Managing Your Environment with Dynamic Resource Definition and the IMS 12 Repository Function: Hands-On Lab

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Introduction

The goals of this workshop are to become familiar with the requirements for setting up the IMS Common Service Layer (CSL) and IMS Dynamic Resource Definition (DRD) with the IMS 12 repository and explore how to use this new flavor of DRD as well as its associated utilities. The IMS TSO SPOC application will also be introduced and we will cover how to issue DRD commands from it, targeting one or more systems in an IMSplex.

In this workshop, you will be working with two IMS systems named IMSB and IMSC, each at the version 12 release level. These two IMS systems exist together in an IMSplex named DEMOC.

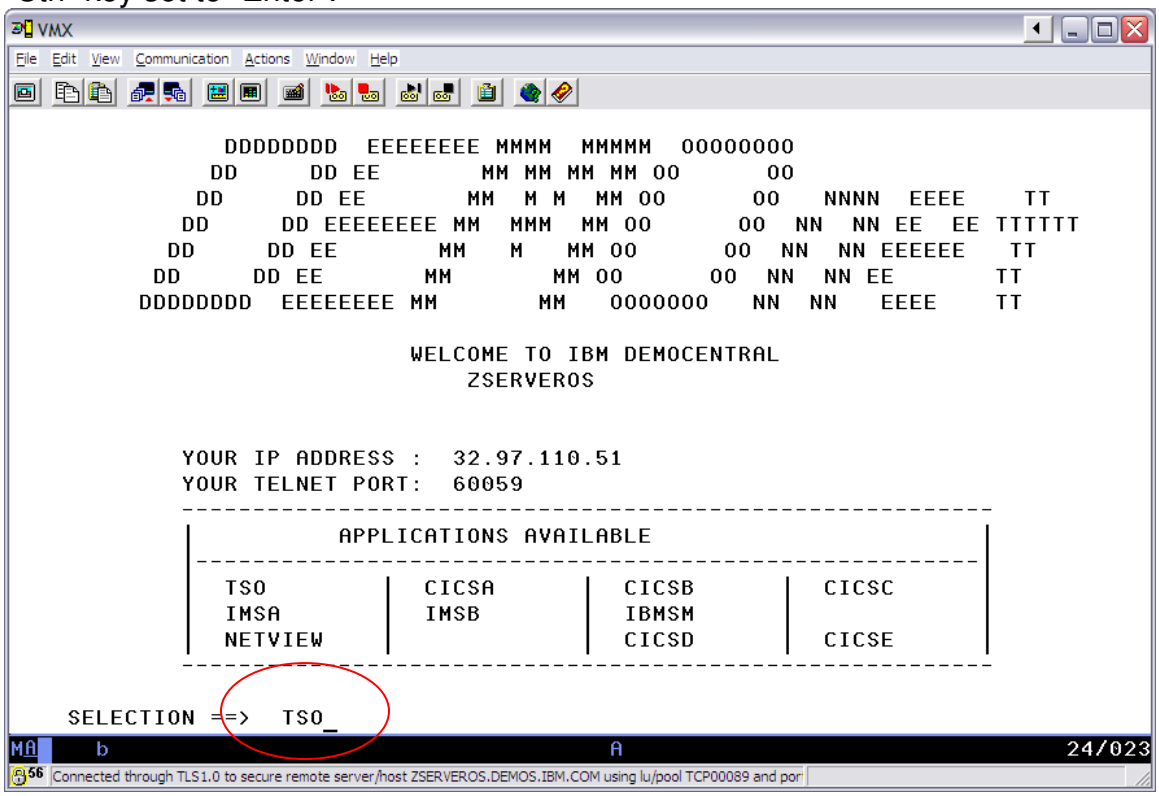
Before beginning the hands-on portion of this workshop, you will have the opportunity to review the PROCLIB members that must be defined in order to set up the CSL as well as DRD with repository. This will familiarize you with the types of definitions required in order to implement these capabilities in your shop. For simplicity, you will not be initializing your own CSL, performing setup for DRD, or enabling the repository environment. Rather, you will be leveraging an existing CSL and using an existing DRD/repository implementation that has already been set up and initialized for you. This will allow you to focus on how to use the DRD capability with the repository, its utilities, and the IMS TSO SPOC application.

This workshop is comprehensive and will take more than the allotted hour for this session. Please finish as many of the exercises as you can, and try out the remainder at home in your test/sandbox environment.

We begin by signing on to the system.

Signing Onto the System

Enter “TSO” from the home screen and press Enter. Note that some systems have the “Ctrl” key set to “Enter”.



Sign on using your designated user ID (IMPOTXX) and password. Throughout this workshop, some screenshots may include the IMPOT19 or IMPOT20 user ID but IMPOTXX will be referenced in your instructions. Whenever you are instructed to enter any data that contains an “XX”, please **substitute the # associated with your user ID**. This will hold true whether the “XX” exists in a data set name or when you are dynamically creating/changing any resources with a command. For example, if you are instructed to create a resource named RSCXX and your user ID is IMPOT15, you should create a resource name RSC15. If you are instructed to create a data set named IMPOTXX.DATA, you should create a data set named IMPOT15.DATA. But again, any screenshot examples will show RSCXX or IMPOTXX.DATA.

```
VMX
File Edit View Communication Actions Window Help
IKJ56700A ENTER USERID -
IMPOTXX_
MA    d                                A                                02/008
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TC
```

Press Enter and fill in the password on the following screen.

```
VMX
File Edit View Communication Actions Window Help
------------------------------- TSO/E LOGON ----------------------------------

   Enter LOGON parameters below:                    RACF LOGON parameters:

   Userid    ===> IMPOT20

   Password  ===>                                   New Password ===> _

   Procedure ===> DBAUSER                           Group Ident  ===>

   Acct Nmbr ===> 20345678

   Size      ===> 24000

   Perform   ===>

   Command   ===>

   Enter an 'S' before each option desired below:
           -Nomail         -Nonotice        -Reconnect        -OIDcard

PF1/PF13 ==> Help    PF3/PF15 ==> Logoff    PA1 ==> Attention    PA2 ==> Reshow
You may request specific help information by entering a '?' in any entry field
MA    b                                                                 08/071
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Press Enter until you see the ISPF Primary Options Menu.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
   Menu  Utilities  Compilers  Options  Status  Help
                              ISPF Primary Option Menu

 0  Settings      Terminal and user parameters            User ID . : IMPOT20
 1  View          Display source data or listings         Time. . . : 22:22
 2  Edit          Create or change source data            Terminal. : 3278
 3  Utilities     Perform utility functions               Screen. . : 1
 4  Foreground    Interactive language processing         Language. : ENGLISH
 5  Batch         Submit job for language processing      Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands       TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                  TSO prefix: IMPOT20
 P  IBM Products  IBM program development products        System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager        MVS acct. : 20345678
 11 Workplace     ISPF Object/Action Workplace            Release . : ISPF 6.1
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


      Enter X to Terminate using log/list defaults

 Option ===> _
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    b                                                                22/014
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Before getting started with the hands-on portion of this workshop, you have the opportunity to examine how the system was set up, and is covered in the following sections. This review is optional; to get started right away, please skip to the *Setting User Preferences for the IMS TSO SPOC Application* section on the next page.

Setting Up the IMS Common Service Layer

The Common Service Layer (CSL) components required to use DRD have already been set up for you. If you would like to review the PROCLIB members that were defined for the CSL for this workshop, please see the section entitled *Setting Up the IMS Common Service Layer* on page 101 in the Appendix.

Setting Up IMS Dynamic Resource Definition for Use with Repository

Dynamic Resource Definition has also already been set up for usage with the new IMS 12 repository function. If you would like to review the IMS PROCLIB member that was defined to enable DRD for this workshop, please see the section entitled *Setting Up IMS Dynamic Resource Definition with Repository* on page 110 in the Appendix. Migration to DRD with repository involves defining the Repository Server configuration settings and allocating the repository data sets that are to be used with DRD.

Repository Server configuration

The Repository Server (RS) address space provides access to the IMSRSC repository, which contains stored resource definitions for one or more IMS systems in an IMSplex. RM communicates with the RS to access these resources. The RS has already been

set up for you, and if you would like to review the PROCLIB member that was defined for it for this workshop, please see the section entitled *Setting Up the Repository Server* on page 115 in the Appendix.

Allocating Repository Data Sets (Catalog and IMSRSC)

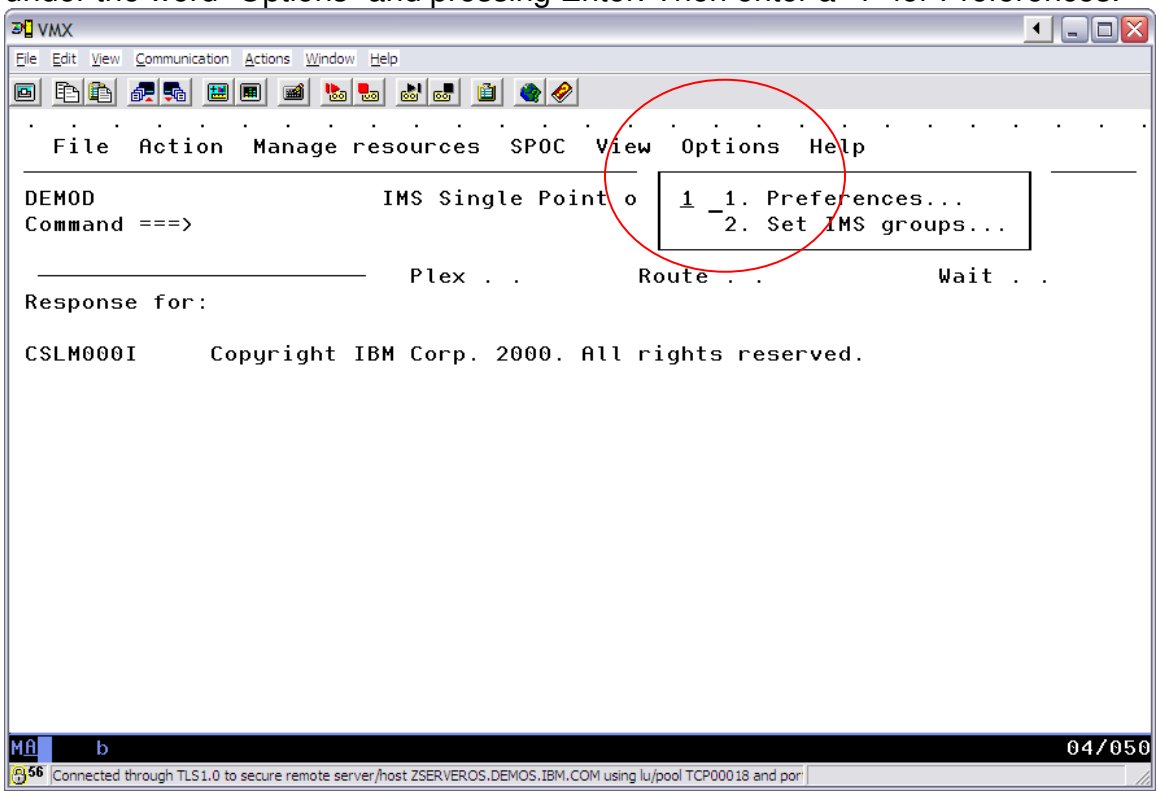
The RS catalog data sets as well as the IMSRSC repository data sets that contain IMS stored resource definitions have already been allocated for you for use in this workshop. To review the JCL that was run in order to create these repository data sets, refer to the section entitled *Allocating Repository Data Sets (Catalog and IMSRSC)* on page 112 in the Appendix.

Setting User Preferences for the IMS TSO SPOC Application

We'll begin by invoking the IMS TSO SPOC application via the IMS Application Menu and then setting preferences.

Invoke the IMS TSO SPOC application using the instructions found in the Appendix section entitled *Invoking the IMS TSO SPOC Application* on page 91. Note that these instructions should be followed whenever you are instructed to invoke the TSO SPOC application during this workshop.

From the TSO SPOC home screen, go to the Options menu by positioning your cursor under the word "Options" and pressing Enter. Then enter a "1" for Preferences.



The name of our IMSplex is "DEMOC". Enter this in the Default IMSplex field, then tab down to the Waiting preference field and enter a "1" here to ensure that we see responses for commands that we enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Help
DEMOD                IMS Single Point of Control Preferences

Command ===> ____________________________________________________________
Select your options and press the Enter key.

                                                                More:     +
Command Entry Preferences
Default IMSplex . . . . DEMOC _
Default routing . . . . ______________________________________________
                        ______________________________________________

Wait interval . . . . . _______
Waiting preference  . . 1_   1.  Wait for command to complete.
                             2.  Do not wait for command response.

Command shortcuts . . . __   1.  Use command shortcuts.
                             2.  Do not use command shortcuts.

Shortcut processing . . __   1.  Merge explicit and default parameters.
                             2.  Explicit parameters override defaults.

 F1=Help   F12=Cancel
MA   B                                A                          10/032
```

After pressing Enter you will be taken back to the TSO SPOC home screen, shown here.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _____________________________________________________________
 ________________________  Plex . . _____  Route . . __________  Wait . . _____
Response for:

CSLM000I     Copyright IBM Corp. 2000. All rights reserved.

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA   B                                A                          04/015
```

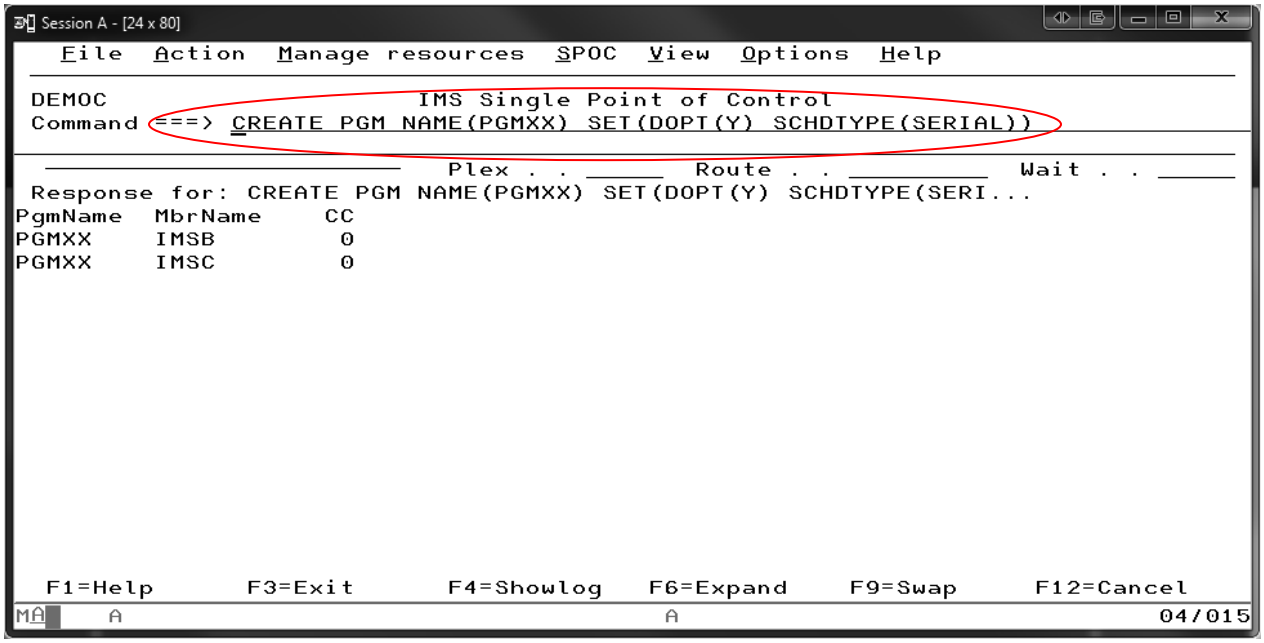
Dynamically Creating Resources Using DRD Commands

Let's now try dynamically creating a program resource. From the TSO SPOC home screen, issue a type-2 CREATE command to create a program resource named PGMXX. Remember, whenever you see an "XX" in this workshop, you are to substitute

your user ID # for it. For example, if your user ID is IMPOT11, the program resource you will create in this exercise is PGM11.

Enter a CREATE TRAN NAME(PGMXX) command, leaving the ROUTE field blank to take default routing to both IMSB and IMSC and setting the following attribute values:

- DOPT(Y) – the PSB for this program will be located dynamically
- SCHDTYPE(SERIAL) – the program is serial



Now create a transaction resource named TRANXXA (again, leave the ROUTE field blank to take default routing to both IMSB and IMSC systems) and set the following attribute values:

- PGM(PGMXX) – the program associated with the transaction
- RESP(Y) – the transaction is response mode
- CLASS(1) – the transaction is assigned to class 1

Refer to the following screenshot for the command syntax (substitute your user ID # for the parts of the command containing “XX”):

```
Session A - [24 x 80]
File  Action  Manage resources  SPOC  View  Options  Help

DEMOC                    IMS Single Point of Control
Command ===> CREATE TRAN NAME(TRANXXA) SET(PGM(PGMXX) RESP(Y) CLASS(1))

                          Plex . . _____   Route . . _________   Wait . . _____
Response for: CREATE TRAN NAME(TRANXXA) SET(PGM(PGMXX) RESP(Y)...
Trancode MbrName    CC
TRANXXA  IMSB        0
TRANXXA  IMSC        0

F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap      F12=Cancel
MA    A                                A                                04/015
```

Dynamically Creating Resources Using a Model Descriptor

We will now show how to create a transaction descriptor, setting attribute values that can later be automatically assigned to a new resource when it is dynamically created.

Create a transaction descriptor named TRNDSCXX, **routing only to IMSC**. Do this by typing “IMSC” in the ROUTE field. Set the following attribute values:

- PGM(PGMXX)
- CLASS(3)
- EXPRTIME(20)
- RESP(Y)
- TRANSTAT(Y)

Refer to the following screenshot for the command syntax, noting that if a command is lengthy it will wrap to the next line:

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> CREATE TRANDESC NAME(TRNDSCXX) SET(PGM(PGMXX) CLASS(3) EXPRTIME(60
) RESP(Y) TRANSTAT(Y))
                          Plex . . _____  Route . . IMSC     Wait . . _____
 Response for: CREATE TRANDESC NAME(TRNDSCXX) SET(PGM(PGMXX) CL...
DescName MbrName    CC
TRNDSCXX IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                          04/015
```

Next create a new transaction resource using the descriptor you just created in the previous step. Name the transaction TRANXXB, and **route it only to IMSC** by typing "IMSC" in the ROUTE field. Designate the descriptor whose attribute values should be used for this new resource by including the descriptor name on the LIKE(DESC()) parameter. Refer to the following screenshot for the command syntax:

```
VMX
File Edit View Communication Actions Window Help
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOD                    IMS Single Point of Control
 Command ===> CREATE TRAN NAME(TRANXXB) LIKE(DESC(TRNDSCXX))
                          Plex . . _____  Route . . IMSC     Wait . . _____
 Response for: CREATE TRAN NAME(TRANXXB) LIKE(DESC(TRNDSCXX))
Trancode MbrName    CC
TRANXXB  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap      F12=Cancel
MA    d                                  A                          04/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TC
```

Query this newly created TRANXXB transaction and show all of its attribute values (refer to the following example for syntax). But this time, leave **the ROUTE field blank** so that the command is routed to both IMSB and IMSC (delete “IMSC” from the Route field). Note that the command response reflects that this TRANXXB transaction resource does not exist on IMSB as a runtime definition – it only exists on IMSC. This is of course due to the fact that when we created the transaction resource, we only routed it to the IMSC system.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                        IMS Single Point of Control
 Command ===> _

                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(ALL)                More:    >
Trancode MbrName    CC CCText              LPSBname LCls    LQCnt  LLCT LPLCT LPL
TRANXXB  IMSC        0                     PGMXX       3        0 65535 65535   6
TRANXXB  IMSB       10 NO RESOURCES FOUND

                  At least one request was successful.

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

At this point, we have created a runtime resource definition on IMSC named TRANXXB and it has not yet been exported to the repository. To see this: enter the QUERY command for the TRANXXB resource as shown in the following example, ensuring that your user ID # is reflected in the NAME(TRANXXB) parameter. Since we have only created this resource on the IMSC system, **route the command to IMSC** only by typing “IMSC” in the ROUTE field.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                        IMS Single Point of Control
 Command ===> _

                          Plex . . _____   Route . . IMSC     Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(DEFN)                More:    >
Trancode MbrName     CC CCText                          Repo IMSid    PSBname  LPSBna
TRANXXB  IMSC      1D3 REPOSITORY MEMBER NOT FOUND Y
TRANXXB  IMSC        0                                     IMSC              PGMXX

          No clients returned return code 0. Check return code(s).

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                                  04/015
```

Note that there are two lines of output for this command: one showing the stored resource definition in the repository (which is currently non-existent) and one showing the runtime resource definition. As you can see in the command response, the 1D3 completion code reflects that the resource does not exist in the repository, while it does exist in the active IMSC system. Once we have exported this resource to the repository, we will revisit this command and you will see different command output for the stored resource definition.

In this example, we used the SHOW(DEFN) parameter with the QUERY command to display a resource's runtime and stored resource definition. You can issue the QUERY command with different flavors of the SHOW(DEFN) command such as SHOW(DEFN,LOCAL) or SHOW(DEFN,GLOBAL) or SHOW(DEFN,IMSID), which we will review in more detail later on in the section entitled *Displaying runtime and stored resource definitions* on page 32.

Exporting/Importing Resources to/from the IMSRSC repository

Let's now create the TRANXXB resource that currently only exists on IMSC on the IMSB system. But this time instead of using a CREATE command, we will use the type-2 EXPORT and IMPORT commands with the shared repository. Creating this resource on IMSB could be accomplished by simply entering a CREATE command via the TSO SPOC, but using EXPORT/IMPORT demonstrates the benefit of multiple IMS systems sharing the same repository and is therefore included in this exercise. In this section, we will first review a series of steps in which no errors occur, then review some scenarios that include common pitfalls and learn how to navigate around them.

You will start by exporting the TRANXXB runtime transaction definition created on IMSC to the shared repository. Since we are planning on activating this resource for IMSB later on, in this exercise we will export TRANXXB to both IMSC's and IMSB's stored

resource definitions. Since the stored definitions for both of these IMS systems can coexist together in the shared repository, only one EXPORT command is needed.

Note: When an EXPORT command is issued to write a transaction resource to the repository, Resource Manager (RM) validates that the associated program resource either already exists in the repository as a stored definition, or is included in the same EXPORT command as the transaction resource. If the program is not present, the command will fail. In this exercise, we will export the associated program resource at the same time that we export the transaction resource to the repository.

Enter the EXPORT command for the PGMXX and TRANXXB resources as shown in the following example, ensuring that your user ID # is reflected in the NAME(PGMXX TRANXXB) parameter. **Route the IMPORT command to IMSC** since this IMS system has the TRANXXB resource defined in its runtime environment. If the route field was left blank and OM selected IMSB as the command master, the command would fail since IMSB does not yet have the TRANXXB resource defined in its runtime environment. Note that both IMSB and IMSC are specified on the SET(IMSID()) parameter to target both of these systems' stored resource definitions.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM TRAN) NAME(PGMXX TRANXXB) SET(IM
SID(IMSB IMSC))
                          Plex . . _____  Route . . IMSC____  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM TRAN) NAME(PGM...
Name      Type      MbrName     CC
IMSB      LIST      IMSC         0
IMSC      LIST      IMSC         0
PGMXX     PGM       IMSC         0
TRANXXB   TRAN      IMSC         0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                          A                                  04/015
```

You can now verify that the TRANXXB resource now exists in the repository as a stored definition for both IMSB and IMSC with the QUERY command. Enter the QUERY command for the TRANXXB resource as shown in the following example, ensuring that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ________________________  Plex . . _____  Route . . IMSC     Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(IMSID)
Trancode MbrName     CC Repo IMSid
TRANXXB  IMSC         0 Y    IMSB
TRANXXB  IMSC         0 Y    IMSC

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                          04/015
```

Including SHOW(IMSID) parameter on the QUERY command displays the IMSIDs within the repository that have the stored TRANXXB resource definition defined. Since we just exported this resource to the repository for IMSB and IMSC, this is reflected in the command response and is highlighted with a circle above.

Now import the TRANXXB resource to IMSB by entering the IMPORT command for the TRANXXB resource as shown in the following example. **Route the IMPORT command to both IMSB and IMSC** (Route field should be blank) and ensure that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> IMPORT DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB)_

  ________________________  Plex . . _____  Route . . _________  Wait . . _____
 Response for: IMPORT DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB...
Name     Type     MbrName    CC CCText                          ImpType
TRANXXB  TRAN     IMSB        0                                 CREATE
TRANXXB  TRAN     IMSC       11 RESOURCE ALREADY EXISTS

                 At least one request was successful.

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap      F12=Cancel
MA    A                                  A                          04/064
```

The output shows that the TRANXXB transaction resource is successfully created on IMSB, and the “ImpType” column indicates that it was created in the runtime environment. But the transaction already exists on IMSC, which is reflected by a completion code of 11 with informative information in the CCText column.

We can now verify that the TRANXXB resource exists as a runtime definition for both IMSB and IMSC with the QUERY command. Enter the QUERY command for the TRANXXB resource as shown in the following example. **Route the QUERY command to both IMSB and IMSC** (Route field should be blank) and ensure that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

                          Plex . . _____   Route . . _________   Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(ALL)                   More:    >
Trancode MbrName     CC LPSBname LCls     LQCnt  LLCT LPLCT LPLCTTime LCPRI LNPRI
TRANXXB  IMSB         0 PGMXX       3         0 65535 65535   6553500     1     1
TRANXXB  IMSC         0 PGMXX       3         0 65535 65535   6553500     1     1

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The output shows that the TRANXXB transaction resource now exists as a runtime definition for both IMSB and IMSC, and includes all of the associated attribute values.

When type-2 commands are issued from automation (such as the Batch SPOC Utility or a REXX program that uses the REXX SPOC API), a non-zero completion code is commonly deemed as unacceptable and causes the automation sequence to abort. The above IMPORT command’s response that we received earlier could potentially cause this problem.

In IMS 12, the IMPORT command was enhanced to allow for the update of runtime resource definitions with corresponding stored resource definitions. Prior to IMS 12, this was not possible: if a resource already existed as a runtime definition, a stored resource definition with the same name could not be imported and would yield the result as shown above with a completion code of 11. Now, we are able to issue the IMPORT command with the OPTION(UDPATE) parameter to indicate that a runtime resource is to be refreshed with a stored resource definition.

In this exercise, we learned how to port resource definitions from one IMS system to another using the shared repository. With one EXPORT command, we can write to the

repository for both IMS systems. We also learned how to query the repository to determine whether a particular resource exists within it, without having to run a utility to examine the contents of the data set (as is the case with the original type of DRD that used the Resource Definition Data Set, or RDDS).

Let's now consider a scenario in which the TRANXXB transaction resource is updated on one IMS system, and the same update needs to be applied another IMS system. For example, perhaps one IMS system is a test system and another is a production system. Testing needs to be completed on the test system with the updated TRANXXB resource before it can be made active on the production system. To make the resource active on the production system, you could simply issue the same UPDATE command on it…but since we now know that IMS 12 allows the dynamic update of a runtime resource definition with a stored definition, let's use this technique to update it in the following scenario.

