

14. Production Processing

14.1 Production Processing Process

The Data Processing Subsystem provides a batch processing environment to support the generation of data products. It manages, queues, and executes Data Processing Requests (DPR) on the processing resources at a DAAC. A DPR can be defined as one science processing job. Each DPR encapsulates all of the information needed to execute the processing job. DPRs are submitted from the Planning Subsystem and their processing is triggered by the availability of their input data.

DPRs use Product Generation Executives (PGEs) to perform processing. PGEs result from the integration and test of delivered science algorithms and also user-specific methods in the Data Processing Subsystem. They are encapsulated in the ECS environment through the SDP Toolkit. The Data Processing Subsystem provides the operational interfaces needed to monitor the execution of science software PGEs.

Production Processing requires close monitoring of job processing status/activities and operator intervention as needed to modify job status. In addition it involves monitoring the load on the processing resources to determine whether the load on processing assets is appropriately distributed.

The site M&O Production Monitors use the following principal tools in the Data Processing Subsystem:

- **AutoSys GUI Control Panel** - for launching various AutoSys and AutoXpert GUIs.
- AutoSys GUIs.
 - **Job Activity Console (Ops Console)** – for monitoring job processing status/activities and modifying job status.
 - **Alarm Manager** – for monitoring and responding to AutoSys alarms.
 - **Job Definition GUI** – for determining the ownership of jobs in AutoSys.
 - **Monitors/Browsers** – for monitoring job processing status/activities and obtaining reports on job processing status.
- AutoXpert GUIs.
 - **JobScape** – for a Pert-type graphical view of job processing status/activities and for modifying job status.
 - **TimeScape** – for a Gantt-type graphical view of job processing status/activities and for modifying job status.
 - **HostScape** – for a machine-oriented graphical view of job processing status/activities.

Subsequent sections related to Production Processing address the following topics, including an overview and step-by-step procedures for each topic:

- Section 14.2 Launching the AutoSys/AutoXpert GUIs and configuring AutoSys screens/displays.
- Section 14.3 Reviewing hardware status.
- Section 14.4 Monitoring/controlling job processing.
- Section 14.5 Tuning system parameters.
- Section 14.6 An overview of the process and step-by-step procedures for troubleshooting Production Processing problems.

14.2 Launching the AutoSys/AutoXpert GUIs and Configuring AutoSys Screens/Displays

The AutoSys and AutoXpert GUIs are the principal tools the Production Monitors use for monitoring and controlling activities occurring in Production Processing.

Each procedure outlined will have an **Activity Checklist** table that will provide an overview of the task to be completed. The outline of the **Activity Checklist** is as follows:

Column one - **Order** shows the order in which tasks should be accomplished.

Column two - **Role** lists the Role/Manager/Operator responsible for performing the task.

Column three - **Task** provides a brief explanation of the task.

Column four - **Section** provides the *Procedure (P)* section number or *Instruction (I)* section number where details for performing the task can be found.

Column five - **Complete?** is used as a checklist to keep track of which task steps have been completed.

Table 14.2-1 provides an Activity Checklist for activities related to Launching the AutoSys/AutoXpert GUIs and Configuring AutoSys Screens/Displays.

Table 14.2-1. Launching the AutoSys/AutoXpert GUIs and Configuring AutoSys Screens/Displays - Activity Checklist

Order	Role	Task	Section	Complete?
1	Production Monitor	Log in to ECS Hosts	(P) 14.2.1	
2	Production Monitor	Launch the AutoSys GUI Control Panel	(P) 14.2.2	
3	Production Monitor	Configure AutoSys/AutoXpert Runtime Options	(P) 14.2.3	
4	Production Monitor	Select Jobs to be Displayed on AutoSys/AutoXpert GUIs	(P) 14.2.4	
5	Production Monitor	Set the Current Job on AutoSys/AutoXpert GUIs	(P) 14.2.5	
6	Production Monitor	Configure HostScape Hardware Groups	(P) 14.2.6	

The process of configuring AutoSys begins when the Production Monitor starts the AutoSys graphical user interface (GUI) Control Panel and changes runtime options or uses the vi editor to modify AutoSys configuration files.

The procedures in this section concern launching the AutoSys GUIs, configuring AutoSys runtime options, and configuring AutoSys hardware groups.

14.2.1 Log in to ECS Hosts

Logging in to ECS hosts is accomplished from a UNIX command line prompt. Table 14.2-2 presents (in a condensed format) the steps required to log in to ECS hosts. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

1 At the UNIX command line prompt enter:

setenv DISPLAY <client name>:0.0

- Use either the X terminal/workstation IP address or the machine-name for the client name.
- When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.

2 In the terminal window (at the command line prompt) start the log-in to the appropriate host by entering:

/tools/bin/ssh <host name>

- The **-l** option can be used with the ssh command to allow logging in to the remote host (or the local host for that matter) with a different user ID. For example, to log in to x0sps03 as user cmops enter:

/tools/bin/ssh -l cmops x0sps03

- Depending on the set-up it may or may not be necessary to include the path (i.e., /tools/bin/) with the ssh command. Using ssh alone is often adequate. For example:

ssh x0sps03

- or -

ssh -l cmops x0sps03

- Examples of Science Processor host names include **e0spg11**, **g0spg11**, and **l0spg11**.
- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
- Examples of Access/Process Coordinators (APC) Server host names include **e0acg11**, **g0acg01**, and **l0acg02**.

- Examples of Ingest Server host names include **e0icg11**, **g0icg01**, and **l0acg02**.
- Examples of Sun external server host names include **e0ins01**, **g0ins01**, and **l0ins01**.
- Examples of Sun internal server host names include **e0acs06**, **g0acs06**, and **l0acs06**.
- If you receive the message, “Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?” enter **yes** (“y” alone will not work).
- If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key ’<user@localhost>’** appears; continue with Step 3.
- If you have not previously set up a secure shell passphrase, go to Step 4.

3 If a prompt to **Enter passphrase for RSA key ’<user@localhost>’** appears, enter:

<passphrase>

- If a command line prompt is displayed, log-in is complete.
- If the passphrase is unknown, press **Return/Enter**, which should cause a **<user@remotehost>’s password:** prompt to appear (after the second or third try if not after the first one), then go to Step 4.
- If the passphrase is entered improperly, a **<user@remotehost>’s password:** prompt should appear (after the second or third try if not after the first one); go to Step 4.

4 If a prompt for **<user@remotehost>’s password:** appears, enter:

<password>

- A command line prompt is displayed.
- Log-in is complete.

Table 14.2-2. Log in to ECS Hosts - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	setenv DISPLAY <client name>:0.0	enter text, press Enter
2	/tools/bin/ssh <host name> (as applicable)	enter text, press Enter
3	<passphrase> (if applicable)	enter text, press Enter
4	<password> (if applicable)	enter text, press Enter

14.2.2 Launch the AutoSys GUI Control Panel

The AutoSys GUI Control Panel is invoked from a UNIX command line prompt. Table 14.2-3 presents (in a condensed format) the steps required to launch the AutoSys GUI Control Panel. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 In the terminal window, at the command line prompt, enter:


```
cd /usr/ecs/ <MODE>/COTS/autotree/autouser
```

 - **<MODE>** is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T)
 - TS2 - New Version Checkout
 - OPS - Normal Operations
 - “autouser” is the directory containing the AutoSys configuration files.
 - The path may vary with the specific site installation; e.g., the **autotree** directory may be identified as **autotreeb** at some sites.

- 3 Set the application environment variables by entering:


```
setenv ECS_HOME /usr/ecs/  
source <AUTOSERV INSTANCE>.autosys.csh.<host name>
```

 - Application home environment is entered.
 - When logging in as a system user (e.g., cmshared), the ECS_HOME variable may be set automatically so it may not be necessary to set it manually.
 - **<AUTOSERV INSTANCE>** (also called an AUTOSYS instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
 - Examples of AUTOSERV instances at DAACs include **FMR** and **SPG**.
 - Multiple AUTOSERV instances may be installed at a DAAC.
 - Configuration files in the **autouser** directory identify the available AUTOSERV instances. For example, **config.FMR** is the configuration file for AUTOSERV instance **FMR**.

- 4 Launch the **AutoSys GUI Control Panel** by entering:


```
cd /usr/ecs/ <MODE>/CUSTOM/utilities  
EcDpPrAutosysStart <MODE> <AUTOSERV INSTANCE>
```

 - The **AutoSys GUI Control Panel** is displayed.

Table 14.2-3. Launch the AutoSys GUI Control Panel - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/ <MODE>/COTS/autotree/autouser	enter text, press Enter

Table 14.2-3. Launch the AutoSys GUI Control Panel - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
3	setenv ECS_HOME /usr/ecs/	enter text, press Enter
4	source <AUTOSERV INSTANCE>.autosys.csh.<host name>	enter text, press Enter
5	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text, press Enter
6	EcDpPrAutosysStart <MODE> <AUTOSERV INSTANCE>	enter text, press Enter

14.2.3 Configure AutoSys/AutoXpert Runtime Options

The following AutoSys/AutoXpert Runtime Options may be defined by the Production Monitor operator:

- **Refresh Interval** - The Refresh Interval is how often the GUI View Region display is updated.
- **Ping Interval** - The Ping Interval is defined by how often the connectivity is evaluated.
- **Hang Time** - The Hang Time is the length of time jobs continue to be displayed within a machine after they have completed running.
- **Inches/Hour**- Inches/Hour specifies how much information is displayed on the screen. All values are initially set to default values by the AutoSys system.

Table 14.2-4 lists the runtime options available for **HostScape**, **TimeScape**, and **JobScape**. Not all options are available for all GUIs.

HostScape displays jobs on a machine-by-machine basis, indicating which AutoSys server/client machines are up and active, and which jobs are running or have recently run on each machine. This interface is used to monitor hardware status in real-time.

Table 14.2-4. Runtime Options Table

Interface	Refresh Interval	Hangtime	PING	Inches/Hour
HostScape	X	X	X	
TimeScape	X			X
JobScape	X			

TimeScape presents a Gantt-like view of a job processing from a temporal (or time-related) point-of-view. This interface depicts both “command jobs” and “box jobs.” It also depicts the nesting of jobs within boxes and the duration of time it will take for jobs to complete. This interface is used to monitor job flow in real-time.

JobScope presents a Pert-like view of job processing from a logical (or job dependency) point of view. This interface depicts both “command jobs” and “box jobs.” It also depicts the nesting of jobs within boxes and the dependencies between jobs. This interface can be used to monitor job flow in real-time.

Table 14.2-5 presents (in a condensed format) the steps required to configure AutoXpert runtime options. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures (perform only those steps applicable to the interface, as defined in Table 14.2-4.):

- 1** Launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.

- 2** **Single-click** on either **HostScope**, **TimeScope**, or **JobScope** button on the **AutoSys GUI Control Panel**.
 - The specified **GUI** is displayed.

- 3** Display the **Runtime Options** dialogue box by executing the following menu path:
Options → Edit Runtime Options
 - The **Runtime Options** dialogue box is displayed.

