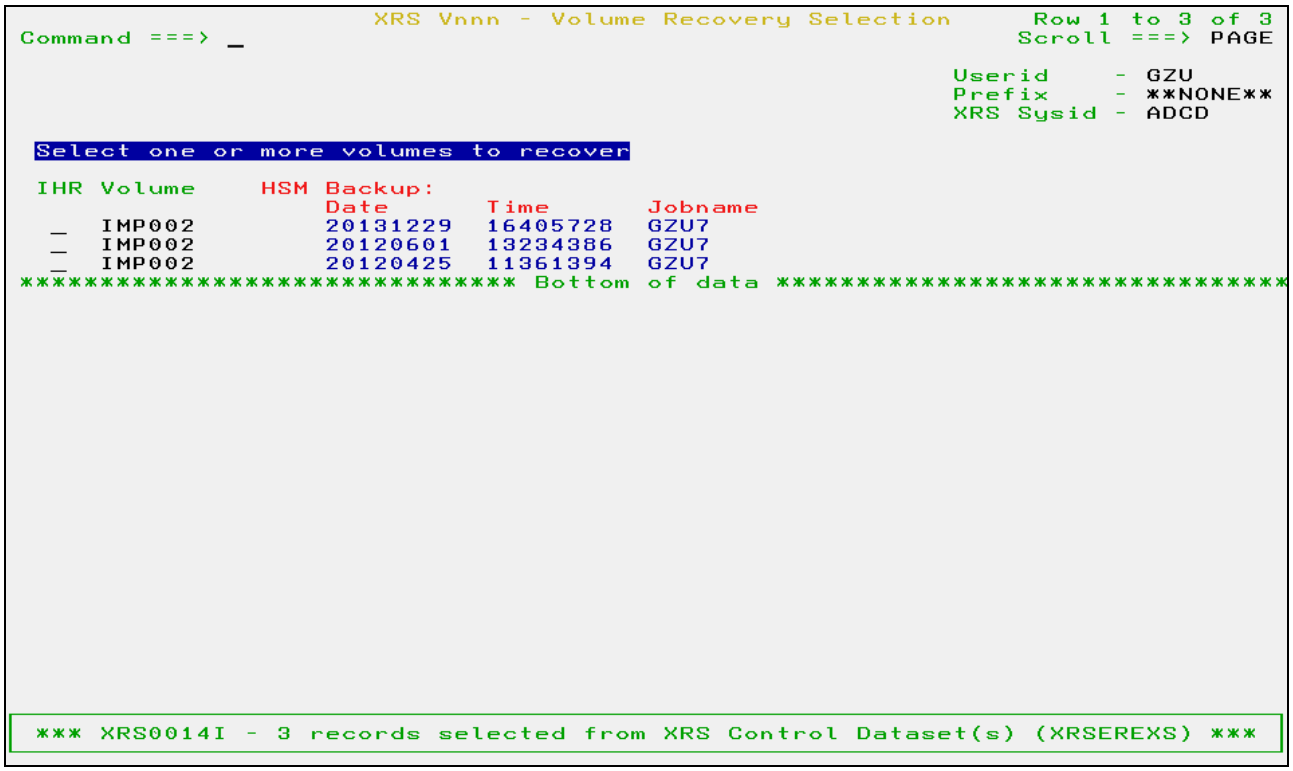
Screen 24: Full volume recovery search criteria

1. Enter at least one selection criteria to be used to match volumes from the XRS Control Dataset. If more than one criteria is entered, then only volumes matching all criteria are displayed.
2. Selected volumes can be recovered to alternate disks. The user is prompted during JCL generation and can specify a new name for the volume being recovered. The number of displayed matching backup records can also be restricted here.
3. ***This is a new option in 510***. If set to 'Y' then HSM is called to indicate if (newer) HSM backups are available for the volume.

4. The default XRS Control Dataset can be overridden here. Optionally enter the name of an alternate XRS Control Dataset. If the required backup information has not yet been copied from the current XRS Log file, then activate the corresponding option to include these files in the search for recovery information.

5.1.2. Volume Selection

This panel displays all matching volumes found in the XRS Control Dataset and XRS Log file(s), matching the entered selection criteria. Detailed information for each volume may be displayed or recovery JCL can be generated.