To begin, enter the same IMPORT command that we just entered in the previous exercise, but this time include the OPTION(UPDATE) parameter. Enter the command as shown below, **routing the command to both IMSB and IMSC by leaving the Route field blank** and ensuring that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> IMP DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB) OPTION(UPDATE)

                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: IMP DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB) O...
Name     Type     MbrName    CC ImpType
TRANXXB  TRAN     IMSB        0
TRANXXB  TRAN     IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                              04/015
```

Since we have included the OPTION(UPDATE) parameter, the command response now yields a completion code of zero for both IMS systems. We did not update any of the transaction's attributes since the last import, so the "ImpType" column is left blank since the import did not result in any creation or update of the transaction's runtime definition. As we saw in the previous example that included the completion code of 11, the "ImpType" column shows CREATE when a resource is created in the runtime environment. When a runtime definition is updated in the runtime environment as a result of issuing the IMPORT command with OPTION(UPDATE), then UPDATE will appear in the column. Let's now see an example of this by updating one of the transaction's attribute values in <u>one</u> IMS system, exporting the updated transaction to

the stored definitions in the repository for both IMS systems, then issuing the IMPORT command with OPTION(UPDATE) to refresh the runtime definition for the other IMS that did not yet receive the update.

Let's begin by displaying a few attributes for the TRANXXB transaction by entering a QUERY command as shown below, **routing the command to both IMSB and IMSC by leaving the Route field blank** and ensuring that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> QUERY TRAN NAME(TRANXXB) SHOW(CLASS SERIAL TRANSTAT)

  ________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(CLASS SERIAL TRANS...
Trancode MbrName    CC LCls LSerial LTranStat
TRANXXB  IMSB        0    3 N       Y
TRANXXB  IMSC        0    3 N       Y

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                   A                                04/015
```

The command response shows that the TRANXXB transaction has the same attribute values on both IMS systems. Let's now update the transaction class value for the IMSB system from 3 to 1, and then capture the update in the repository.

Enter an UPDATE command as shown in the example below, **routing the command to IMSB only** and ensuring that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
  ------------------------   Plex . . _____   Route . . IMSB     Wait . . _____
 Response for: UPDATE TRAN NAME(TRANXXB) SET(CLASS(1))
Trancode MbrName    CC
TRANXXB  IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that the transaction was updated successfully. Next let's display the transaction again for both IMS systems, but this time we'll use a shortcut to issue the command.

Enter the ISPF command RETP on the command line, the same place we've been entering our type-2 commands.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> RETP_
  ------------------------   Plex . . _____   Route . . IMSB     Wait . . _____
 Response for: UPDATE TRAN NAME(TRANXXB) SET(CLASS(1))
Trancode MbrName    CC
TRANXXB  IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/019
```

Once you press Enter, the following pop-up will be displayed.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 -            Retrieve                 ------------------------------------
 D    Options  Help                    Point of Control
 C   ------------------------------
     DEMOC PF Retrieve Panel
                                            Route . . IMSB       Wait . .
 R   Select the command                 XB) SET(CLASS(1))
Tr   to be retrieved
TR                      More:     +
     2_  1.  UPDATE TRAN NAME(TR>
         2.  QUERY TRAN NAME(TRA>
         3.  QUERY TRAN NAME(TRA>
         4.  IMP DEFN SOURCE(REP>
         5.  IMP DEFN SOURCE(REP>
         6.  imp defn source(rep>
         7.
         8.
         9.
         10.
         11.
      F1=Help        F2=Split
      F3=Exit        F7=Backward
  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                   A                              10/007
```

The pop-up shows an abbreviated list of the commands we've been entering in the previous examples. Select the second command shown in the list by entering a 2 (or whatever number corresponds to the last QUERY command entered), then press Enter.

The command is selected and populated on the command line as shown below.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 ------------------------------------------------------------------------
 DEMOC                      IMS Single Point of Control
 Command ===> QUERY TRAN NAME(TRANXXB) SHOW(CLASS SERIAL TRANSTAT)
 ------------------------------------------------------------------------
  ------------------------------   Plex . . _____  Route . . _________  Wait . . _____
 Response for: UPDATE TRAN NAME(TRANXXB) SET(CLASS(1))
Trancode MbrName    CC
TRANXXB  IMSB        0
  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                   A                              06/055
```

<u>Delete the IMSB from the Route field to route the command to both IMSB and IMSC</u>, then press Enter. The command response confirms that the TRANXXB transaction's class has been updated from 3 to 1 for the IMSB system, as shown below. The TRANXXB transaction class remains set to 3 for the IMSC system since it was not targeted in the previous UPDATE command.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> QUERY TRAN NAME(TRANXXB) SHOW(CLASS SERIAL TRANSTAT)
  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXB) SHOW(CLASS SERIAL TRANS...
Trancode MbrName    CC LCls LSerial LTranStat
TRANXXB  IMSB        0    1 N       Y
TRANXXB  IMSC        0    3 N       Y

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                              04/015
```

Now let's export this update to both IMSB's and IMSC's stored resource definitions in the repository by entering an EXPORT command as shown in the example below with SET(IMSID(IMSB IMSC)) included. **Specify IMSB in the Route field** since IMSB is the system that contains the updated resource and ensure that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB) SET(IMSID(IMSB I
MSC))
  ________________________   Plex . . _____  Route . . IMSB_____  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB...
Name     Type     MbrName    CC
IMSB     LIST     IMSB        0
IMSC     LIST     IMSB        0
TRANXXB  TRAN     IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                              04/015
```

The command response shows that the export completed successfully: the stored definitions for both IMSB and IMSC were updated in the repository and the new transaction class attribute is changed from 3 to 1 (note that the class value for IMSC's runtime definition remains as 3 until an IMPORT has been completed for this

transaction). To confirm the updates, let's issue a QUERY command to display the stored definitions' attributes for the transaction. Enter the QUERY command as shown below. **Leave the Route field blank** to let OM choose the command master IMS and ensure that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

DEMOC                    IMS Single Point of Control
Command ===> _

                          Plex . . _____  Route . . _________  Wait . . _____
Response for: QUERY TRAN NAME(TRANXXB) SHOW(DEFN,IMSID)            More:    >
Trancode MbrName    CC Repo IMSid    PSBname  LPSBname Cls LCls   LCT  LLCT  PLC
TRANXXB  IMSB        0 Y             PGMXX               3      65535       6553
TRANXXB  IMSB        0 Y    IMSB     PGMXX               1      65535       6553
TRANXXB  IMSB        0 Y    IMSC     PGMXX               1      65535       6553
TRANXXB  IMSB        0      IMSB               PGMXX           1       65535
TRANXXB  IMSC        0      IMSC               PGMXX           3       65535

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA   B                                  A                                04/015
```

Including the SHOW(DEFN,IMSID) parameter with the QUERY command results in a display of both the stored <u>and</u> runtime definitions for a resource. The generic section contains resource attribute values that apply to all IMS systems in the repository. If an IMS's stored resource definitions are later updated to have different attribute values compared to those in the generic section, they are then stored in an IMS-specific section within the repository and will show their own line of output when a QUERY command with SHOW(DEFN,IMSID) is issued.

Now that we have an understanding of generic versus IMS-specific sections within the repository, let's examine the above command response. The first line of output shows the TRANXXB resource as it exists in the repository's generic section. When we first exported TRANXXB to the repository for the IMSB and IMSC systems, the attributes were set to the values shown in this line of output. Later, when we updated the transaction class value for IMSB and then exported it to the repository for not only IMSB's stored definitions, but IMSC's as well – an IMS-specific section was created in the repository to contain the now differing transaction class value. As such, a line of output is displayed for IMSB and IMSC in the example above that shows the different class value of 1 that is maintained in the IMS-specific section in the repository.

The last two lines of output show the TRANXXB runtime resource definitions as they exist for IMSB and IMSC. Notice that the transaction class value for IMSC remains as 3, the original value, since we've not updated it yet in the runtime environment. This is about to change however, since the next step involves updating the runtime resource

definition for IMSC. Let's now issue the IMPORT command on both IMSB and IMSC, with the OPTION(UPDATE) parameter specified as shown in the example below. **Leave the Route field blank** and ensure that your user ID # is reflected in the NAME(TRANXXB) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                      IMS Single Point of Control
 Command ===> IMPORT DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB) OPTION(UPDATE)

                            Plex . . _____  Route . . _________  Wait . . _____
 Response for: IMPORT DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB...
Name     Type     MbrName    CC ImpType
TRANXXB  TRAN     IMSB        0
TRANXXB  TRAN     IMSC        0 UPDATE

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows in the second line of output that TRANXXB's runtime resource definition for IMSC was updated, by displaying UPDATE in the "ImpType" column. The first line of output shows that the import was processed for IMSB, but since the "ImpType" column is blank, we know that it did not alter the runtime resource definition since its attribute values already matched those associated with the stored resource definition we imported.

Let's now display the TRANXXB one last time, to confirm that its runtime resource definitions reflect the import that just occurred. We need to issue a QUERY command to do this, but this time let's issue the command via a shortcut. Recall that we just entered a QUERY command for TRANXXB a few steps back, which means that it exists in the TSO SPOC *Command Status* panel. From this panel we can re-issue commands as well as display previous command responses.

Place your cursor under the SPOC menu at the top of the panel and press Enter. When you see a menu displayed like the one shown in the example, enter a 3 to invoke the *Command Status* panel.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                      IMS Si   3 _1. Cmd entry & response
 Command ===>                          2. Cmd entry & log
                                       3. Command status
 ___________________________   Plex    4. Command shortcuts      Wait . .
 Response for: QRY TRAN NAME(TRA       5. Expand command...         More:    >
Trancode MbrName    CC LPSBname        6. Audit trail...        ime LCPRI LNPRI
TRANXXB  IMSB        0 PGMXX                                    500     1     1
TRANXXB  IMSC        0 PGMXX       3        0 65535 65535   6553500     1     1
  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                03/038
```

You will now see a list of the commands that you've been entering in the previous exercises -- notice that the second command in the list is a QUERY command. Since we'd like to display TRANXXB's definitions to confirm that the import command updated the runtime resource definition, re-issue the QUERY command from this panel by entering an "I" in the action column to the left of the command, as shown in the example below.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                      IMS Single Point of Control        Row 1 to 13 of 287
 Command ===> ____________________________________________________________________
 ___________________________   Plex . . _____  Route . . __________  Wait . . _____
 Enter '/' to view command response, 'i' to reissue a command, or 'd' to delete
 a command.

 Act   Status      Command
 ___   Complete    IMPORT DEFN SOURCE(REPO) TYPE(TRAN) NAME(TRANXXB) OPTION(UP
 I__   Complete    QUERY TRAN NAME(TRANXXB) SHOW(DEFN)
 ___   Complete    EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB) SET(IMSID
 ___   Complete    QRY TRAN NAME(TRANXXB) SHOW(ALL)
 ___   Complete    QRY TRAN NAME(TRANXXB) SHOW(DEFN,GLOBAL)
 ___   Complete    QRY TRAN NAME(*) SHOW(DEFN,GLOBAL)
 ___   Complete    QRY TRAN NAME(*) SHOW(DEFN)
 ___   Complete    QRY TRAN NAME(*) SHOW(DEFN)
 ___   Complete    EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB) SET(IMSID
 ___   Complete    EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB) SET(IMSID
 ___   Complete    QRY TRAN NAME(*) SHOW(ALL)
 ___   Complete    EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXB) SET(IMSID
 ___   Complete    DEL DEFN TYPE(TRAN) NAME(TRANXXB) FOR(IMSID(*))
  F1=Help   F12=Cancel
MA    A                                A                                12/003
```

After pressing Enter, the QUERY command is re-issued to the IMSplex and we receive a fresh set of output as shown in the example below:

```
Session B - [24 x 80]
 File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . __________  Wait . . _____
Response for: QUERY TRAN NAME(TRANXXB) SHOW(DEFN,IMSID)            More:    >
Trancode MbrName    CC Repo IMSid    PSBname  LPSBname Cls LCls   LCT  LLCT  PLC
TRANXXB  IMSB        0 Y             PGMXX               3      65535       6553
TRANXXB  IMSB        0 Y    IMSB     PGMXX               1      65535       6553
TRANXXB  IMSB        0 Y    IMSC     PGMXX               1      65535       6553
TRANXXB  IMSB        0      IMSB              PGMXX           1       65535
TRANXXB  IMSC        0      IMSC              PGMXX           1       65535
 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                A                                04/015
```

Notice that in the last two lines of output, the TRANXXB's runtime definition now has a transaction class value of 1 for <u>both</u> IMS systems.

In this exercise, we learned how to dynamically update runtime resource definitions using the IMPORT command with OPTION(UPDATE). When the OPTION(UPDATE) parameter is omitted from the IMPORT command syntax, import processing cannot update a runtime resource definition with a different stored resource definition: the command will fail with a non-zero completion code. Again, this can cause problems in command automation if a completion code of zero is required to proceed in the automation sequence. Using the OPTION(UPDATE) enhancement with the IMPORT command circumvents this issue. We also learned that a stored definition can be updated for an IMS system before it is made active in its runtime environment, which could be the case if testing is still underway for a resource before it can be made active on a production system.

Common pitfalls and how to resolve them

Earlier, we mentioned that a successful export of a transaction to the repository requires the presence of its associated program also in the repository or its inclusion in the EXPORT command syntax. What happens if this requirement is not met? In this section, we will review this scenario by creating a program and transaction resource, then attempting to export only the transaction to the repository.

Create a program named PGMXXZ on IMSB by issuing a CREATE command as in the example below. **<u>Route the command to IMSB</u>** and ensure that your user ID # is reflected in the NAME(PGMXXZ) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ___________________________  Plex . . _____  Route . . IMSB_____  Wait . . _____
 Response for: CREATE PGM NAME(PGMXXZ)
PgmName  MbrName    CC
PGMXXZ   IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                                  04/015
```

As a sidenote, notice that we did not specify any attribute values for this program resource. This means that the attribute values were assigned from the current program default descriptor, which could be either the IMS-provided descriptor or a user-defined descriptor.

Now create a transaction named TRANXXZ on IMSB by issuing a CREATE command as in the example below, setting the associated program to PGMXXZ, created in the previous step. **Route the command to IMSB** and ensure that your user ID # is reflected in the NAME(TRANXXZ) and SET(PGM(PGMXXZ)) parameters.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ___________________________  Plex . . _____  Route . . IMSB_____  Wait . . _____
 Response for: CREATE TRAN NAME(TRANXXZ) SET(PGM(PGMXXZ))
Trancode MbrName    CC
TRANXXZ  IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                  04/015
```

Now try to export the TRANXXZ transaction to the repository without including the PGMXXZ program by entering an EXPORT command as shown in the example below. **Route the command to IMSB** and ensure that your user ID # is reflected in the NAME(TRANXXZ) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXZ)_

  ________________________   Plex . . _____  Route . . IMSB____  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(TRAN) NAME(TRANXXZ...
Name     Type     MbrName    CC CCText
IMSB     LIST     IMSB      1D0 NOT DONE DUE TO ERROR
TRANXXZ  TRAN     IMSB       67 NO PGM() DEFINED

          No clients returned return code 0. Check return code(s).

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/064
```

The command fails with a 67 completion code, and the CCText column indicates that there is no program defined for this transaction. If we issue the command again, this time including the program resource, the command succeeds. If the associated program name is unknown, a QUERY command with SHOW(PGM) can be entered for the transaction to display the program name. Enter an EXPORT command as shown in the example below. **Route the command to IMSB** and ensure that your user ID # is reflected in the NAME(PGMXXZ TRANXXZ) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                         IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM TRAN) NAME(PGMXXZ TRANXXZ)

                          Plex . . _____   Route . . IMSB_____   Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM TRAN) NAME(PGM...
Name      Type      MbrName     CC
IMSB      LIST      IMSB         0
PGMXXZ    PGM       IMSB         0
TRANXXZ   TRAN      IMSB         0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

As a sidenote, notice that we omitted the SET(IMSID()) parameter from the EXPORT command. Since we routed the command to IMSB, the IMSID that was exported to defaulted to IMSB. We will see how targeting specific IMS systems using command routing rather than the SET(IMSID()) parameter is useful in the next section where we will discuss exporting resources that have unique attribute values that are specific to a particular IMS system.

Exporting IMS resources with generic vs. unique attribute values

You may have some resources defined to different IMS systems that have the same name, but different attribute values. These unique resources can be maintained in the repository, but it is important to export them in such a way that the attribute values will be preserved. In this section, we will review exporting scenarios in which IMS resources are generically defined the same way across different IMS systems, as well as scenarios in which they are unique.

Let's begin with a basic scenario involving a new program that has the same attribute values for both IMS systems in our IMSplex. We can export this program to the repository with one command that targets the stored definitions of both IMS systems.

Create a program resource as shown in the example below, leaving the **Route field blank** and ensuring that your user ID # is reflected in the NAME(PGMXXBG) parameter.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ___________________________   Plex . . _____   Route . . __________   Wait . . _____
 Response for: CREATE PGM NAME(PGMXXBG)
PgmName  MbrName    CC
PGMXXBG  IMSB        0
PGMXXBG  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                                04/015
```

Now enter an EXPORT command as in the following example, leaving the **Route field blank** and ensuring that your user ID # is reflected in the NAME(PGMXXBG) parameter. Target both IMS systems in the IMSplex with the SET(IMSID(*)) parm.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(PGMXXBG) SET(IMSID(*))

  ___________________________   Plex . . _____   Route . . __________   Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(PGMXXBG)...
Name     Type     MbrName    CC
IMSB     LIST     IMSC        0
IMSC     LIST     IMSC        0
PGMXXBG  PGM      IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                                04/015
```

The use of the SET(IMSID(*)) parameter targets both IMS systems that have stored definitions in the repository. In our test system, we have a 2-way IMSplex consisting of IMSB and IMSC, so these systems are targeted by this EXPORT command. The command response shown above gives information in two parts: the specific resource that was exported, and which IMS systems' stored definitions were altered (created or updated). In our case, the IMSC system was the master of the command (selected by

OM with internal logic), and it wrote the PGMXXBG program resource to its own stored definitions, as well as IMSB's. The "LIST" type shown in the first two lines of the command response indicates that the stored definitions of IMSB and IMSC were altered. The last line of the command simply indicates the name of the resource that was involved.

In this scenario, the exported program had the same generic attribute values for both IMS systems. Now, what if the program resource would have had attribute values that were unique to each IMS system? For example, being parallel schedulable on one IMS, but serial on the other? Let's now review this scenario.

Create a program resource named PGMXXAG as in the following example that is parallel schedulable on IMSB only (routing the command to IMSB and ensuring that your user ID # is reflected in the NAME(PGMXXAG) parameter).

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                         IMS Single Point of Control
 Command ===> _

                          Plex . . _____  Route . . IMSB     Wait . . _____
 Response for: CREATE PGM NAME(PGMXXAG) SET(SCHDTYPE(PARALLEL))
PgmName  MbrName    CC
PGMXXAG  IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

Now create a program resource with the same name on IMSC, but this time define it as serial (routing the command to IMSC and ensuring that your user ID # is reflected in the NAME(PGMXXAG) parameter).

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                        IMS Single Point of Control
 Command ===> _

 ___________________________  Plex . . _____  Route . . IMSC_____  Wait . . _____
 Response for: CREATE PGM NAME(PGMXXAG) SET(SCHDTYPE(SERIAL))
PgmName  MbrName    CC
PGMXXAG  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                                 04/015
```

Confirm that these two programs have different scheduling types by entering the following QUERY command (the Route field should be blank so that both IMS systems receive the command; ensure that your user ID # is reflected in the NAME(PGMXXAG) parameter).

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                        IMS Single Point of Control
 Command ===> _

 ___________________________  Plex . . _____  Route . . __________  Wait . . _____
 Response for: QUERY PGM NAME(PGMXXAG) SHOW(SCHDTYPE)
PgmName  MbrName    CC LRgnType LSchdType
PGMXXAG  IMSB        0 MPP      PARALLEL
PGMXXAG  IMSC        0 MPP      SERIAL

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                 04/015
```

When exporting resources with attribute values that are specific to particular IMS systems, you must issue a separate EXPORT command for each IMS. This will ensure that the unique attribute values are preserved within the repository in the IMS system's stored resource definitions. We'll now issue two export commands for the program, then display the program's stored definition within the repository to display the results of the export.

Enter the EXPORT command, as in the following example (routing the command to IMSB and ensuring that your user ID # is reflected in the NAME(PGMXXAG) parameter).

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                         IMS Single Point of Control
 Command ===> ____________________________________________________________

 ___________________________  Plex . . _____  Route . . IMSB_____  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(PGMXXAG)
Name     Type     MbrName    CC
IMSB     LIST     IMSB        0
PGMXXAG  PGM      IMSB        0

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                07/016
```

Note that the SET(IMSID()) parameter was omitted. Since we routed the command to the IMSB system, the export targeted this IMS's stored resource definitions. **Note: if we would have included the SET(IMSID()) parameter and specified command routing, the routing would have taken precedence.**

Now enter the EXPORT command targeting IMSC as in the following example (routing the command to IMSC and ensuring that your user ID # is reflected in the NAME(PGMXXAG) parameter). Notice that we did not have to modify the command syntax to export to the IMSC system – we simply changed the command routing. Therefore, when exporting resources that have unique attribute values that are specific to different IMS systems, it is recommended to omit the SET(IMSID()) parameter for ease of use when issuing this command separately to different IMS systems. This will ensure that each system's unique resource definitions are preserved.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

                        IMS Single Point of Control
 Command ===> _

                          Plex . . _____  Route . . IMSC_____  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(PGMXXAG)
Name      Type      MbrName    CC
IMSC      LIST      IMSC        0
PGMXXAG   PGM       IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

Now that we've exported the PGMXXAG program resource to the repository for both IMS systems, we can now display them by querying its stored definition as it exists in the repository. In the next section, we'll display the PGMXXAG resource with the QUERY command and various flavors of the SHOW(DEFN) parameter.

Displaying runtime and stored resource definitions

As a reminder, when a resource exists in an active/running IMS system, it is referred to as a "runtime" resource definition. If a resource exists is the offline repository, it is referred to as a "stored" resource definition. In IMS 12, the QUERY command has been enhanced to display both of these definition types with the SHOW(DEFN) parameter. There are various flavors of the SHOW(DEFN) parameter which can display a resource's runtime and stored definition, just the runtime definition, or just the stored definition. You can also view specific IMSIDs that have a particular resource defined with another flavor of the SHOW(DEFN) parameter.

When a resource has stored definitions for multiple IMS systems in the repository, the output of a QUERY command will differ, depending on whether the resource has the same generic attribute values for all of the IMS systems versus when it has unique attribute values across the systems. To illustrate this point, in this section we will include the SCHDTYPE attribute value when we query the PGMXXAG program, since this attribute value differs across IMSB and IMSC. Let's now examine the QUERY command and its different flavors of the SHOW(DEFN) parameter, using our PGMXXAG resource.

To display PGMXXAG's runtime and stored definitions, enter the QUERY command with the SHOW(DEFN,SCHDTYPE) parameter as in the example below. Leave the Route field blank and ensure that your user ID # is reflected in the NAME(PGMXXAG) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

DEMOC                    IMS Single Point of Control
Command ===> _

                          Plex . . _____  Route . . __________  Wait . . _____
 Response for: QRY PGM NAME(PGMXXAG) SHOW(DEFN,SCHDTYPE)
PgmName  MbrName    CC Repo IMSid    LRgnType SchdType LSchdType
PGMXXAG  IMSB        0 Y                      PARALLEL
PGMXXAG  IMSB        0 Y    IMSC              SERIAL
PGMXXAG  IMSB        0      IMSB     MPP               PARALLEL
PGMXXAG  IMSC        0      IMSC     MPP               SERIAL

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                                04/015
```

As you can see, when the QUERY command is issued with SHOW(DEFN) specified, the stored definitions within the repository are retrieved by one command master IMS (IMSB in our example), and the runtime definitions are returned from each IMS that has the resource defined.

Recall the generic and IMS-specific sections within the repository that we previously discussed. In the first line of our command response above, the command master IMS displays the PGMXXAG resource as it exists in the repository with its generic attribute values. Generic attribute values are designated when the resource is exported to the repository for the first time. Recall that IMSB was the first system to export the PGMXXAG resource; therefore IMSB's PGMXXAG resource's attributes were used to create the generic section. Any other IMS that has this same resource defined (like IMSC), but with different attribute values, will appear in a separate line of output when a QUERY…SHOW(DEFN) command is issued. IMSC's PGMXXAG resource had a different scheduling type, so when it was exported to the repository, it was put in IMSC's IMS-specific section and appears in a separate line of output. IMSs with resources that match those in the generic section of the repository will not have their own dedicated line of output.

The "Repo" column indicates a "Y" to indicate that it is a stored definition in the repository versus a runtime definition in an active IMS system. The "IMSid" column shows the specific IMS that has the stored definition defined in the repository. PGMXXAG's runtime definition information in shown in the last two lines, and both the "MbrName" and "IMSid" columns indicate the IMSID that has the runtime resource definition defined.

To display only PGMXXAG's <u>runtime</u> definitions, enter the QUERY command with the SHOW(DEFN,LOCAL,SCHDTYPE) parameter as in the example below. Leave the Route field blank and ensure that your user ID # is reflected in the NAME(PGMXXAG) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QRY PGM NAME(PGMXXAG) SHOW(DEFN,LOCAL,SCHDTYPE)
PgmName  MbrName    CC IMSid    LRgnType LSchdType
PGMXXAG  IMSB        0 IMSB     MPP      PARALLEL
PGMXXAG  IMSC        0 IMSC     MPP      SERIAL
 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

To display only PGMXXAG's stored definitions, enter the QUERY command with the SHOW(DEFN,GLOBAL,SCHDTYPE) parameter as in the example below. Leave the Route field blank and ensure that your user ID # is reflected in the NAME(PGMXXAG) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QRY PGM NAME(PGMXXAG) SHOW(DEFN,GLOBAL,SCHDTYPE)
PgmName  MbrName    CC Repo IMSid    SchdType
PGMXXAG  IMSB        0 Y             PARALLEL
PGMXXAG  IMSB        0 Y    IMSC     SERIAL
 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

PGMXXAG's stored definitions are displayed in the command output. Once again, note that the command master (IMSB) displays the generic resource in the repository, and if an IMS system has a resource with differing attribute values compared to this generic resource (IMSC), a line of output is shown.

In this section, we learned how to display resources that exist in the runtime environment as well as the resources that exist offline in the repository. Let's now examine the ways that we can capture changes made to runtime definitions and write them to the repository, so that they are available across IMS coldstarts.

Capturing runtime resource definition changes in the IMS repository

Prior to IMS 12, DRD definitional changes could be captured at every system checkpoint via automatic export, thereby preserving the changes across IMS coldstart. If there were definitional changes made since the previous system checkpoint, autoexport would write all of the IMS runtime resource definitions to the system RDDS at checkpoint time. This would capture the resources that were added, changed, and deleted since the last checkpoint. In IMS 12, when DRD is used with the repository, the DRD definitional changes are captured using a different technique. Let's now explore this new method, which is more efficient compared to autoexport since it involves a significantly smaller amount of overhead in capturing the resource changes. We'll start with handling newly added and updated resources.

Capturing newly added and updated resources

When the repository is used in a DRD environment and runtime resource definitions are added or changed, an EXPORT command is required in order to write these new/changed resources to the repository. Special parameters were added to the EXPORT command in IMS 12 to make the actual export processing more efficient, enabling it to target only the resources that are new or have been modified in the runtime environment. You can target the resources that have been added/changed since the last EXPORT command was issued with the new OPTION(CHANGESONLY) parameter. You can be even more granular by specifying a window of time in which resources could have been added/changed with the new STARTTIME() and ENDTIME() parameters and target those specific resources for the export.

EXPORT exercise with OPTION(CHANGESONLY)

Let's now go through a scenario in which we add new resources as well as modify existing resources, then target them with an EXPORT command using these special parameters that allow for maximum I/O efficiency. We'll start with an exercise that allows you to export resources that were added/changed since the last EXPORT command was issued.

First create two new program resources named PROGXX1 and PROGXX2 by entering the CREATE command as in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
 ___________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: CREATE PGM NAME(PROGXX1 PROGXX2)
PgmName  MbrName    CC
PROGXX1  IMSB        0
PROGXX1  IMSC        0
PROGXX2  IMSB        0
PROGXX2  IMSC        0
  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

In an earlier exercise, we introduced the concept of a default descriptor that is used to assign attributes for newly created resources when the attributes themselves are not explicitly specified in the command syntax. Notice that in this command, we did not specify any parameters for the PROGXX1 and PROGXX2 program resources so we know that the attribute values were assigned from the current program default descriptor, which could be either the IMS-provided descriptor or a user-defined descriptor.

Now, to show that these new programs only exist in the runtime environment and are not stored in the repository yet, we will issue a QUERY command. But let's use a shortcut this time. First place the cursor under the "CREATE" in the response to the previously issued command as shown in the example.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _____________________________________________________________

 ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: CREATE PGM NAME(PROGXX1 PROGXX2)
PgmName  MbrName    CC
PROGXX1  IMSB        0
PROGXX1  IMSC        0
PROGXX2  IMSB        0
PROGXX2  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                07/016
```

Now press Enter and you will see the CREATE command appear on the command line. Simply type “QUERY” over the “CREATE” command and add the SHOW(DEFN,IMSID) parameter to the end of the command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank and press Enter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _____________________________________________________________

 ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC CCText                      Repo IMSid    LRgnType BMPTyp
PROGXX1  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX1  IMSB        0                                  IMSB     MPP
PROGXX1  IMSC        0                                  IMSC     MPP
PROGXX2  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX2  IMSB        0                                  IMSB     MPP
PROGXX2  IMSC        0                                  IMSC     MPP

                 At least one request was successful.