- 4** **Single-click Refresh Interval (Seconds)** and enter a value between **1** and **99999**.
 - Value is entered.
 - Default value is **30**
 - **Reloading Job Data** window reappears every **##** seconds.
 - If Freeze Frame feature is enabled, changes will not take place until it is disabled.

- 5** **Single-click Ping Interval (Seconds)** (if applicable) and enter a value between **1** and **99999**.
 - Value is entered.
 - Default value is **300**
 - 99999 means no **ping** commands are issued.
 - If Freeze Frame feature is enabled, changes will not take place until it is disabled.

- 6** **Single-click Hang Time (Minutes)** (if applicable) and enter a value between **1** and **99999**.
 - Value is entered.
 - Default value is **1**.
 - If Freeze Frame feature is enabled, changes will not take place until it is disabled.

- 7 **Single-click Inches/Hr (inches)** (if applicable) and enter a value between **1** and **###**.
 - Value is entered.
 - Default value is **2**.
 - If Freeze Frame feature is enabled, changes will not take place until is disabled.
- 8 **Single-click Apply**.
 - The Runtime Options are set.
- 9 **Single-click OK**.
 - The dialogue box closes.

Table 14.2-5. Configure AutoSys/AutoXpert Runtime Options - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
2	Either HostScape , TimeScape , or JobScape button (as applicable)	single-click
3	Options → Edit Runtime Options	single-click
4	Refresh Interval (Seconds) field	single-click
5	<value> (between 1 and 99999)	enter number
6	Ping Interval (Seconds) field (if applicable)	single-click
7	<value> (between 1 and 99999) (if applicable)	enter number
8	Hang Time (Minutes) field (if applicable)	single-click
9	<value> (between 1 and 99999) (if applicable)	enter number
10	Inches/Hr (inches) field (if applicable)	single-click
11	<value> (if applicable)	enter number
12	Apply button	single-click
13	OK button	single-click

14.2.4 Select Jobs to be Displayed on AutoSys/AutoXpert GUIs

This section explains how to select jobs to be displayed on AutoSys/AutoXpert GUIs. The Production Monitor can select jobs on the basis of the following criteria:

- Job Name.
- Job Status.
- Machine.

The following default values apply to the job selection criteria until the Production Monitor modifies them:

- All Jobs.

- All Statuses.
- All Machines.

Table 14.2-6 presents (in a condensed format) the steps required to select jobs to be displayed on AutoSys/AutoXpert GUIs. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.
- 2 **Single-click** on either the **HostScape**, **TimeScape**, or **JobScape** button as applicable.
 - The AutoXpert GUI corresponding to the selected button is displayed.
- 3 Execute the following menu path:
View → Select Jobs to Display
 - **Job Selection** dialogue box is displayed.
 - **Job selection** has the following default settings:
 - **All Jobs** for **Select by Name**.
 - **All Statuses** for **Select by Status**.
 - **All Machines** for **Select by Machine**.
 - If the default settings are the desired settings, proceed to Step 10.
- 4 If all jobs are to be displayed on the AutoXpert GUI, verify that the **All Jobs** toggle button is selected.
 - **Single-click** on the **All Jobs** button to change state from unselected to selected or vice versa.
 - When the **All Jobs** option is selected, the **All Jobs** button color is yellow.
 - Leave the **Box Hierarchies: Show Number of Levels** set at **all**.
 - Proceed to Step 7.
- 5 If selecting a particular job or set of jobs by name, first verify that the **All Jobs** button is **unselected**.
 - **Single-click** on the **All Jobs** button to change state from selected to unselected or vice versa.
- 6 If selecting a particular job or set of jobs by name, in the **Name Matching Patterns** fields enter:
<job name>
 - The asterisk (*) wildcard character can be used for entering a partial job name.
 - For example, enter ***OPS*** to select jobs with “OPS” in their name.

- 7 If jobs are to be displayed on the basis of their status, **single-click** on the appropriate button(s) to select the desired status(es) in the **Select by Status** list.
- Options are: **All Statuses, Starting, Running, Success, Failure, Terminated, Restart, Que Wait, Activated, Inactive, On Hold, On Ice.**
 - Any or all buttons can be selected.
 - Button turns yellow when selected.
- 8 If jobs are to be displayed regardless of the machine on which they are running, verify that the **All Machines** toggle button is selected.
- **Single-click** on the **All Machines** button to change state from unselected to selected or vice versa.
 - When the **All Machines** option is selected, the **All Machines** button color is yellow.
 - Proceed to Step 10.
- 9 If jobs are to be displayed on the basis of the machine on which they are running, **single-click** on the name(s) of the desired machine(s) in the **Select by Machine** list.
- To select multiple machines **press and hold** either the **Ctrl** key or the **Shift** key while **single-clicking** on individual machines in the **Select by Machine** list.
 - Alternatively, to select multiple machines **press and hold** either the **Ctrl** key or the **Shift** key then **single-click** on the first machine and drag the cursor to the name of the last machine to be selected and release the mouse button.
 - Selected machine(s) is (are) highlighted.
- 10 **Single-click** on the appropriate button from the following selections:
- **OK** - to accept all specified job selection criteria and dismiss the **Job Selection** dialogue box.
 - Original AutoXpert GUI is displayed.
 - Jobs are displayed on the AutoXpert GUI based on the specified selection criteria.
 - **Apply** - to accept all specified job selection criteria without dismissing the **Job Selection** dialogue box.
 - Repeat Steps 4 through 10 as necessary to specify additional job selection criteria.
 - **Cancel** - to dismiss the **Job Selection** dialogue box without accepting any job selection criteria.
 - Original AutoXpert GUI is displayed

Table 14.2-6. Select Jobs to be Displayed on AutoSys/AutoXpert GUIs - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
2	Either HostScope , TimeScope , or JobScope button (as applicable)	single-click
3	View → Select Jobs to Display	single-click
4	All Jobs toggle button (selected or unselected as applicable)	single-click
5	<job name> (if applicable)	enter text
6	Select by Status toggle button(s) (if applicable)	single-click
7	All Machines toggle button (selected or unselected as applicable)	single-click
8	<machine(s)> (from Select by Machine list) (if applicable)	single-click
9	OK button	single-click

14.2.5 Set the Current Job on AutoSys/AutoXpert GUIs

This section explains how to set the “current job” on AutoSys/AutoXpert GUIs. Setting the current job causes the job name to be displayed in the **Current Job Name** field in the Control Region of the AutoXpert GUI. Subsequently clicking on the **Job Console** button on the AutoXpert GUI causes the **Job Activity Console** GUI (also known as the **Ops Console** GUI) to be displayed with information concerning the current job.

Either of the following two methods can be used to set the current job:

- Click on the name of a job displayed on an AutoXpert GUI.
- Set the current job using the AutoXpert GUI pull-down menu.

Table 14.2-7 presents (in a condensed format) the steps required to set the current job on an AutoSys/AutoXpert GUI using the pull-down menu. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.
- 2 **Single-click** on either the **HostScope**, **TimeScope**, or **JobScope** button as applicable.
 - The AutoXpert GUI corresponding to the selected button is displayed.
- 3 Execute the following menu path:

View → Set Current Job

- **Set Current Job** dialogue box is displayed.
- 4** In the **Filter** field enter:
<job name>
- The asterisk (*) wildcard character can be used for entering a partial job name (e.g., type ***AM1*** to list all jobs with “AM1” in their name).
- 5** **Single-click** on the **Filter** button.
- All jobs that meet the criteria specified in the **Filter** field are displayed in the **Jobs** field.
- 6** **Single-click** on the name of the job to be designated the “current job” from the jobs listed in the **Jobs** field.
- The name of the selected job is displayed in the **Selected Job** field of the **Set Current Job** dialogue box.
- 7** **Single-click** on the appropriate button from the following selections:
- **OK** - to accept the selected job and dismiss the **Set Current Job** dialogue box.
 - Original AutoXpert GUI is displayed.
 - Selected job is displayed in the **Current Job Name** field in the Control Region of the AutoXpert GUI.
 - **Apply** - to accept the selected job without dismissing the **Set Current Job** dialogue box.
 - Selected job is displayed in the **Current Job Name** field in the Control Region of the AutoXpert GUI.
 - **Cancel** - to dismiss the **Set Current Job** dialogue box without setting a “current job.”
 - Original AutoXpert GUI is displayed

Table 14.2-7. Set the Current Job on AutoSys/AutoXpert GUIs - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
2	Either HostScape , TimeScape , or JobScape button (as applicable)	single-click
3	View → Set Current Job	single-click
4	<job name>	enter text
5	Filter button	single-click
6	<job name> (from Jobs list)	single-click
7	OK button	single-click

14.2.6 Configure HostScape Hardware Groups

This section explains how to configure AutoSys hardware groups. The default group is “All Machines.” If the Production Monitor needs to monitor specific sets of machines, groups may be defined.

Table 14.2-8 presents (in a condensed format) the steps required to configure AutoSys hardware groups. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the UNIX command line prompt enter:
cd /usr/ecs/ <MODE>/COTS/autotree/autouser
- 3 Enter:
source <AUTOSYS INSTANCE>.autosys.csh.<hostname>
- 4 Edit the file called **xpert.groups.<AUTOSERV INSTANCE>** using an appropriate text editor (e.g., vi).
 - For example:
vi xpert.groups.FMR
- 5 Enter:
groupname: <group name>
- 6 Enter:
<machine name>

(Repeat Step 6 for each item in the group.)

Repeat Steps 5 and 6 for additional groups.
- 7 Save the file.

```
groupname: Operations
x0pls02
x0sps06
x0spg01
groupname: SSI&T
x0ais01
x0sps06
x0spg01
```

Figure 14.2-1. AutoSys Hardware Group File Example

- 8 Launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.
- 9 **Single-click HostScape.**
 - The **HostScape** GUI page is presented.
- 10 Display the **Machine Group Selection** dialogue box by executing the following menu path:
View → Select Machine Group
 - The **Machine Group Selection** dialogue box is presented.
- 11 Select <**machine group**>.
 - The **machine group** is highlighted.
- 12 **Single-click Apply** button.
 - The selected **machine group** is applied.
- 13 **Single-click OK** button.
 - The **Machine Group Selection** dialogue box is closed
 - The **HostScape** display should now show the selected group of machines.

Table 14.2-8. Configure HostScape Hardware Groups - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	<code>cd /usr/ecs/ <MODE>/COTS/autotree/autouser</code>	enter text, press Enter
3	<code>source <AUTOSYS INSTANCE>.autosys.csh.<hostname></code>	enter text, press Enter
4	<code>vi xpert.groups.<AUTOSERV INSTANCE></code>	enter text, press Enter
5	<code>groupname: <groupname></code>	enter text, press Enter
6	<code><machine name ></code>	enter text, press Enter
7	Repeat Steps 5 and 6 as necessary for additional groups/machines	enter text, press Enter
8	Save the file	enter text, press Enter
9	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
10	HostScape button	single-click
11	View → Select Machine Group	single-click
12	<code><machine group></code> (to be presented) (from menu)	single-click
13	Apply button	single-click
14	OK button	single-click

14.3 Reviewing Hardware Status

Hardware status is displayed on the AutoXpert HostScape GUI. The Production Monitor uses the HostScape GUI to determine the status of processors, the condition of the AutoSys queue, whether any processors are overloaded while others are idle, whether there are any system problems, etc.