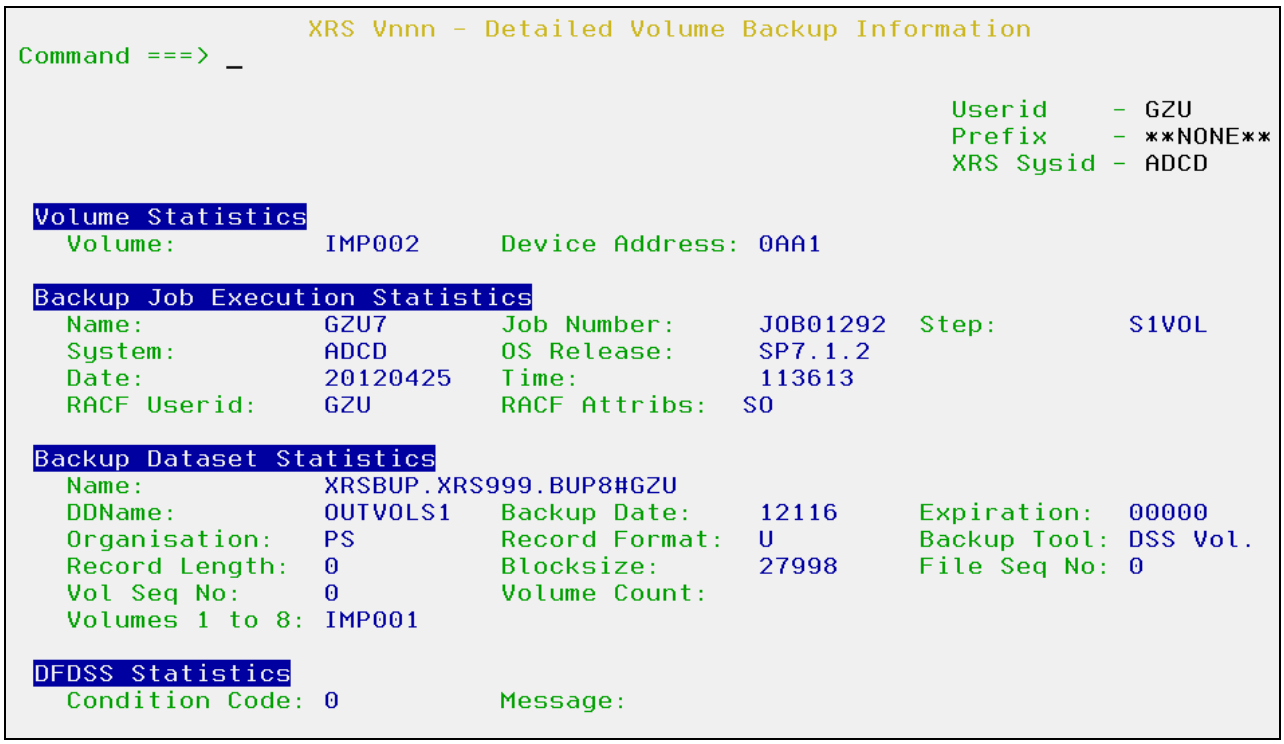


Screen 25: Recoverable volume list

Enter either an “I” to display detailed backup information or “R” to recover the volume. ***Enter "H" if you want to display the available HSM backups of this volume***. More than one volume may be processed at any one time.

5.1.3. Backup Volume Details

If an “I” is entered in front of one of the displayed volumes, then all available backup information is shown.



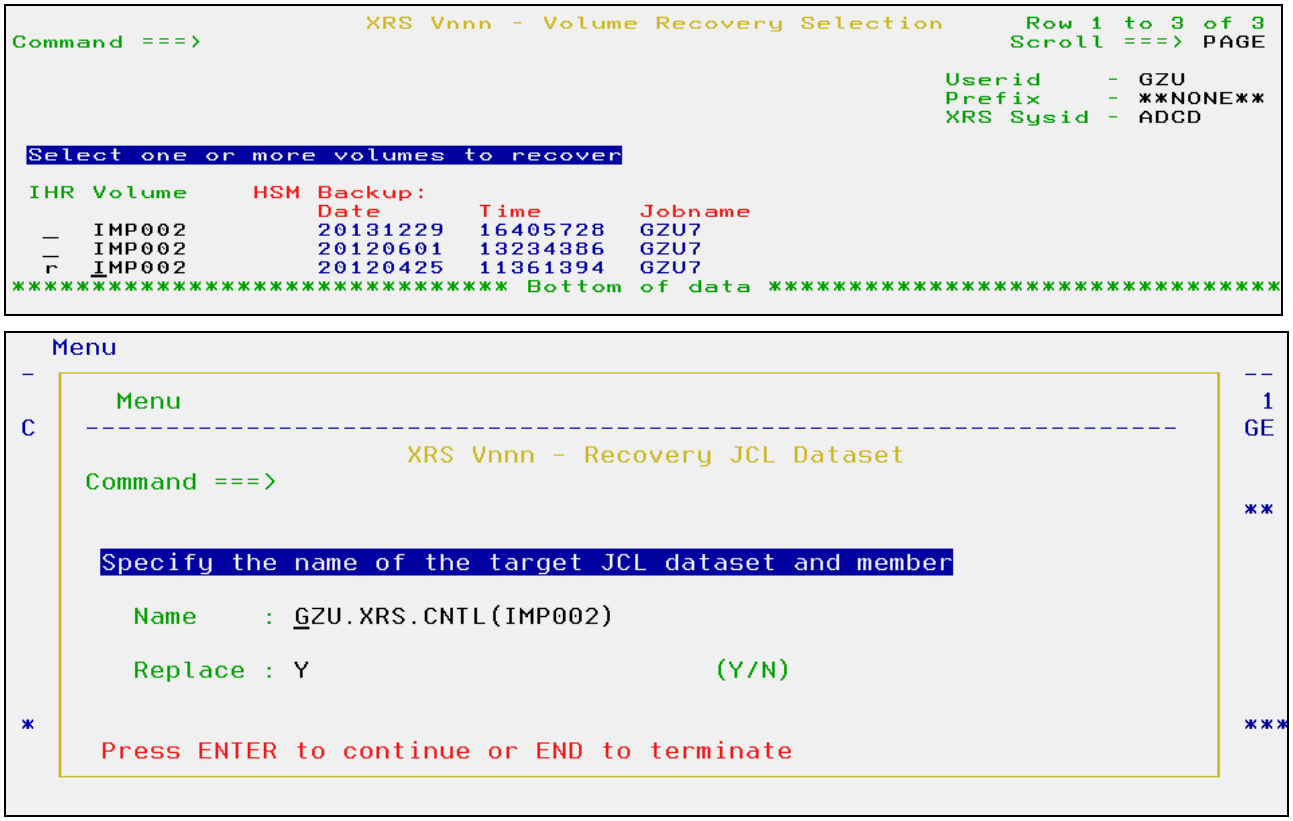
Screen 26: Detailed volume backup information

The detailed volume information is divided into four categories:

- Volume information
- Backup job details
- Backup dataset statistics
- DFSMSdss backup info