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

The command response shows that the PROGXX1 and PROGXX2 program resources exist as runtime resource definitions, but do not yet exist in the repository. A blank

appearing in the “Repo” column indicates that the line of output is associated with a runtime resource definition that exists in the active IMS system.

To export these new resources to the repository, we could simply issue an EXPORT command explicitly naming these two resources on the NAME() parameter. However, what if you did not want to keep track of all of the individual resources names that have been added or updated since the last EXPORT command was issued? The answer is using the OPTION(CHANGESONLY) parameter, which captures only these particular resources that are new or changed, and writes them to the repository upon export. To illustrate this, enter an EXPORT command with OPTION(CHANGESONLY) as shown in the example below. Leave the Route field blank so as to prevent the IMS systems specified in the SET(IMSID()) parameter from being overridden.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(*) SET(IMSID(IMSB IMSC))
OPTION(CHANGESONLY)
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(*) SET(I...
Name      Type      MbrName    CC
IMSB      LIST      IMSB        0
IMSC      LIST      IMSB        0
PROGXX1   PGM       IMSB        0
PROGXX2   PGM       IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap      F12=Cancel
MA    A                                  A                                04/015
```

Notice that all we needed to specify in the command was the resource type, but not any names. The output indicates that the IMS resource lists for IMSB and IMSC were both updated, and the PROGXX1 and PROGXX2 resources were involved in the export processing. As a sidenote, also notice that in our example, IMSB was selected as the command master who wrote the new/changed resource definitions to the repository for itself, and also on behalf of IMSC. In your case, OM may have selected IMSC as the command master via internal logic.

To show that these two program resources now exist in the repository, enter a QUERY command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Action  Manage resources  SPOC  View  Options  Help

DEMOC                    IMS Single Point of Control
Command ===> _

                          Plex . . _____  Route . . _________  Wait . . _____
Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(IMSID)
PgmName  MbrName    CC Repo IMSid
PROGXX1  IMSB        0 Y    IMSB
PROGXX1  IMSB        0 Y    IMSC
PROGXX2  IMSB        0 Y    IMSB
PROGXX2  IMSB        0 Y    IMSC

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                                              04/015
```

Including the SHOW(IMSID) parameter on the QUERY command will display each IMSID that has the specified resource(s) defined in the repository. As you can see in the command response, the PROGXX1 and PROGXX2 resources now exist in the repository for both IMSB and IMSC.

In the last sequence of steps, we issued the EXPORT command with OPTION(CHANGESONLY) to capture newly added resources in the repository without having to specify the resource names in the command. Now let's see how this parameter value can be used to capture resource updates as well.

To begin, let's display a few updatable attribute values for these programs including the scheduling type, dynamic option value, and language interface. Enter a QUERY command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(SCHDTYPE DOPT LANG)

  ___________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(SCHDTYPE DO...
PgmName  MbrName    CC LRgnType LDOPT LPgmLang LSchdType
PROGXX1  IMSB        0 MPP      N               PARALLEL
PROGXX1  IMSC        0 MPP      N               PARALLEL
PROGXX2  IMSB        0 MPP      N               PARALLEL
PROGXX2  IMSC        0 MPP      N               PARALLEL

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The requested attribute values for the two programs are displayed. Now let's change each of these values for both of the programs and then export them to the repository to once again showcase the OPTION(CHANGESONLY) parameter capability.

Enter an UPDATE command to change these attributes as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> UPDATE PGM NAME(PROGXX1 PROGXX2) SET(SCHDTYPE(SERIAL) DOPT(Y) LANG
(JAVA))
  ___________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: UPDATE PGM NAME(PROGXX1 PROGXX2) SET(SCHDTYPE(SE...
PgmName  MbrName    CC
PROGXX1  IMSB        0
PROGXX1  IMSC        0
PROGXX2  IMSB        0
PROGXX2  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

To confirm that these attribute changes have taken effect in the runtime environment for our two programs, enter a QUERY command as shown in the example below, specifying that the attributes we just updated are shown. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(SCHDTYPE DOPT LANG)

                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(SCHDTYPE DO...
PgmName  MbrName    CC LRgnType LDOPT LPgmLang LSchdType
PROGXX1  IMSB        0 JMP      Y     JAVA     SERIAL
PROGXX1  IMSC        0 JMP      Y     JAVA     SERIAL
PROGXX2  IMSB        0 JMP      Y     JAVA     SERIAL
PROGXX2  IMSC        0 JMP      Y     JAVA     SERIAL

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response confirms that the runtime resource definitions have successfully been updated. Let's now capture these changes and write them to the repository.

Enter an EXPORT command using the OPTION(CHANGESONLY) parameter as shown in the example below. Leave the route field blank so as to prevent the IMS systems specified in the SET(IMSID()) parameter from being overridden.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(*) SET(IMSID(IMSB IMSC))
OPTION(CHANGESONLY)
  ___________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) NAME(*) SET(I...
Name      Type      MbrName    CC
IMSB      LIST      IMSB        0
IMSC      LIST      IMSB        0
PROGXX1   PGM       IMSB        0
PROGXX2   PGM       IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

Once again, notice that all we needed to specify in the command was the resource type, but not any names. The inclusion of OPTION(CHANGESONLY) picked up the changes we made to the two program resources earlier, and wrote these updated resources to the repository for IMSB and IMSC.

To confirm that these resource updates now exist in the stored definitions within the repository, let's display these definitions and examine the attribute values that we previously updated. Enter a QUERY command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC Repo IMSid    LRgnType BMPType LBMPType FP LFP DOPT LDOPT
PROGXX1  IMSB        0 Y                      N                N      N
PROGXX1  IMSB        0 Y    IMSB              N                N      Y
PROGXX1  IMSB        0 Y    IMSC              N                N      Y
PROGXX1  IMSB        0      IMSB     JMP              N           N        Y
PROGXX1  IMSC        0      IMSC     JMP              N           N        Y
PROGXX2  IMSB        0 Y                      N                N      N
PROGXX2  IMSB        0 Y    IMSC              N                N      Y
PROGXX2  IMSB        0 Y    IMSB              N                N      Y
PROGXX2  IMSB        0      IMSB     JMP              N           N        Y
PROGXX2  IMSC        0      IMSC     JMP              N           N        Y
 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

Notice that including SHOW(DEFN,IMSID) in the QUERY command syntax results in a display of the stored resource definitions within the repository as well as the runtime resource definitions. A “Y” in the “Repo” column signifies that the line of output contains a stored resource definition, whereas a blank signifies a runtime resource definition. The lines of output that do not have an IMSID listed show the generic resource definition within the repository for that particular resource. In our scenario, we changed some our programs’ attributes so that they differ from this generic definition. However, the generic definition is still displayed for the resource when SHOW(DEFN,IMSID) is used.

Let’s now confirm that the attribute values in the stored definitions match what we just exported. Recall that we previously updated the dynamic option (DOPT) to Y, the scheduling type to SERIAL, and the language interface to JAVA. If you look at the PROGXX1 and PROGXX2’s stored definitions (the lines that have a “Y” in the “Repo” column), you will notice the DOPT value is in fact “Y”, reflecting our change that was exported. If you page to the right twice (by pressing PF11 twice), you will see what is shown in the example below.

```
Session A - [24 x 80]
 File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID)     More: <  >
PgmName  MbrName  Repo LRgnType Lang LPgmLang SchdType LSchdType TimeCreate>
PROGXX1  IMSB     Y                           PARALLEL           2012.205 17:00:
PROGXX1  IMSB     Y                           SERIAL             2012.205 17:00:
PROGXX1  IMSB     Y                           SERIAL             2012.205 17:00:
PROGXX1  IMSB          JMP           JAVA               SERIAL
PROGXX1  IMSC          JMP           JAVA               SERIAL
PROGXX2  IMSB     Y                           PARALLEL           2012.205 17:00:
PROGXX2  IMSB     Y                           SERIAL             2012.205 17:00:
PROGXX2  IMSB     Y                           SERIAL             2012.205 17:00:
PROGXX2  IMSB          JMP           JAVA               SERIAL
PROGXX2  IMSC          JMP           JAVA               SERIAL

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                A                                04/015
```

Notice that the scheduling type has been updated to SERIAL and the language interface has been updated to JAVA for the stored resource definitions in the repository. Once again, these differ from PROGXX1 and PROGXX2's generic definition in the repository, which remains with the original values.

In this last exercise, we learned how to export new and updated resources to the repository without having to explicitly name the resources in the EXPORT command syntax. Another way to pinpoint resources that you'd like targeted for export is by specifying a timeframe in which resources could have been added/updated, which we'll now explore.

EXPORT exercise with STARTTIME() and ENDTIME()

IMS 12 introduces the ability to include a start time and end time with the EXPORT command, to indicate that any resource additions/changes that occurred within the specified window of time should be written to the repository. You can also specify only a start time without an end time. To demonstrate this capability, in this exercise we will create two new program resources, update our existing program resources that we used in the last exercise, and then target these new/changed resources with an EXPORT command that specifies a timestamp.

Let's begin by creating two new program resources named PROGXX3 and PROGXX4. Enter a CREATE command as in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
 File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
Response for: CREATE PGM NAME(PROGXX3 PROGXX4)
PgmName  MbrName    CC
PROGXX3  IMSB        0
PROGXX3  IMSC        0
PROGXX4  IMSB        0
PROGXX4  IMSC        0
 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA   A                                A                                04/015
```

Now we've got two new programs defined as runtime resource definitions. Let's update the PROGXX1 and PROGXX2 programs that we created in the previous exercise by changing their transaction level statistics attribute to "Y".

Enter an UPDATE command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> UPDATE PGM NAME(PROGXX1 PROGXX2) SET(TRANSTAT(Y))

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: UPDATE PGM NAME(PROGXX1 PROGXX2) SET(TRANSTAT(Y)...
PgmName  MbrName    CC
PROGXX1  IMSB        0
PROGXX1  IMSC        0
PROGXX2  IMSB        0
PROGXX2  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

Next, let's display the programs we've been adding/updating in this exercise by entering QUERY commands to confirm that they have not yet been exported to the repository.

Enter a QUERY command for the PROGXX3 and PROGXX4 program resources as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX3 PROGXX4) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC CCText                       Repo IMSid    LRgnType BMPTyp
PROGXX3  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX3  IMSB        0                                  IMSB     MPP
PROGXX3  IMSC        0                                  IMSC     MPP
PROGXX4  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX4  IMSB        0                                  IMSB     MPP
PROGXX4  IMSC        0                                  IMSC     MPP

                 At least one request was successful.

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that these programs exist as runtime resource definitions, but do not yet have stored resource definitions in the repository.

Next, enter another QUERY command for the PROGXX1 and PROGXX2 resources as shown below to examine their transaction level statistics attribute and confirm that the updated runtime definitions have not yet been exported to the repository. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID,TRANSTAT)

                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID,...
PgmName  MbrName    CC Repo IMSid    LRgnType TranStat LTranStat
PROGXX1  IMSB        0 Y                        N
PROGXX1  IMSB        0 Y    IMSB                N
PROGXX1  IMSB        0 Y    IMSC                N
PROGXX1  IMSB        0      IMSB     JMP                Y
PROGXX1  IMSC        0      IMSC     JMP                Y
PROGXX2  IMSB        0 Y                        N
PROGXX2  IMSB        0 Y    IMSB                N
PROGXX2  IMSB        0 Y    IMSC                N
PROGXX2  IMSB        0      IMSB     JMP                Y
PROGXX2  IMSC        0      IMSC     JMP                Y

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                 A                                04/015
```

Runtime Definitions

Stored Definitions

The command response shows that the PROGXX1 and PROGXX2 runtime resource definitions have a transaction level statistics value of “Y” whereas their corresponding stored resource definitions in the repository have not yet been updated, showing an “N”.

Let’s now export the new PROGXX3 and PROGXX4 resources along with the updated PROGXX1 and PROGXX2 resources by issuing an EXPORT command with a start time specified. This will cause the export to target only the resources that are new or updated since the start time specified and we will not need to explicitly specify the resource names in the command syntax. Enter an EXPORT command as shown below, leaving the Route field blank, substituting your user ID # in the NAME() parameter values, and specifying a start time in the format of *yyyy.ddd hh:mm* (year, Julian day, hour in military time and minute). A start time of 30 minutes prior to this point in the exercise is recommended. To determine the Julian day, please see the *Julian Day Table Reference* in the Appendix section on page 125.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(REPO) TYPE(PGM) SET(IMSID(IMSB IMSC)) STARTTIME
(2012.205 17:20)
                          Plex . . _____  Route . . __________  Wait . . _____
 Response for: EXPORT DEFN TARGET(REPO) TYPE(PGM) SET(IMSID(IMS...
Name     Type     MbrName    CC
IMSB     LIST     IMSB        0
IMSC     LIST     IMSB        0
PROGXX1  PGM      IMSB        0
PROGXX2  PGM      IMSB        0
PROGXX3  PGM      IMSB        0
PROGXX4  PGM      IMSB        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that our four programs were exported to IMSB and IMSC. Depending on how quickly you’re going through these exercises, you may see additional resources that are exported with this command. In our example scenario, there were only four program resources as shown above that were created since the start time that we specified in the command syntax.

If you now display these programs, you will find that they have been added to and updated in the repository. Enter a QUERY command for the PROGXX3 and PROGXX4 program resources as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX3 PROGXX4) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC Repo IMSid    LRgnType BMPType LBMPType FP LFP DOPT LDOPT
PROGXX3  IMSB        0 Y                      N                N      N
PROGXX3  IMSB        0 Y    IMSB              N                N      N
PROGXX3  IMSB        0 Y    IMSC              N                N      N
PROGXX3  IMSB        0      IMSB     MPP              N           N        N
PROGXX3  IMSC        0      IMSC     MPP              N           N        N
PROGXX4  IMSB        0 Y                      N                N      N
PROGXX4  IMSB        0 Y    IMSB              N                N      N
PROGXX4  IMSB        0 Y    IMSC              N                N      N
PROGXX4  IMSB        0      IMSB     MPP              N           N        N
PROGXX4  IMSC        0      IMSC     MPP              N           N        N

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                 A                                04/015
```

The command response shows that stored resource definitions for PROGXX3 and PROGXX4 now exist in the repository.

Next, enter a final QUERY command for the PROGXX1 and PROGXX2 resources as shown below to examine their transaction level statistics attribute and confirm that the updated runtime definitions have now been exported to the repository. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID,TRANSTAT)

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(DEFN,IMSID,...
PgmName  MbrName    CC Repo IMSid    LRgnType TranStat LTranStat
PROGXX1  IMSB        0 Y                      N
PROGXX1  IMSB        0 Y    IMSB              Y
PROGXX1  IMSB        0 Y    IMSC              Y
PROGXX1  IMSB        0      IMSB     JMP              Y
PROGXX1  IMSC        0      IMSC     JMP              Y
PROGXX2  IMSB        0 Y                      N
PROGXX2  IMSB        0 Y    IMSB              Y
PROGXX2  IMSB        0 Y    IMSC              Y
PROGXX2  IMSB        0      IMSB     JMP              Y
PROGXX2  IMSC        0      IMSC     JMP              Y

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                 A                                04/015
```

The transaction level statistics attribute value now reflects the updated value of “Y” for the PROGXX1 and PROGXX2 stored resource definitions.

In this section we learned how to capture newly added/updated resources in the repository in an efficient way using special EXPORT parameters. But what happens in the case that runtime resource definitions are deleted? How do we reflect these deletions in the repository?

Handling deleted resources

Prior to IMS 12, DRD deletions made to runtime resource definitions were captured in the RDDS via autoexport at system checkpoint time. In this process, IMS would replace the entire RDDS contents with a total capture of its current runtime resource definitions. When runtime resource definitions are deleted in IMS 12 using DRD with the repository, a separate command needs to be issued in order to delete the corresponding stored resource definitions in the repository. This gives greater control to the user, and is much more efficient than autoexport since it allows targeting of the specific resources that should be deleted in the repository. This is in contrast to the original type of DRD, which used up more CPU I/O time to write all of the runtime definitions to the RDDS, thereby reflecting the deletion by excluding the deleted resources from the export. In this exercise, we will demonstrate the new process that is more efficient.

Let’s start by deleting two of the programs created in the previous exercise. Delete the PROGXX3 and PROGXX4 runtime resource definitions by entering the DELETE command as shown in the example below. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: DELETE PGM NAME(PROGXX3 PROGXX4)
PgmName  MbrName    CC
PROGXX3  IMSB        0
PROGXX3  IMSC        0
PROGXX4  IMSB        0
PROGXX4  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that the runtime resource definitions were successfully deleted. Let’s now query these resources to show that they no longer exist in the

runtime environment, but currently remain in the repository as stored definitions. To enter the QUERY command, let's use a shortcut. Enter the ISPF command RETP on the command line as shown in the example below as press Enter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> RETP_

  ------------------------  Plex . . _____  Route . . _________  Wait . . _____
 Response for: DELETE PGM NAME(PROGXX3 PROGXX4)
PgmName  MbrName    CC
PROGXX3  IMSB        0
PROGXX3  IMSC        0
PROGXX4  IMSB        0
PROGXX4  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/019
```

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 -          Retrieve
 D    Options  Help                 Point of Control
 C   ------------------------
     DEMOC PF Retrieve Panel

                                          Route . .            Wait . .
 R   Select the command               3 PROGXX4)
Pg   to be retrieved
PR                    More:     +
PR   2_  1.  DELETE PGM NAME(PRO>
PR       2.  QUERY PGM NAME(PROG>
PR       3.  QUERY PGM NAME(PROG>
         4.  QUERY PGM NAME(PROG>
         5.  EXPORT DEFN TARGET(>
         6.  QUERY PGM NAME(PROG>
         7.
         8.
         9.
         10.
         11.
      F1=Help        F2=Split
      F3=Exit        F7=Backward

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                10/007
```

A box similar to what is shown above will be displayed. Select the numerical value associated with one of the last QUERY commands that was entered from the list. It is option 2 in our example, but it may vary depending on the specific commands you have

entered prior to this point. Once you select the command from the list, press Enter and the command will be populated on the command line as shown in the example below. If the QUERY command that you select does not include the PROGXX3 and PROGXX4 resources, you can simply type over the names specified. Route the command to both IMSB and IMSC by leaving the Route field blank.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> QUERY PGM NAME(PROGXX3 PROGXX4) SHOW(DEFN,IMSID)_

  ________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: DELETE PGM NAME(PROGXX3 PROGXX4)
PgmName  MbrName    CC
PROGXX3  IMSB        0
PROGXX3  IMSC        0
PROGXX4  IMSB        0
PROGXX4  IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/063
```

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ________________________   Plex . . _____  Route . . __________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX3 PROGXX4) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC CCText             Repo IMSid    LRgnType BMPType LBMPTyp
PROGXX3  IMSB        0                    Y                      N
PROGXX3  IMSB        0                    Y    IMSB              N
PROGXX3  IMSB        0                    Y    IMSC              N
PROGXX3  IMSB       10 NO RESOURCES FOUND
PROGXX3  IMSC       10 NO RESOURCES FOUND
PROGXX4  IMSB        0                    Y                      N
PROGXX4  IMSB        0                    Y    IMSB              N
PROGXX4  IMSB        0                    Y    IMSC              N
PROGXX4  IMSB       10 NO RESOURCES FOUND
PROGXX4  IMSC       10 NO RESOURCES FOUND

          No clients returned return code 0. Check return code(s).

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that the PROGXX3 and PROGXX4 runtime resources have been deleted. As a reminder, runtime resources are shown in the command response with a blank in the “Repo” column. On the other hand, the stored resources are shown with a “Y” in the “Repo” column and we can see that they still exist in the repository.

To delete the stored definitions in the repository for PROGXX3 and PROGXX4, enter the DELETE DEFN command as shown in the example below. Leave the Route field blank to prevent overriding the FOR(IMSID()) parameter in the command syntax, which specifies the particular IMS systems the stored definitions should be deleted for. Remember to substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                      IMS Single Point of Control
 Command ===> DELETE DEFN TYPE(PGM) NAME(PROGXX3 PROGXX4) FOR(IMSID(IMSB IMSC))

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: DELETE DEFN TYPE(PGM) NAME(PROGXX3 PROGXX4) FOR(...
Name      Type      MbrName     CC IMSid
IMSB      LIST      IMSB         0
IMSC      LIST      IMSB         0
PROGXX3   PGM       IMSB         0 IMSB
PROGXX3   PGM       IMSB         0 IMSC
PROGXX4   PGM       IMSB         0 IMSB
PROGXX4   PGM       IMSB         0 IMSC

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    A                                  A                                04/015
```

The command response indicates that the PROGXX3 and PROGXX4 resources have been deleted for both IMS systems and removed from their respective IMS resource lists in the repository.

Now let’s issue a final query to confirm that the two programs no longer exist as runtime or stored resource definitions. Enter a QUERY command as shown in the example. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX3 PROGXX4) parameter.

```
Session A - [24 x 80]
 File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
Response for: QUERY PGM NAME(PROGXX3 PROGXX4) SHOW(DEFN,IMSID)     More:    >
PgmName  MbrName    CC CCText                      Repo LRgnType BMPType LBMPTyp
PROGXX3  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX3  IMSB       10 NO RESOURCES FOUND
PROGXX3  IMSC       10 NO RESOURCES FOUND
PROGXX4  IMSB      1D3 REPOSITORY MEMBER NOT FOUND Y
PROGXX4  IMSB       10 NO RESOURCES FOUND
PROGXX4  IMSC       10 NO RESOURCES FOUND

        No clients returned return code 0. Check return code(s).

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA   A                                A                                04/015
```

The command response confirms that the program resources no longer exist in either place for both IMS systems.

Now that we've examined different ways of capturing runtime resource definitions in the repository, let's switch gears a bit and introduce some new utilities that can aid in migration to/fallback from DRD with repository. Press PF3 until you reach the ISPF Primary Options Menu screen.

Using utilities to aid in migration/fallback

A key step in implementing DRD with repository is populating the repository with IMS stored resource definitions that match the runtime resource definitions of its respective active IMS. In IMS 12, you can generate a repository that contains equivalent contents of an RDDS. This can be accomplished by using the new RM utilities. You can also generate a repository from IMS log records using utilities, and for fallback purposes, you can use the utilities to generate an RDDS or help recreate a MODBLKS data set. Let's now explore how to use these utilities to help migrate to repository DRD, and fall back from it.

Migration aid: generating a repository from an RDDS

Perhaps you've already implemented DRD in your shop and you have a system RDDS that contains all of your IMS stored resource definitions. You can use this system RDDS as input into the *RDDS to Repository utility* (CSLURP10) to generate a repository with equivalent contents. Alternatively, you could also create a non-system RDDS, capture all of your IMS's resource definitions in it with an EXPORT command, and then use this non-system RDDS as input to the utility. In this exercise, we chose a very simple scenario for demonstration purposes in which we:

- Delete all of the stored transaction definitions in our repository
- Query the repository to confirm that it contains no stored transaction definitions

- Populate a non-system RDDS with one runtime transaction definition (in a real-world scenario, several other resources would be involved)
- Use this non-system RDDS as input into the CSLURP10 utility to populate our repository with this stored transaction definition
- Query the repository to confirm that it now contains the same stored transaction definition that was copied from the non-system RDDS with the utility

A non-system RDDS named IMPOTXX.NSRDDS1 (the XX should be your user ID #) has already been created for you for use in this exercise. Let's begin by deleting all of the stored transaction definitions in the repository with a DELETE DEFN command. Enter the command shown in the example, **routing to IMSC.**

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> DELETE DEFN TARGET(REPO) TYPE(TRAN) NAME(*) FOR(IMSID(IMSB IMSC))
                          Plex . . _____  Route . . IMSC_____  Wait . . _____
Log for . . : DELETE DEFN TARGET(REPO) TYPE(TRAN) NAME(*) FOR(...  More:    >

IMSplex . . . . . : DEMOC
Routing . . . . . : IMSC
Start time. . . . : 2012.213 15:06:39.10
Stop time . . . . : 2012.213 15:06:39.11
Return code . . . : 00000000
Reason code . . . : 00000000
Reason text . . . :
Command master. . : IMSC

MbrName  Messages
-------- -----------------------
IMSC     DFS3406I DELETE COMMAND COMPLETE FOR ALL, REPOTYPE=IMSRSC, REPONAME=IM

 F1=Help      F3=Exit      F4=Showlist  F6=Expand    F9=Retrieve F12=Cancel
MA    B                                A                                04/015
```

The DFS3406I message confirms that the delete was successful. Let's now query the repository to verify that no stored transaction definitions exist in it any longer. Enter a QUERY command shown in the example, leaving the Route field blank so that OM selects the command master.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
DEMOC                    IMS Single Point of Control
Command ===> _
                         Plex . . _____  Route . . __________  Wait . . _____
Response for: QUERY TRAN NAME(*) SHOW(DEFN,GLOBAL)                More:    >
Trancode MbrName    CC CCText                      Repo PSBname  Cls   LCT  PLC
*        IMSC      1D3 REPOSITORY MEMBER NOT FOUND Y

        The command completed with warning(s). Check return code(s).

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                A                                04/015
```

The command response reflects that IMSC was the master of the command, who determined that there are currently no stored transaction resources in the repository. Recall that issuing the QUERY command with SHOW(DEFN,GLOBAL) displays only the stored definitions in the repository.

Let's now prepare our non-system RDDS by exporting a runtime transaction to it, so that when we use this RDDS as input into the *RDDS to Repository* utility (CSLURP10), it will include this transaction that we can later track in the repository.

Earlier in this workshop, we created a runtime transaction resource on both IMSB and IMSC named TRANXXA. Let's confirm that it exists in our runtime environment, and then export it to our non-system RDDS. Enter a QUERY command as shown in the example, leaving the Route field blank so both IMSB and IMSC receive the command.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
  ------------------------   Plex . . _____  Route . . __________  Wait . . _____
 Response for: QUERY TRAN NAME(TRANXXA) SHOW(DEFN,LOCAL)            More:    >
Trancode MbrName    CC IMSid    LPSBname LCls  LLCT LPLCT LPLCTTime LCPRI LNPRI
TRANXXA  IMSB        0 IMSB     PGMXX       1 65535 65535   6553500     1     1
TRANXXA  IMSC        0 IMSC     PGMXX       1 65535 65535   6553500     1     1

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                                                04/015
```

Including SHOW(DEFN,LOCAL) displays the TRANXXA runtime resource definition and confirms that it does in fact exist as a runtime for IMSB and IMSC.

To write this transaction to the non-system RDDS, enter an EXPORT command as shown in the example, leaving the Route field blank and substituting your user ID # for the XX in the RDDSDSN(IMPOTXX.NSRDDS1) data set and NAME(TRANXXA) parameters.