Table 14.3-1 provides an Activity Checklist for activities related to Reviewing Hardware Status.

Table 14.3-1. Reviewing Hardware Status - Activity Checklist

Order	Role	Task	Section	Complete?
1	Production Monitor	Review Hardware Status Using HostScape	(P) 14.3.1	
2	Production Monitor	Select Hardware Status View Options in HostScape	(P) 14.3.2	

14.3.1 Review Hardware Status Using HostScape

Table 14.3-2 presents (in a condensed format) the steps required to review hardware status using AutoXpert HostScape. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1** Launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.
- 2** **Single-click** on the **HostScape** button on the **AutoSys GUI Control Panel**.
 - The **HostScape** GUI page is presented.
 - View presented is **Normal View**.
- 3** Review the Control Region (left side of display) to identify color code for status of machines. This code is displayed on the machine box border in the **View Region**.
 - **MACHINE UP** (active) is Green.
 - **MACHINE DOWN** (inactive and cannot be reached) is Red.
 - Machine Inactive is Black. (Not shown in Control Region)
- 4** Review machine type in **View Region**.
 - The **machine name** is displayed.
 - Event Server (database server) name appears below list of jobs, if applicable.
 - Event Processor (AutoSys server/daemon) name appears below list of jobs, if applicable.
- 5** Review machine boxes in the View Region to ascertain status of individual machines.
 - The total number of jobs **STARTING** or **RUNNING**.
 - All jobs in a **RUNNING** state are listed.
- 6** Review the **Alarm** indicator/buttons of individual machines in the View Region.
 - If an alarm is present, **single-clicking** alarm buttons brings up the **Alarm Manager**.
 - Red indicates that an alarm has been generated.
 - Gray (default color) indicates normal operation.
- 7** Review machine connection status in the View Region.
 - Solid black line indicates AutoSys can communicate with the client machine Internet daemon.
 - Solid red line indicates AutoSys cannot communicate with the client machine Internet daemon; however, the daemon does respond to **ping** commands.
 - Dashed red line indicates AutoSys cannot communicate with the client machine; machine is probably turned off.

- 8 Start the exit from **HostScape** by executing the following menu path:
File → Exit
 - A **HostScape Exit** dialogue box is displayed.
- 9 **Single-click** on the appropriate button from the following selections:
 - **OK** - to exit from the **HostScape** GUI.
 - The **HostScape** GUI is dismissed.
 - **Cancel** - to return to the **HostScape** GUI.

Table 14.3-2. Review Hardware Status Using HostScape - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
2	HostScape button	single-click
3	Review Control Region to identify color code for machine status	observe
4	Review individual machine data in View Region	observe
5	File → Exit (when applicable)	single-click
6	OK button (when applicable)	single-click

14.3.2 Select Hardware Status View Options in HostScape

The View Options provide three methods to view the hardware status:

- The Normal view (default) displays three rows of machines with job activities.
- The Global view displays seven rows of machines but not job activities.
- The Zoom view displays one machine with great detail: Job name, description, status, and commands.

The Production Monitor may select the Global view to monitor the entire system and in the case of a malfunction, use the Zoom view to focus on the specific problem machine.

Table 14.3-3 presents (in a condensed format) the steps required to change the hardware status view in AutoXpert HostScape. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Select global view by executing the following menu path:
View → Select View Level → Global View
 - The **Global** view is displayed.

- No job information is displayed.
- 2 Select a machine by **single-clicking** on <machine name>.
 - 3 Execute the following menu path:
View → Zoom in Machine
 - The **Zoom** view is displayed.
 - A table of **Job Name, Description, Status, and Commands** is displayed.
 - 4 Observe individual machine data in the table.
 - 5 Select **Dismiss**.
 - The **Global** view is displayed.
 - 6 Display the **Normal** view of hardware status by executing the following menu path:
View → Select View Level → Normal view
 - The **Normal** view is displayed.
 - Limited job information is displayed.

Table 14.3-3. Select Hardware Status View Options in HostScape - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	View → Select View Level → Global View	single-click
2	<machine name>	single-click
3	View → Zoom in Machine	single-click
4	Review individual machine data in table	observe
5	Dismiss button	single-click
6	View → Select View Level → Normal View	single-click

14.4 Monitoring/Controlling Job Processing

There are three primary tools for monitoring and controlling job processing:

- AutoXpert **JobScape** GUI.
- AutoXpert **TimeScape** GUI.
- AutoSys **Job Activity Console** GUI (also known as also known as the **Ops Console** GUI).

JobScope presents a Pert-like graphical view of job processing from a logical (or job dependency) point of view. JobScope depicts both command jobs and box jobs. In addition, it depicts the nesting of jobs within boxes and the dependencies among jobs within a box.

JobScope can be used for monitoring and controlling job flow in real-time. It allows the Production Monitor to identify potential problems, try to prevent them from becoming actual problems, put problem jobs on hold in favor of letting good jobs run, restart jobs after correcting problems with them, etc.

AutoXpert TimeScope presents a Gantt-like graphical view of a job processing from a temporal (time-related) point of view. TimeScope depicts both command jobs and box jobs. It also depicts the nesting of jobs within boxes and the duration of time it will take for jobs to complete. TimeScope is used for monitoring job flow in real-time.

The AutoSys **Job Activity Console** GUI is a text-based interface for monitoring jobs that have been defined for AutoSys. It displays information on the job's start time (and date), end time (and date), run time, status, exit code (if completed), host, priority, and other attributes. It provides a means of evaluating job-starting conditions, which can be useful in determining what "upstream" job may be preventing the currently selected job from running. It provides summary and event reports that can be used in identifying problems with processing a particular job.

Guidelines for Reporting Unsuccessful Completion of On-Demand Jobs

- Under any of the following circumstances involving an on-demand job notify User Services of the problem in accordance with the applicable local policy:
 - Job is killed.
 - Job terminates and cannot be restarted.
 - A FAILPGE granule is created.
- The DAAC is obliged to send an e-mail message to the requester of an unsuccessful on-demand job to explain why the request cannot be fulfilled.

Guideline for Putting Jobs "On Ice" or "On Hold"

- Put jobs on "on hold" rather than "on ice" unless there is a compelling reason to put a job on ice.
- Ensure that the job to be put either "on hold" or "on ice" is not already in a "starting" or "running" state. (A job that is either "starting" or "running" cannot be put "on hold" or "on ice.")

Guidelines for Force-Starting Jobs

- Force-start command jobs (e.g., preprocessing or postprocessing) only; do not attempt to force-start a box job.
 - The software does not support box job force-starts. (Although it may work fine in some cases, it can cause the PDPS database to get out of sync and prevent the DPR (and possibly other DPRs) from running successfully.)

- If a box job were force-started, the allocation portion of the preprocessing job would run again. Allocation might choose a different science processor than was chosen the previous time the job ran. Using a different science processor could cause failure of the job.
- After each job (and often within each job) the state of the DPR is tracked in various tables in the database. Box job force-starts lack the code needed to check the state of the box and perform the cleanup activities necessary for starting over.
- Ensure that the GUI has refreshed and the job to be force-started is not already running before trying to force-start a job. (If a job is already running, it should not be force-started.)
 - If using AutoSys/AutoXpert 3.4.2 or a later version, it should not be possible to force-start jobs that are already running.
- If any command job other than execution fails, force-start the job that failed only. Do not force start any preceding or succeeding jobs in the box.
- If execution fails, it is not safe to restart it unless the post-processing job had been put on hold and the failure was detected before postprocessing started running.
- If execution fails and the failure was not detected before postprocessing started running, the DPR must run to completion as a failed PGE and the DPR must be deleted and recreated.

In any case the Production Monitor may implement certain changes of job status only when the Production Monitor “owns” the job affected by the modification.

Table 14.4-1 provides an Activity Checklist for activities related to Monitoring/Controlling Job Processing.

Table 14.4-1. Monitoring/Controlling Job Processing - Activity Checklist (1 of 2)

Order	Role	Task	Section	Complete?
1	Production Monitor	Monitor/Control Job Processing	(P) 14.4.1	
2	Production Monitor	Determine the Descendants of a Job	(P) 14.4.2	
3	Production Monitor	Change the JobScape View Using the Pull-Down Menu	(P) 14.4.3	
4	Production Monitor	Respond to Alarms	(P) 14.4.4	
5	Production Monitor	Configure Alarm Selection	(P) 14.4.5	
6	Production Monitor	Specify Job Selection Criteria	(P) 14.4.6	
7	Production Monitor	Determine the Ownership of an AutoSys Job	(P) 14.4.7	
8	Production Monitor	Send an Event to a Job	(P) 14.4.8	
9	Production Monitor	Send an Event to a Job from an AutoXpert GUI	(P) 14.4.8.1	
10	Production Monitor	Send an Event to a Job from the Job Activity Console	(P) 14.4.8.2	

Table 14.4-1. Monitoring/Controlling Job Processing - Activity Checklist (2 of 2)

Order	Role	Task	Section	Complete?
11	Production Monitor	Send an Event to a Job from the Send Event GUI	(P) 14.4.8.3	
12	Production Monitor	Cancel a Sent Event	(P) 14.4.9	
13	Production Monitor	Perform Job Management Client Functions	(P) 14.4.10	
14	Production Monitor	Review a Job Activity Report	(P) 14.4.11	
15	Production Monitor	Review a Job Dependency Report	(P) 14.4.12	
16	Production Monitor	Define a Monitor or Browser	(P) 14.4.13	
17	Production Monitor	Run a Monitor or Browser	(P) 14.4.14	
18	Production Monitor	Run a Monitor or Browser from the Monitor/Browser GUI	(P) 14.4.14.1	
19	Production Monitor	Run a Monitor or Browser from the Command Shell	(P) 14.4.14.2	

14.4.1 Monitor/Control Job Processing

Table 14.4-2 presents (in a condensed format) the steps required to review DPR dependencies in AutoXpert **JobScope**. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 To display the **JobScope** GUI **single-click** on the **JobScope** button on the **AutoSys GUI Control Panel**.
 - The **JobScope** GUI is displayed.
- 2 To display the **TimeScope** GUI **single-click** on the **TimeScope** button on the **AutoSys GUI Control Panel**.
 - The **TimeScope** GUI is displayed.
- 3 To display the **Job Activity Console** GUI click on the **Job Activity Console** button on the **AutoSys GUI Control Panel**.
 - The **Job Activity Console** GUI, also known as the **Ops Console** GUI, is displayed.
- 4 Configure AutoSys/AutoXpert runtime options for the **JobScope** and/or **TimeScope** GUI(s).
 - For detailed instructions refer to the **Configure AutoSys/AutoXpert Runtime Options** procedure (Section 14.2.3).

- 5 If necessary, select jobs to be displayed on the **JobScape** and/or **TimeScape** GUI(s).
 - For detailed instructions refer to the **Select Jobs to be Displayed on AutoSys/AutoXpert GUIs** procedure (Section 14.2.4).