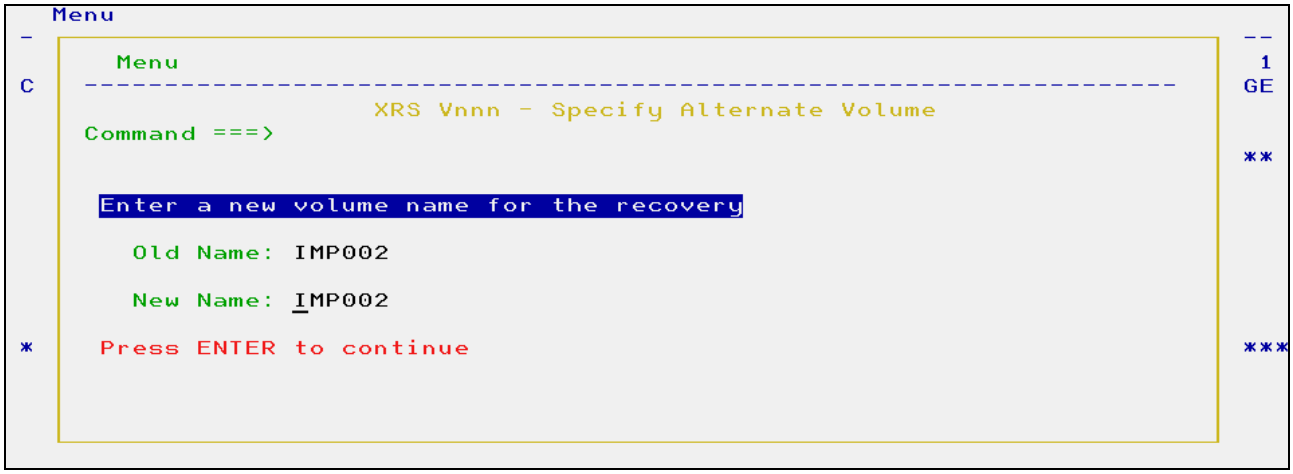
5.1.4. Volume Recovery Processing

This window is displayed when one or more volumes were selected for recovery. The name of the default dataset and member containing the generated JCL can be overridden. Replace must be specified if the member already exists.



Screen 27: Select JCL dataset

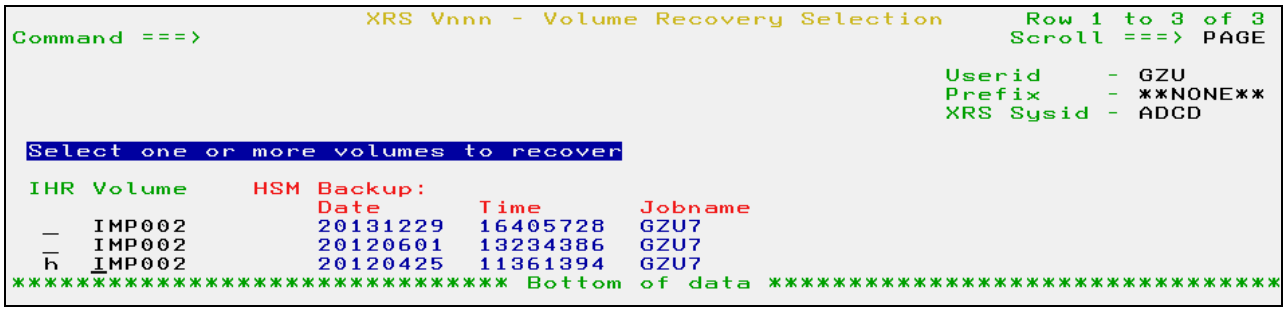
This panel is shown if the volume is to be recovered to an alternate disk. It is only shown when the option is activated in the volume recovery processing dialog. Optionally enter a new name for each volume.