```
Session B - [24 x 80]
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> EXPORT DEFN TARGET(RDDS) RDDSDSN(IMPOTXX.NSRDDS1) TYPE(TRAN) NAME(
TRANXXA) OPTION(OVERWRITE)
  ------------------------   Plex . . _____  Route . . __________  Wait . . _____
 Response for: EXPORT DEFN TARGET(RDDS) RDDSDSN(IMPOT19.NSRDDS1...
Name     Type     MbrName    CC
TRANXXA  TRAN     IMSC        0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                             04/055
```

The non-system RDDS named IMPOTXX.RDDS1 now contains only the TRANXXA stored resource definition, since we included OPTION(OVERWRITE) in the command syntax. We can now run the *RDDS to Repository* utility (CSLURP10) to write this resource to the repository from our non-system RDDS.

Press PF3 until you reach the ISPF Primary Option Menu as shown below. Enter 3.4 as shown below.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
 ------------------------------------------------------------------------------
                            ISPF Primary Option Menu

 0  Settings      Terminal and user parameters            User ID . : DDS1743
 1  View          Display source data or listings         Time. . . : 14:56
 2  Edit          Create or change source data            Terminal. : 3278
 3  Utilities     Perform utility functions               Screen. . : 1
 4  Foreground    Interactive language processing         Language. : ENGLISH
 5  Batch         Submit job for language processing      Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands       TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                  TSO prefix: DDS1743
 P  IBM Products  IBM program development products        System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager        MVS acct. : 12345678
 11 Workplace     ISPF Object/Action Workplace            Release . : ISPF 6.3
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


      Enter X to Terminate using log/list defaults

 Option ===> 3.4_
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    A                                                              22/017
```

Press Enter and browse the IMPOTXX.TESTXYZ PDS to find the JCL that invokes the *RDDS to Repository* (CSLURP10) utility.

```
Session B - [24 x 80]
  Menu  RefList  RefMode  Utilities  Help
 ------------------------------------------------------------------------------
                              Data Set List Utility
                                                                   More:     +
   blank Display data set list              P Print data set list
       V Display VTOC information          PV Print VTOC information

 Enter one or both of the parameters below:
   Dsname Level . . . IMPOTXX.TESTXYZ
   Volume serial  . . ______

 Data set list options
   Initial View                 Enter "/" to select option
   1  1. Volume                 /  Confirm Data Set Delete
      2. Space                  /  Confirm Member Delete
      3. Attrib                 /  Include Additional Qualifiers
      4. Total                  /  Display Catalog Name
                                _  Display Total Tracks
                                _  Prefix Dsname Level

 When the data set list is displayed, enter either:
 Option ===> ____________________________________________________________
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    B                                A                              09/031
```

Edit the CSLURP10 member.

```
Session B - [24 x 80]
  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMPOT19.TESTXYZ                          Row 00001 of 00013
            Name     Prompt        Size   Created          Changed          ID
 _________ BATCHSPC                 43  2008/05/23  2012/07/07 23:25:07  DDS1743
 _________ BSPOCTST                 21  2008/05/23  2012/07/08 00:36:08  DDS1743
 E________ CSLURP10                 23  2008/05/23  2012/07/31 15:02:18  IMPOT19
 _________ CSLURP20                 20  2008/05/23  2012/07/26 01:32:16  DDS1743
 _________ CSLUSPOC                 43  2008/05/23  2011/07/25 11:01:32  DDS1743
 _________ DFSRDDAL                 10  2008/05/23  2012/07/27 19:29:32  DDS1743
 _________ MOD2RDDS                 20  2008/05/23  2012/07/26 20:41:59  DDS1743
 _________ OLDS2RPO                 41  2008/05/23  2012/07/27 21:30:55  DDS1743
 _________ REXXSPOC                 62  2008/05/23  2012/07/06 19:21:11  DDS1743
 _________ REXXUPTR                 49  2008/05/23  2012/07/07 23:17:24  DDS1743
 _________ URDD0CMD                 10  2008/05/23  2011/07/23 18:40:54  IMPOT20
 _________ URDD0MAC                 10  2008/05/23  2012/07/27 19:29:39  DDS1743
 _________ URDD0QRY                 10  2008/05/23  2012/07/30 21:27:41  DDS1743
           **End**


 Command ===> ___________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                              07/003
```

```
Session B - [24 x 80]
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IMPOT19.TESTXYZ(CSLURP10) - 01.64              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>          your edit profile using the command RECOVERY ON.
000001 //IMPOTXX JOB MSGCLASS=H,NOTIFY=&SYSUID,USER=&SYSUID
000002 //*
000003 //JOBLIB DD DSN=IMS.IMSC.SDFSRESL,DISP=SHR
000004 //*
000005 //STEP1    EXEC  PGM=CSLURP10
000006 //SYSUDUMP DD  SYSOUT=*
000007 //SYSPRINT DD  SYSOUT=*
000008 //*
000009 //*****************************************************************/
000010 //* SPECIFY A VALID RDDS DSN FOR INPUT. CONCATENATION IS NOT    */
000011 //* ALLOWED.                                                    */
000012 //*****************************************************************/
000013 //RDDSDSN  DD  DSN=IMPOTXX.NSRDDS1,DISP=SHR ********************/
000014 //*
000015 //*****************************************************************/
Command ===> ____________________________________________ Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                          A                                19/034
```

Specify your user ID # for the XX in the job name as well as in the IMPOTXX.NSRDDS1 shown on the RDDSDSN DD statement. Press PF8 to page down and see the rest of the JCL.

```
Session B - [24 x 80]
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IMPOT19.TESTXYZ(CSLURP10) - 01.65              Columns 00001 00072
000016 //* IMSID MAY BE SPECIFIED ON SYSIN OR WILL DEFAULT TO THE      */
000017 //* IMSID ON THE RDDS HEADER RECORD. WHEN USING SYSIN, COMMA    */
000018 //* SEPERATED IMSIDS MAY BE SPECIFIED.                          */
000019 //*****************************************************************/
000020 //SYSIN    DD  *
000021            IMSPLEX(NAME=DEMOC IMSID(IMSB,IMSC))
000022 /*
000023 //
****** ***************************** Bottom of Data ***************************
Command ===> ____________________________________________ Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                          A                                22/015
```

Note that the name of our DEMOC IMSplex is specified, and IMSB and IMSC have both been specified in the IMSID list – this means that the resource within in our IMPOTXX.NSRDDS1 data set will be copied to both of those IMS systems' stored definitions in the repository.

Submit the job by entering a “SUB” command on the command line and enter a jobname character if prompted. If you are unfamiliar with how to submit a batch job, please see the *Submitting Batch Jobs* section in the Appendix on page 93 for more detailed information. Once you’ve submitted the job, press Enter and then PF3 until you have reached the ISPF Primary Options Menu.

```
Session B - [24 x 80]
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
 ------------------------------------------------------------------------
 EDIT       IMPOT19.TESTXYZ(CSLURP10) - 01.65              Columns 00001 00072
 000016 //* IMSID MAY BE SPECIFIED ON SYSIN OR WILL DEFAULT TO THE      */
 000017 //* IMSID ON THE RDDS HEADER RECORD. WHEN USING SYSIN, COMMA    */
 000018 //* SEPERATED IMSIDS MAY BE SPECIFIED.                          */
 000019 //*************************************************************/
 000020 //SYSIN    DD  *
 000021            IMSPLEX(NAME=DEMOC IMSID(IMSB,IMSC))
 000022 /*
 000023 //
 ****** **************************** Bottom of Data ****************************
 IKJ56700A ENTER JOBNAME CHARACTER(S) -
Q
 IKJ56250I JOB IMPOT19Q(JOB07374) SUBMITTED
 *** _
MA    B                          A                                   24/006
```

Now view the job output with ISPF Primary Option Menu selection 3.8. For more detail on viewing job output, please see *Viewing Job Output Using ISPF 3.8* in the Appendix on page 95.

Enter “IMPOTXX” plus the jobname character in the jobname field. For example, if your user ID is IMPOT11 and you entered an “O” as the job name character when you submitted the job in the previous step, you would enter “IMPOT11O” in the jobname field. Also enter an “L” on the command line and press Enter.

```
Session B - [24 x 80]
  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                              Outlist Utility
                                                                   More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXQ
   Class  . . . _
   JobID  . . . ________

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI    )
                                           (M for machine )
Option ===> L_
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                                A                                22/015
```

Several jobnames may then be displayed. Take note of the <u>last</u> job number that is displayed, in the following example it is JOB07374.

```
Session B - [24 x 80]
IKJ56192I JOB IMPOT19R(JOB07366) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19Q(JOB07370) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19Q(JOB07374) ON OUTPUT QUEUE
***  _
MA    B                                A                                04/006
```

Press Enter and fill out the jobID field with a format of “JXXXXX” where “XXXXX” is the jobID just noted on the previous panel. Press Enter.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                              Outlist Utility
                                                                   More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXQ
   Class  . . . _
   JobID  . . . J07374  

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI    )
                                           (M for machine )
Option ===> _____________________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    A                                A                                12/025
```

The next series of screens show the job output. Press PF8 to page down through the output and notice the various CSL26XXX messages that show details behind the utility execution, such as the RDDS name, the IMSID targeted in the repository, and a confirmation that the write to the repository was successful. Finally, there is a summary of the resources and descriptors that were written to the repository at the end of the output. In our case, one transaction resource was written from the non-system RDDS to the repository.

Note: earlier in this workshop when we created the TRANXXA transaction resource, we had set its associated program to be PGMXX. The exercises that followed involved exporting this program resource to the repository, so it already existed in the repository at the time we copied the TRANXXA resource to it with the *RDDS to Repository utility (CSLURP10). Had the associated program been absent, the utility would have failed with an error such as the following:*

```
CSL2603I CSLURP10 IS PROCESSING RDDS IMPOT18.NSRDDS1
CSL2618I CSLURP10 IS PROCESSING PLEX=CSLDEMOC, IMSID LIST FROM SYSIN, IMSC
CSL2620I CSLURP10 SUCCESSFUL REGISTRATION WITH RM, RMNAME=RMBRM
CSL2616E CSLURP10 CSLRPUPD REQUEST FAILED RC=0300000C, RSN=00003004
         ERRORTEXT=00000000 03000008 00002514 00000000 00000000 00000000
         RSCNAME=TRAN18A , RSCTYPE=TRAN    , CC=00000055
```

Therefore, when running CSLURP10, always make sure the programs associated with the transactions involved are either processed with the utility or already present in the repository.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    IMPOT19.SPF131.OUTLIST                          CHARS 'CSL26' found
          CPU:     0 HR  00 MIN  00.00 SEC    SRB:     0 HR  00 MIN  00.00 SEC
 CSL2603I CSLURP10 IS PROCESSING RDDS IMPOT19.NSRDDS1
 CSL2618I CSLURP10 IS PROCESSING PLEX=CSLDEMOC, IMSID LIST FROM SYSIN, IMSB
          IMSC
 CSL2620I CSLURP10 SUCCESSFUL REGISTRATION WITH RM, RMNAME=RMBRM
 CSL2600I CSLURP10 WRITE TO REPOSITORY WAS SUCCESSFUL FOR REPOTYPE=IMSRSC   , REP

    **** SUMMARY ****

 DB       COUNT     : 0
 DBDESC   COUNT     : 0
 PGM      COUNT     : 0
 PGMDESC  COUNT     : 0
 RTC      COUNT     : 0
 RTCDESC  COUNT     : 0
 TRAN     COUNT     : 1
 TRANDESC COUNT     : 0
 DB       DUPLICATES: 0
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                05/002
```

Let's now query the repository to confirm that the TRANXXA transaction resource was copied for IMSB and IMSC. To exit this panel, press PF3 until you reach the ISPF Primary Option Menu. Invoke the TSO SPOC application by entering "P.C", then "IMS", then option 1. Information about invoking the TSO SPOC can be found in the Appendix in the *Invoking the IMS TSO SPOC Application* section on page 91.

Enter the QUERY command as shown, leaving the Route field blank.

```
Session A - [24 x 80]
File Edit View Communication Actions Window Help
  File  Action  Manage resources  SPOC  View  Options  Help

 DEMOC                    IMS Single Point of Control
 Command ===> _

  ________________________   Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY TRAN NAME(*) SHOW(DEFN,GLOBAL,IMSID)          More:    >
Trancode MbrName    CC Repo IMSid    PSBname  Cls   LCT  PLCT PLCTTime NPRI LPRI
TRANXXA  IMSC        0 Y             PGMXX      1 65535 65535  6553500    1    1
TRANXXA  IMSC        0 Y    IMSB     PGMXX      1 65535 65535  6553500    1    1
TRANXXA  IMSC        0 Y    IMSC     PGMXX      1 65535 65535  6553500    1    1

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    A                                  A                                04/015
```

The command response shows that the TRANXXA resource now exists in the repository for IMSB and IMSC.

In this exercise, we learned how to use an existing RDDS as input into the CSLURP10 utility to generate stored resource definitions within the repository for specific IMSIDs. But what if you've never implemented DRD in your shop and therefore don't have an RDDS to use to populate your repository? In this case, you can leverage the DRD utilities with the RM utilities to populate the repository with definitions from your IMS log records. Let's now explore this scenario.

Migration aid: generating a repository from IMS log records

The steps involved in populating a repository with stored resource definitions using IMS log records as input are similar to what we covered in the previous exercise, with one extra step. In this exercise, we will use the *Create RDDS from Log Records* utility (DFSURCL0) to first generate an RDDS from IMSC's log record data sets, then use this RDDS as input to the *RDDS to Repository* utility (CSLURP10) that we used in the previous exercise. These two utilities can be invoked in one batch job, which we'll now illustrate.

Navigate to the IMPOTXX.TESTXYZ PDS using 3.4 from the Primary Options Menu.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters           User ID . : DDS1743
1  View          Display source data or listings        Time. . . : 14:56
2  Edit          Create or change source data           Terminal. : 3278
3  Utilities     Perform utility functions              Screen. . : 1
4  Foreground    Interactive language processing        Language. : ENGLISH
5  Batch         Submit job for language processing     Appl ID . : ISP
6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                 TSO prefix: DDS1743
P  IBM Products  IBM program development products       System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager       MVS acct. : 12345678
11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.4
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    A                                                            22/017
```

Browse the IMPOTXX.TESTXYZ data set (substituting your user ID # for the XX) and edit the member named OLDS2RPO.

```
Session B - [24 x 80]
  Menu  Functions  Confirm  Utilities  Help

BROWSE            IMPOT19.TESTXYZ                        Row 00001 of 00013
           Name     Prompt       Size   Created          Changed          ID
_________ BATCHSPC                43  2008/05/23  2012/07/07 23:25:07  DDS1743
_________ BSPOCTST                21  2008/05/23  2012/07/08 00:36:08  DDS1743
_________ CSLURP20                20  2008/05/23  2012/07/26 01:32:16  DDS1743
_________ CSLUSPOC                43  2008/05/23  2011/07/25 11:01:32  DDS1743
_________ DFSRDDAL                10  2008/05/23  2012/07/27 19:29:32  DDS1743
_________ MOD2RDDS                20  2008/05/23  2012/07/26 20:41:59  DDS1743
E________ OLDS2RPO                41  2008/05/23  2012/07/27 20:52:38  DDS1743
_________ RDDS2RPO                21  2008/05/23  2012/07/26 20:44:43  DDS1743
_________ REXXSPOC                62  2008/05/23  2012/07/06 19:21:11  DDS1743
_________ REXXUPTR                49  2008/05/23  2012/07/07 23:17:24  DDS1743
_________ URDD0CMD                10  2008/05/23  2011/07/23 18:40:54  IMPOT20
_________ URDD0MAC                10  2008/05/23  2012/07/27 19:29:39  DDS1743
_________ URDD0QRY                10  2008/05/23  2012/07/27 19:28:42  DDS1743
          **End**

Command ===> _____________________________________________ Scroll ===> PAGE
 F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
F10=Left   F11=Right  F12=Cancel
MA    B                                A                            12/003
```

```
Session B - [24 x 80]
File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT19.TESTXYZ(OLDS2RPO) - 01.57              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //         SET RESLIB=IMS.IMSC.SDFSRESL
000003 //JOBLIB   DD DISP=SHR,DSN=&RESLIB
000004 //*
000005 //DUMMY1   EXEC PGM=IEFBR14
000006 //*
000007 //PROC1    PROC
000008 //DFSURCL0 EXEC PGM=DFSURCL0
000009 //SYSUT1   DD DUMMY
000010 //CONTROL  DD DUMMY
000011 //REPORT   DD SYSOUT=*
000012 //WORKFILE DD DISP=(NEW,CATLG,CATLG),
000013 //         DSN=&WORKFILE,
000014 //         UNIT=SYSDA,
Command ===> _                                          Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                                A                          22/015
```

Edit the IMPOTXX jobname to specify your user ID # in place of the XX. Then press PF8 to page down to see the rest of the JCL. The screenshots below are of the remaining two pages.

```
Session B - [24 x 80]
File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT19.TESTXYZ(OLDS2RPO) - 01.58              Columns 00001 00072
000014 //         UNIT=SYSDA,
000015 //         SPACE=(CYL,(100,50),RLSE),
000016 //         DCB=(LRECL=133,BLKSIZE=6118,RECFM=FBA)
000017 //RDDSDSN  DD DISP=(NEW,CATLG,CATLG),
000018 //         DSN=&TEMPDSN,
000019 //         UNIT=SYSDA,
000020 //         SPACE=(CYL,(100,50),RLSE),
000021 //         DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760)
000022 //*
000023 //CSLURP10 EXEC PGM=CSLURP10,MEMLIMIT=4G
000024 //SYSUDUMP DD  SYSOUT=*
000025 //SYSPRINT DD  SYSOUT=*
000026 //RDDSDSN  DD DISP=SHR,
000027 // DSN=&TEMPDSN
000028 //SYSIN    DD DUMMY
000029 //         PEND
000030 //DUMMY2   EXEC PROC1
Command ===> _                                          Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                                                           22/015
```

```
Session B - [24 x 80]
File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IMPOT19.TESTXYZ(OLDS2RPO) - 01.58              Columns 00001 00072
000025 //SYSPRINT DD  SYSOUT=*
000026 //RDDSDSN  DD DISP=SHR,
000027 // DSN=&TEMPDSN
000028 //SYSIN    DD DUMMY
000029 //         PEND
000030 //DUMMY2   EXEC PROC1
000031 //DFSURCL0.SYSUT1 DD DSN=IMS.IMSC.OLP00,DISP=SHR
000032 //         DD DSN=IMS.IMSC.OLP01,DISP=SHR
000033 //         DD DSN=IMS.IMSC.OLP02,DISP=SHR
000034 //         DD DSN=IMS.IMSC.OLP03,DISP=SHR
000035 //         DD DSN=IMS.IMSC.OLP04,DISP=SHR
000036 //         DD DSN=IMS.IMSC.OLP05,DISP=SHR
000037 //DFSURCL0.CONTROL DD *
000038    IMSID=IMSC
000039 //CSLURP10.SYSIN DD *
000040   IMSPLEX(NAME=DEMOC IMSID(IMSC))
IKJ56700A ENTER JOBNAME CHARACTER(S) -
0
IKJ56250I JOB IMPOT19O(JOB06810) SUBMITTED
*** _
MA   B                    A                                   24/006
```

IMS Log data sets

As you can see, this JCL uses IMS log data sets that you specify as input into the *Create RDDS from Log Records* utility (DFSURCL0) and generates a temporary RDDS that is later used as input to the *RDDS to Repository* utility (CSLURP10). Lines 31-36 contain the IMS log data set names, line 38 specifies that the logs belong to IMSC, and finally line 40 specifies that IMSC will have stored resources definitions created for it in the repository. Submit the job by entering the SUB command on the command line, enter a job name character if prompted, and note the job ID shown. In our example, it is JOB06810. More detail on submitting batch job can be found in the *Submitting Batch Jobs* section in the Appendix on page 93.

Now let's examine the job output. Press PF3 until you have reached the ISPF Primary Options Menu. Now view the job output using option 3.8. More detail on examining job output can be found in the *Viewing Job Output Using ISPF 3.8* section in the Appendix on page 95.

```
Session B - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
 ------------------------------------------------------------------------------
                            ISPF Primary Option Menu

 0  Settings      Terminal and user parameters           User ID . : IMPOT19
 1  View          Display source data or listings        Time. . . : 15:49
 2  Edit          Create or change source data           Terminal. : 3278
 3  Utilities     Perform utility functions              Screen. . : 1
 4  Foreground    Interactive language processing        Language. : ENGLISH
 5  Batch         Submit job for language processing     Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                 TSO prefix: IMPOT19
 P  IBM Products  IBM program development products       System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager       MVS acct. : 19345678
 11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


      Enter X to Terminate using log/list defaults

 Option ===> 3.8
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    B                                A                                22/017
```

Press Enter and fill out the JobID field with a format of “JXXXXX” where “XXXXX” is the jobID just noted on the previous panel.

```
Session B - [24 x 80]
 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                              Outlist Utility
                                                                  More:     +
     L List job names/id(s) via the TSO STATUS command
     D Delete job output from SYSOUT hold queue
     P Print job output and delete from SYSOUT hold queue
     R Requeue job output to a new output class
 blank Display job output

 For Job to be selected:
    Jobname  . . IMPOTXXO
    Class  . . . _
    JobID  . . . J06810

 For Job to be requeued:
    New Output class  . . _

 For Job to be printed:
    Printer Carriage Control  . . _         (A for ANSI    )
 Option ===>
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    B                                A                                13/025
```

Press Enter to view the job output. To find the pertinent data, enter “F CREATION” on the command line as shown below.

```
Session B - [24 x 80]
 Menu  Utilities  Compilers  Help
BROWSE    IMPOT19.SPF122.OUTLIST                    Line 00000000 Col 001 080
********************************* Top of Data *********************************
1                  J E S 2  J O B  L O G  --  S Y S T E M  M V S E  --  N O D E
0
 21.46.16 JOB06810 ---- FRIDAY,    27 JUL 2012 ----
 21.46.16 JOB06810  IRR010I  USERID IMPOT19  IS ASSIGNED TO THIS JOB.
 21.46.16 JOB06810  IEF677I WARNING MESSAGE(S) FOR JOB IMPOT19O ISSUED
 21.46.16 JOB06810  ICH70001I IMPOT19  LAST ACCESS AT 19:47:49 ON FRIDAY, JULY 2
 21.46.16 JOB06810  $HASP373 IMPOT19O STARTED - INIT 1    - CLASS A - SYS MVSE
 21.46.16 JOB06810  IEF403I IMPOT19O - STARTED - TIME=21.46.16
 21.46.16 JOB06810  -                                          --TIMINGS (MINS.)-
 21.46.16 JOB06810  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CPU    SRB  CLOC
 21.46.16 JOB06810  -IMPOT19O          DUMMY1      00      9    .00    .00    .0
 21.46.17 JOB06810  +DFS4004W LOG WRAPS AFTER RECORD      134
 21.46.17 JOB06810  + CURRENT RECORD TIME STAMP: 2012151210629346
 21.46.17 JOB06810  + PRIOR RECORD TIME STAMP  : 2012210012742333
 21.46.17 JOB06810  + AN OPEN OLDS MAY BE BEING PROCESSED
 21.46.17 JOB06810  -IMPOT19O DUMMY2   DFSURCL0    04    173    .00    .00    .0
 Command ===> F CREATION_                                   Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                              22/025
```

You will then see a screen like the example below.

```
Session B - [24 x 80]
 Menu  Utilities  Compilers  Help
BROWSE    IMPOT19.SPF122.OUTLIST                    CHARS 'CREATION' found
1* ***************************************************************************
 *  RDDS CREATION  / DFSURCL0              DATE: 2012/209   TIME: 21:46   PAGE:
 * ***************************************************************************
 *
 * CONTROL:    IMSID=IMSC
 *
 * NO VALUE FOR CHKPTID WAS SPECIFIED
 * THE LAST CHKPTID ON THE LOG WILL BE USED
 *
 * RDDS DATA SET NAME:
 *  SYS12209.T214616.RA000.IMPOT19O.TEMPDSN.H01
 *
 * INPUT LOG DATA SET NAME(S):
 *  IMS.IMSC.OLP00
 *  IMS.IMSC.OLP01
 *  IMS.IMSC.OLP02
 *  IMS.IMSC.OLP03
 Command ===>                                               Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                                               06/010
```

This portion of the job output shows a comprehensive summary of the IMS log data sets that were read from IMSC, timestamp information, the quantity of resources/descriptors created in the repository based on the log record data, and the types of log records processed. Press PF8 to page down and browse through the summary data.

In this exercise, we learned how to populate a repository with stored resource definitions from IMS log records, using a temporary RDDS as a midway point, all in one batch job.

Fallback aid: generating an RDDS from the repository

You are also able to use the utilities we've been discussing to fall back to using DRD with the RDDS instead of the repository. To do this, you can use the *Repository to RM* (CSLURP20) utility using the current repository as input. In this exercise you will:

- Create a non-system RDDS named IMPOTXX.NSRDDS2
- Display IMSB's PROGXX1 and PROGXX2 stored program definitions in the repository (these are the programs that we created/exported earlier in the workshop) so that we can later cross-check them in the IMPOTXX.NSRDDS2 data set
- Populate IMPOTXX.NSRDDS2 with IMSB's stored resource definitions in the repository using CSLURP20
- Display the contents of IMPOTXX.NSRDDS2 by running a query report and confirming that the PROGXX1 and PROGXX2 program resources that we queried in the repository now exist in the non-system RDDS using DFSURDD0

Note: in this exercise the entire collection of IMSC's stored resource definitions in the repository will be copied to the non-system RDDS. We will examine only the new programs that we previously created/exported for simplicity.

Allocate a non-system RDDS named IMPOTXX.NSRDD2 (substitute your user ID # for the XX) by following the instructions in the *Allocating a Non-System RDDS* section in the Appendix on page 118.

Before we populate it with definitions from the repository, let's first display the programs we previously created and exported to show/confirm that they exist in the repository. Invoke the TSO SPOC application by following the instructions in the *Invoking the IMS TSO SPOC Application* section of the Appendix on page 91. Enter the QUERY command as shown in the example. Route the command to both IMSB and IMSC by leaving the Route field blank, and substitute your user ID # in the NAME(PROGXX1 PROGXX2) parameter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Action  Manage resources  SPOC  View  Options  Help
 DEMOC                    IMS Single Point of Control
 Command ===> _
                          Plex . . _____  Route . . _________  Wait . . _____
 Response for: QUERY PGM NAME(PROGXX1 PROGXX2) SHOW(IMSID)
PgmName  MbrName    CC Repo IMSid
PROGXX1  IMSB        0 Y    IMSB
PROGXX1  IMSB        0 Y    IMSC
PROGXX2  IMSB        0 Y    IMSB
PROGXX2  IMSB        0 Y    IMSC
  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Retrieve F12=Cancel
MA    B                                  A                                04/015
```

The command response shows that the PROGXX1 and PROGXX2 resources both exist in the repository for IMSB and IMSC. Note that in this exercise, we will only copy the stored resource definitions for IMSC. To populate the IMPOTXX.NSRDDS2 data set with these definitions, we will invoke the CSLURP20 utility, which only allows one IMSID to be specified per invocation.