- 6 If necessary, set the current job on the **JobScape** and/or **TimeScape** GUI(s).
 - For detailed instructions refer to the **Set the Current Job on AutoSys/AutoXpert GUIs** procedure (Section 14.2.5).

- 7 If necessary, generate a list of jobs to be displayed on the **Job Activity Console** GUI.
 - Job list based on the specified selection criteria is displayed in the **Job List** region of the **Job Activity Console**.
 - For detailed instructions refer to the **Specify Job Selection Criteria** procedure (Section 14.4.6).

- 8 Observe information displayed on the **JobScape** GUI, **TimeScape** GUI, and/or **Job Activity Console** GUI.
 - The **JobScape** GUI presents a Pert-like graphic view of job processing from a logical (or job dependency) point of view.
 - The **Control Region** (left side of display) of the **JobScape** GUI has the legend for symbols displayed in the **View Region** (right side of the display).
 - Arrows in the **View Region** of the **JobScape** GUI indicate the status of job dependencies [Dependency arrows indicate only that a job dependency exists for a job. They do not define time-related starting conditions, nor do they describe the type of job dependency; e.g., “success,” “started,” or “running.”]:
 - Solid arrow represents **True** (job dependencies have been met).
 - Dashed arrow represents **False** (job dependencies have **not** been met).
 - Colors in the **View Region** of the **JobScape** GUI indicate the status of jobs:
 - White indicates job status of **ACTIVATED**.
 - Green indicates job status of **STARTING** or **RUNNING**.
 - Light Blue indicates job status of **SUCCESS**.
 - Red indicates job status of **FAILURE** or **TERMINATED**.
 - Orange indicates job status of **RESTART**.
 - Yellow indicates job status of **QUE_WAIT**.
 - Dark Blue indicates job status of **ON_HOLD** or **ON_ICE** or **INACTIVE**.
 - Shapes in the **View Region** of the **JobScape** GUI indicate the types of jobs:
 - Rectangle depicts **Box Job**.
 - Ellipse depicts **Command Job**.
 - Hexagon depicts **File Watcher Job** (not displayed in ECS implementation of AutoXpert).
 - The **TimeScape** GUI presents a Gantt-like graphic view of a job processing from a temporal (time-related) point of view.

- The **Control Region** (left side of display) of the **TimeScope** GUI has the legend for symbols displayed in the **View Region** (right side of the display).
- Time is listed along the horizontal axis of the **View Region** (right side of the display) of the **TimeScope** GUI. (Current time is indicated in red and as a red dashed vertical line.)
- Jobs are listed along the vertical axis of the **View Region** of the **TimeScope** GUI.
- Bars in the **View Region** of the **TimeScope** GUI indicate projected and actual time involved in job processing:
 - Solid bar represents **Projected** completion time (average job completion time).
 - Striped bar represents **Actual** time taken.
- Colors in the **View Region** indicate the status of jobs:
 - White indicates job status of **ACTIVATED**.
 - Green indicates job status of **STARTING** or **RUNNING**.
 - Light Blue indicates job status of **SUCCESS**.
 - Red indicates job status of **FAILURE** or **TERMINATED**.
 - Orange indicates job status of **RESTART**.
 - Yellow indicates job status of **QUE_WAIT**.
 - Dark Blue indicates job status of **ON_HOLD** or **ON_ICE** or **INACTIVE**.
- The **Job Activity Console** GUI, also known as the **Ops Console** GUI, provides a text view of each individual job.
 - Jobs are listed in a table in the **Job List** region of the **Job Activity Console** GUI; i.e., **Job Name**, **Description**, **Status**, **Command**, and **Machine**.
 - Job details are displayed in the Currently Selected Job region of the Job Activity Console; i.e., **Currently Selected Job** (job name), **Machine Time** (current time or time at which the frame was frozen), **Description**, **Command**, **Start Time** (and date), **End Time** (and date), **Run Time**, **Status**, **Exit Code**, **Next Start**, **Machine**, **Queue Name**, **Priority**, **Num. of Tries**.
 - Overall **Starting Conditions** and all individual (atomic) starting conditions are displayed in the **Starting Conditions** region of the **Job Activity Console**; including all atomic conditions the identification of each **Atomic Condition** its **Current State**, and **T/F** status (whether the current state evaluates true or false).

NOTE:

The starting conditions can be useful in determining what “upstream” job may be preventing the currently selected job from running. An **Atomic Condition** is one of the most basic components of an overall starting condition. For example, if **SUCCESS(JOB_X)** and **SUCCESS(JOB_Y)** define the overall starting condition for a job, there are two atomic conditions, one of which is **SUCCESS(JOB_X)** and the other of which is **SUCCESS(JOB_Y)**. The **T/F** (true/false) flag indicates whether the corresponding atomic condition has been satisfied. **Single-clicking** on one of the **Atomic Conditions** causes the job associated with that condition to become the currently selected job, with its details displayed in the **Currently Selected Job** region of the display. By checking the atomic conditions, it is

possible to check the path of upstream dependencies to determine which job (if any) is preventing a particular job from running.

- Reports are displayed in the **Event Report** region of the **Job Activity Console**; i.e., the **Summary** report, which shows the result of the last execution of the job including **Job Name, Last Start, Last End, Status, Pri/Xit, Run**; and the **Event** report, which lists all events from the last execution of the job including **Status** [Event], **Time, Ntry** [number of tries], **EventState** [e.g., “Processed”], **ProcessTime, Machine**.
- **Single-clicking** anywhere on a job row in the **Job List** region of the **Job Activity Console** causes detailed information for that job to be displayed in the **Currently Selected Job** region of the display.
- **Single-clicking** on a type of report in the **Reports** list of the **Job Activity Console** causes the report to be displayed in the **Event Report** region. [The selected report is displayed. The color of the button corresponding to the selected report changes to yellow. For a better view of a report, it is possible to expand the size of the GUI by grabbing a corner of the GUI with the mouse cursor and resizing as desired.]
- The freeze-frame feature prevents the GUIs (**JobScape** GUI, **TimeScape** GUI, or **Job Activity Console** GUI) from being updated, which can disrupt the display.
 - The **Freeze Frame** toggle button is yellow when the freeze-frame feature is activated.
 - To change the state of the freeze-frame feature **single-click** on the **Freeze Frame** toggle button.
 - Deactivating the freeze-frame feature allows the display to be updated with new information.
- Horizontal and vertical scroll bars appear when necessary to allow viewing data that are not readily visible in GUI windows.
- AutoSys/AutoXpert GUIs have Alarm buttons that are red when there is an unacknowledged alarm in the alarm list.
 - To display and acknowledge alarms perform the **Respond to Alarms** procedure (Section 14.4.4).

9 If it becomes necessary to perform any of the following actions, go to the corresponding procedure:

- **Determine the Descendants of a Job** (Section 14.4.2) [to determine relationships among jobs].
- **Change the JobScape View Using the Pull-Down Menu** (Section 14.4.3) [to change the level of detail displayed for each job shown in the View Region of the **JobScape** GUI].
- **Respond to Alarms** (Section 14.4.4) [to display and acknowledge alarms involving failures of job processing or other errors in data processing].
- **Determine the Ownership of an AutoSys Job** (Section 14.4.7) [to determine which user ID has “edit” privileges and can make changes to the status of a job].

- **Send an Event to a Job from an AutoXpert GUI** (Section 14.4.8.1) [to modify a particular job using JobScape or TimeScape].
- **Send an Event to a Job from the Job Activity Console** (Section 14.4.8.2) [to modify a particular job using the **Job Activity Console**].
- **Send an Event to a Job from the Send Event GUI** (Section 14.4.8.3) [to modify a particular job using the **Send Event GUI**].
- **Cancel a Sent Event** (Section 14.4.9) [to cancel a sent event].
- **Perform Job Management Client Functions** (Section 14.4.10) [to perform certain actions using the Job Management Client user interface].
 - Create DPR Job.
 - Release DPR Job.
 - Cancel DPR Job.
 - Change DPR ID.
 - View Job Management DPR Queue.
 - Create Ground Event Job.
 - Cancel Ground Event Job.
 - Change Max Concurrent Jobs for PGE Limits Table.
 - Cancel Max/Min DPRs for Job Class.
 - Trigger Release of Unreleased Ready-to-Run DPRs.
- **Review a Job Activity Report** (Section 14.4.11) [to determine job states (e.g., running, completed, or in the AutoSys queue) using the AutoSys **autorep** command].
- **Review a Job Dependency Report** (Section 14.4.12) [to determine the current state of a job, its job dependencies, the dependencies and nested hierarchies (for boxes) as specified in the job definition, etc. using the AutoSys **job_depends** command].
- **Run Monitors/Browsers from the Monitor/Browser GUI** (Section 14.4.14.1) [to monitor (using the **Monitor/Browser GUI**) a limited set of AutoSys events or determine the eventual status of jobs run during the preceding shift or day (e.g., which jobs were successful, which jobs failed, and which jobs are still running)].
- **Run Monitors/Browsers Using UNIX Commands** (Section 14.4.14.2) [to monitor (using UNIX commands) a limited set of AutoSys events or determine the eventual status of jobs run during the preceding shift or day (e.g., which jobs were successful, which jobs failed, and which jobs are still running)].

NOTE: When all events for all jobs should be monitored, do *not* run a monitor. Instead, display the Event Processor log in real time (using the command **autosyslog -e**). Running a monitor adds another connection to the database and establishes an additional process that is continually polling the database. That has a significant impact on system performance.

10 Repeat Steps 4 through 9 as necessary to monitor/control jobs.

- 11 If it becomes necessary to exit from the **JobScape** GUI or **TimeScape** GUI, execute the following menu path:
File → **Exit**
- An exit dialogue box (i.e., **JobScape Exit** or **TimeScape Exit** dialogue box) is displayed.
- 12 If exiting from the **JobScape** GUI or **TimeScape** GUI, **single-click** on the appropriate button from the following selections:
- **OK** - to exit from the GUI.
 - The GUI is dismissed.
 - **Cancel** - to return to the applicable GUI.
- 13 If it becomes necessary to exit from the **Job Activity Console (Ops Console)** GUI, **single-click** on the **Exit** button.
- An **AutoSys JAC Exit** dialogue box is displayed to confirm the decision to quit the display.
- 14 If exiting from the **Job Activity Console (Ops Console)** GUI, **single-click** on the appropriate button from the following selections:
- **OK** - to exit from the **Job Activity Console (Ops Console)** GUI.
 - The **Job Activity Console (Ops Console)** GUI is dismissed.
 - **Cancel** - to return to the **Job Activity Console (Ops Console)** GUI.