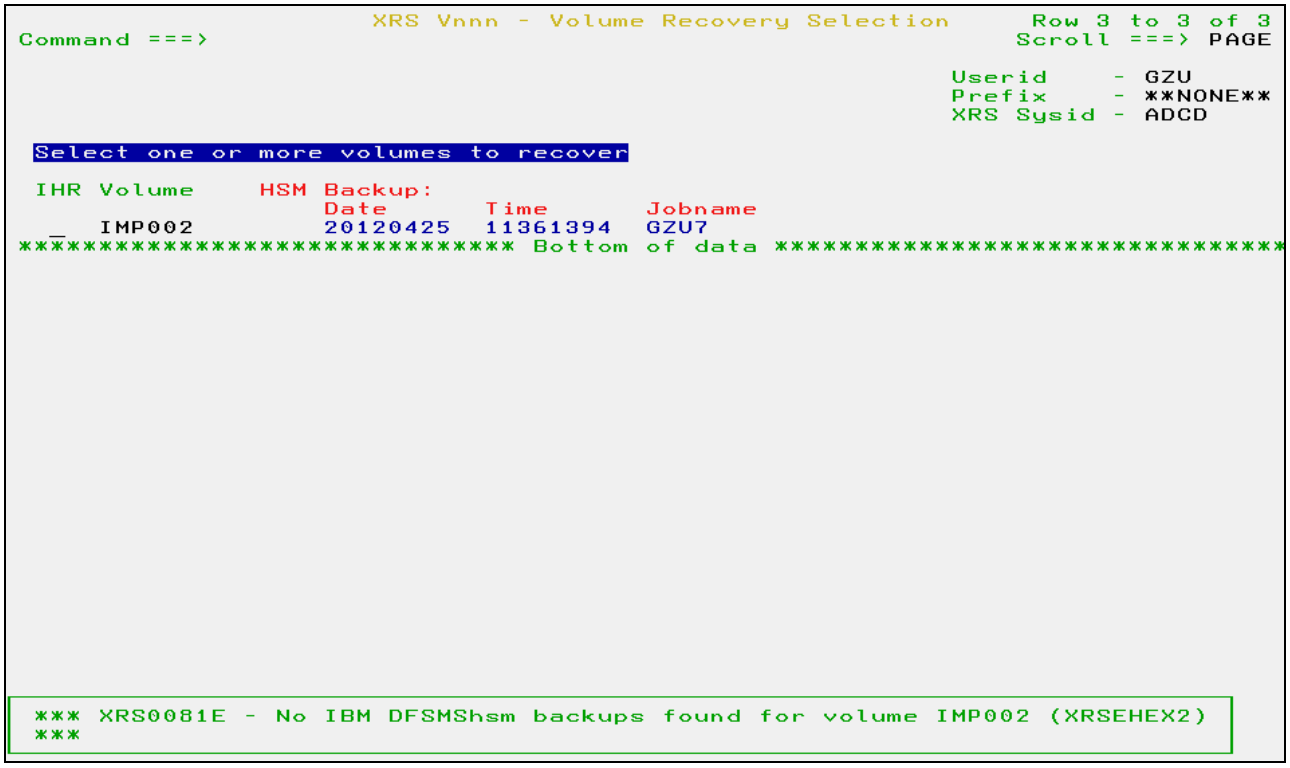
Screen 28: Alternate volume recovery

5.1.5. HSM Backup Information

This window is displayed when HSM backup information for the selected volume is requested.



Screen 29: Request HSM backup infos



Screen 30: HSM backup informations

5.1.6. Volume Recovery JCL

After all information has been entered, the JCL needed to recover the selected volumes is created and displayed. The unit name is substituted, if the DDName used during the backup matches a value in the common options.

```
//*********************************************************************
//*                                                                   *
//* Job generated on the 8 May 2012 at 17:16:19 by GZU                *
//*                                                                   *
//*********************************************************************
//*                                                                   *
//* Recovering -                                                      *
//*   Volume:        IMP002                                           *
//*   Target Volume: IMP002                                           *
//*                                                                   *
//* Backup Information -                                              *
//*   Date:          20120425                                         *
//*   Time:          11361394                                         *
//*                                                                   *
//*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
//* NOTE: The selected volume is being recovered from a               *
//*       DSS physical backup. If there are multi-volume              *
//*       datasets on this volser, then all parts need to be          *
//*       manually recovered.                                         *
//*!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!*
//*********************************************************************
//RECOV001 EXEC PGM=ADRDSSU
//SYSPRINT DD  SYSOUT=*
//BACKUPDS DD  DSN=XRSBUP.XRS999.BUP8#GZU,
//             DISP=OLD,
//             VOL=SER=(IMP001)
//TRGTVOL  DD  UNIT=SYSDA,DISP=OLD,VOL=SER=IMP002
//SYSIN    DD  *
  RESTORE +
  INDD(BACKUPDS) OUTDD(TRGTVOL)
/*
```