Navigate to the IMPOTXX.TESTXYZ PDS using 3.4 from the Primary Options Menu.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

 0  Settings      Terminal and user parameters           User ID . : DDS1743
 1  View          Display source data or listings        Time. . . : 14:56
 2  Edit          Create or change source data           Terminal. : 3278
 3  Utilities     Perform utility functions              Screen. . : 1
 4  Foreground    Interactive language processing        Language. : ENGLISH
 5  Batch         Submit job for language processing     Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                 TSO prefix: DDS1743
 P  IBM Products  IBM program development products       System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager       MVS acct. : 12345678
 11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications

      Enter X to Terminate using log/list defaults

 Option ===> 3.4_
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    A                                                                22/017
```

Browse the IMPOTXX.TESTXYZ data set (substituting your user ID # for the XX) and edit the member named CSLURP20.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMPOT19.TESTXYZ                          Row 00001 of 00011
            Name     Prompt        Size   Created          Changed          ID
 _________ BATCHSPC                 43   2008/05/23  2012/07/07 23:25:07  DDS1743
 _________ BSPOCTST                 21   2008/05/23  2012/07/08 00:36:08  DDS1743
 _________ CSLURP10                 20   2008/05/23  2012/07/26 16:30:08  IMPOT19
 E________ CSLURP20                 20   2008/05/23  2012/07/26 01:32:16  DDS1743
 _________ CSLUSPOC                 43   2008/05/23  2011/07/25 11:01:32  DDS1743
 _________ DFSRDDAL                 10   2008/05/23  2012/07/26 22:21:50  IMPOT19
 _________ REXXSPOC                 62   2008/05/23  2012/07/06 19:21:11  DDS1743
 _________ REXXUPTR                 49   2008/05/23  2012/07/07 23:17:24  DDS1743
 _________ URDD0CMD                 10   2008/05/23  2011/07/23 18:40:54  IMPOT20
 _________ URDD0MAC                 10   2008/05/23  2011/07/23 18:43:06  IMPOT20
 _________ URDD0QRY                 10   2008/05/23  2012/07/25 20:24:24  DDS1743
           **End**
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                                08/003
```

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
 ------------------------------------------------------------------------------
 EDIT       IMPOT19.TESTXYZ(CSLURP20) - 01.55              Columns 00001 00072
 ****** ***************************** Top of Data ******************************
 ==MSG> -Warning- The UNDO command is not available until you change
 ==MSG>           your edit profile using the command RECOVERY ON.
 000001 //IMPOTXX JOB ,MSGCLASS=H,NOTIFY=&SYSUID,USER=&SYSUID
 000002 //*
 000003 //JOBLIB DD DSN=IMS.IMSC.SDFSRESL,DISP=SHR
 000004 //*
 000005 //STEP1 EXEC PGM=CSLURP20
 000006 //SYSUDUMP DD SYSOUT=*
 000007 //SYSPRINT DD SYSOUT=*
 000008 //*
 000009 //*****************************************************************/
 000010 //* SPECIFY A VALID NON-SYSTEM RDDS DSN FOR OUTPUT */
 000011 //*****************************************************************/
 000012 //*
 000013 //RDDSDSN DD DSN=IMPOTXX.NSRDDS2,DISP=SHR
 000014 //*
 000015 //*****************************************************************/
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
  F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                                                                22/015
```

Looking at the JCL, the name of the RDDSDSN DD statement should be IMPOTXX.NSRDDS2, with your user ID # substituted for the XX. Edit the IMPOTXX

jobname to specify your user ID # in place of the XX. Then press PF8 to page down to see the rest of the JCL.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT19.TESTXYZ(CSLURP20) - 01.55              Columns 00001 00072
000016 //* IMSID MUST BE SPECIFIED ON SYSIN. */
000017 //*****************************************************************/
000018 //SYSIN DD *
000019 IMSPLEX(NAME=DEMOC IMSID(IMSC))
000020 //*
****** **************************** Bottom of Data ****************************

IKJ56700A ENTER JOBNAME CHARACTER(S) -
0
IKJ56250I JOB IMPOT190(JOB06759) SUBMITTED
*** _

MA    B                                A                                23/006
```

On the IMSPLEX parameter, the IMSplex name should be DEMOC and the IMSID should be IMSC. When we run the utility, IMSC's stored resource definitions in the repository will be copied into the IMPOTXX.NSRDD2 data set. Submit the job by entering the SUB command on the command line, enter a job name character if prompted, and note the job ID shown. In our example, it is JOB06759. More detail on submitting batch job can be found in the *Submitting Batch Jobs* section in the Appendix on page 93.

Now let's examine the job output. Press PF3 until you have reached the ISPF Primary Options Menu. Now view the job output using option 3.8. More detail on examining job output can be found in the *Viewing Job Output Using ISPF 3.8* section in the Appendix on page 95.

```
Session B - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
 ------------------------------------------------------------------------------
                           ISPF Primary Option Menu

 0  Settings      Terminal and user parameters           User ID . : IMPOT19
 1  View          Display source data or listings        Time. . . : 15:49
 2  Edit          Create or change source data           Terminal. : 3278
 3  Utilities     Perform utility functions              Screen. . : 1
 4  Foreground    Interactive language processing        Language. : ENGLISH
 5  Batch         Submit job for language processing     Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                 TSO prefix: IMPOT19
 P  IBM Products  IBM program development products       System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager       MVS acct. : 19345678
 11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


      Enter X to Terminate using log/list defaults

 Option ===> 3.8
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    B                                A                                22/017
```

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                              Outlist Utility
                                                                   More:     +
     L List job names/id(s) via the TSO STATUS command
     D Delete job output from SYSOUT hold queue
     P Print job output and delete from SYSOUT hold queue
     R Requeue job output to a new output class
 blank Display job output

 For Job to be selected:
    Jobname  . . IMPOTXXD
    Class    . . _
    JobID    . . J06759

 For Job to be requeued:
    New Output class  . . _

 For Job to be printed:
    Printer Carriage Control  . . _          (A for ANSI     )
                                             (M for machine  )
 Option ===>
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    B                                A                                14/022
```

Press Enter again to view the job output. Press PF8 until you each the bottom of the output and you will see various CSL26XXx messages that show details behind the utility execution, such as the targeted RDDS name, the IMSID of the system whose stored resource definitions were copied from the repository, and a confirmation that the write to

the RDDS was successful. Finally, there is a summary of the resources and descriptors that were written to the RDDS at the end of the output.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    IMPOT19.SPF115.OUTLIST                      Line 00000062 Col 001 080
         CPU:     0 HR  00 MIN  00.01 SEC    SRB:     0 HR  00 MIN  00.00 SEC
 CSL2603I CSLURP20 IS PROCESSING RDDS IMPOT19.NSRDDS2
 CSL2618I CSLURP20 IS PROCESSING PLEX=CSLDEMOC, IMSID LIST FROM SYSIN IMSC
 CSL2620I CSLURP20 SUCCESSFUL REGISTRATION WITH RM, RMNAME=RMBRM
 CSL2625I CSLURP20 WRITE TO RDDS SUCCESSFUL FOR RDDSDSN=IMPOT19.NSRDDS2
          FROM REPOTYPE=IMSRSC   REPONAME=IMSREPNM

    **** SUMMARY ****

 DB       COUNT     : 76
 DBDESC   COUNT     : 1
 PGM      COUNT     : 137
 PGMDESC  COUNT     : 0
 RTC      COUNT     : 0
 RTCDESC  COUNT     : 0
 TRAN     COUNT     : 155
 TRANDESC COUNT     : 25
******************************** Bottom of Data ********************************
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                                                 22/015
```

Before we ran the *Repository to RDDS* utility, we queried the PROGXX1 and PROGXX2 program stored resource definitions to show that they exist in the repository. Now let's display the contents of the IMPOTXX.NSRDDS2 RDDS to show/confirm that they were included in the copy to the RDDS.

Navigate to the IMPOTXX.TESTXYZ PDS using 3.4 from the Primary Options Menu.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
 ------------------------------------------------------------------------------
                            ISPF Primary Option Menu

 0  Settings      Terminal and user parameters           User ID . : DDS1743
 1  View          Display source data or listings        Time. . . : 14:56
 2  Edit          Create or change source data           Terminal. : 3278
 3  Utilities     Perform utility functions              Screen. . : 1
 4  Foreground    Interactive language processing        Language. : ENGLISH
 5  Batch         Submit job for language processing     Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                 TSO prefix: DDS1743
 P  IBM Products  IBM program development products       System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager       MVS acct. : 12345678
 11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


      Enter X to Terminate using log/list defaults

 Option ===> 3.4
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
MA    A                                                                 22/017
```

Browse the IMPOTXX.TESTXYZ data set (substituting your user ID # for the XX) and edit the member named URDD0QRY.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMPOT19.TESTXYZ                          Row 00001 of 00011
            Name     Prompt        Size   Created          Changed          ID
 __________ BATCHSPC                 43  2008/05/23  2012/07/07 23:25:07  DDS1743
 __________ BSPOCTST                 21  2008/05/23  2012/07/08 00:36:08  DDS1743
 __________ CSLURP10                 20  2008/05/23  2012/07/26 16:30:08  IMPOT19
 __________ CSLURP20                 20  2008/05/23  2012/07/27 15:16:06  IMPOT19
 __________ CSLUSPOC                 43  2008/05/23  2011/07/25 11:01:32  DDS1743
 __________ DFSRDDAL                 10  2008/05/23  2012/07/26 22:21:50  IMPOT19
 __________ REXXSPOC                 62  2008/05/23  2012/07/06 19:21:11  DDS1743
 __________ REXXUPTR                 49  2008/05/23  2012/07/07 23:17:24  DDS1743
 __________ URDD0CMD                 10  2008/05/23  2011/07/23 18:40:54  IMPOT20
 __________ URDD0MAC                 10  2008/05/23  2011/07/23 18:43:06  IMPOT20
 E_________ URDD0QRY                 10  2008/05/23  2012/07/27 15:29:02  IMPOT19
            **End**



 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                                 15/003
```

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT19.TESTXYZ(URDD0QRY) - 01.37              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB  CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD   DSN=IMS.IMSC.SDFSRESL,DISP=SHR
000003 //S1       EXEC PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD   DSN=IMPOTXX.NSRDDS2,DISP=SHR
000005 //SYSOUT   DD   SYSOUT=*
000006 //SYSPRINT DD   SYSOUT=*
000007 //SYSIN    DD   *
000008 OUTPUT=QUERY
000009 /*
000010 //
****** **************************** Bottom of Data ****************************



Command ===> SUB_                                          Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    B                          A                                  22/018
```

This JCL invokes the *Extract RDDS Contents* utility which will allow you to display all of the stored resource definitions contained in your non-system RDDS. Edit the RDDSDSN DD statement to DSN=IMPOTXX.NSRDDS2, with your user ID # substituted for the XX. Edit the IMPOTXX jobname to specify your user ID # in place of the XX. Also notice that OUTPUT=QUERY is specified at the end of the JCL, which requests that a query report showing the definitional content is created. Submit the job by entering the SUB command on the command line, enter a job name character if prompted, and note the job ID shown. More detail on submitting batch job can be found in the *Submitting Batch Jobs* section in the Appendix on page 93.

Now let's examine the job output. Press PF3 until you have reached the ISPF Primary Options Menu. Now view the job output using option 3.8. More detail on examining job output can be found in the *Viewing Job Output Using ISPF 3.8* section in the Appendix on page 95.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters          User ID . : IMPOT19
1  View          Display source data or listings       Time. . . : 18:56
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISP
6  Command       Enter TSO or Workstation commands     TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                TSO prefix: IMPOT19
P  IBM Products  IBM program development products      System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager      MVS acct. : 19345678
11 Workplace     ISPF Object/Action Workplace          Release . : ISPF 6.3
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.8
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                                                            22/017
```

List the job names that have output available to view.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
                          Outlist Utility
                                                          More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname   . . IMPOTXXO
   Class  . . . _
   JobID  . . . ________

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI     )
                                           (M for machine  )
Option ===> L
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                          A                                 22/015
```

Take note of the most recent job number.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
IKJ56192I JOB IMPOT19O(JOB06553) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06562) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06564) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06565) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06569) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19Z(JOB06594) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06759) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06767) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06794) ON OUTPUT QUEUE
*** _
MA    B                                A                                10/006
```

Enter the noted job number in the JobID field and press Enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
                                Outlist Utility
                                                                More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXO
   Class  . . _
   JobID  . . J06794_

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI     )
                                           (M for machine  )
Option ===> _____________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                                A                                14/024
```

The job output is displayed below. To confirm that IMSC's stored definitions were copied from the repository to the RDDS, enter "F IMSID" on the command line as shown below and press Enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 BROWSE    IMPOT19.SPF117.OUTLIST                    Line 00000000 Col 001 080
********************************* Top of Data *********************************
1                   J E S 2  J O B  L O G  --  S Y S T E M  M V S E  --  N O D E
0
 18.49.21 JOB06794 ---- FRIDAY,    27 JUL 2012 ----
 18.49.21 JOB06794  IRR010I  USERID IMPOT19  IS ASSIGNED TO THIS JOB.
 18.49.21 JOB06794  ICH70001I IMPOT19  LAST ACCESS AT 18:46:07 ON FRIDAY, JULY 2
 18.49.21 JOB06794  $HASP373 IMPOT19O STARTED - INIT 1    - CLASS A - SYS MVSE
 18.49.21 JOB06794  IEF403I IMPOT19O - STARTED - TIME=18.49.21
 18.49.21 JOB06794  -                                          --TIMINGS (MINS.)-
 18.49.21 JOB06794  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CPU    SRB  CLOC
 18.49.21 JOB06794  -IMPOT19O          S1          04     88    .00    .00    .0
 18.49.21 JOB06794  IEF404I IMPOT19O - ENDED - TIME=18.49.21
 18.49.21 JOB06794  -IMPOT19O ENDED.  NAME-                     TOTAL CPU TIME=
 18.49.21 JOB06794  $HASP395 IMPOT19O ENDED
0------ JES2 JOB STATISTICS ------
-  27 JUL 2012 JOB EXECUTION DATE
-            9 CARDS READ
-        2,295 SYSOUT PRINT RECORDS
 Command ===> F IMSID_                                    Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                              22/022
```

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 BROWSE    IMPOT19.SPF117.OUTLIST                          CHARS 'IMSID' found
     HEADER_LENGTH(348) VERSION(0) STATUS(GOOD)                  +
     IMSID(IMSC) IMSTYPE(....) SYSTEM_RDDS(N)                    +
     OFFSET_TO_CMD(0) CMD_IMAGE:                                 +
     (RDDDSN BUILT BY CSLURP20 UTILITY FROM REPONAME IMSREPNM   ) +
     TIMESTAMP(2012.209 20:03:58.069620-UTC)                     +
     DATASET_NAME(IMPOT19.NSRDDS2                              )
DB NAME(AAADB) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2011.173 22:55:07.56-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(ANGIESDB) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2012.189 00:21:47.04-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(AUTODB) ACCTYPE(READ) RESIDENT(Y) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2010.056 02:41:51.34-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(CRSDBD76) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2010.056 02:41:51.34-UTC) +
     TMAC() TMUP() TIMP()
 Command ===> _                                           Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                                              05/006
```

Here, the query report shows information about the RDDS header record – including the IMSID of IMSC, whose stored resource definitions we had targeted previously in this exercise when we invoked the *Repository to RDDS* utility.

Next, to show that the PROGXX1 and PROGXX2 program stored definitions were included in the copying of the repository to your non-system RDDS, search for PROGXX1 in the output by entering “F PROGXX1” on the command line as shown below. Press Enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 BROWSE    IMPOT19.SPF117.OUTLIST                    Line 00000049 Col 001 080
     HEADER_LENGTH(348) VERSION(0) STATUS(GOOD)                  +
     IMSID(IMSC) IMSTYPE(....) SYSTEM_RDDS(N)                    +
     OFFSET_TO_CMD(0) CMD_IMAGE:                                 +
     (RDDDSN BUILT BY CSLURP20 UTILITY FROM REPONAME IMSREPNM   ) +
     TIMESTAMP(2012.209 20:03:58.069620-UTC)                     +
     DATASET_NAME(IMPOT19.NSRDDS2                              )
DB NAME(AAADB) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2011.173 22:55:07.56-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(ANGIESDB) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2012.189 00:21:47.04-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(AUTODB) ACCTYPE(READ) RESIDENT(Y) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2010.056 02:41:51.34-UTC) +
     TMAC() TMUP() TIMP()
DB NAME(CRSDBD76) ACCTYPE(UPD) RESIDENT(N) GLOBAL DMB(0000) +
     LOCAL DMB(0000) MODELNAME() MODELTYPE() TMCR(2010.056 02:41:51.34-UTC) +
     TMAC() TMUP() TIMP()
 Command ===> F PROGxx1                                  Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                                              22/023
```

Both PROGXX1 and PROGXX2 are shown in the query report, along with their respective attribute values.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 BROWSE    IMPOT19.SPF117.OUTLIST                          CHARS 'PROGXX1' found
     TMAC() TMUP() TIMP()
PGM NAME(PROGXX1) BMPTYPE(N) DOPT(Y) FP(N) GPSB(N) +
     RESIDENT(N) SCHDTYPE(SERIAL) TRANSTAT(Y) MODELNAME() +
     MODELTYPE() TMCR(2012.205 22:00:07.37-UTC) TMAC() +
     TMUP() TIMP()
PGM NAME(PROGXX2) BMPTYPE(N) DOPT(Y) FP(N) GPSB(N) +
     RESIDENT(N) SCHDTYPE(SERIAL) TRANSTAT(Y) MODELNAME() +
     MODELTYPE() TMCR(2012.205 22:00:07.37-UTC) TMAC() +
     TMUP() TIMP()
PGM NAME(PXMXX) BMPTYPE(N) DOPT(Y) FP(N) GPSB(N) RESIDENT(N) +
     SCHDTYPE(SERIAL) TRANSTAT(N) MODELNAME() MODELTYPE() +
     TMCR(2012.072 17:43:49.96-UTC) TMAC() TMUP() +
     TIMP()
PGM NAME(SAMPLEPG) BMPTYPE(N) DOPT(N) FP(N) GPSB(N) +
     RESIDENT(N) SCHDTYPE(PARALLEL) TRANSTAT(N) MODELNAME() +
     MODELTYPE() TMCR(2011.216 17:23:13.81-UTC) TMAC() +
     TMUP() TIMP()
TRAN NAME(SAMPLETR) AOCMD(N) CLASS(1) CMTMODE(SNGL) +
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                          A                                   05/010
```

In this exercise, we created a non-system RDDS and populated it with IMSC's stored resource definitions from the repository with the *Repository to RDDS* utility, CSLURP20. After that, we used the *Extract RDDS Contents* utility, DFSURDD0, to create a query report to display the contents on the non-system RDDS. Within it, we found two programs that we had previously created and exported to the repository, thereby illustrating its effectiveness.

This exercise models the steps you would follow if you needed to fall back from using DRD with repository to using DRD with the RDDS. But what if you need a MODBLKS since you migrated to DRD with repository from an environment that used MODBLKS online change? Let's now explore how to meet this need.

Fallback aid: generating a MODBLKS from the repository

Generating a MODBLKS data set from the repository involves creating a temporary RDDS, then extracting it to create Stage-1 macro statements. These macros can then be used to generate a MODBLKS data set.

In this exercise, we will leverage the steps completed in the previous exercise by using the IMPOTXX.NSRDDS2 data set that we just populated with repository contents as input to the *Extract RDDS Contents* (DFSURDD0) utility. This time however, rather than have the utility generate a query report, we will have it generate Stage-1 macros. To invoke the utility, navigate to the IMPOTXX.TESTXYZ PDS using 3.4 from the Primary Options Menu.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters           User ID . : DDS1743
1  View          Display source data or listings        Time. . . : 14:56
2  Edit          Create or change source data           Terminal. : 3278
3  Utilities     Perform utility functions              Screen. . : 1
4  Foreground    Interactive language processing        Language. : ENGLISH
5  Batch         Submit job for language processing     Appl ID . : ISP
6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                 TSO prefix: DDS1743
P  IBM Products  IBM program development products       System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager       MVS acct. : 12345678
11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.3
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.4
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    A                                                            22/017
```

Browse the IMPOTXX.TESTXYZ data set (substituting your user ID # for the XX) and edit the member named URDD0MAC.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help

BROWSE            IMPOT19.TESTXYZ                          Row 00001 of 00011
           Name     Prompt        Size   Created          Changed          ID
_________ BATCHSPC                 43  2008/05/23  2012/07/07 23:25:07  DDS1743
_________ BSPOCTST                 21  2008/05/23  2012/07/08 00:36:08  DDS1743
_________ CSLURP10                 20  2008/05/23  2012/07/26 16:30:08  IMPOT19
_________ CSLURP20                 20  2008/05/23  2012/07/27 15:16:06  IMPOT19
_________ CSLUSPOC                 43  2008/05/23  2011/07/25 11:01:32  DDS1743
_________ DFSRDDAL                 10  2008/05/23  2012/07/26 22:21:50  IMPOT19
_________ REXXSPOC                 62  2008/05/23  2012/07/06 19:21:11  DDS1743
_________ REXXUPTR                 49  2008/05/23  2012/07/07 23:17:24  DDS1743
_________ URDD0CMD                 10  2008/05/23  2011/07/23 18:40:54  IMPOT20
E_________ URDD0MAC                10  2008/05/23  2011/07/23 18:43:06  IMPOT20
_________ URDD0QRY                 10  2008/05/23  2012/07/27 15:29:02  IMPOT19
          **End**

Command ===>                                              Scroll ===> PAGE
 F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
F10=Left   F11=Right  F12=Cancel
MA    B                                A                            14/003
```

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT19.TESTXYZ(URDD0MAC) - 01.22              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB  CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD   DSN=IMS.IMSC.SDFSRESL,DISP=SHR
000003 //S1       EXEC PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD   DSN=IMPOTXX.NSRDDS2,DISP=SHR
000005 //SYSOUT   DD   SYSOUT=*
000006 //SYSPRINT DD   SYSOUT=*
000007 //SYSIN    DD   *
000008 OUTPUT=MAC
000009 /*
000010 //
****** **************************** Bottom of Data ****************************



Command ===> SUB_                                          Scroll ===> PAGE
 F1=Help     F2=Split    F3=Exit     F5=Rfind    F6=Rchange   F7=Up
 F8=Down     F9=Swap    F10=Left    F11=Right   F12=Cancel
MA   B                          A                                  22/018
```

This JCL invokes the *Extract RDDS Contents* utility which will allow you to generate Stage 1 macro statements that are equivalent to the stored resource definitions contained in your non-system RDDS. Edit the RDDSDSN DD statement to DSN=IMPOTXX.NSRDDS2, substituting your user ID # for the XX. Edit the IMPOTXX jobname to specify your user ID # in place of the XX. Also notice that OUTPUT=MAC is specified at the end of the JCL, which requests that Stage 1 macros are generated. Submit the job by entering the SUB command on the command line, enter a job name character if prompted, and note the job ID shown. More detail on submitting batch job can be found in the *Submitting Batch Jobs* section in the Appendix on page 93.

Now let's examine the job output. Press PF3 until you have reached the ISPF Primary Options Menu. Now view the job output using option 3.8. More detail on examining job output can be found in the *Viewing Job Output Using ISPF 3.8* section in the Appendix on page 95.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters          User ID . : IMPOT19
1  View          Display source data or listings       Time. . . : 18:56
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISP
6  Command       Enter TSO or Workstation commands     TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                TSO prefix: IMPOT19
P  IBM Products  IBM program development products      System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager      MVS acct. : 19345678
11 Workplace     ISPF Object/Action Workplace          Release . : ISPF 6.3
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.8
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                                                            22/017
```

List the job names that have output available to view.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
                          Outlist Utility
                                                          More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname   . . IMPOTXXO
   Class   . . . _
   JobID   . . . ________

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI     )
                                           (M for machine  )
Option ===> L
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                          A                                 22/015
```

Take note of the most recent job number.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
IKJ56192I JOB IMPOT19O(JOB06553) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06562) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06564) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06565) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06569) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19Z(JOB06594) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06759) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06767) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06794) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT19O(JOB06802) ON OUTPUT QUEUE
*** _
MA    B                                A                                11/006
```

Enter the noted job number in the JobID field and press Enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
                                Outlist Utility
                                                                More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXO
   Class  . . .
   JobID  . . . J06802

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _         (A for ANSI     )
                                           (M for machine  )
Option ===> _____________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                                A                                12/025
```

The job output is displayed below. To see the Stage 1 macro statements that were generated, press PF8 until you reach them. To find our two programs that we originally

created in one of the previous exercises, search for the PROGXX1 resource by entering "F PROGXX1" on the command line as shown below.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help

 BROWSE    IMPOT19.SPF121.OUTLIST                    Line 00000000 Col 001 080
********************************* Top of Data **********************************
1                  J E S 2  J O B  L O G  --  S Y S T E M  M V S E  --  N O D E
0
 19.47.49 JOB06802 ---- FRIDAY,    27 JUL 2012 ----
 19.47.49 JOB06802  IRR010I  USERID IMPOT19  IS ASSIGNED TO THIS JOB.
 19.47.49 JOB06802  ICH70001I IMPOT19  LAST ACCESS AT 19:42:24 ON FRIDAY, JULY 2
 19.47.49 JOB06802  $HASP373 IMPOT19O STARTED - INIT 1    - CLASS A - SYS MVSE
 19.47.49 JOB06802  IEF403I IMPOT19O - STARTED - TIME=19.47.49
 19.47.49 JOB06802  -                                          --TIMINGS (MINS.)-
 19.47.49 JOB06802  -JOBNAME  STEPNAME PROCSTEP    RC   EXCP    CPU    SRB  CLOC
 19.47.49 JOB06802  -IMPOT19O          S1          00     78    .00    .00    .0
 19.47.49 JOB06802  IEF404I IMPOT19O - ENDED - TIME=19.47.49
 19.47.49 JOB06802  -IMPOT19O ENDED.  NAME-                    TOTAL CPU TIME=
 19.47.49 JOB06802  $HASP395 IMPOT19O ENDED
0------ JES2 JOB STATISTICS ------
-  27 JUL 2012 JOB EXECUTION DATE
-            9 CARDS READ
-        1,615 SYSOUT PRINT RECORDS
 Command ===> F PROGXX1_                                   Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                A                                22/024
```

Once you press Enter, you will see the PROGXX1 and PROGXX2 program resource definitions located within the collection of Stage 1 macros generated by the *Extract RDDS Contents* utility.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help

 BROWSE    IMPOT19.SPF121.OUTLIST                    CHARS 'PROGXX1' found
              ROUTING=NO,TRANSTAT=Y
         APPLCTN   PSB=PROGXX1,DOPT,                          X
              FPATH=NO,SCHDTYP=SERIAL,                        X
              TRANSTAT=Y,PGMTYPE=TP
         APPLCTN   PSB=PROGXX2,DOPT,                          X
              FPATH=NO,SCHDTYP=SERIAL,                        X
              TRANSTAT=Y,PGMTYPE=TP
         APPLCTN   PSB=PXMXX,DOPT,                            X
              FPATH=NO,SCHDTYP=SERIAL,                        X
              TRANSTAT=N,PGMTYPE=TP
         APPLCTN   PSB=SAMPLEPG,                              X
              FPATH=NO,SCHDTYP=PARALLEL,                      X
              TRANSTAT=N,PGMTYPE=TP
         TRANSACT  CODE=(SAMPLETR),AOI=NO,DCLWA=YES,          X
              EXPRTIME=0,                                     X
              INQ=(NO,RECOVER),MODE=SNGL,EDIT=(UC),           X
              MSGTYPE=(MULTSEG,NONRESPONSE,1),                X
              PROCLIM=(65535,65535),PRTY=(1,1,65535),         X
 Command ===> _                                            Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    B                                                            05/024
```

Appendix

Setting Key Values in the IMS TSO SPOC

Enter KEYS on the command line, as shown in the following screenshot.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                    IMS Single Point of Control
Command ===> KEYS

                          Plex . . _____  Route . . _________  Wait . . _____
Response for:

CSLM000I     Copyright IBM Corp. 2000. All rights reserved.