Table 14.4-2. Monitor/Control Job Processing - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel	Use procedure in Section 14.2.2
2	JobScape button	single-click
3	TimeScape button	single-click
4	Job Activity Console button	single-click
5	Configure AutoSys/AutoXpert runtime options for the JobScape and/or TimeScape GUI(s)	Use procedure in Section 14.2.3
6	Select jobs to be displayed on the JobScape and/or TimeScape GUI(s) (as necessary)	Use procedure in Section 14.2.4
7	Set the current job on the JobScape and/or TimeScape GUI(s) (as necessary)	Use procedure in Section 14.2.5
8	Generate a list of jobs to be displayed on the Job Activity Console GUI (as necessary)	Use procedure in Section 14.4.6
9	Observe information displayed on the JobScape GUI, TimeScape GUI, and/or Job Activity Console GUI	observe
10	Perform the appropriate operational procedure as needed	Use applicable procedure(s) in Sections 14.4.2 through 14.4.14.2

Table 14.4-2. Monitor/Control Job Processing - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
11	Repeat Steps 5 through 10 as necessary	
12	File → Exit (to exit from the JobScape GUI or TimeScape GUI) (when applicable)	single-click
13	OK button (to exit from the JobScape GUI or TimeScape GUI) (when applicable)	single-click
14	Exit button (to exit from the Job Activity Console GUI) (when applicable)	single-click
15	OK button (to exit from the Job Activity Console GUI) (when applicable)	single-click

14.4.2 Determine the Descendants of a Job

This section explains how to determine the descendants of a job on either the AutoXpert **JobScape** GUI or the AutoXpert **TimeScape** GUI. The procedure starts with the assumption that AutoSys has been launched and at least one of the appropriate GUIs (i.e., **JobScape** or **TimeScape**) is being displayed.

Table 14.4-3 presents (in a condensed format) the steps required to determine the descendants of a job on either the **JobScape** GUI or **TimeScape** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Select a job by placing the **cursor** on a job and pressing the **left** mouse button.
 - Border around selected job changes to **yellow**.
 - Job name appears in **Current Job Name** area of the Control Region.

- 2 Review options by placing the **cursor** on a job and pressing the **right** mouse button.
 - Pop-up menu appears with the options **<job name>**, **Show Children** [grayed out if not applicable], **Show All Descendants** [grayed out if not applicable], **Hide All Descendants** [grayed out if not applicable], **Show Job Arrows** [**JobScape** only], **Hide Job Arrows** [**JobScape** only], **Show Box Arrows** [**JobScape** only], **Hide Box Arrows** [**JobScape** only], **Job Definition**, **View Dependencies**, **Set Simulation**, **Overrides** [grayed out], **Start Job**, **Kill Job**, **Force Start Job**, **On Hold**, **Off Hold**, **On Ice**, **Off Ice**.

- 3 If applicable, select **Show Children** on the pop-up menu (release the right mouse button).
 - Job's first level Command and Box Jobs appear.
 - Repeat Steps 1 and 2 to change job selection.

- 4 If applicable, select **Show All Descendants** on the pop-up menu.
 - Job's Command and Box Jobs appear for all levels.
- 5 If applicable, select **Hide All Descendants** on the pop-up menu.
 - Default view is displayed.
 - All descendants are hidden.

Table 14.4-3. Determine the Descendants of a Job - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	<job name>	single-click
2	<job name> → Show Children (as applicable)	right-click
3	Review the job status in View Region (as applicable)	observe
4	<job name> → Show All Descendants (as applicable)	right-click
5	Review the job status in View Region (as applicable)	observe
6	<job name> → Hide All Descendants (as applicable)	right-click
7	Review the job status in View Region (as applicable)	observe

14.4.3 Change the JobScope View Using the Pull-Down Menu

This section explains how to change the view on the AutoXpert **JobScope** GUI. Changing the view affects the level of detail displayed for each job shown in the **View Region** of the GUI. The procedure starts with the assumption that **JobScope** is currently being displayed.

As previously mentioned the view can be changed in some ways by simply clicking with the **right** mouse button on the name of a job displayed on an AutoXpert GUI and selecting the desired option from the pop-up menu. The following options related to changing the view and display levels are displayed on the menu:

- Show Children.
- Show All Descendants.
- Hide All Descendants.
- Show Job Arrows.
- Hide Job Arrows.
- Show Box Arrows.
- Hide Box Arrows.

Another method for changing the view on the **JobScape** GUI involves using the **View** pull-down menu. Many of the same choices plus some additional options can be selected using the pull-down menu.

Table 14.4-4 presents (in a condensed format) the steps required to change the **JobScape** View using the pull-down menu. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

1 To start selecting a new view execute the following menu path:

View → Set View

- The following menu options are displayed: **Normal Text View**, **Small Text View**, **No Text View**, **Show Arrows**, **Hide Arrows**, **View by Id**, **View by Name** [grayed out].

2 **Single-click** to select the desired option from the pull-down menu.

- **Normal Text View** is the default view.
- **Small Text View** is similar to **Normal Text View** but the text and graphics are smaller.
- No text is displayed in the **No Text View**, which provides a global or big-picture view of the jobs currently in processing without specifically identifying them by name.
- **Show Arrows** displays the lines/arrows between jobs.
 - Is characteristic of the default view.
- **Hide Arrows** removes the lines/arrows between jobs from the display.
- **View by Id** changes the display to provide a sequential reference number for each job rather than showing the job name.
- **View by Name** changes the display to show job names rather than reference numbers.
 - Is characteristic of the default view.
 - Is accessible only when the current display is by **Id** number.

3 To start selecting a new display level execute the following menu path:

View → Set Display Levels

- The following menu options are displayed: **1**, **2**, **3**, **4**, **5**, and **All**.

4 **Single-click** to select the desired option from the pull-down menu.

- **All** is the default type of view.
- Selecting **1** provides a display of the box level only.
 - Just the box header is shown.
 - No command jobs are shown.

- If any other selection (i.e., **2**, **3**, **4**, **5**, or **All**) is made (in the ECS implementation), the boxes and command jobs with the boxes are displayed.

Table 14.4-4. Change the JobScape View Using the Pull-Down Menu - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	View → Set View	single-click
2	<view> (from menu)	single-click
3	View → Set Display Levels	single-click
4	<display level> (from menu)	single-click

14.4.4 Respond to Alarms

The process of responding to alarms begins with the Production Monitor starting the AutoSys **Alarm Manager**. The **Alarm Manager** allows the Production Monitor to view alarms as they arrive, provide a response, and change the alarm status. The Alarm Manager is also configurable for the types of alarms that are displayed.

The procedure for responding to alarms starts with the assumption that at least one of the following GUIs is currently being displayed:

- **JobScape** GUI.
- **TimeScape** GUI.
- **HostScape** GUI.
- **Job Activity Console** GUI.

Table 14.4-5 presents (in a condensed format) the steps required to respond to alarms. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 **Single-click** on the **Alarm** button.
 - The **Alarm Manager** GUI page is presented.
 - Alarms are displayed in reverse order of occurrence; the most recent alarm appears at the top of the list.
- 2 Configure alarm selection.
 - For detailed instructions refer to the **Configure Alarm Selection** procedure (Section 14.4.5).
- 3 If desired, verify that the freeze-frame feature of the **Alarm Manager** GUI is activated (**single-click** on the **Freeze Frame** button if necessary).
 - The freeze-frame feature prevents the **Alarm Manager** from being updated, disrupting the display.

- 4 **Single-click** on an alarm in the **Alarm List**.
 - Information for **Alarm Type, Job Name, Time, State, Comment** is displayed.
 - Alarm is displayed in detail in the **Currently Selected Alarm** region of the display.
 - Refer to the *AutoSys® Reference Guide for UNIX* for descriptions of AutoSys alarms.
 - The *AutoSys® Reference Guide for UNIX*, the *AutoSys® User Guide for UNIX*, and the *AutoSys®/Xpert User Guide for UNIX* can be downloaded from the following web site:
<http://support.ca.com/autosysmanuals/atsys.html>.

- 5 If a response is to be documented, **single-click** in the **Response** edit box.

- 6 If a response is to be documented, enter:
 <text>
 - Response is entered.

- 7 Update **Alarm State** by **single-clicking** on the proper radio button.
 - Options are: **Open, Acknowledged, Closed**.
 - Alarm State is updated.

- 8 **Single-click** on the appropriate button from the following selections:
 - **OK** - to enter all alarm responses and dismiss the **Alarm Manager** GUI.
 - **Alarm Manager** GUI is dismissed.
 - **Apply** - to enter all alarm responses without dismissing the **Alarm Manager** GUI.
 - Repeat Steps 4 through 8 as necessary to review and update additional alarms.
 - **Cancel** - to dismiss the **Alarm Manager** GUI without entering any alarm responses.
 - **Alarm Manager** GUI is dismissed.

NOTE: Information concerning a job for which there is/was an alarm can be reviewed by performing the **Monitor/Control Job Processing** procedure (Section 14.4.1).

Table 14.4-5. Respond to Alarms - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Alarm button (from JobScape, TimeScape, HostScape , or the Job Activity Console)	single-click
2	Configure alarm selection	Use procedure in Section 14.4.5
3	Freeze Frame button (if desired)	single-click
4	<alarm> (from the Alarm List)	single-click
5	<text> (Response edit box) (if desired)	enter text

Table 14.4-5. Respond to Alarms - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
6	Open , Acknowledged , or Closed button (if applicable)	single-click
7	OK button or Apply button (as applicable)	single-click
8	Repeat steps as necessary to review/update additional alarms	

14.4.5 Configure Alarm Selection

By configuring the AutoSys **Alarm Manager** the Production Monitor can control which alarms are displayed. Alarms can be selected by type, state, or time. The procedure for configuring the Alarm Manager starts with the assumption that the **Alarm Manager** is currently running.

Table 14.4-6 presents (in a condensed format) the steps required to configure alarm selection for the AutoSys **Alarm Manager**. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Execute the following menu path from the **Alarm Manager**:
View → Select Alarms...
 - **Alarm Selection** GUI is displayed.
 - Alarm Selection defaults are...
 - **All Types** for **Select by Type**
 - **Open** and **Acknowledged** for **Select by State**
 - **All Times** for **Select by Time**
 - If the default settings are the desired settings, proceed to Step 12.

- 2 If all types of alarms are to be displayed on the **Alarm Manager** GUI, verify that the **All Types** toggle button is selected in the **Select by Type** area.
 - **Single-click** on the **All Types** button to change state from unselected to selected or vice versa.
 - When the **All Types** option is selected, the **All Types** button color is yellow.
 - Proceed to Step 4.

- 3 If selecting a particular type of alarm or set of alarm types, **single-click** on the name(s) of the desired alarm(s) in the **Select by Type** list.
 - To select multiple types of alarms **press and hold** either the **Ctrl** key or the **Shift** key while **single-clicking** individual alarms in the **Alarm List**.