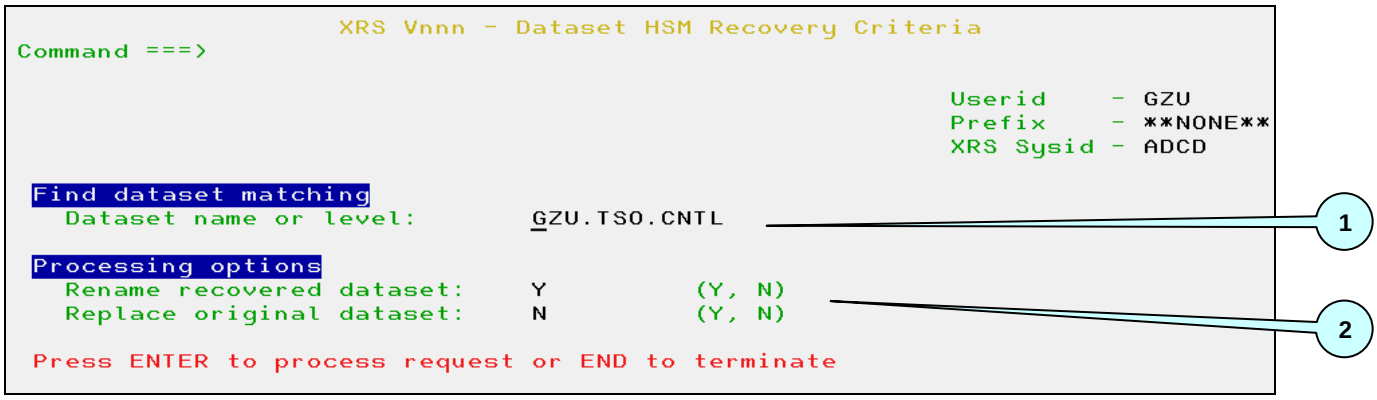
Listing 3: Generated recovery JCL

6. XRS HSM Backup Recovery Dialog

6.1. Recovery Selection

6.1.1. Dataset Recovery Criteria

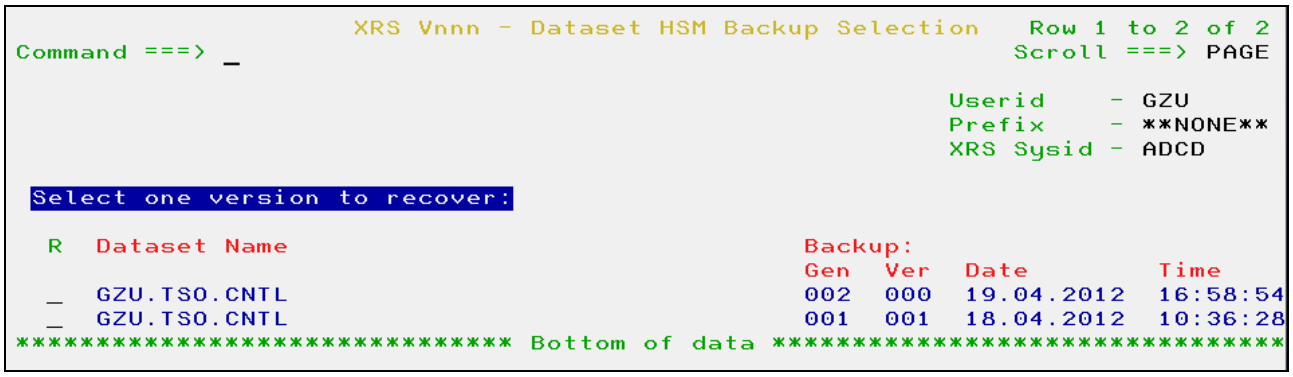
This panel is displayed when recoveries using HSM backups are required. It can be directly called from the XRS Primary Menu or from the dataset lists displayed in the other recovery methods (dataset or logical volume).



Screen 31: HSM backup search criteria

1. Enter a dataset name to recover (a template is allowed here (ending with a '*', same syntax as the HLIST command).
2. Specify whether the dataset is to be renamed or replaced.

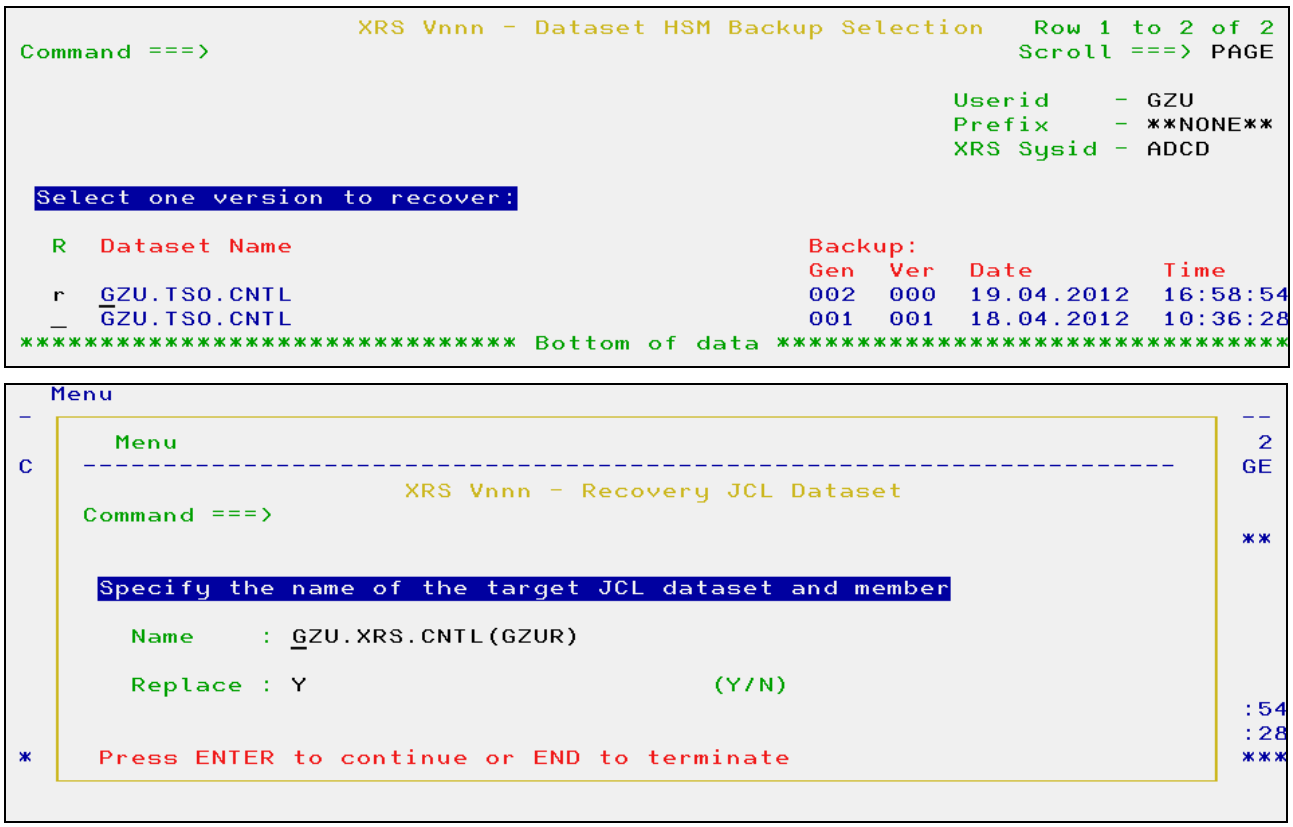
This panel displays all available HSM backup information for the requested dataset. Enter "R" in front of the required version to generate the recovery JCL.