 F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap     F12=Cancel
MA    b                                A                                05/019
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Then press Enter and PF8 down to the bottom of the panel. Ensure that the settings look like what is shown in the next screenshot. If changes need to be made, make sure that you press Enter and PF3 out once you've edited the panel. This will save the changes.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

                          Keylist Utility
  File

SETTINGS                CSLU Keylist CSLUK08 Change      Row 10 to 12 of 12

Make changes and then select File action bar.

Keylist Help Panel Name . . . CSLUHKY8

Key        Definition                                    Format  Label
F10  . .   LEFT                                          NO      Left
F11  . .   RIGHT                                         LONG    Right
F12  . .   CANCEL                                        SHORT   Cancel
   **End**

Command ===> _                                          Scroll ===> PAGE
 F1=Help       F2=Split      F3=Exit       F7=Backward   F8=Forward
 F9=Swap      F10=Actions   F12=Cancel
MA    b                                                              22/017
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Invoking the IMS TSO SPOC Application

From the ISPF Primary Options Menu, enter “P.C” from the ISPF Primary Options Menu command line to get to the Data Management Tools for IMS menu.

```
VMX
File Edit View Communication Actions Window Help

  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters          User ID . : IMPOT20
1  View          Display source data or listings       Time. . . : 20:50
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 2
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISP
6  Command       Enter TSO or Workstation commands     TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                TSO prefix: IMPOT20
P  IBM Products  IBM program development products      System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager      MVS acct. : 20345678
11 Workplace     ISPF Object/Action Workplace          Release . : ISPF 6.1
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults
Option ===> P.C
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    b                          A                                  22/017
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00018 and por
```

On the next panel, enter “IMS” to invoke the IMS Application Menu.

```
VMX
File Edit View Communication Actions Window Help

                    Data Management Tools for IMS
                                                            More:     +

PRF -IMS Program Restart Facility       HPS -IMS HP System Generation Tools
DCS -IMS Database Control Suite         QCF -IMS Queue Control Fac ( DEMOA   )
HDA -IMS HPPC Historical Data Analyzer  HDC -IMS Hardware Data Compression-Ext
SPO -IMS SPOC                           DRF -IMS Database Repair Facility
PA  -IMS Performance Analyzer           CCF -IMS Command Control Facility
NCF -IMS Network Compression Facility   HCA -IMS HP Change Accumulation
IDP -IMS DataPropagator                 HAL -IMS HALDB Conversion Aid
PI  -IMS Problem Investigator           ISM -IMS Sysplex Manager
BTS -IMS Batch Terminal Simulator       CM  -IMS Config Manager
HPD -IMS HALDB Partion Definiton        ICE -IMS Connect Extensions
ART -IMS Appl Recovery Tool             IKB -IMS Tools Knowledge Base
RE  -IMS Recovery Expert                IMS -IMS V11 Application Menu
DE  -IMS Data Encryption                IPS -IMS Tools Policy Services

Available systems:  IMSA -V10R1 IMSB -V10R1 IMSC -V11R1 IMSD -V11R1

  L -List installed IMS Tools and SMP/E maintenance.
OPTION  ===> IMS
 F1=Help      F2=Split     F3=Exit      F4=Resize    F5=Exhelp    F6=Keyshelp
 F7=PrvPage   F8=NxtPage   F9=Swap     F10=PrvPage  F11=NxtPage  F12=Cancel
MA    b                          A                                  22/018
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00018 and por
```

On the next panel you will see the IMS Application Menu. Enter a “1” to invoke the IMS TSO SPOC application.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

 Help

                              IMS Application Menu

Select an application and press Enter.


         1   Single Point of Control (SPOC)
         2   Manage resources
         3   Knowledge-Based Log Analysis (KBLA)
         4   HALDB Partition Definition Utility (PDU)
         5   Syntax Checker for IMS parameters (SC)
         6   Installation Verification Program (IVP)
         7   IVP Export Utility (IVPEX)
         8   IPCS with IMS Dump Formatter (IPCS)
         9   Abend Search and Notification (ASN)


 To exit t
             Copyright IBM Corp. 2003. All rights reserved.

Command ===> 1
 F1=Help    F12=Cancel
MA    b                    A                    23/016
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00018 and por
```

Submitting Batch Jobs

You can submit a batch job while editing a member in ISPF by simply entering SUB on the command line, as shown in the following example.

```
VMX
File Edit View Communication Actions Window Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IMPOT20.TESTXYZ(URDD0QRY) - 01.38              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB  CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD   DSN=IMS.IMSD.SDFSRESL,DISP=SHR
000003 //S1       EXEC PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD   DSN=IMPOTXX.NSRDDS1,DISP=SHR
000005 //SYSOUT   DD   SYSOUT=*
000006 //SYSPRINT DD   SYSOUT=*
000007 //SYSIN    DD   *
000008 OUTPUT=QUERY
000009 /*
000010 //
****** ***************************** Bottom of Data ***************************

Command ===> SUB                                          Scroll ===> PAGE
 F1=Help      F2=Split     F3=Exit      F5=Rfind     F6=Rchange   F7=Up
 F8=Down      F9=Swap     F10=Left     F11=Right    F12=Cancel
MA    a                          A                              10/044
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

After you submit the job, you may be prompted to enter a job name character. Enter a character of your choice, such as “O” for output as shown in the following example. If you do not receive this prompt, simply press Enter.

```
VMX
File Edit View Communication Actions Window Help
  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help
EDIT       IMPOT20.TESTXYZ(URDD0QRY) - 01.38              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB  CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD   DSN=IMS.IMSD.SDFSRESL,DISP=SHR
000003 //S1       EXEC PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD   DSN=IMPOTXX.NSRDDS1,DISP=SHR
000005 //SYSOUT   DD   SYSOUT=*
000006 //SYSPRINT DD   SYSOUT=*
000007 //SYSIN    DD   *
000008 OUTPUT=QUERY
000009 /*
000010 //
****** ***************************** Bottom of Data ***************************

IKJ56700A ENTER JOBNAME CHARACTER(S) -
O_
MA    a                          A                              22/002
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Once you press Enter, you will receive a confirmation screen that the job was in fact submitted. You can either note the job ID shown (which you will need later in order to view the job output), but this is optional since you can later display a list of job IDs before viewing the output.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
   File   Edit   Edit_Settings   Menu   Utilities   Compilers   Test   Help
EDIT       IMPOT20.TESTXYZ(URDD0QRY) - 01.39                Columns 00001 00072
****** **************************** Top of Data ****************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB   CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD    DSN=IMS.IMSD.SDFSRESL,DISP=SHR
000003 //S1       EXEC  PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD    DSN=IMPOTXX.NSRDDS1,DISP=SHR
000005 //SYSOUT   DD    SYSOUT=*
000006 //SYSPRINT DD    SYSOUT=*
000007 //SYSIN    DD    *
000008 OUTPUT=QUERY
000009 /*
000010 //
****** **************************** Bottom of Data *************************


IKJ56700A ENTER JOBNAME CHARACTER(S) -
O
IKJ56250I JOB IMPOT200(JOB08070) SUBMITTED
***_
MA    a                                  A                              24/005
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Viewing Job Output Using ISPF 3.8

From the ISPF Primary Options Menu, enter option 3.8.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Utilities  Compilers  Options  Status  Help
 ------------------------------------------------------------------------
                          ISPF Primary Option Menu

 0  Settings      Terminal and user parameters           User ID . : IMPOT20
 1  View          Display source data or listings        Time. . . : 18:01
 2  Edit          Create or change source data           Terminal. : 3278
 3  Utilities     Perform utility functions              Screen. . : 1
 4  Foreground    Interactive language processing        Language. : ENGLISH
 5  Batch         Submit job for language processing     Appl ID . : ISP
 6  Command       Enter TSO or Workstation commands      TSO logon : DBAUSER
 7  Dialog Test   Perform dialog testing                 TSO prefix: IMPOT20
 P  IBM Products  IBM program development products       System ID : ESYSMVS
 10 SCLM          SW Configuration Library Manager       MVS acct. : 20345678
 11 Workplace     ISPF Object/Action Workplace           Release . : ISPF 6.1
 12 z/OS System   z/OS system programmer applications
 13 z/OS User     z/OS user applications


     Enter X to Terminate using log/list defaults
 Option ===> 3.8
  F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
 F10=Actions  F12=Cancel
 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 MA    b                                                          21/017
 56  Connected through TLS1.0 to secure remote server/host ZSERVEROS.
```

All of the jobs in this workshop have the same name as your user ID. Therefore, in the jobname field shown on the next panel, enter your user ID with the job name character that you entered after you submitted the job. For example, if you had previously entered a job name character of “O”, the job name to enter in the Jobname field is IMPOTXXO. **Important note: if you were not prompted to enter a job name character when you submitted the job, simply enter IMPOTXX as the Jobname here.** Next, you must determine the JobID. If you did not note the job ID shown after you previously submitted the job, enter an “L” on the command line to display a list of job IDs associated with previously submitted jobs.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Help
                                Outlist Utility
                                                                More:      +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXO
   Class  . . . _
   JobID  . . . ________

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _          (A for ANSI    )
                                            (M for machine )
Option ===> L
 F1=Help     F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    a                                A                                22/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

One or more job IDs are shown in the following example. Typically the last one shown in the list is the specific job ID to take note of.

```
IKJ56192I JOB IMPOT20C(JOB07447) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20V(JOB07448) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20W(JOB07451) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20D(JOB07452) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB07456) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB07458) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB07459) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20Q(JOB07460) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB07983) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20A(JOB07986) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20A(JOB07998) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20E(JOB07999) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20W(JOB08032) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB08044) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20Q(JOB08047) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB08048) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB08061) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB08069) ON OUTPUT QUEUE
IKJ56192I JOB IMPOT20O(JOB08070) ON OUTPUT QUEUE
*** _
```

Once you have the job ID, enter it in an abbreviated format of JXXXXX in the JobID field and press Enter. The job output will then be displayed.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                                Outlist Utility
                                                                   More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPQTXXO
   Class  . .   _
   JobID  . .   J8070 __

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _          (A for ANSI    )
                                            (M for machine )
Option ===> ____________________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    a                                A                                14/023
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Browsing a PDS Member Using ISPF 3.4

Begin by entering the 3.4 option on the ISPF Primary Options Menu.

```
VMX
File Edit View Communication Actions Window Help
   Menu  Utilities  Compilers  Options  Status  Help

                         ISPF Primary Option Menu

0  Settings       Terminal and user parameters          User ID . : IMPOT20
1  View           Display source data or listings       Time. . . : 17:45
2  Edit           Create or change source data          Terminal. : 3278
3  Utilities      Perform utility functions             Screen. . : 1
4  Foreground     Interactive language processing       Language. : ENGLISH
5  Batch          Submit job for language processing    Appl ID . : ISP
6  Command        Enter TSO or Workstation commands     TSO logon : DBAUSER
7  Dialog Test    Perform dialog testing                TSO prefix: IMPOT20
P  IBM Products   IBM program development products      System ID : ESYSMVS
10 SCLM           SW Configuration Library Manager      MVS acct. : 20345678
11 Workplace      ISPF Object/Action Workplace          Release . : ISPF 6.1
12 z/OS System    z/OS system programmer applications
13 z/OS User      z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.4
 F1=Help     F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    b                                                            22/017
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00048 and por
```

Enter the name of the PDS the member shown on the Dsname Level field (substituting your user ID # for the XX) and press Enter.

```
VMX
File Edit View Communication Actions Window Help
   Menu  RefList  RefMode  Utilities  Help

                         Data Set List Utility
                                                              More:     +
   blank Display data set list              P Print data set list
       V Display VTOC information          PV Print VTOC information

Enter one or both of the parameters below:
   Dsname Level . . IMPOTXX.TESTXYZ
   Volume serial  . .

Data set list options
   Initial View                 Enter "/" to select option
   1  1. Volume                 /  Confirm Data Set Delete
      2. Space                  /  Confirm Member Delete
      3. Attrib                 /  Include Additional Qualifiers
      4. Total                  /  Display Catalog Name
                                /  Display Total Tracks
                                _  Prefix Dsname Level

When the data set list is displayed, enter either:
Option ===>
 F1=Help     F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    a                                A                           09/039
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Then display a list of the members contained within the PDS by typing a “B” next to it and pressing Enter.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Options  View  Utilities  Compilers  Help
 ------------------------------------------------------------------------
 DSLIST - Data Sets Matching IMPOT20.TESTXYZ                    Row 1 of 1

 Command - Enter "/" to select action                Message         Volume
 ------------------------------------------------------------------------
 B_       IMPOT20.TESTXYZ                                            DMEU07
 ****************************** End of Data Set list ******************************



 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    b                                                                 07/003
56 Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00048 and por
```

Its list of members is displayed. To view the contents of the member, enter a “B” next to the member name. To edit the member, enter an E”.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------
 DSLIST  BROWSE    IMPOT20.TESTXYZ                        Row 00001 of 00005
            Name     Prompt        Size   Created          Changed          ID
 _________ CSLUSPOC                 15  2008/05/23  2011/06/17 18:15:28  IMPOT20
 _________ DFSRDDAL                  8  2008/05/23  2011/06/16 14:13:00  IMPOT20
 _________ URDD0CMD                 10  2008/05/23  2011/06/17 13:47:24  IMPOT20
 _________ URDD0MAC                 10  2008/05/23  2011/06/15 16:59:53  IMPOT20
 e_________ URDD0QRY                 10  2008/05/23  2011/06/15 17:00:05  IMPOT20
           **End**



 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    b                                                                 10/003
56 Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00018 and por
```

Setting Up the IMS Common Service Layer

The three CSL components required to use DRD with the IMS repository are Operations Manager (OM), Structured Call Interface (SCI) and Resource Manager (RM). OM allows you to enter commands to one or more systems in an IMSplex from a single point of control (SPOC). DRD uses type-2 commands, which must be entered via an OM interface such as a SPOC. SCI enables communication among members existing together in an IMSplex. When you enter a command to an IMSplex, SCI passes the command to OM, who in turn routes it to one or more IMS systems the IMSplex. OM collects the command responses from the various IMS systems and returns a consolidated command response back to the command originator. In a DRD with repository environment, RM communicates with the Repository Server address space (which is not a CSL component, but a required element to use the repository) via XCF services when it requires access to the IMS resources in the repository. This whole process occurs behind the scenes when you use the IMS TSO SPOC application (a type of single point of control) to enter DRD commands to the IMS systems in the IMSplex.

To set up the CSL, you must define the CSL parameters in the DFSDFxxx PROCLIB member. You will later see that this same PROCLIB member is used to define the DRD enablement parameters. Lastly, each CSL component requires an initialization PROCLIB member that is read when its address space is initializing. For simplicity, each of these members has already been defined for you and in this section you will simply browse them to give you an idea of their required parameters along with their appropriate values.

> System Definition PROCLIB Member (DFSDFxxx) for CSL
>
> The processing options for the CSL are defined in the CSL section of the System Definition PROCLIB member DFSDFxxx. The xxx suffix will be specified in the IMS startup procedure JCL to indicate the specific member to be read upon startup. In this workshop, each of our IMS systems has been enabled to use the repository and each has its own respective DFSDFxxx member: DFSDF00B belongs to the IMSB system and DFSDF00C belongs to IMSC. To see an example, you can review the DFSDF00B member, which is contained in the IMS.IMSB.PROCLIB partitioned data set (PDS). To browse this member, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix).

```
Session A - [24 x 80]
  Menu  Functions  Confirm  Utilities  Help
 BROWSE            IMS.IMSB.PROCLIB                          Row 00040 of 00179
           Name     Prompt       Size   Created          Changed          ID
 B_________ DFSDF00B                 39  2011/11/29  2012/06/08 18:02:26  DNET545
 __________ DFSDRFDC
 __________ DFSDSCMB
 __________ DFSDSCTA                  1  1995/07/26  1995/07/26 11:37:19  PLS
 __________ DFSDSCTB                  1  2003/05/29  2003/05/29 11:51:47  PLS
 __________ DFSDSCTI
 __________ DFSFIXDC
 __________ DFSHSSP1
 __________ DFSHSSP2
 __________ DFSIFP
 __________ DFSINTCO                  1  2004/09/20  2004/09/20 09:12:31  DNET084
 __________ DFSINTDC
 __________ DFSJBP
 __________ DFSJMP
 __________ DFSJVMAP
 __________ DFSJVMEV
 __________ DFSJVMMS
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                                              05/003
```

Browse the member and you will see the following.

```
Session A - [24 x 80]
  Menu  Utilities  Compilers  Help
 BROWSE    IMS.IMSB.PROCLIB(DFSDF00B) - 01.05        Line 00000000 Col 001 080
********************************** Top of Data **********************************
*-------------------------------------------------------------------*
* COMMON SERVICE LAYER SECTION                                      *
*-------------------------------------------------------------------*
<SECTION=COMMON_SERVICE_LAYER>
CMDSEC=N,                        /* NO CMD AUTHORIZATION CHECKING   */
IMSPLEX=DEMOC,                   /* IMSPLEX NAME                    */
LEOPT=Y
OLC=LOCAL,
MODBLKS=DYN,                     /* DRD ENABLED;MODBLKS OLC DISABLE */
RMENV=Y
*-------------------------------------------------------------------*
* DYNAMIC RESOURCES SECTION                                         *
*-------------------------------------------------------------------*
<SECTION=DYNAMIC_RESOURCES>
AUTOEXPORT=AUTO,                 /* AUTO EXPORT RESOURCES TO RDDS   */
AUTOIMPORT=AUTO,                 /* AUTO IMPORT RESOURCES FR RDDS   */
RDDSDSN=(
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                                              22/015
```

Notice that the following parameters are specified in the Common Service Layer section of this member:

- **CMDSEC=N** means that IMS will not perform any security checking on commands that that are routed to it from OM. Note that IMS security checking differs from OM security checking (specified in CSLOIxxx, to be covered later).

- **IMSPLEX=DEMOC** is the IMSplex group name. All CSL components such as SCI, OM and RM that we will review shortly must specify DEMOC for the IMSplex.
- **LEPOPT=Y** means that IMS will allow Language Environment (LE) dynamic runtime parameter overrides.
- **OLC=LOCAL** means that local online change (versus global/coordinated online change) is enabled for the IMSplex.
- **MODBLKS=DYN** means that Dynamic Resource Definition is enabled for the IMSplex for the dynamic management of MODBLKS resources.
- **RMENV=Y** means that IMS requires an RM environment in order to use RM services. The use of the IMS repository with DRD requires RM, so the parameter must be defined this way, which is the default.

If you look at the Dynamic Resources section of this member, you will see values defined for AUTOIMPORT, AUTOEXPORT and RDDSDSN. When using DRD with the repository, the only relevant parameter is AUTOIMPORT because automatic export is not supported in this environment and RDDSs are not used after migrating to the repository flavor of DRD. When AUTOIMPORT=AUTO, IMS will attempt to first read the stored resource definitions form the repository during coldstart. If there are no resources there, IMS will attempt to read the RDDS and if no resources are there, it will resort to reading MODBLKS.

Press PF3 once to return to the list of members contained in the IMS.IMSB.PROCLIB data set.

```
Session B - [24 x 80]
  Menu  Functions  Confirm  Utilities  Help
BROWSE            IMS.IMSB.PROCLIB                          Row 00040 of 00179
           Name     Prompt       Size   Created          Changed          ID
_________ DFSDF00B *Browsed        39  2011/11/29  2012/06/08 18:02:26  DNET545
_________ DFSDRFDC
_________ DFSDSCMB
_________ DFSDSCTA                  1  1995/07/26  1995/07/26 11:37:19  PLS
_________ DFSDSCTB                  1  2003/05/29  2003/05/29 11:51:47  PLS
_________ DFSDSCTI
_________ DFSFIXDC
_________ DFSHSSP1
_________ DFSHSSP2
_________ DFSIFP
_________ DFSINTCO                  1  2004/09/20  2004/09/20 09:12:31  DNET084
_________ DFSINTDC
_________ DFSJBP
_________ DFSJMP
_________ DFSJVMAP
_________ DFSJVMEV
_________ DFSJVMMS
Command ===> _____________________________________________ Scroll ===> PAGE
 F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
F10=Left   F11=Right  F12=Cancel
MA    B                                A                              22/015
```

SCI Initialization PROCLIB Member (CSLSIxxx)

The parameters that define SCI within an IMSplex are contained in the CSLSIxxx PROCLIB member. The xxx suffix will be specified in the SCI address space startup procedure JCL to indicate the specific member to be read upon startup. In this workshop, the SCI initialization member that is part of our DEMOC IMSplex

is named CSLSI00B and is contained in the IMS.IMSB.PROCLIB data set. To browse this member, find it in the list of members currently displayed in the IMS.IMSD.PROCLIB data set. Otherwise, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix).

```
Session B - [24 x 80]
  Menu  Functions  Confirm  Utilities  Help
 BROWSE            IMS.IMSB.PROCLIB                      CHARS 'CSLSI00B' found
           Name     Prompt        Size   Created          Changed          ID
 B_________ CSLSI00B                12  2003/12/12  2012/05/30 09:44:01  PLS
 __________ CSLSI000
 __________ DBBBATCH
 __________ DBDGEN
 __________ DBFMSDBC
 __________ DFSACBCP
 __________ DFSBMP
 __________ DFSCGECE
 __________ DFSCG00B                10  2003/12/12  2012/05/30 09:43:56  PLS
 __________ DFSCG000
 __________ DFSDF00B                39  2011/11/29  2012/06/08 18:02:26  DNET545
 __________ DFSDRFDC
 __________ DFSDSCMB
 __________ DFSDSCTA                 1  1995/07/26  1995/07/26 11:37:19  PLS
 __________ DFSDSCTB                 1  2003/05/29  2003/05/29 11:51:47  PLS
 __________ DFSDSCTI
 __________ DFSFIXDC
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
 MA    B                                A                              05/003
```

Browse the member and you will see the following.

```
Session B - [24 x 80]
  Menu  Utilities  Compilers  Help
 BROWSE    IMS.IMSB.PROCLIB(CSLSI00B) - 01.14        Line 00000000 Col 001 080
********************************** Top of Data **********************************
*-----------------------------------------------------------------------
* STRUCTURED CALL INTERFACE INITIALIZATION PARAMETERS
*-----------------------------------------------------------------------

ARMRST=Y,                    /* SHOULD ARM RESTART SCI ON FAILURE?   */
SCINAME=IMSB,                /* SCI NAME (SCIID = XXXXXSCI)          */
IMSPLEX(NAME=DEMOC)          /* IMSPLEX NAME (CSLXXXXX)              */
*FORCE=(ALL,SHUTDOWN)        /* CLEAN UP ECSA CNTL BLKS              */

*-----------------------------------------------------------------------
* END OF MEMBER
*-----------------------------------------------------------------------
******************************** Bottom of Data ********************************



 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
 MA    B                                A                              22/015
```

Note the parameter values that are shown in this member:

- **ARMRST=Y** means that the SCI address space will automatically be restarted by the Automatic Restart Manager in the event that it fails.
- **SCINAME=IMSB** means that the SCIID used as the job name associated with the SCI address space will actually be “IMSBSCI”.
- **IMSPLEX(NAME=DEMOC)** means that this SCI is part of the IMSplex named DEMOC. The two IMS systems (IMSB and IMSC) that you will be working with in this workshop, along with the OM address space, are all part of this same IMSplex.

Press PF3 once to return to the list of members contained in the IMS.IMSB.PROCLIB data set.

SCI Address Space Startup Procedure

In this workshop, the SCI address space has already been initialized for you and is running as a started task. As mentioned above, the name of the SCI is IMSBSCI. For your reference, the JCL used to start the SCI address space is shown in the following example. Note that SCIINIT=00B was specified, so that the CSLSI00B initialization member that you just saw above is read upon initialization of the SCI address space. Also note that ARMRST=N was specified, so that the ARMRST=Y defined in the CSLSI00B member is overridden at SCI initialization.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMSBSCI  STC03078  DSID     2 LINE 0       COLUMNS 02- 81
 COMMAND INPUT ===> _                                         SCROLL ===> PAGE
********************************** TOP OF DATA **********************************
                   J E S 2  J O B  L O G  --  S Y S T E M  M V S E  --  N O D E

17.40.58 STC03078 ---- SATURDAY,  14 JUL 2012 ----
17.40.58 STC03078  IEF695I START IMSBSCI  WITH JOBNAME IMSBSCI  IS ASSIGNED TO U
17.40.58 STC03078  $HASP373 IMSBSCI  STARTED
17.40.58 STC03078  IEF403I IMSBSCI - STARTED - TIME=17.40.58
17.41.00 STC03078  CSL0020I SCI READY SCIBSC
        1 //IMSBSCI  JOB MSGLEVEL=1
        2 //STARTING EXEC IMSBSCI
        3 XXIMSBSCI  PROC IMSID=IMSB
          XX*-------------------------------------------------------------------*
          XX* IMSB SCI                                                          *
          XX*-------------------------------------------------------------------*
        4 XXSCI      EXEC PGM=BPEINI00,REGION=0K,
          XX  PARM=('BPECFG=BPECONFG','BPEINIT=CSLSINI0','SCIINIT=00B',
          XX        'ARMRST=N','SCINAME=SCIB')
          XX*
  F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=IFIND     F6=BOOK
  F7=UP        F8=DOWN      F9=SWAP      F10=LEFT     F11=RIGHT    F12=RETRIEVE
MA   A                                    A                                04/0
```

OM Initialization PROCLIB Member (CSLOIxxx)

The parameters that define OM within an IMSplex are contained in the CSLOIxxx PROCLIB member. The xxx suffix will be specified in the OM startup procedure JCL to indicate the specific member to be read upon startup. In this workshop, the OM initialization member that is part of our DEMOC IMSplex is named CSLOI00B and is contained in the IMS.IMSC.PROCLIB data set. To browse this member, find it in the list of members currently displayed in the

IMS.IMSB.PROCLIB data set. Otherwise, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help
 BROWSE            IMS.IMSB.PROCLIB                      CHARS 'CSLOI00B' found
            Name     Prompt        Size   Created          Changed          ID
 B_________ CSLOI00B                 17  2003/12/12  2012/07/27 23:05:10  DDS1743
 __________ CSLOI000
 __________ CSLRI00B                 14  2003/12/12  2012/05/30 12:58:02  PLS
 __________ CSLRI000
 __________ CSLSI00B                 12  2003/12/12  2012/05/30 09:44:01  PLS
 __________ CSLSI000
 __________ DBBBATCH
 __________ DBDGEN
 __________ DBFMSDBC
 __________ DFSACBCP
 __________ DFSBMP
 __________ DFSCGECE
 __________ DFSCG00B                 10  2003/12/12  2012/05/30 09:43:56  PLS
 __________ DFSCG000
 __________ DFSDF00B                 39  2011/11/29  2012/06/08 18:02:26  DNET545
 __________ DFSDRFDC
 __________ DFSDSCMB
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                05/003
```

Browse the member and you will see the following.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 BROWSE    IMS.IMSB.PROCLIB(CSLOI00B) - 01.13        Line 00000000 Col 001 080
********************************* Top of Data *********************************
*-------------------------------------------------------------------------
* OPERATIONS MANAGER INITIALIZATION PARAMETERS
*-------------------------------------------------------------------------

ARMRST=N,                        /* SHOULD ARM RESTART OM ON FAILURE? */
CMDLANG=ENU,                     /* USE ENGLISH FOR COMMMAND DESC     */
CMDSEC=N,                        /* COMMAND SECURITY DELEGATED TO IMS */
OMNAME=IMSB,                     /* OM NAME (OMID = XXXXXXOM)         */
IMSPLEX(
 NAME=DEMOC,
 AUDITLOG=SYSLOG.MVSQ01.LOG),
CMDTEXTDSN=IMS.V12R1.SDFSDATA

*-------------------------------------------------------------------------
* END OF MEMBER
*-------------------------------------------------------------------------
******************************** Bottom of Data ********************************
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                22/015
```

Note the parameter values that are shown in this member:

- **ARMRST=N** means that if the OM address space fails, Automatic Restart Manager will not restart it.