- Alternatively, to select multiple types of alarms **press** and **hold** either the **Ctrl** key or the **Shift** key, then **single-click** on the first type of alarm and drag the cursor to the last type of alarm to be selected and release the mouse button.
 - Selected alarm(s) is (are) highlighted.
 - Refer to the *AutoSys® Reference Guide for UNIX* for descriptions of AutoSys alarms.
 - The *AutoSys® Reference Guide for UNIX*, the *AutoSys® User Guide for UNIX*, and the *AutoSys®/Xpert User Guide for UNIX* can be downloaded from the following web site:
<http://support.ca.com/autosysmanuals/atsys.html>.
- 4** If all alarm states are to be displayed on the **Alarm Manager** GUI, verify that the **All States** toggle button is selected in the **Select by State** area.
- **Single-click** on the **All States** button to change state from unselected to selected or vice versa.
 - When the **All States** option is selected, the **All States** button color is yellow.
 - Proceed to Step 6.
- 5** If selecting a particular alarm state or set of alarm states to be displayed on the **Alarm Manager** GUI, **single-click** on the name(s) of the desired alarm state(s) in the **Select by State** list.
- Options are **Open**, **Acknowledged**, or **Closed**.
 - Any or all buttons can be selected.
 - Button turns yellow when selected.
- 6** If alarms at all times are to be displayed on the **Alarm Manager** GUI, verify that the **All Times** toggle button is selected in the **Select by Time** area.
- **Single-click** on the **All Times** button to change state from unselected to selected or vice versa.
 - When the **All Times** option is selected, the **All Times** button color is yellow.
 - Proceed to Step 12.
- 7** If selecting a particular date/time range for alarms to be displayed on the **Alarm Manager** GUI, first verify that the **All Times** toggle button is **unselected**.
- **Single-click** on the **All Times** button to change state from unselected to selected or vice versa.
- 8** If selecting a particular date/time range for alarms to be displayed on the **Alarm Manager** GUI, in the **From Date** field enter:
- <MM/DD/YYYY>
- Press **Tab** to advance to the next field.

- 9 If selecting a particular date/time range for alarms to be displayed on the **Alarm Manager** GUI, in the **From Time** field enter:
<hh:mm>
- Press **Tab** to advance to the next field.
- 10 If selecting a particular date/time range for alarms to be displayed on the **Alarm Manager** GUI, in the **To Date field** enter:
<MM/DD/YYYY>
- Press **Tab** to advance to the next field.
- 11 If selecting a particular date/time range for alarms to be displayed on the **Alarm Manager** GUI, in the **To Time** field enter:
<hh:mm>
- 12 **Single-click** on the appropriate button from the following selections:
- **OK** - to accept all specified alarm selections and dismiss the **Alarm Selection** GUI.
 - **Alarm Manager** GUI is displayed.
 - **Apply** - to accept all specified alarm selections without dismissing the **Alarm Selection** GUI.
 - Repeat Steps 2 through 12 as necessary to specify additional alarm selection criteria.
 - **Cancel** - to dismiss the **Alarm Selection** GUI without accepting any alarm selections.
 - **Alarm Manager** GUI is displayed.
- 13 If an audible signal is desired for alarm notification, execute the following menu path from the **Alarm Manager** GUI:
Options → **Sound On**
- **Sound On** Toggle button appears yellow when sound function has been activated.

Table 14.4-6. Configure Alarm Selection - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	View → Select Alarms.... (from the Alarm Manager)	single-click
2	<alarm type(s)> (from Select by Type list)	single-click
3	<alarm state(s)> (Select by State list)	single-click
4	All Times button (if desired)	single-click
5	<MM/DD/YYYY> (From Date field) (if applicable)	enter text, press Tab
6	<hh:mm> (From Time field) if applicable)	enter text, press Tab
7	<MM/DD/YYYY> (To Date field) (if applicable)	enter text, press Tab

Table 14.4-6. Configure Alarm Selection - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
8	<hh:mm> (To Time field) (if applicable)	enter text, press Tab
9	OK button	single-click
10	Options → Sound On (Alarm Manager GUI) (if desired)	single-click

14.4.6 Specify Job Selection Criteria

The Production Monitor reviews job activities using the AutoSys **Job Activity Console**. The AutoSys **Job Selection** GUI is used for specifying (filtering) the jobs to be reviewed, including setting the criteria for displaying jobs by name, status and/or machine.

The procedure for specifying job selection criteria starts with the assumption that the **Job Activity Console (Ops Console)** GUI is being displayed.

Table 14.4-7 presents (in a condensed format) the steps required to filter (select) jobs to be displayed on the **Job Activity Console (Ops Console)** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Execute the following menu path from the **Job Activity Console (Ops Console)** GUI:
View → Select Jobs
 - The **Job Selection** view is displayed.
 - Job selection has the following default settings:
 - **All Jobs (Job Name)** for **Select by Name**.
 - **All Statuses** for **Select by Status**.
 - **All Machines** for **Select by Machine**.
 - **Unsorted** for **Sort Order**.
 - If the default settings are the desired settings, proceed to Step 10.

- 2 If all jobs are to be displayed on the **Job Activity Console (Ops Console)**, verify that the **All Jobs** toggle button is selected.
 - **Single-click** on the **All Jobs** button to change state from unselected to selected or vice versa.
 - When the **All Jobs** option is selected, the **All Jobs** button color is yellow.
 - Proceed to Step 6.

- 3 If selecting a particular job by job name, in the **Job Name** field enter:
<job name>

- When typing in either the **Job Name** field or the **Box Name** field, the corresponding toggle button is automatically turned on. (You do not have to click on the button, just start typing in the desired field.)
 - The asterisk (*) wildcard character can be used for entering a partial job or box name (e.g., *AST*).
 - Proceed to Step 6.
- 4** If selecting a particular box job by name, in the **Box Name** field enter:
<box name>
- 5** If selecting a particular box job by name, in the **Box Levels** field enter:
<number of box levels>
- Options include any valid positive integer or the word “all.”
 - “0” - indicates that only the top-level box specified in the **Box Name** field is to be displayed.
 - “1” - indicates that the specified top-level box and all direct descendant boxes and enclosed jobs are to be displayed.
 - “all” - indicates that all jobs in the box are to be displayed.
- 6** If jobs are to be displayed on the basis of their status, **single-click** on the appropriate button(s) to select the desired status(es) in the **Select by Status** list.
- Options are **All Statuses, Starting, Running, Success, Failure, Terminated, Restart, Que Wait, Activated, Inactive, On Hold, On Ice.**
 - Any or all buttons can be selected.
 - Button turns yellow when selected.
- 7** If jobs are to be displayed regardless of the machine on which they are running, verify that the **All Machines** toggle button is selected.
- **Single-click** on the **All Machines** button to change state from unselected to selected or vice versa.
 - When the **All Machines** option is selected, the **All Machines** button color is yellow.
 - Proceed to Step 9.
- 8** If jobs are to be displayed on the basis of the machine on which they are running, **single-click** on the name(s) of the desired machine(s) in the **Select by Machine** list.
- To select multiple machines **press and hold** either the **Ctrl** key or the **Shift** key while **single-clicking** on individual machines in the **Select by Machine** list.
 - Alternatively, to select multiple machines **press and hold** either the **Ctrl** key or the **Shift** key then **single-click** on the first machine and drag the cursor to the name of the last machine to be selected and release the mouse button.

- Selected machine(s) is (are) highlighted.

9 Single-click on the desired **Sort Order**.

- Options are **Start Time, End Time, Job Name, Job Status, Machine Name, and Unsorted**.

10 Single-click on the appropriate button from the following selections:

- **OK** - to accept all specified job selection criteria and dismiss the **Job Selection GUI**.
 - **Job Activity Console (Ops Console)** is displayed.
- **Apply** - to accept all specified job selection criteria without dismissing the **Job Selection GUI**.
 - Repeat Steps 2 through 10 as necessary to specify additional job selection criteria.
- **Cancel** - to dismiss the **Job Selection GUI** without accepting any job selection criteria.
 - **Job Activity Console (Ops Console)** is displayed.

Table 14.4-7. Specify Job Selection Criteria - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	View → Select Jobs	single-click
2	All Jobs toggle button (selected or unselected as applicable)	single-click
3	<job name> (if applicable)	enter text
4	<box name> (if applicable)	enter text
5	<number of box levels> (if applicable)	enter text
6	Select by Status toggle button(s) (if applicable)	single-click
7	All Machines toggle button (selected or unselected as applicable)	single-click
8	<machine name(s)> (from Select by Machine list) (if applicable)	single-click
9	<sort order> toggle button (as applicable)	single-click
10	OK button	single-click

14.4.7 Determine the Ownership of an AutoSys Job

AutoSys is very much ownership-aware. Only the “owner” of a job has “edit” privileges and can make changes to the status of an owned job.

AutoSys recognizes ownership in terms of two factors:

- User ID.
- Machine where the operator (user) logged in.

For example, cmshared@g0sps06 identifies the operator who logged in as “cmshared” at machine g0sps06. Any operator who logs in as “cmshared” at another machine (e.g., g0pls01) would not be able to change the status of a job “owned” by cmshared@g0sps06. Consequently, to have any real effect on a job first it is necessary to log in as the job’s owner and launch the AutoSys GUIs as that owner.

The procedure to determine the ownership of an AutoSys job starts with the assumption that AutoSys has been launched and at least one of the appropriate GUIs (i.e., **JobScape** or **TimeScape**) is being displayed.

Table 14.4-8 presents (in a condensed format) the steps required to determine the ownership of a job. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Place the mouse cursor on the relevant job (on **JobScape** or **TimeScape**) and **single-click** and **hold** the **right** mouse button.
 - Pop-up menu appears with the options <job name>, **Show Children** [grayed out if not applicable], **Show All Descendants** [grayed out if not applicable], **Hide All Descendants** [grayed out if not applicable], **Show Job Arrows** [**JobScape** only], **Hide Job Arrows** [**JobScape** only], **Show Box Arrows** [**JobScape** only], **Hide Box Arrows** [**JobScape** only], **Job Definition**, **View Dependencies**, **Set Simulation**, **Overrides** [grayed out], **Start Job**, **Kill Job**, **Force Start Job**, **On Hold**, **Off Hold**, **On Ice**, **Off Ice**.
- 2 Select **Job Definition** from the pop-up menu (release the right mouse button).
 - The **Job Definition** GUI is displayed.
 - If the current UserID does not "own" (have edit permissions on) the job, a **Job Security MESSAGE** window is displayed.
- 3 If a **Job Security MESSAGE** window is displayed, **single-click** on the **Ok** button.
 - The **Job Security MESSAGE** window is dismissed.
- 4 Review the entry in the **Owner** field of the **Job Definition** GUI.
 - Job owner is identified in the **Owner** field of the **Job Definition** GUI.
 - Job name is listed in the **Job Name** field of the **Job Definition** GUI.

NOTE: Jobs should **not** be deleted using the AutoSys **Job Definition** GUI because it does not communicate with the PDPS database.

- 5 To exit from the **Job Definition** GUI, **single-click** on the **Exit** button.

Table 14.4-8. Determine the Ownership of an AutoSys Job - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	<job name> → Job Definition	right-click
2	Ok button (in Job Security MESSAGE window) (if applicable)	single-click
3	Review the job owner information in the Owner field	read text
4	Exit button (when applicable)	single-click

14.4.8 Send an Event to a Job

As previously mentioned there are three methods for making certain types of modifications (e.g., start or kill) to a particular job:

- Menu accessed by clicking the **right** mouse button on the relevant job name on either the **JobScape** or **TimeScape** GUI.
- Buttons in the **Actions** region of the **Job Activity Console (Ops Console)**.
- AutoSys **Send Event** GUI.

14.4.8.1 Send an Event to a Job from an AutoXpert GUI

The procedure to send an event to a job from an AutoXpert GUI starts with the assumption that AutoSys has been launched and at least one of the appropriate GUIs (i.e., **JobScape** or **TimeScape**) is being displayed.