Screen 32: List of available HSM backups

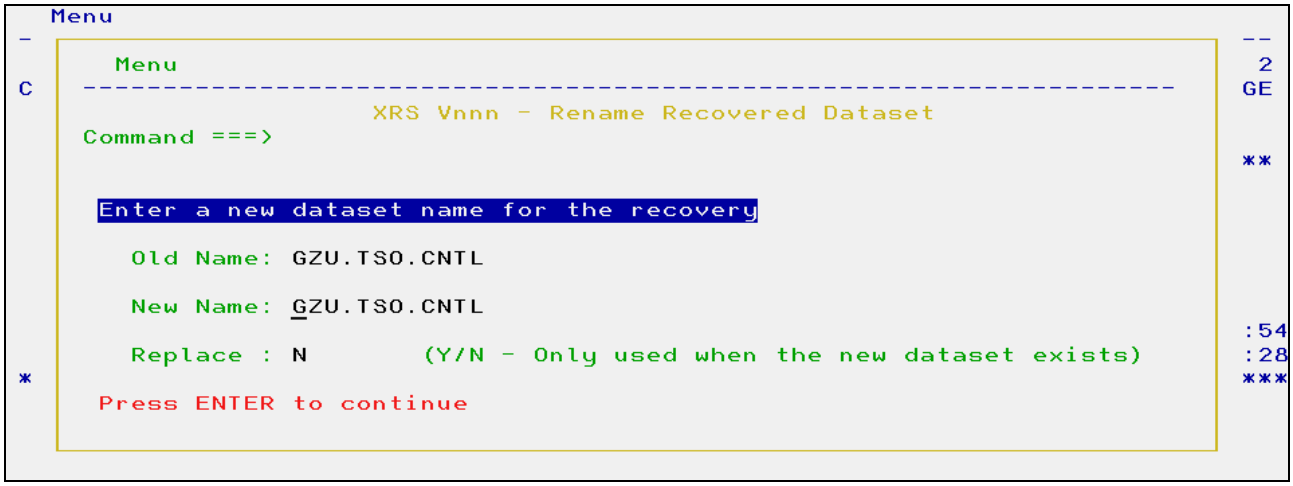
6.1.2. Dataset Recovery Processing

The following window is displayed when a recovery was requested. The name of the default dataset and member containing the generated JCL can be overridden. Replace must be specified if the member already exists.



Screen 33: Select JCL dataset

If the rename option was requested on the recovery selection panel, then the following screen is displayed. Enter an alternate dataset name to be used for recovery processing.



Screen 34: Specify alternate dataset name

6.1.3. Dataset Recovery JCL

After all information has been entered, the JCL needed to recover the selected dataset is created and displayed.

```
//*********************************************************************
//*                                                                   *
//* Recovering -                                                      *
//*   Dataset:    GZU.TSO.CNTL                                        *
//*                                                                   *
//* HSM Backup Information -                                          *
//*   Date:       19.04.2012                                          *
//*   Time:       16:58:54                                            *
//*   Version:    002                                                 *
//*   Generation: 000                                                 *
//*                                                                   *
//*********************************************************************
//RECOV00I EXEC PGM=IKJEFT1A
//SYSTSPRT DD  SYSOUT=*
//SYSTSIN  DD  *
  HRECOVER  'GZU.TSO.CNTL' +
            GENERATION(000) VERSION(002) +
            WAIT
/*
```

Listing 4: Generated HSM recovery JCL

Note: If a dataset is migrated, then the recovery process will fail. This is a restriction within HSM. Either recall the dataset manually using TSO/ISPF or add the HRECALL command with the WAIT option prior to the HRECOVER statement.

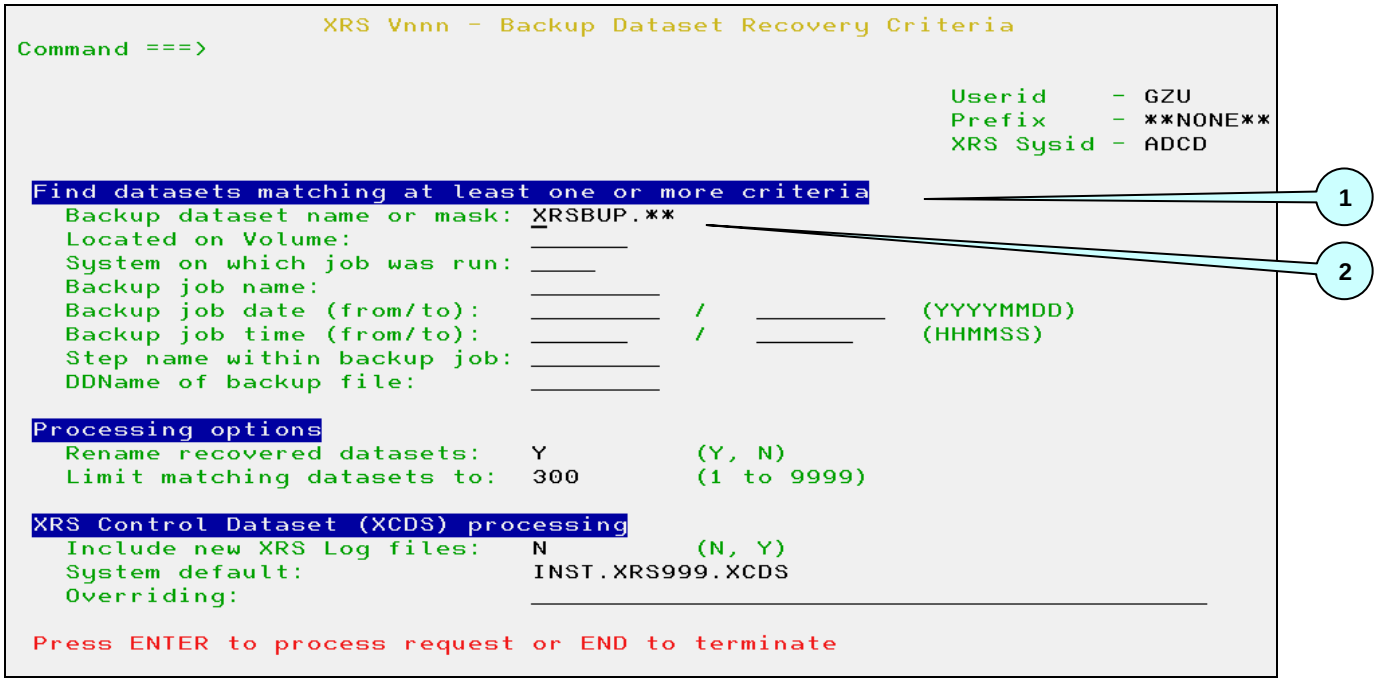
7. XRS Backup dataset dialog

7.1. Backup Datasets

This is a new option in V490. It allows to restore all datasets from a DFDSS backup in an easy way.