- **CMDLANG=ENU** means that English will be used for IMS command text that is distributed to OM automation clients upon request.
- **CMDSEC=N** means that there is no command security in place for any command coming through the OM interface (type-1/type-2).
- **OMNAME=IMSB** means that this OM's OMID known to the system is "IMSBOM".
- **IMSPLEX(NAME=DEMOB,AUDITLOG=SYSLOG.MVSQ01.LOG)** means that the OM is part of the DEMOC IMSplex and that the system logger log stream named SYSLOG.MVSQ01.LOG will be used for the OM Audit Trail.
- **CMDTEXTDSN=IMS.V12R1.SDFSDATA** specifies the name of the PDS that contains the command syntax translatable text. This keyword is required and is the 1-44 character data set name. The data set must be a PDS with fixed-length record members.

OM Address Space Startup Procedure

In this workshop, the OM address space has already been initialized for you and is running as a started task. As mentioned above, the name of the OM is IMSBOM. For your reference, the JCL used to start the OM address space is shown in the following example. Note that OMINIT=00B was specified, so that the CSLOI00B initialization member that you just saw above is read upon initialization of the OM address space.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMSBOM   STC03080  DSID     2 LINE 0       COLUMNS 02- 81
 COMMAND INPUT ===> _                                         SCROLL ===> PAGE
********************************* TOP OF DATA ***********************************
                   J E S 2  J O B  L O G  --  S Y S T E M  M V S E  --  N O D E

17.40.58 STC03080 ---- SATURDAY,  14 JUL 2012 ----
17.40.58 STC03080  IEF695I START IMSBOM   WITH JOBNAME IMSBOM   IS ASSIGNED TO U
17.40.58 STC03080  $HASP373 IMSBOM   STARTED
17.40.58 STC03080  IEF403I IMSBOM - STARTED - TIME=17.40.58
17.40.59 STC03080 *CSL0003A OM       WAITING FOR SCI      OMBOM
17.41.05 STC03080  CSL0020I OM  READY OMBOM
        1 //IMSBOM   JOB MSGLEVEL=1
        2 //STARTING EXEC IMSBOM
        3 XXIMSBOM   PROC IMSID=IMSB
          XX*-------------------------------------------------------------
          XX* IMSB OM
          XX*-------------------------------------------------------------
        4 XXOM       EXEC PGM=BPEINI00,REGION=0K,
          XX  PARM=('BPECFG=BPECONFG','BPEINIT=CSLOINI0','OMINIT=00B',
          XX        'ARMRST=N','CMDSEC=N','OMNAME=OMB')
  F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=IFIND     F6=BOOK
  F7=UP        F8=DOWN      F9=SWAP     F10=LEFT     F11=RIGHT    F12=RETRIEVE
MA    A                                  A                                04/021
```

Press PF3 once to return to the list of members contained in the IMS.IMSB.PROCLIB data set.

RM Initialization PROCLIB Member (CSLRIxxx)

The parameters that define RM within an IMSplex are contained in the CSLRIxxx PROCLIB member. The xxx suffix will be specified in the RM startup procedure JCL to indicate the specific member to be read upon startup. In this workshop,

the RM initialization member that is part of our DEMOC IMSplex is named CSLRI00B and is contained in the IMS.IMSB.PROCLIB data set. To browse this member, find it in the list of members currently displayed in the IMS.IMSB.PROCLIB data set. Otherwise, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMS.IMSB.PROCLIB                      CHARS 'CSLRI00B' found
            Name      Prompt        Size   Created          Changed          ID
 B_________ CSLRI00B                 14   2003/12/12  2012/05/30 12:58:02  PLS
 __________ CSLRI000
 __________ CSLSI00B                 12   2003/12/12  2012/05/30 09:44:01  PLS
 __________ CSLSI000
 __________ DBBBATCH
 __________ DBDGEN
 __________ DBFMSDBC
 __________ DFSACBCP
 __________ DFSBMP
 __________ DFSCGECE
 __________ DFSCG00B                 10   2003/12/12  2012/05/30 09:43:56  PLS
 __________ DFSCG000
 __________ DFSDF00B                 39   2011/11/29  2012/06/08 18:02:26  DNET545
 __________ DFSDRFDC
 __________ DFSDSCMB
 __________ DFSDSCTA                  1   1995/07/26  1995/07/26 11:37:19  PLS
 __________ DFSDSCTB                  1   2003/05/29  2003/05/29 11:51:47  PLS
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                05/003
```

Browse the member and you will see the following.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    IMS.IMSB.PROCLIB(CSLRI00B) - 01.23         Line 00000000 Col 001 080
********************************* Top of Data ********************************
ARMRST=N,                    /* SHOULD ARM RESTART RM ON FAILURE?    */
IMSPLEX(NAME=DEMOC),         /* IMSPLEX NAME (CSLPLEX1)              */
RMNAME=IMSB                  /* RM NAME (RMID = XXXXXRM)             */
*-------------------------------------------------------------------*
* REPOSITORY SECTION                                                *
*-------------------------------------------------------------------*
<SECTION=REPOSITORY>
REPOSITORY=(NAME=IMSREPNM,TYPE=IMSRSC,GROUP=REPXCFGN)
*-------------------------------------------------------------------*
/*CQSSSN=CQS1,                  CQS TO MANAGE RESOURCE STRUCTURE     */
/*IMSPLEX(                                                           */
/* NAME=DEMO2,                   IMSPLEX NAME (CSLXXXXX)             */
/* RSRCSTRUCTURE(                                                    */
/*     STRNAME=QRSCIMS01))       RESOURCE STRUCTURE NAME             */
******************************** Bottom of Data ******************************


 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                22/015
```

Note the parameter values that are shown in this member:

- **ARMRST=N** means that if the RM address space fails, Automatic Restart Manager will not restart it.
- **IMSPLEX(NAME=DEMOC)** means that this RM is part of the IMSplex named DEMOC. The two IMS systems (IMSB and IMSC) that you will be working with in this workshop, along with the RM address space, are all part of this same IMSplex.
- **RMNAME=IMSB** means that this RM's RMID known to the system is "IMSBRM".

The <SECTION=REPOSITORY> is new in IMS 12 and must specify settings specific to the repository environment. Note the parameter values that are shown here:

- **NAME=IMSREPNM** means that the name of the repository being managed by RM is "IMSREPNM"; this same name is used by the Batch Admin utility when defining the repository to the Repository Server address space using the ADD function.
- **TYPE=IMSRSC** means that the type of repository being defined here is of type IMSRSC (currently the only type available).
- **GROUP=REPXCFGN** means that RM is in the XCF group named REPXCFGN; this same group must be defined in the FRPCFG PROCLIB member.

<u>RM Address Space Startup Procedure</u>

In this workshop, the RM address space has already been initialized for you and is running as a started task. As mentioned above, the name of the RM is IMSBRM. For your reference, the JCL used to start the RM address space is shown in the following example. Note that RMINIT=00B was specified, so that the CSLRI00B initialization member that you just saw above is read upon initialization of the RM address space.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMSBRM   STC03081  DSID     2 LINE 4       COLUMNS 02- 81
 COMMAND INPUT ===> _                                          SCROLL ===> PAGE
17.40.58 STC03081  IEF695I START IMSBRM   WITH JOBNAME IMSBRM   IS ASSIGNED TO U
17.40.58 STC03081  $HASP373 IMSBRM   STARTED
17.40.58 STC03081  IEF403I IMSBRM - STARTED - TIME=17.40.58
17.40.59 STC03081 *CSL0003A RM       WAITING FOR SCI      RMBRM
17.41.06 STC03081  CSL2500I RM RMBRM    CONNECT REQUEST SUCCESSFUL FOR  280
   280             REPOSITORY NAME=IMSREPNM                                  ,
   280             REPOSITORY TYPE=IMSRSC   RMBRM
17.41.06 STC03081  CSL0020I RM  READY RMBRM
        1 //IMSBRM   JOB MSGLEVEL=1
        2 //STARTING EXEC IMSBRM
        3 XXIMSBRM   PROC IMSID=IMSB
          XX*-------------------------------------------------------------*
          XX* IMSB RM                                                     *
          XX*-------------------------------------------------------------*
        4 XXRM       EXEC PGM=BPEINI00,REGION=0K,
          XX  PARM=('BPECFG=BPECONFG','BPEINIT=CSLRINI0','RMINIT=00B',
          XX        'ARMRST=N','RMNAME=RMB')
          XX*
  F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=IFIND     F6=BOOK
  F7=UP        F8=DOWN      F9=SWAP     F10=LEFT     F11=RIGHT    F12=RETRIEVE
MA    A                                                                 04/021
```

Setting Up IMS Dynamic Resource Definition with Repository

In addition to defining MODBLKS=DYN in the Common Service Layer section of DFSDFxxx (mentioned earlier), there is another section specific to Dynamic Resource Definition (DRD) that must also be defined in this same member. If you reviewed the previous section entitled *Setting Up the IMS Common Service Layer* on page 101, you began by studying the CSL section in the DFSDF00B member contained in the IMS.IMSB.PROCLIB data set. We will now review this member again, this time focusing on the DRD section. To browse this member, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMS.IMSB.PROCLIB                      CHARS 'DFSDF00B' found
          Name      Prompt        Size   Created          Changed          ID
 B_________ DFSDF00B                 39  2011/11/29  2012/06/08 18:02:26  DNET545
            DFSDRFDC
            DFSDSCMB
            DFSDSCTA                  1  1995/07/26  1995/07/26 11:37:19  PLS
            DFSDSCTB                  1  2003/05/29  2003/05/29 11:51:47  PLS
            DFSDSCTI
            DFSFIXDC
            DFSHSSP1
            DFSHSSP2
            DFSIFP
            DFSINTCO                  1  2004/09/20  2004/09/20 09:12:31  DNET084
            DFSINTDC
            DFSJBP
            DFSJMP
            DFSJVMAP
            DFSJVMEV
            DFSJVMMS
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                05/003
```

Browse the member and you will see the following. Press PF8 to page down and see all of the parameters defined here.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 BROWSE    IMS.IMSB.PROCLIB(DFSDF00B) - 01.05         Line 00000010 Col 001 080
RMENV=Y
*-----------------------------------------------------------------------*
* DYNAMIC RESOURCES SECTION                                             *
*-----------------------------------------------------------------------*
<SECTION=DYNAMIC_RESOURCES>
AUTOEXPORT=AUTO,                  /* AUTO EXPORT RESOURCES TO RDDS   */
AUTOIMPORT=AUTO,                  /* AUTO IMPORT RESOURCES FR RDDS   */
RDDSDSN=(
  IMS.IMSB.RDDS1,
  IMS.IMSB.RDDS2,
  IMS.IMSB.RDDS3)
*-----------------------------------------------------------------------*
* REPOSITORY SECTION                                                    *
*-----------------------------------------------------------------------*
<SECTION=REPOSITORY>
REPOSITORY=(TYPE=IMSRSC)
*-----------------------------------------------------------------------*
*-----------------------------------------------------------------------*
 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                                22/015
```

Note that the following parameters have been defined in <SECTION=DYNAMIC_RESOURCES>:

- **AUTOEXPORT=AUTO** means that at every IMS system checkpoint, if there have been MOBDLKS definitional changes made since the previous system checkpoint, IMS will automatically export all of its MODBLKS runtime resource definitions to its system RDDS containing the oldest data. **Note:** when DRD with repository has been enabled, the RDDS is no longer used. But as long as

automatic export is still enabled (as shown in our example above), IMS will continue writing resources to the RDDS at system checkpoint time if there have been runtime definitional changes made. Once migration to DRD with repository has been completed, you should disable autoexport with the **`UPDATE IMS SET(LCLPARM(AUTOEXPORT(N))`** command to eliminate the unnecessary I/O to the RDDS.

- **AUTOIMPORT=AUTO** means that IMS will import all MODBLKS stored resource definitions from the repository at coldstart, or if the repository is empty or not defined, from the most current system RDDS; if its system RDDSs are empty or not defined, IMS attempts to read from the MODBLKS data set.
- **RDDSDSN=(IMS.IMSB.RDDS1, IMS.IMSB.RDDS2, IMS.IMSB.RDDS3)** specifies the names of the system RDDSs for this particular IMS system. Again, the system RDDS is not used in a DRD with repository environment but if autoexport remains enabled, IMS will continue to export to these system RDDSs at system checkpoint time until it is explicitly disabled.
-

Note that the following parameter has been defined in <SECTION=REPOSITORY>:

- **TYPE=IMSRSC** indicates that the type of repository being used in this IMSplex is of type IMSRSC (the only valid type at this time); members of an IMSplex share this same repository to store MODBLKS resource definitions: databases, programs, routing codes and transactions.

Allocating Repository Data Sets (Catalog and IMSRSC)

The following JCL was used to allocate the RS catalog data sets (primary/secondary) as well as the IMSRSC repository data sets (primary/secondary/spare) that contain IMS stored resource definitions.

```
//*
//* ALLOCATE DATA SETS
//*
//ALLOCATE EXEC PGM=IDCAMS,DYNAMNBR=200
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
  DEFINE CLUSTER(
                 NAME(IMS.IMSB.REPO.CATPRI.RID)
                 REUSE
                 INDEXED
                 STORCLAS(BASE)
                 MGMTCLAS(STANDARD)
                 KEYS(128,0)
                 FREESPACE(10 10)
                 RECORDSIZE(282 282)
                 SHAREOPTIONS(2 3)
                 CONTROLINTERVALSIZE(8192)
                 VOLUMES(DMEP01)
                 CYLINDERS(1 1)
                )
            DATA(
                 NAME(IMS.IMSB.REPO.CATPRI.RID.D)
                )
           INDEX(
                 NAME(IMS.IMSB.REPO.CATPRI.RID.I)
                )
  DEFINE CLUSTER(
                 NAME(IMS.IMSB.REPO.CATPRI.RMD)
                 REUSE
                 INDEXED
                 STORCLAS(BASE)
                 MGMTCLAS(STANDARD)
                 KEYS(12,0)
                 FREESPACE(20 20)
```

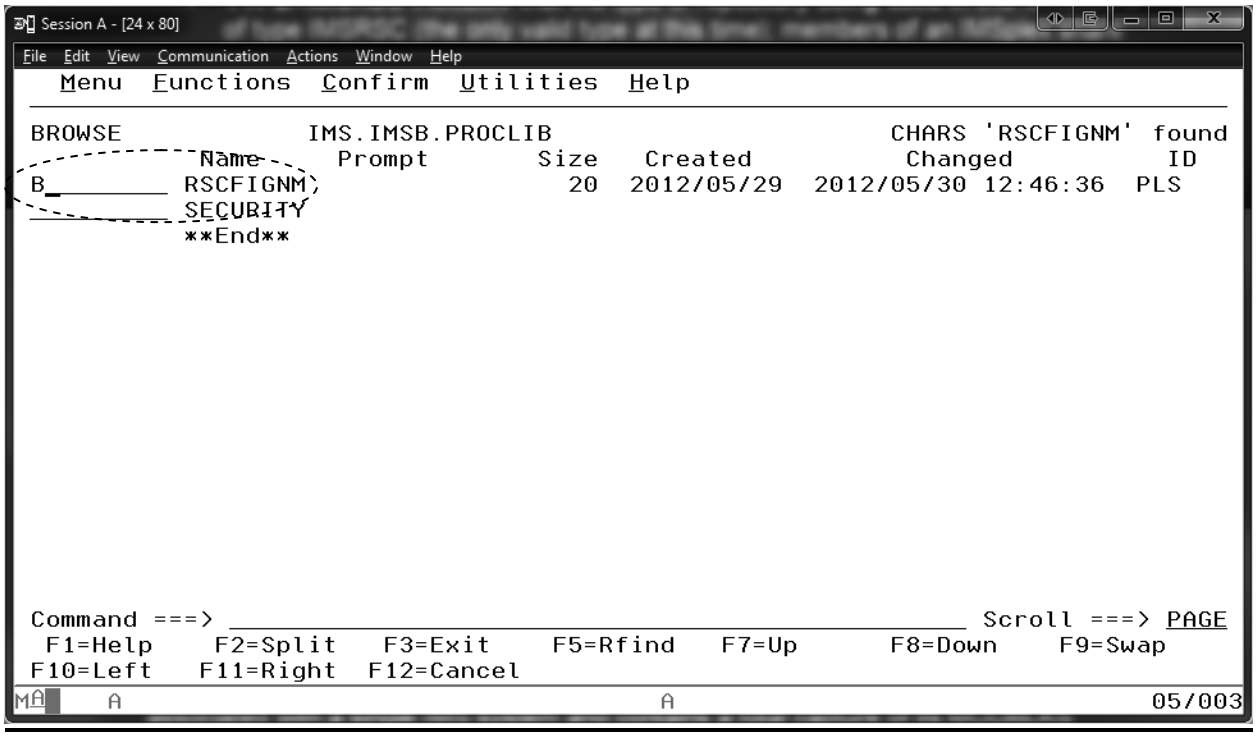
```
               RECORDSIZE(8185 8185)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.CATPRI.RMD.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.CATPRI.RMD.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.CATSEC.RID)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(128,0)
               FREESPACE(10 10)
               RECORDSIZE(282 282)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.CATSEC.RID.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.CATSEC.RID.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.CATSEC.RMD)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(12,0)
               FREESPACE(20 20)
               RECORDSIZE(8185 8185)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.CATSEC.RMD.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.CATSEC.RMD.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSPRI.RID)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(128,0)
               FREESPACE(10 10)
               RECORDSIZE(282 282)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSPRI.RID.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSPRI.RID.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSPRI.RMD)
               REUSE
               INDEXED
```

```
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(12,0)
               FREESPACE(20 20)
               RECORDSIZE(8185 8185)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSPRI.RMD.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSPRI.RMD.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSSEC.RID)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(128,0)
               FREESPACE(10 10)
               RECORDSIZE(282 282)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSSEC.RID.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSSEC.RID.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSSEC.RMD)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(12,0)
               FREESPACE(20 20)
               RECORDSIZE(8185 8185)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSSEC.RMD.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSSEC.RMD.I)
              )
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSSPR.RID)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(128,0)
               FREESPACE(10 10)
               RECORDSIZE(282 282)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSSPR.RID.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSSPR.RID.I)
              )
```

```
DEFINE CLUSTER(
               NAME(IMS.IMSB.REPO.IMSSPR.RMD)
               REUSE
               INDEXED
               STORCLAS(BASE)
               MGMTCLAS(STANDARD)
               KEYS(12,0)
               FREESPACE(20 20)
               RECORDSIZE(8185 8185)
               SHAREOPTIONS(2 3)
               CONTROLINTERVALSIZE(8192)
               VOLUMES(DMEP01)
               CYLINDERS(1 1)
              )
          DATA(
               NAME(IMS.IMSB.REPO.IMSSPR.RMD.D)
              )
         INDEX(
               NAME(IMS.IMSB.REPO.IMSSPR.RMD.I)
              )
```

Setting Up the Repository Server

To use DRD with the repository, the Repository Server address space must be configured with settings related to performance, communications and security in its FRPCFG PROCLIB member. In this workshop's test environment, the name of the RS configuration member is RSCFIGNM and is contained in the IMS.IMSB.PROCLIB PDS. To browse this member, use ISPF Primary Options Menu 3.4 (if you are unfamiliar with this browsing process, please see the section entitled *Browsing a PDS Member Using ISPF 3.4* on page 99 in this Appendix.



Browse the member and you will see the following. Press PF8 to page down and see all of the parameters defined here.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
   Menu  Utilities  Compilers  Help
 BROWSE    IMS.IMSB.PROCLIB(RSCFIGNM) - 01.06         Line 00000000 Col 001 080
******************************** Top of Data ********************************
XCF_THREADS=8
MAX_COMMUNICATION_RETRY=32
MBR_CORE_MAX=1024
IMSPLEX(NAME=DEMOC)
RSNAME=RSRVNM
PRIMARY_CATALOG_REPOSITORY_INDEX=(
IMS.IMSB.REPO.CATPRI.RID)
PRIMARY_CATALOG_REPOSITORY_MEMBER=(
IMS.IMSB.REPO.CATPRI.RMD)
SECONDARY_CATALOG_REPOSITORY_INDEX=(
IMS.IMSB.REPO.CATSEC.RID)
SECONDARY_CATALOG_REPOSITORY_MEMBER=(
IMS.IMSB.REPO.CATSEC.RMD)
VSAM_BUFNO=128
VSAM_BUFSIZE=8
XCF_GROUP_NAME=REPXCFGN
AUDIT=NO
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                              22/015
```

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
   Menu  Utilities  Compilers  Help
 BROWSE    IMS.IMSB.PROCLIB(RSCFIGNM) - 01.06         Line 00000018 Col 001 080
AUDIT_FAIL=CONTINUE
AUDIT_LEVEL=HIGH
AUDIT_DEFAULT=NOAUDIT
****************************** Bottom of Data ******************************



 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    A                                A                              22/015
```

Note the parameter values that are shown in this member:

- **XCF_THREADS=8** means that there are 8 XCF listener threads available to accept data from clients.
- **MAX_COMMUNICATION_RETRY=32** is the default value and means that there are 32 communication retries in the event that a client-side API process experiences a failure due to insufficient z/OS XCF threads. When this limit is

exceeded, the client request fails with a reason code indicating that the server is busy.

- **MBR_CORE_MAX=1024** is the default value and means that there are 1024KB of incore storage allocated to support an XCF data package.
- **IMSPLEX(NAME=DEMOC)** means that the RS address space is part of the DEMOC IMSplex.
- **RSNAME=RSRVNM** means that the name "RSRVNM" is used to create the REPOID, used in RS processing. The characters "RP" are appended to this name, so any messages output by the RS will contain its name as "RSRVNMRP".
- **PRIMARY_CATALOG_REPOSITORY_INDEX= (IMS.IMSB.REPO.CATPRI.RID)** defines the name of the primary RID of the RS catalog repository.
- **PRIMARY_CATALOG_REPOSITORY_INDEX= (IMS.IMSB.REPO.CATPRI.RMD)** defines the name of the primary RMD of the RS catalog repository.
- **SECONDARY_CATALOG_REPOSITORY_INDEX= (IMS.IMSB.REPO.CATSEC.RID)** defines the name of the secondary RID of the RS catalog repository.
- **SECONDARY_CATALOG_REPOSITORY_INDEX= (IMS.IMSB.REPO.CATSEC.RMD)** defines the name of the secondary RMD of the RS catalog repository.
- **VSAM_BUFNO=128** is the default value and means that there are 128 VSAM buffers in the local shared resource pool used for repository access.
- **VSAM_BUFSIZE=8** is the default value and means that the VSAM LSR pool buffers used for repository I/O are 8KB in size.
- **XCF_GROUP_NAME=REPXCFGN** means that the RS is part of the REPXCFGN XCF group.
- **AUDIT=NO** means that auditing is disabled and access to the repository is not being tracked.
- **AUDIT_FAIL=CONTINUE** is the default value and indicates that if auditing were enabled (currently it's not since AUDIT=NO is defined) and the RS address space fails to connect to the log stream when it's first initializing, to continue the initialization process versus aborting.
- **AUDIT_LEVEL=HIGH** means that when auditing is enabled, that audit records are written to the log.
- **AUDIT_DEFAULT=NOAUDIT** is the default value and indicates that access to members within the repository will not be audited.

<u>RS Address Space Startup Procedure</u>

In this workshop, the RS address space has already been initialized for you and is running as a started task. As mentioned above, the name of the RS is RSRVNM. For your reference, the JCL used to start the RS address space is shown in the following example. Note that FPQRCFG=RSCFIGNM was specified, so that the RSCFIGNM member that you just saw above is read upon initialization of the RM address space.

```
Session A - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Display  Filter  View  Print  Options  Search  Help
 ------------------------------------------------------------------------------
 SDSF OUTPUT DISPLAY IMSBRSRV STC03079  DSID     2 LINE 18      COLUMNS 02- 81
 COMMAND INPUT ===> _                                          SCROLL ===> PAGE
   260             IEC161I IMS.IMSB.REPO.IMSSPR.RMD,IMS.IMSB.REPO.IMSSPR.RMD.D,
   260             IEC161I CATALOG.PRODUCTS.UCAT
17.41.06 STC03079  FRP2016I - Repository opened: IMSREPNM
        1 //IMSBRSRV JOB MSGLEVEL=1
        2 //STARTING EXEC IMSBRSRV
          XX*********************************************************************
          XX* IMSB REPOSITORY SERVER
          XX*********************************************************************
        3 XXIMSBRSRV PROC RGN=128M,BPERCFG=BPERECFN,
          XX             FPQRCFG=RSCFIGNM,SOUT='*'
          XX*
        4 XXRS        EXEC PGM=BPEINI00,REGION=&RGN,
          XX  PARM='BPEINIT=FRPINI00,BPECFG=&BPERCFG,FRPCFG=&FPQRCFG'
          XX*
          IEFC653I SUBSTITUTION JCL - PGM=BPEINI00,REGION=128M,PARM='BPEINIT=FRP
        5 XXSTEPLIB  DD  DSN=IMS.IMSB.SDFSRESL,DISP=SHR
          XX*
        6 XXPROCLIB  DD  DSN=IMS.IMSB.PROCLIB,DISP=SHR
  F1=HELP      F2=SPLIT     F3=END       F4=RETURN    F5=IFIND     F6=BOOK
  F7=UP        F8=DOWN      F9=SWAP     F10=LEFT     F11=RIGHT    F12=RETRIEVE
MA    A                                  A                                04/021
```

Allocating a Non-System RDDS

An RDDS (either system or non-system) is a BSAM data set that can be allocated using either IEBGENER or the ISPF ALLOCATION function. Remember, a system RDDS is associated with a single IMS system and contains a total capture of its MODBLKS definitions and is not shared with other IMS systems. A non-system RDDS on the other hand, can be shared among IMS systems and can be used to port resource definitions from one IMS to another, as you've seen in the previous exercises.