Table 14.4-9 presents (in a condensed format) the steps required to send an event to a job from an AutoXpert GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 **Single-click** on either the **JobScape** button or the **TimeScape** button (as desired) on the **AutoSys GUI Control Panel**.
 - The selected GUI (i.e., **JobScape** or **TimeScape**) is displayed.
- 2 Place the mouse cursor on the relevant job and **single-click** and **hold** the **right** mouse button.
 - Pop-up menu appears with the options <job name>, **Show Children** [grayed out if not applicable], **Show All Descendants** [grayed out if not applicable], **Hide All Descendants** [grayed out if not applicable], **Show Job Arrows** [**JobScape** only], **Hide Job Arrows** [**JobScape** only], **Show Box Arrows** [**JobScape** only], **Hide Box Arrows** [**JobScape** only], **Job Definition**, **View Dependencies**, **Set Simulation Overrides** [grayed out], **Start Job**, **Kill Job**, **Force Start Job**, **On Hold**, **Off Hold**, **On Ice**, **Off Ice**.

- 3 Select the event (e.g., **Force Start Job, On Hold**) to be sent to the job from the pop-up menu (release the right mouse button).
 - A confirmation dialogue box is displayed.

- 4 **Single-click** on the appropriate button from the following selections:
 - **Yes** - to send the event to the job.
 - The confirmation dialogue box is dismissed.
 - The specified action is taken.
 - **No** – to dismiss the confirmation dialogue box without sending the event to the job.

Table 14.4-9. Send an Event to a Job from an AutoXpert GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	<job name> → <event>	right-click
2	Yes button	single-click

14.4.8.2 Send an Event to a Job from the Job Activity Console

The procedure to send an event to a job from the **Job Activity Console (Ops Console)** starts with the assumption that AutoSys has been launched and the **Job Activity Console (Ops Console)** is being displayed.

Table 14.4-10 presents (in a condensed format) the steps required to send an event to a job from the **Job Activity Console (Ops Console)**. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Specify job selection criteria for the AutoSys **Job Activity Console**.
 - For detailed instructions refer to the **Specify Job Selection Criteria** procedure (Section 14.4.6).

- 2 Verify that the job with the status to be modified is listed in the **Currently Selected Job** field of the **Job Activity Console (Ops Console)**.
 - **Single-click** on the job row in the **Job List** region of the **Job Activity Console** if necessary.
 - Information concerning the selected job is displayed in the **Currently Selected Job** region of the **Job Activity Console**.

- 3 **Single-click** on the button corresponding to the desired action to be taken with respect to the selected job (if there is a corresponding button in the **Actions** region of the **Job Activity Console**).
 - Options are **Start Job**, **Kill Job**, **Force Start Job**, [Put Job] **On Hold**, [Take Job] **Off Hold**, [Display] **Jobs Completed** [Report], [Display] **Jobs Waiting** [Report].
 - A confirmation dialogue box is displayed.

- 4 **Single-click** on the appropriate button from the following selections:
 - **Yes** - to send the event to the job.
 - The confirmation dialogue box is dismissed.
 - The specified action is taken.
 - **No** – to dismiss the confirmation dialogue box without sending the event to the job.

Table 14.4-10. Send an Event to a Job from the Job Activity Console – Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Specify job selection criteria for the Job Activity Console	Use procedure in Section 14.4.6
2	Review jobs in the Job List region	observe
3	<job name> (from Job List region)	single-click
4	<event> button (i.e., Start Job , Kill Job , Force Start Job , On Hold , or Off Hold) (as applicable)	single-click
5	Yes button	single-click

14.4.8.3 Send an Event to a Job from the Send Event GUI

The procedure to send an event to a job from the **Send Event** GUI starts with the assumption that AutoSys has been launched and the **Job Activity Console (Ops Console)** is being displayed.

Table 14.4-11 presents (in a condensed format) the steps required to send an event to a job from the **Send Event** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Specify job selection criteria for the AutoSys **Job Activity Console**.
 - For detailed instructions refer to the **Specify Job Selection Criteria** procedure (Section 14.4.6).

- 2 In the **Job List** region of the **Job Activity Console** **single-click** on the job row corresponding to the job with the status to be modified.
 - Information concerning the selected job is displayed in the **Currently Selected Job** region of the **Job Activity Console**.

- 3 **Single-click** on the **Send Event** button in the **Actions** Region of the **Job Activity Console**.
 - **Send Event** GUI is displayed.
 - **Send Event** defaults are:
 - **Start Job** for **Event Type**.
 - **Now** for **Time**.
 - **Normal** for **Send Priority**.
 - If the default settings are the desired settings, proceed to Step 18.

- 4 Verify that the correct job is listed in the **Job Name** field of the **Send Event** GUI.
 - If not, **single-click** on the **Cancel** button and select the correct job (return to Step 2).

- 5 **Single-click** on the **Event Type** to be sent to the job in AutoSys.
 - Options are **Start Job, Job On Hold, Job Off Hold, Comment, Stop Demon, Force Start Job, Job On Ice, Job Off Ice, Kill Job, Change Status, Change Priority, Set Global,** and **Set Signal**.
 - Remember that a job with status of either “starting” or “running” cannot be put “on hold” or “on ice.”
 - Note that the GUI has an option to **Cancel Previously Sent Event**.

- 6 To select a future time for sending the event to the job **single-click** on the **Future** button.
 - If **Now** (the default value) is desired, proceed to Step 10.
 - Current date and time are default values.

- 7 In the **Date** field enter:
<MM/DD/YYYY>

- 8 In the **Time** field enter:
<hh:mm>

- 9 **Single-click** on either the **A.M.** or **P.M.** button as applicable.

- 10 If **Comment** was selected as the **Event Type**, in the **Comment** field enter:
<comment>
 - **Comment** is a free-form field for entering text to be sent to the specified job.

- 11 Verify the entry in the **AUTOSERV Instance** field.
- If incorrect enter:
<**AUTOSERV Instance**>
 - **AUTOSERV Instance** field specifies the instance of AutoSys to which the event will be sent. (You can send events to instances of AutoSys other than the one you are running.)
 - The current AutoSys instance should be displayed by default in the **AUTOSERV Instance** field.
- 12 If **Set Global** was selected as the **Event Type**, in the **Global Name** field enter:
<**Global Name**>
- The **Global Name** and **Global Value** fields are accessible only if **Set Global** was selected in the **Event Type** region.
 - The name in the **Global Name** field identifies a variable that is made available to all jobs in AutoSys; consequently, it is a “global” variable.
- 13 If **Set Global** was selected as the **Event Type**, in the **Global Value** field enter:
<**Global Value**>
- 14 If either **Send Signal** or **Kill Job** was selected as the **Event Type**, in the **Signal** field enter:
<**number of UNIX signal**>
- The **Signal** field is accessible only if **Send Signal** or **Kill Job** was selected in the **Event Type** region.
 - Numbers corresponding to UNIX signals are shown in Table 14.4-12.
- 15 If **Change Status** was selected as the **Event Type**, **single-click** on the **Status** option menu button and select the desired status.
- Options are: **Running, Success, Failure, Terminated, Starting, and Inactive.**
 - **Status** can be changed only if **Change Status** was selected in the **Event Type** region.
- 16 If **Change Priority** was selected as the **Event Type**, in the **Queue Priority** field enter:
<**Queue Priority**>
- 17 If sending the event to the job is due to an emergency condition, **single-click** on the **High** button in the **Send Priority** area.
- **Send Priority** refers to the priority for sending the selected event to the job (not the job priority).
 - Options are **Normal** and **High.**

- **High** priority is reserved for emergencies.

18 Single-click on the **Execute** button.

- A confirmation dialogue box is displayed.

19 Single-click on the appropriate button from the following selections:

- **Yes** - to send the event to the job.
 - The confirmation dialogue box and the **Send Event** GUI are dismissed.
 - The selected event is sent to the specified job.
 - Once an event has been sent from the **Send Event** dialogue, it may not be possible to cancel or modify it.
- **No** – to dismiss the confirmation dialogue box and return to the **Send Event** GUI without sending the event to the job.

Table 14.4-11. Send an Event to a Job from the Send Event GUI – Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Specify job selection criteria for the Job Activity Console	Use procedure in Section 14.4.6
2	Review jobs in the Job List region	observe
3	<job name> (from Job List region)	single-click
4	Send Event button	single-click
5	<event type> button	single-click
6	Verify <job name> (Job Name field)	enter text if necessary
7	Either Now or Future button	single-click
8	<date> (if applicable)	enter text if applicable
9	<time> (if applicable)	enter text if applicable
10	Either A.M. or P.M. button (if applicable)	enter text if applicable
11	<comment> (in Comment field) (if applicable)	enter text
12	<AUTOSERV Instance> (in AUTOSERV Instance field) (if applicable)	enter text
13	<global name> (in Global Name field) (if applicable)	enter text
14	<global value> (in Global Value field) (if applicable)	enter text
15	<number of UNIX signal> (in Signal field) (if applicable)	enter text
16	<status> (from Status option button) (if applicable)	single-click
17	<queue priority> (in Queue Priority field) (if applicable)	enter number
18	Either Normal or High (Send Priority) button (if applicable)	single-click

Table 14.4-11. Send an Event to a Job from the Send Event GUI – Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
19	Execute button	single-click
20	yes button	single-click

Table 14.4-12. UNIX Signals (1 of 2)

NAME	VALUE	DEFAULT	EVENT
HUP	1	Exit	Hangup.
INT	2	Exit	Interrupt.
QUIT	3	Core	Quit.
ILL	4	Core	Illegal Instruction.
TRAP	5	Core	Trace/Breakpoint Trap.
ABRT	6	Core	Abort.
EMT	7	Core	Emulation Trap.
FPE	8	Core	Arithmetic Exception.
KILL	9	Exit	Killed.
BUS	10	Core	Bus Error.
SEGV	11	Core	Segmentation Fault.
SYS	12	Core	Bad System Call.
PIPE	13	Exit	Broken Pipe.
ALRM	14	Exit	Alarm Clock.
TERM	15	Exit	Terminated.
USR1	16	Exit	User Signal 1.
USR2	17	Exit	User Signal 2.
CHLD	18	Ignore	Child Status Changed.
PWR	19	Ignore	Power Fail/Restart.
WINCH	20	Ignore	Window Size Change.
URG	21	Ignore	Urgent Socket Condition.
POLL	22	Exit	Pollable Event.
STOP	23	Stop	Stopped (signal).
TSTP	24	Stop	Stopped (user).
CONT	25	Ignore	Continued.
TTIN	26	Stop	Stopped (tty input).
TTOU	27	Stop	Stopped (tty output).
VTALRM	28	Exit	Virtual Timer Expired
PROF	29	Exit	Profiling Timer Expired.
XCPU	30	Core	CPU time limit exceeded.
XFSZ	31	Core	File size limit exceeded.
WAITING	32	Ignore	Concurrency signal reserved by threads library.