7.2. Backup Dataset Recovery Criteria

This panel is displayed when all datasets of a backup need to be recovered. Backup datasets can be selected using specific criteria. Processing options and XRS backup information source files can also be specified. The default values for "Rename recovered datasets" and "Include new XRS Log files" may be changed using the options dialog.

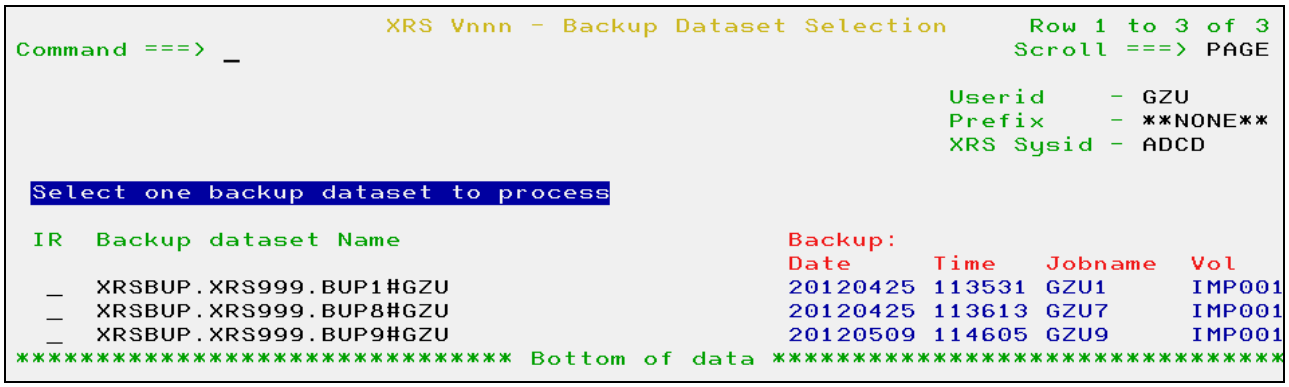


Screen 35: Backup dataset Recovery Criteria

1. Enter at least one of the selection criteria to find matching backup datasets from the XRS Control Dataset. If more than one criterion is entered, then only datasets matching all criteria are displayed. If "Volser of Backup file" is less than 6 bytes long, then a generic search is performed (equivalent to XXX*).
2. A template (like in ISPF 3.4) is possible for the backup dataset name: the same rules apply as for the dataset name in the “Dataset Recovery Criteria” (see 7.1.1 for details).

7.3. Backup Dataset Selection

This panel displays all backup datasets found in the XRS Control Dataset and optionally the XRS Log file(s) matching the entered selection criteria. Detailed information for each backup dataset may be displayed or dataset recovery JCL can be generated.

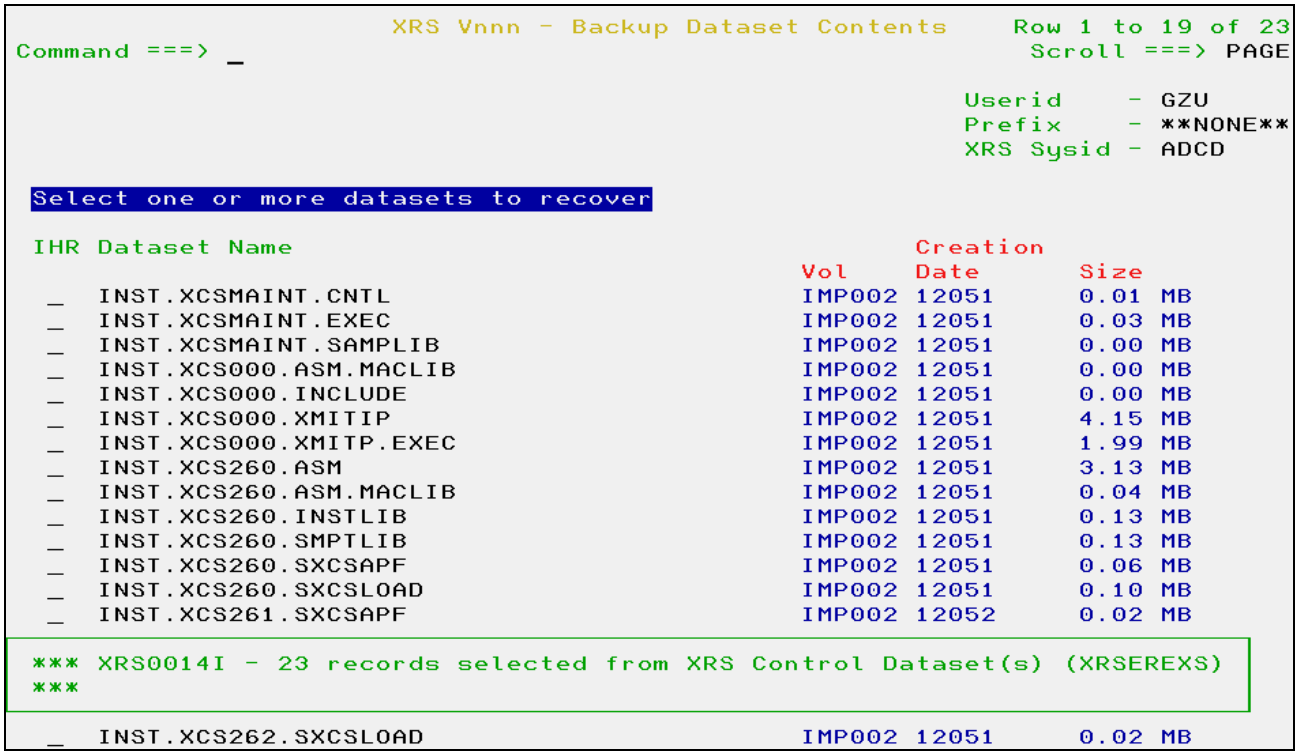


Screen 363: Backup dataset selection

Enter either an “I” to display detailed backup information or “R” to recover all datasets from the backup.