In this section, you will allocate a non-system RDDS using IEBGENER. The IEBGENER job is contained in the IMPOTXX.TESTXYZ PDS member named DFSRDDAL. Navigate to this member using the ISPF Primary Options Menu option 3.4.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings       Terminal and user parameters            User ID . : IMPOT20
1  View           Display source data or listings         Time. . . : 18:17
2  Edit           Create or change source data            Terminal. : 3278
3  Utilities      Perform utility functions               Screen. . : 1
4  Foreground     Interactive language processing         Language. : ENGLISH
5  Batch          Submit job for language processing      Appl ID . : ISP
6  Command        Enter TSO or Workstation commands       TSO logon : DBAUSER
7  Dialog Test    Perform dialog testing                  TSO prefix: IMPOT20
P  IBM Products   IBM program development products        System ID : ESYSMVS
10 SCLM           SW Configuration Library Manager        MVS acct. : 20345678
11 Workplace      ISPF Object/Action Workplace            Release . : ISPF 6.1
12 z/OS System    z/OS system programmer applications
13 z/OS User      z/OS user applications

     Enter X to Terminate using log/list defaults
Option ===> 3.4
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    b                                                              21/017
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00066 and por
```

Browse the IMPOTXX.TESTXYZ data set (substituting your user ID # for the XX).

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  Menu  RefList  RefMode  Utilities  Help
                          Data Set List Utility
                                                            More:     +
   blank Display data set list              P Print data set list
       V Display VTOC information          PV Print VTOC information

Enter one or both of the parameters below:
   Dsname Level . . IMPOTXX.TESTXYZ
   Volume serial  . .

Data set list options
   Initial View                 Enter "/" to select option
   1  1. Volume                 /  Confirm Data Set Delete
      2. Space                  /  Confirm Member Delete
      3. Attrib                 /  Include Additional Qualifiers
      4. Total                  /  Display Catalog Name
                                /  Display Total Tracks
                                _  Prefix Dsname Level

When the data set list is displayed, enter either:
Option ===>
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    d                                A                           09/031
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TC
```

Edit the DFSRDDAL member by entering an “E” next to it and pressing Enter.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Functions  Confirm  Utilities  Help
 ------------------------------------------------------------------------------
 BROWSE            IMPOT20.TESTXYZ                          Row 00001 of 00005
            Name     Prompt        Size   Created          Changed          ID
 __________ CSLUSPOC                 50  2008/05/23  2011/07/24 23:58:59  IMPOT20
 E_________ DFSRDDAL                 10  2008/05/23  2011/06/29 17:40:41  IMPOT20
 __________ URDD0CMD                 10  2008/05/23  2011/06/27 19:43:01  IMPOT20
 __________ URDD0MAC                 10  2008/05/23  2011/06/28 17:22:58  IMPOT20
 __________ URDD0QRY                 10  2008/05/23  2011/07/23 17:52:13  IMPOT20
            **End**

 Command ===> ____________________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
 .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .  .
 MA    a                                A                                06/003
 Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00059 and port 22
```

Change the XXs in the job name IMPOTXX to specify your user ID # instead. Replace the XXs in the same way for the DSN=IMPOTXX.NSRDDS2 name on the SYSUT2 DD statement. This is the name of the non-system RDDS that you are creating. Keep all of the other parameters as shown in the JCL, as these are the recommended values for allocating an RDDS. Enter “SUB” on the command line to submit the job, ensuring that you also enter a job name character (such as “O”) and press Enter.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT20.TESTXYZ(DFSRDDAL) - 01.30              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX  JOB   CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //S1       EXEC  PGM=IEBGENER
000003 //SYSOUT   DD    SYSOUT=*
000004 //SYSPRINT DD    SYSOUT=*
000005 //SYSUT1   DD    DUMMY,BLKSIZE=32760,RECFM=VB
000006 //SYSUT2   DD    DSN=IMPOTXX.NSRDDS2
000007 //               DCB=(RECFM=VB,LRECL=32756,BLKSIZE=32760),
000008 //               UNIT=SYSDA,
000009 //               DISP=(,CATLG),SPACE=(TRK,(10,10))
000010 //SYSIN    DD    DUMMY
****** ***************************** Bottom of Data ***************************


IKJ56700A ENTER JOBNAME CHARACTER(S) -
O
IKJ56250I JOB IMPOT20O(JOB08088) SUBMITTED
***
MA    a                                A                                12/035
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00017 and por
```

Note the job ID from this screen (in the example, it is JOB08088). Press Enter, then PF3 until you reach the ISPF Primary Options Menu. Now select option 3.8 and press Enter.

Enter “IMPOTXX” plus the jobname character in the jobname field. For example, if your user ID is IMPOT11 and you entered an “O” as the job name character when you submitted the job in the previous step, you would enter “IMPOT11O” in the jobname field. Since you already know the job ID, there is no need to determine it by entering an “L” on the command line, as in previous exercises. Simply enter the job ID in the appropriate fields as shown in the following screenshot and press Enter.

```
VMX
File Edit View Communication Actions Window Help
  Menu  Utilities  Help
                                 Outlist Utility
                                                                More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname   . . IMPOTXXO
   Class   . . . _
   JobID   . . . J8088___

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _          (A for ANSI     )
                                            (M for machine )
Option ===> ____________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    a                                A                          14/023
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00017 and por
```

Press PF8 to scroll through the output and note that the COND CODE shown is 0000, which indicates that your non-system RDDS named IMPOTXX.NSRDDS2 was allocated successfully.

```
VMX
File Edit View Communication Actions Window Help
  Menu  Utilities  Compilers  Help
BROWSE    IMPOT20.SPF162.OUTLIST                    Line 00000034 Col 001 080
IEF237I JES2 ALLOCATED TO SYSPRINT
IEF237I DMY  ALLOCATED TO SYSUT1
IGD101I SMS ALLOCATED TO DDNAME (SYSUT2  )
        DSN (IMPOT20.NSRDDS2                              )
        STORCLAS (USRBASE) MGMTCLAS (USRMGMT) DATACLAS (        )
        VOL SER NOS= DMEU01
IEF237I DMY  ALLOCATED TO SYSIN
IEF142I IMPOT200 S1 - STEP WAS EXECUTED - COND CODE 0000
IEF285I   IMPOT20.IMPOT200.JOB09818.D0000101.?         SYSOUT
IEF285I   IMPOT20.IMPOT200.JOB09818.D0000102.?         SYSOUT
IGD104I IMPOT20.NSRDDS2                              RETAINED,  DDNAME=SYSUT2
IEF373I STEP/S1      /START 2011179.1833
IEF032I STEP/S1      /STOP  2011179.1833
        CPU:     0 HR  00 MIN  00.00 SEC    SRB:     0 HR  00 MIN  00.00 SEC
        VIRT:   512K  SYS:   360K  EXT:        4K  SYS:    11028K
IEF375I  JOB/IMPOT200/START 2011179.1833
IEF033I  JOB/IMPOT200/STOP  2011179.1833
Command ===> ____________________________________________ Scroll ===> PAGE
 F1=Help     F2=Split    F3=Exit     F5=Rfind    F7=Up       F8=Down     F9=Swap
F10=Left    F11=Right   F12=Cancel
MA    b                                                              22/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00066 and por
```

To exit, press PF3 until you reach the ISPF Primary Options menu.

You can also verify that the non-system RDDS was created successfully via ISPF Primary Options Menu 3.4.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  Menu  Utilities  Compilers  Options  Status  Help
                          ISPF Primary Option Menu

0  Settings      Terminal and user parameters          User ID . : IMPOT20
1  View          Display source data or listings       Time. . . : 17:45
2  Edit          Create or change source data          Terminal. : 3278
3  Utilities     Perform utility functions             Screen. . : 1
4  Foreground    Interactive language processing       Language. : ENGLISH
5  Batch         Submit job for language processing    Appl ID . : ISP
6  Command       Enter TSO or Workstation commands     TSO logon : DBAUSER
7  Dialog Test   Perform dialog testing                TSO prefix: IMPOT20
P  IBM Products  IBM program development products      System ID : ESYSMVS
10 SCLM          SW Configuration Library Manager      MVS acct. : 20345678
11 Workplace     ISPF Object/Action Workplace          Release . : ISPF 6.1
12 z/OS System   z/OS system programmer applications
13 z/OS User     z/OS user applications

     Enter X to Terminate using log/list defaults

Option ===> 3.4
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    b                                                              22/017
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00048 and por
```

Specify IMPOTXX.NSRDDS2 for the data set name such as in the following example and press Enter.

```
Session B - [24 x 80]
File  Edit  View  Communication  Actions  Window  Help
  Menu  RefList  RefMode  Utilities  Help
                          Data Set List Utility
                                                              More:     +
   blank Display data set list              P Print data set list
       V Display VTOC information          PV Print VTOC information

Enter one or both of the parameters below:
   Dsname Level . . . IMPOTXX.NSRDDS2
   Volume serial  . .

Data set list options
   Initial View                 Enter "/" to select option
   1  1. Volume                 /  Confirm Data Set Delete
      2. Space                  /  Confirm Member Delete
      3. Attrib                 /  Include Additional Qualifiers
      4. Total                  /  Display Catalog Name
                                _  Display Total Tracks
                                _  Prefix Dsname Level

When the data set list is displayed, enter either:
Option ===>
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    B                          A                                  09/039
```

The data set is shown and is now ready for use.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

   Menu  Options  View  Utilities  Compilers  Help
 ------------------------------------------------------------------------------
 DSLIST - Data Sets Matching IMPOT20.NSRDDS2                        Row 1 of 1

 Command - Enter "/" to select action                 Message          Volume
 ------------------------------------------------------------------------------
        IMPOT20.NSRDDS2                                                 DMEU01
 ***************************** End of Data Set list *****************************



 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
 . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 MA    b                                A                              21/015
 56  Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00066 and por
```

Julian Day Table Reference

DATE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1	32	61	92	122	153	183	214	245	275	306	336
2	2	33	62	93	123	154	184	215	246	276	307	337
3	3	34	63	94	124	155	185	216	247	277	308	338
4	4	35	64	95	125	156	186	217	248	278	309	339
5	5	36	65	96	126	157	187	218	249	279	310	340
6	6	37	66	97	127	158	188	219	250	280	311	341
7	7	38	67	98	128	159	189	220	251	281	312	342
8	8	39	68	99	129	160	190	221	252	282	313	343
9	9	40	69	100	130	161	191	222	253	283	314	344
10	10	41	70	101	131	162	192	223	254	284	315	345
11	11	42	71	102	132	163	193	224	255	285	316	346
12	12	43	72	103	133	164	194	225	256	286	317	347
13	13	44	73	104	134	165	195	226	257	287	318	348
14	14	45	74	105	135	166	196	227	258	288	319	349
15	15	46	75	106	136	167	197	228	259	289	320	350
16	16	47	76	107	137	168	198	229	260	290	321	351
17	17	48	77	108	138	169	199	230	261	291	322	352
18	18	49	78	109	139	170	200	231	262	292	323	353
19	19	50	79	110	140	171	201	232	263	293	324	354
20	20	51	80	111	141	172	202	233	264	294	325	355
21	21	52	81	112	142	173	203	234	265	295	326	356
22	22	53	82	113	143	174	204	235	266	296	327	357
23	23	54	83	114	144	175	205	236	267	297	328	358
24	24	55	84	115	145	176	206	237	268	298	329	359
25	25	56	85	116	146	177	207	238	269	299	330	360
26	26	57	86	117	147	178	208	239	270	300	331	361
27	27	58	87	118	148	179	209	240	271	301	332	362
28	28	59	88	119	149	180	210	241	272	302	333	363
29	29	60	89	120	150	181	211	242	273	303	334	364
30	30		90	121	151	182	212	243	274	304	335	365
31	31		91		152		213	244		305		366

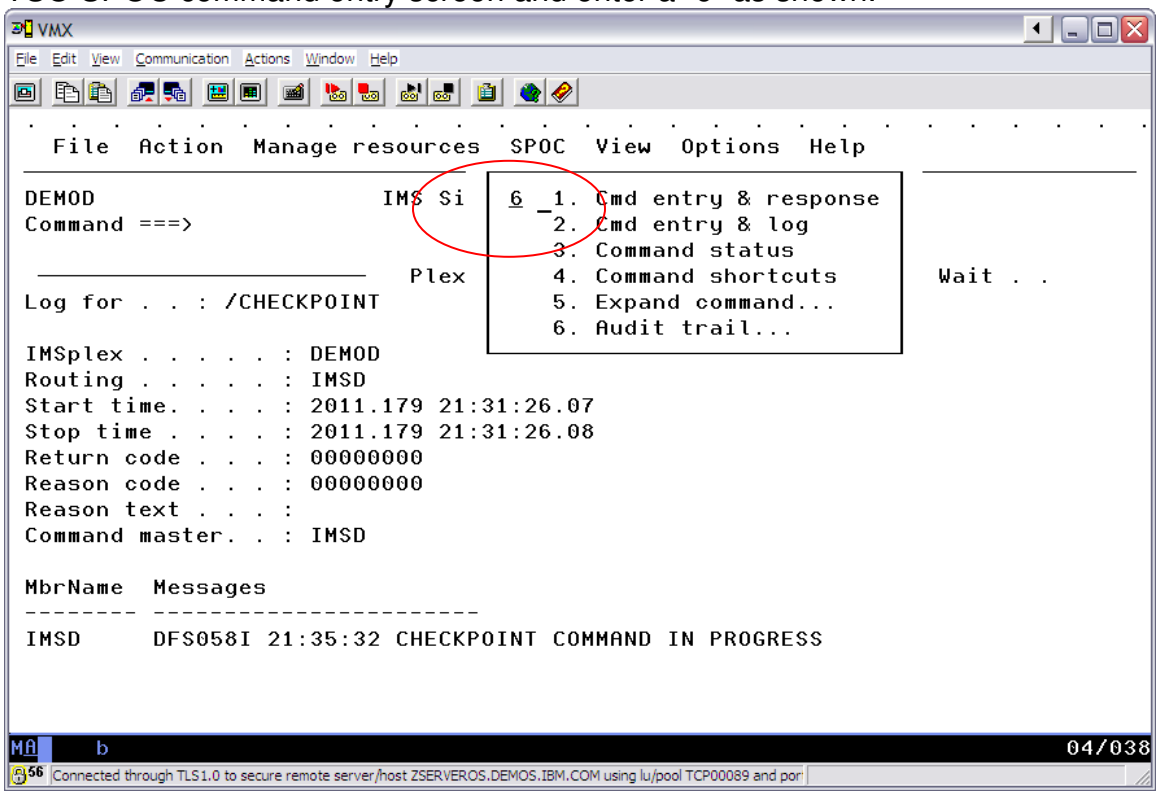
Viewing IMSplex Activity in the OM Audit Trail

The OM Audit Trail tracks all IMSplex activity, including command input/output as well as unsolicited messages. This section consists of several sample screenshots showcasing the different capabilities of the OM Audit Trail.

Note: The instructions shown here are for use with an IMS system named IMSD that is enabled to use the original type of DRD with the RDDS. Your system contains IMSs that are repository-enabled (RDDS is not used here), so this section is for your reference only and not meant for a hands-on activity. In the future, this workshop will be updated to show the OM Audit Trail tracking activities associated with IMS systems that are enabled with repository DRD.

We begin with an assumption that a program named PGMXXAUX was previously created on IMSD. We will also use the OM Audit Trail to determine which system RDDS was written to during the automatic export, and we will then extract this RDDS using the RDDS Extraction Utility to show that this resource was in fact included in the automatic export.

In order to view the OM Audit Trail, place your cursor under the "SPOC" menu within the TSO SPOC command entry screen and enter a "6" as shown.



The OM Audit Trail works by using the z/OS system logger log stream and therefore, the name of this log stream must be specified in the "Datastream name" field, as shown in the next example. Enter SYSLOG.MVSQ01.LOG for the log stream name and press Enter. Note that this same log stream name must be specified in the OM initialization PROCLIB member. Please refer to the Appendix section entitled *Setting up the OM Audit Trail (Additional Instructions)* on page 133 for more information about this.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Help

DEMOD                          IMSplex Audit Trail

Command ===> _____________________________________________________________
Fill in the fields and press the Enter key.


* Datastream name . . . SYSLOG.MVSQ01.LOG
Start date  . . . . . . *        YYYY.DDD or *
Start time  . . . . . . *        HH:MM:SS, *, or -N
End date  . . . . . . . *        YYYY.DDD or *
End time  . . . . . . . *        HH:MM:SS, *, or -N


Filter Preferences
Member List . . . . . . _________________________________________________
                        _________________________________________________
Type List . . . . . . . _________________________________________________
                        _________________________________________________


 F1=Help   F12=Cancel
MA    b                                                          11/026
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

The following screen is displayed and the first item shown is the CREATE PGM NAME(PGMXXAUX) command input/output. Here, you can see a record of all activity that has occurred in the IMSplex.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                          IMSplex Audit Trail
Command ===> _____________________________________________________________

                                   Members . . __________   Type . . ________
                                                                More:    -+>
MbrName  Time                    Message
IMPOT20  2011.216 13:18:29.01 Cmd input . : CREATE PGM NAME(PGMXXAUX)
IMPOT20  2011.216 13:18:29.01 Response for: CREATE PGM NAME(PGMXXAUX)
IMPOT20  2011.216 13:19:56.36 Cmd input . : /CHECKPOINT
IMPOT20  2011.216 13:19:56.36 Response for: /CHECKPOINT
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE*  IMSD
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE* .
IMSD     2011.216 13:19:56.38 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.38 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE* .
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
IMSD     2011.216 13:19:56.39 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
IMSD     2011.216 13:19:56.39 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED
IMSD     2011.216 13:19:56.39 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
 F1=Help    F3=Exit    F5=Rfind   F7=Up     F8=Down   F11=Right  F12=Cancel
MA    a                                A                           04/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

To view any command response, simply place the cursor under the command shown on the screen and press Enter. The response associated with that command will be displayed. When you are finished viewing the response, press PF12 to get back to the Audit Trail screen. For example, to view the output from the CREATE PGM command, place your cursor under the command, as shown in the following screenshot.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                          IMSplex Audit Trail
Command ===> _____________________________________________________________

 ____________________________________  Members . . _________  Type . . ________
                                                                 More:    -+>
MbrName  Time                    Message
IMPOT20  2011.216 13:18:29.01 Cmd input . : CREATE PGM NAME(PGMXXAUX)
IMPOT20  2011.216 13:18:29.01 Response for: CREATE PGM NAME(PGMXXAUX)
IMPOT20  2011.216 13:19:56.36 Cmd input . : /CHECKPOINT
IMPOT20  2011.216 13:19:56.36 Response for: /CHECKPOINT
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE*  IMSD
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE* .
IMSD     2011.216 13:19:56.38 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.38 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.38 DFS994I *CHKPT 11216/131956**SIMPLE* .
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
IMSD     2011.216 13:19:56.39 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
IMSD     2011.216 13:19:56.39 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED
IMSD     2011.216 13:19:56.39 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED
IMSD     2011.216 13:19:56.39 DFS3804I LATEST RESTART CHKPT: 11216/025909, LATES
  F1=Help    F3=Exit    F5=Rfind   F7=Up      F8=Down    F11=Right  F12=Cancel
MA    a                                  A                                10/045
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Press Enter and the command response is displayed.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                      IMS Single Point of Control
Command ===> _____________________________________________________________

 ____________________________  Plex . . _______  Route . . IMSD     Wait . . ______
 Response for: CREATE PGM NAME(PGMXXAUX)
PgmName  MbrName     CC CCText
PGMXXAUX IMSD         0

  F1=Help      F3=Exit      F4=Showlog   F6=Expand    F9=Swap      F12=Cancel
MA    a                                  A                                04/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Press PF12 to get back to the Audit Trail home screen. Next, press PF8 until you reach the bottom of the screen. Notice the DFS3371I message that indicates an automatic export occurred.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                          IMSplex Audit Trail                    End of data
Command ===> _

                                        Members . . _________  Type . . ________
                                                                   More:    - >
MbrName   Time                    Message
IMSD      2011.179 21:31:26.12 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA
IMSD      2011.179 21:31:26.13 DFS3371I SUCCESSFUL AUTO EXPORT TO RDDSDSN=IMS.IMS
IMSD      2011.179 21:31:26.14 DFS3804I LATEST RESTART CHKPT: 11179/211655, LATES
IMSD      2011.179 21:31:26.14 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED
IMSD      2011.179 21:31:26.14 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY DEALLOCATE
********************************* End of Data *********************************

  F1=Help    F3=Exit    F5=Rfind    F7=Up      F8=Down    F11=Right  F12=Cancel
MA    b                                                                  05/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Page to the right to see the name of the system RDDS that was targeted for this export using the PF11 key (or enter a command such as “RIGHT 15” on the command line to page 15 spaces to the right). The following screen is displayed if you enter “RIGHT 15” and you can see that the automatic export wrote all of IMSD’s resources (including the new PGMXXAUX resource that you created) a specific system RDDS, and in our example that follows it was IMS.IMSD.RDDS1.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Action  Manage resources  SPOC  View  Options  Help

DEMOD                          IMSplex Audit Trail
Command ===> _____________________________________________________

 ____________________________________   Members . . _________  Type . . ________
                                                                 More:  <- >
                Message
79 21:31:26.12 DFS3499I ACTIVE DDNAMES: MODBLKSA IMSACBB  FORMATA  MODSTAT ID:
79 21:31:26.13 DFS3371I SUCCESSFUL AUTO EXPORT TO RDDSDSN=IMS.IMSD.RDDS1
79 21:31:26.14 DFS3804I LATEST RESTART CHKPT: 11179/211655, LATEST BUILDQ CHKPT:
79 21:31:26.14 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY ALLOCATED  .
79 21:31:26.14 DFS2500I DATASET  DFSRDDDD SUCCESSFULLY DEALLOCATED.
********************************** End of Data **********************************

  F1=Help    F3=Exit    F5=Rfind   F7=Up     F8=Down   F11=Right  F12=Cancel
MA    b                                A                                05/023
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```

Sidenote: typically the PF10 key is set to page to the left and the PF11 key is set to page to the right. If your PF10/PF11 are not functioning in this way, please see the section entitled *Setting Key Values in the IMS TSO SPOC* in the Appendix on page 90 to learn how to assign key values.

Now that you know the name of the system RDDS that automatic export wrote to, you can run the RDDS Extraction utility against it (specifying OUTPUT=QUERY in the JCL) to confirm that your newly created PGMXXAUX resource was included in automatic export process.

To invoke the RDDS Extraction utility, navigate to the URDD0QRY member within the IMPOTXX.TESTXYZ data set using ISPF Primary Option Menu option 3.4 (see section *Browsing a PDS Member Using ISPF 3.4* on page 99 in the Appendix for more detail). Edit the member to change the RDDSDSN DD statement to specify IMS.IMSD.RDDS1 (or whichever system RDDS you determined in the previous exercise was targeted by the automatic export). Ensure that your user ID # is included in the job name, then submit the job, enter a job name character if prompted, and note the job ID shown.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  File  Edit  Edit_Settings  Menu  Utilities  Compilers  Test  Help

EDIT       IMPOT20.TESTXYZ(URDD0QRY) - 01.37              Columns 00001 00072
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG>           your edit profile using the command RECOVERY ON.
000001 //IMPOTXX_ JOB  CLASS=A,MSGCLASS=H,MSGLEVEL=(1,1)
000002 //JOBLIB   DD   DSN=IMS.IMSD.SDFSRESL,DISP=SHR
000003 //S1       EXEC PGM=DFSURDD0,MEMLIMIT=12G
000004 //RDDSDSN  DD   DSN=IMS.IMSD.RDDS1,DISP=SHR
000005 //SYSOUT   DD   SYSOUT=*
000006 //SYSPRINT DD   SYSOUT=*
000007 //SYSIN    DD   *
000008 OUTPUT=QUERY
000009 /*
000010 //
****** ***************************** Bottom of Data ***************************



IKJ56700A ENTER JOBNAME CHARACTER(S) -
0
IKJ56250I JOB IMPOT200(JOB08061) SUBMITTED
***
MA    a                                  A                                07/018
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```

Note the job ID (in our example it is JOB08061) and view the output using ISPF Primary Options Menu 3.8.

```
VMX
File  Edit  View  Communication  Actions  Window  Help

  Menu  Utilities  Help
 ------------------------------------------------------------------------------
                              Outlist Utility
                                                                   More:     +
    L List job names/id(s) via the TSO STATUS command
    D Delete job output from SYSOUT hold queue
    P Print job output and delete from SYSOUT hold queue
    R Requeue job output to a new output class
blank Display job output

For Job to be selected:
   Jobname  . . IMPOTXXO
   Class  . . . _
   JobID  . . . J8061___

For Job to be requeued:
   New Output class  . . _

For Job to be printed:
   Printer Carriage Control  . . _          (A for ANSI     )
                                            (M for machine  )
Option ===> ____________________________________________________________________
 F1=Help      F2=Split     F3=Exit      F7=Backward  F8=Forward   F9=Swap
F10=Actions  F12=Cancel
MA    a                                A                                14/023
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Press Enter again to view the job output. Search on PGMXXAUX by entering “F PGMXXAUX” on the command line, substituting the PGM resource name that you created (having replaced the XXs with your user ID #) to confirm that this resource was successfully exported to IMSD’s oldest system RDDS.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
   Menu  Utilities  Compilers  Help
 BROWSE    IMPOT20.SPF177.OUTLIST                          CHARS 'PGMXXAUX' found
     TMAC() TMUP() TIMP()
PGM NAME(PGMXXAUX) BMPTYPE(N) DOPT(N) FP(N) GPSB(N) +
     RESIDENT(N) SCHDTYPE(PARALLEL) TRANSTAT(N) MODELNAME(DFSDSPG1) +
     MODELTYPE(DESC) TMCR(2011.216 18:18:29.02-UTC) +
     TMAC() TMUP() TIMP()
PGM NAME(PGMXXTST) BMPTYPE(N) DOPT(N) FP(N) GPSB(N) +
     RESIDENT(N) SCHDTYPE(PARALLEL) TRANSTAT(N) MODELNAME(DFSDSPG1) +
     MODELTYPE(DESC) TMCR(2011.216 18:06:36.55-UTC) +
     TMAC() TMUP() TIMP()
PGM NAME(PGM05) BMPTYPE(N) DOPT(Y) FP(N) GPSB(N) RESIDENT(N) +
     SCHDTYPE(SERIAL) TRANSTAT(N) MODELNAME(DFSDSPG1) +
     MODELTYPE(DESC) TMCR(2011.213 22:12:40.57-UTC) +
     TMAC() TMUP() TIMP()
TRANDESC NAME(TRNDSC05) AOCMD(N) CLASS(3) CMTMODE(SNGL) +
     CONV(N) DCLWA(Y) DIRROUTE(N) EDITUC(Y) EXPRTIME(60) +
     INQ(N) LCT(65535) LPRI(1) MAXRGN(0) MSGTYPE(MULTSEG) +
     NPRI(1) PARLIM(65535) PGM(PGM05) PLCT(65535) +
     PLCTTIME(6553500) RECOVER(Y) REMOTE(N) RESP(Y) +
 Command ===> ____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    a                                A                                05/010
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00091 and por
```

Setting up the OM Audit Trail (Additional Instructions)

Setup note: this same log stream name must also be specified in the OM initialization PROCLIB member using the AUDITLOG= parameter. The OM that currently exists in your DEMOD IMSplex used the CSLOI00D member to apply its parameter values when it initialized. We have included a screenshot of the CSLOI00D member contained in the IMS.IMSD.PROCLIB data set, shown in the following example. Notice that the AUDITLOG= parameter matches what you specified for the log stream name on the Audit Trail input panel.

```
VMX
File  Edit  View  Communication  Actions  Window  Help
   Menu  Utilities  Compilers  Help
 DSLIST    IMS.IMSD.PROCLIB(CSLOI00D) - 01.09         Line 00000000 Col 001 080
********************************* Top of Data *********************************
*-------------------------------------------------------------------------
* OPERATIONS MANAGER INITIALIZATION PARAMETERS
*-------------------------------------------------------------------------

ARMRST=N,                        /* SHOULD ARM RESTART OM ON FAILURE? */
CMDLANG=ENU,                     /* USE ENGLISH FOR COMMMAND DESC     */
CMDSEC=N,                        /* COMMAND SECURITY DELEGATED TO IMS */
OMNAME=IMSD,                     /* OM NAME (OMID = XXXXXXOM)         */
*IMSPLEX(NAME=DEMOD)             /* IMSPLEX NAME                      */
IMSPLEX(
  NAME=DEMOD,                    /* IMSPLEX NAME                      */
  AUDITLOG=SYSLOG.MVSQ01.LOG),   /* MVS LOG STREAM                    */
CMDTEXTDSN=IMS.V11R1.SDFSDATA

*-------------------------------------------------------------------------
* END OF MEMBER
 Command ===> _____________________________________________ Scroll ===> PAGE
  F1=Help    F2=Split   F3=Exit    F5=Rfind   F7=Up      F8=Down    F9=Swap
 F10=Left   F11=Right  F12=Cancel
MA    b                                                              21/015
Connected through TLS1.0 to secure remote server/host ZSERVEROS.DEMOS.IBM.COM using lu/pool TCP00089 and por
```