7.4. Backup Dataset Contents

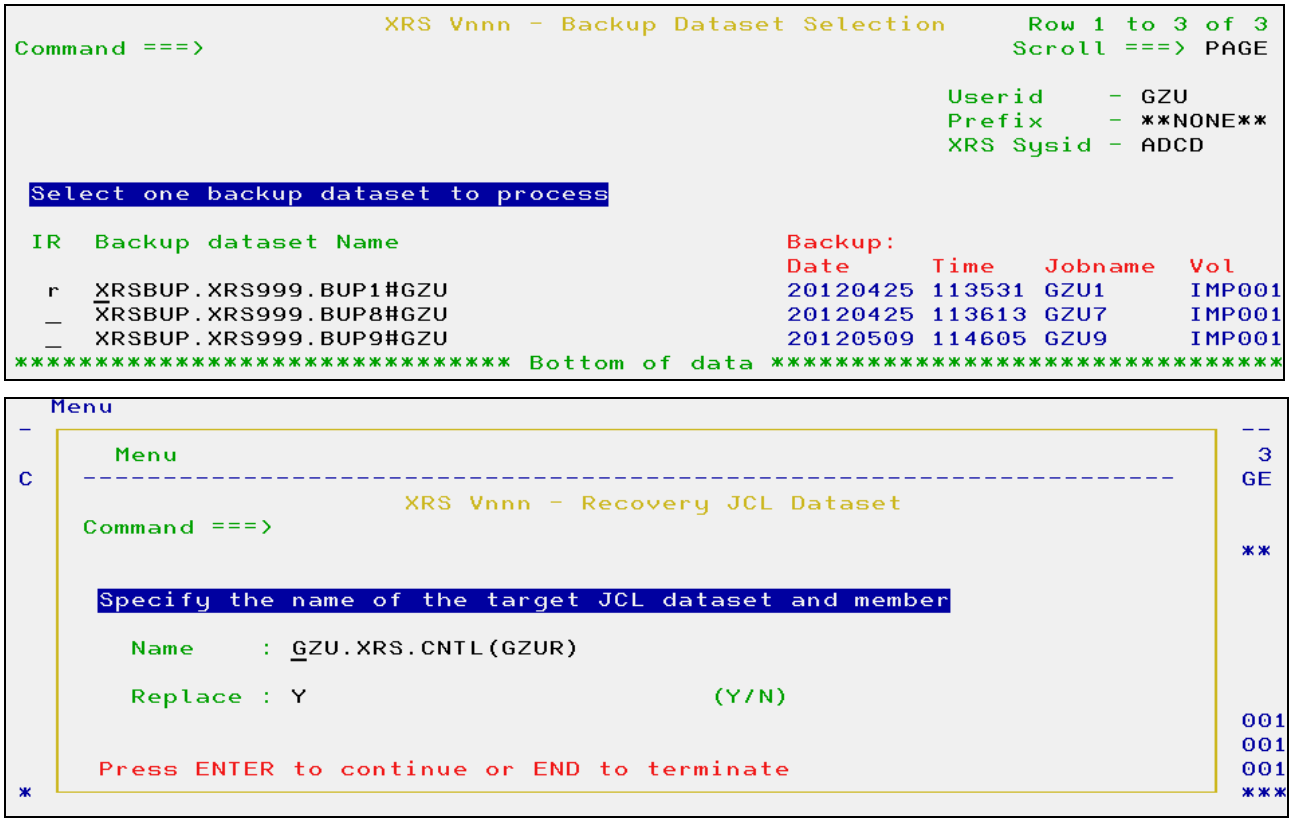
If an “I” is entered in front of one of the displayed backup dataset names, then all available backup information is shown.



Screen 37: Backup dataset contents

7.5. Backup Dataset Recovery

If an “R” is entered in front of one of the displayed backup dataset names, then all saved datasets from this backup will be restored.



Screen 38: Backup dataset recover

7.6. Dataset Recovery JCL

After all information has been entered, the JCL needed to recover the datasets is created and displayed. The unit name is substituted, if the DDName used during the backup matches a value in the common options.

You must type ‘SUB’ in the command line to submit the job.

```
//*********************************************************************
//*                                                                   *
//* Recovering all datasets                                           *
//* from the backup dataset                                           *
//*   Dataset:    XRSBUP.XRS999.BUP1#GZU                              *
//*   Volume:     IMP001                                              *
//*                                                                   *
//* Backup Information -                                              *
//*   Date:       20120425                                            *
//*   Time:       11353143                                            *
//*   Method:     DSS - Logical                                       *
//*                                                                   *
//*********************************************************************
//RECOV001 EXEC PGM=ADRDSSU
//SYSPRINT DD  SYSOUT=*
//BACKUPDS DD  DSN=XRSBUP.XRS999.BUP1#GZU,
//             DISP=OLD,
//             VOL=SER=(IMP001)
//SYSIN    DD  *
  RESTORE DATASET(INCLUDE(**)) +
          REPLACE    +
          SPHERE     +
          FORCECP(0) +
          INDD(BACKUPDS)
/*
```

Listing 5: Dataset recovery JCL

8. Contact

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