Table 14.4-12. UNIX Signals (2 of 2)

NAME	VALUE	DEFAULT	EVENT
LWP	33	Ignore	Inter-LWP signal reserved by threads library.
FREEZE	34	Ignore	Check point Freeze.
THAW	35	Ignore	Check point Thaw.
CANCEL	36	Ignore	Cancellation signal reserved by threads library.
RTMIN	*	Exit	First real time signal
(RTMIN+1)	*	Exit	Second real time signal
(RTMAX-1)	*	Exit	Second-to-last real time signal.
RTMAX	*	Exit	Last real time signal

*The symbols RTMIN through RTMAX are evaluated dynamically in order to permit future configurability.

14.4.9 Cancel a Sent Event

Table 14.4-13 presents (in a condensed format) the steps required to cancel an event that was previously scheduled for *sometime in the future*. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 **Single-click** on the **Send Event** button in the **Actions** Region of the **Job Activity Console**.
 - **Send Event** GUI is displayed.
- 2 **Single-click** on the **Event Type** that was sent to the job and is to be cancelled.
 - Options are **Start Job**, **Job On Hold**, **Job Off Hold**, **Comment**, **Stop Demon**, **Force Start Job**, **Job On Ice**, **Job Off Ice**, **Kill Job**, **Change Status**, **Change Priority**, **Set Global**, and **Set Signal**.
- 3 **Single-click** on the **Cancel Previously Sent Event** radio button.
- 4 **Verify Job Name**.
 - **<Job Name>** appears in the **Job Name** field.
 - Enter the proper **<Job Name>** if incorrect.
- 5 **Single-click** on the **Execute** button.
 - A confirmation dialogue box is displayed requesting permission to proceed with canceling the event.
- 6 Click on the appropriate button from the following selections:
 - **yes** - to send the request to cancel the event.

- The confirmation dialogue box and the **Send Event** GUI are dismissed.
- The event is cancelled.
- **no** - to dismiss the dialogue box and return to the **Send Event** GUI without sending the request to cancel the event.

Table 14.4-13. Cancel a Sent Event - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Send Event button	single-click
2	<event type> button	single-click
3	Cancel Previously Sent Event button	single-click
4	Verify <job name> (Job Name field)	enter text if necessary
5	Execute button	single-click
6	yes button	single-click

14.4.10 Perform Job Management Client Functions

The Job Management Client tool is a set of utility programs intended primarily for use by software developers. However, if necessary, it is possible to gain access to the following Job Management Client functions from AutoSys by clicking on the **Client Tool** button in the **Actions** region of the **Job Activity Console**:

- Create DPR Job.
- Release DPR Job.
- Cancel DPR Job.
- Change DPR ID.
- View Job Management DPR Queue.
- Create Ground Event Job.
- Cancel Ground Event Job.
- Change Max Concurrent Jobs for PGE Limits Table.
- Cancel Max/Min DPRs for Job Class.
- Trigger Release of Unreleased Ready-to-Run DPRs.

The procedure for performing Job Management Client functions starts with the assumption that AutoSys has been launched and the **Job Activity Console (Ops Console)** is being displayed.

Table 14.4-14 presents (in a condensed format) the steps required to perform Job Management Client functions using the AutoSys **Job Activity Console**. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Verify that a box job (e.g., a box job with status to be modified) is listed in the **Currently Selected Job** field of the **Job Activity Console (Ops Console)**.

- **Single-click** on a job row in the **Job List** region of the **Job Activity Console** if necessary.
 - Information concerning the selected job is displayed in the **Currently Selected Job** region of the **Job Activity Console**.
- 2** **Single-click** on the **Client Tool** button in the **Actions** Region of the **Job Activity Console**.
- A confirmation dialogue box is displayed.
- 3** **Single-click** on the **yes** button.
- The dialogue box closes.
 - The **Jobs Activation User Interface** window is displayed.
 - The following menu options are displayed:
 - 0) **Exit**
 - 1) **Create Dpr Job**
 - 2) **Release Dpr Job**
 - 3) **Cancel Dpr Job**
 - 4) **Change Dpr Id**
 - 5) **View Job Management Dpr Queue**
 - 6) **Create Ground Event Job**
 - 7) **Cancel Ground Event Job**
 - 8) **Change Max Concurrent Jobs for PGE Limits table**
 - 9) **Cancel Max/Min Dprs for Job Class**
 - a) **Trigger release of unreleased ready-to-run Dprs**
- 4** At the **enter an option** prompt enter:
<option>
- **<option>** corresponds to the number or letter of the desired function in the menu being displayed.
 - For example, to trigger the release of unreleased ready-to-run DPRs, type **a** then press the **Return/Enter** key.
 - The **a) Trigger release of unreleased ready-to-run Dprs** option orders the Job Management Server to check information in the limits tables and determine the next job to be placed into AutoSys.
 - The **a) Trigger release of unreleased ready-to-run Dprs** option should be used whenever **8) Change Max Concurrent Jobs for PGE Limits table** or **9) Cancel Max/Min Dprs for Job Class** has been used.
- 5** At the Job Management Client prompt enter:
<response>
- Enter an appropriate response to the prompt.

- 6 Repeat Steps 4 and 5 as necessary.
- 7 To quit the Job Management Client at the **enter an option** prompt enter:
 - 0
 - Job Management Client is dismissed.

Table 14.4-14. Perform Job Management Client Functions - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Verify <job name> (Currently Selected Job field)	single-click if necessary
2	Client Tool button	single-click
3	yes button	single-click
4	<option> (number or letter of the desired function) (at the enter an option prompt)	enter text, press Enter
5	<response> (to Job Management Client prompt)	enter text, press Enter
6	Repeat Steps 4 and 5 as necessary	
7	0 (at the enter an option prompt) (when applicable)	enter text, press Enter

14.4.11 Review a Job Activity Report

The following two types of useful reports can be generated using AutoSys commands:

- Activity Report.
- Job Dependency Report.

The AutoSys Activity Report provides the results of the execution of jobs as monitored by AutoSys. It is similar to the Summary Report that is accessible by clicking on the **Summary** button in the **Reports** region of the **Job Activity Console (Ops Console)** GUI.

The AutoSys Job Dependency Report reports information about the dependencies and conditions of jobs. It is accessible by clicking on the **Dependent Jobs** button in the **Show** region of the **Job Activity Console (Ops Console)** GUI as well as through the use of an AutoSys command.

The process of reviewing an Activity Report begins with the Production Monitor running the AutoSys **autorep** command. The **autorep** command reports information about a job, jobs within boxes, machines, and machine status.

Table 14.4-15 presents (in a condensed format) the steps required to display and review the Activity Report using the AutoSys **autorep** command. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:
cd /<path>
 - Change directory to the directory (e.g., /usr/ecs/<MODE>/COTS/autotreeb/autouser, /usr/ecs/<MODE>/COTS/autotree/autouser, /data1/SHARED/COTS/autotree/autouser) containing the set-up files (e.g., FMR.autosys.csh.x0sps02).
 - The particular path to be typed may vary from site to site.

- 3 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:
source <AUTOSYS INSTANCE>.autosys.csh.<host name>
 - An **AUTOSYS INSTANCE** (also called an AUTOSERV instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
 - Examples of AUTOSYS (AUTOSERV) instances at DAACs include **FMR** and **SPG**.
 - Multiple AUTOSYS instances may be installed at a DAAC.

- 4 At the UNIX command line prompt enter:
autorep -J ALL
 - Activity Report is displayed on the UNIX standard output.
 - Enter <**job name**> in place of **ALL** for a specific job.
 - Enter **-M <machine name>** for a Machine Report.
 - Enter **-s** for a summary report.
 - Enter **-d** for a Detailed Report.
 - Enter **-q** for a Query Report.

- 5 Add | **lp** to the preceding command line to print the document or add
> /<path>/<file name> to save the report in a file.
 - Activity Report is printed or saved in a file as applicable.

- 6 Review the Activity Report to determine job states.
 - Completed.
 - Currently running.
 - In the AutoSys queue.

Table 14.4-15. Review a Job Activity Report - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server host))	single-click or use procedure in Section 14.2.1
2	cd /<path> (to the directory containing the AutoSys set-up files) (if applicable)	enter text, press Enter
3	source <AUTOSYS INSTANCE>.autosys.csh.<host name> (if applicable)	enter text, press Enter
4	autorep -J ALL	enter text, press Enter
5	Review the Activity Report to determine job states	read text

14.4.12 Review a Job Dependency Report

The process of reviewing a Job Dependency Report begins with the Production Monitor running the AutoSys **job_depends** command. The **job_depends** command reports information about the dependencies and conditions of a job. The command can be used to determine the current state of a job, its job dependencies, the dependencies and nested hierarchies (for boxes) as specified in the job definition, and a forecast of what jobs will run during a given period of time.

Table 14.4-16 presents (in a condensed format) the steps required to display and review the Job Dependency Report using the AutoSys **job_depends** command. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:

cd /<path>

 - Change directory to the directory (e.g., /usr/ecs/<MODE>/COTS/autotreeb/autouser, /usr/ecs/<MODE>/COTS/autotree/autouser, /data1/SHARED/COTS/autotree/autouser) containing the set-up files (e.g., FMR.autosys.csh.x0sps02).
 - The particular path to be typed may vary from site to site.

- 3 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:
 - source <AUTOSYS INSTANCE>.autosys.csh.<host name>**
 - An **AUTOSYS INSTANCE** (also called an AUTOSERV instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
 - Examples of AUTOSYS (AUTOSERV) instances at DAACs include **FMR** and **SPG**.
 - Multiple AUTOSYS instances may be installed at a DAAC.

- 4 At the UNIX command line prompt enter:
 - job_depends -c -J <job name>**
 - Job Dependency report is displayed.
 - Enter **-c** for current condition status.
 - Enter **-d** for dependencies only.
 - Enter **-t** for time dependencies.
 - Enter **-J <job name>** to indicate a specific job as the subject of the report. Use **ALL** for all jobs.

- 5 Add **| lp** to the preceding command line to print the document or add **> /<path>/<file name>** to save the report in a file.
 - Job Dependency report is printed or saved in a file as applicable.

- 6 Review the Job Dependency Report to determine job dependencies.

Table 14.4-16. Review a Job Dependency Report - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server host))	single-click or use procedure in Section 14.2.1
2	cd /<path> (to the directory containing the AutoSys set-up files) (if applicable)	enter text, press Enter
3	source <AUTOSYS INSTANCE>.autosys.csh.<host name> (if applicable)	enter text, press Enter
4	job_depends -c -J <job name>	enter text, press Enter
5	Review the Job Dependency Report to determine job dependencies	read text

14.4.13 Define a Monitor or Browser

The current edition of the *Release 7 Operations Tools Manual for the EMD Project* (609-EMD-001) indicates that ECS does not support the AutoSys monitor/browser capabilities. However, they are functional and the Production Monitor can use them (with no expectation of ECS support if problems are encountered).

Although some Production Monitors may wish to monitor all events, it is more likely that they will prefer to limit monitoring to alarms and changes of job status (e.g., from “running” to “success” or “failure”). The browser function is particularly useful for determining the eventual status of jobs run during the preceding shift or day; for example, which jobs were successful, which jobs failed, and which jobs are still running.

NOTE: When all events for all jobs should be monitored, do *not* run a monitor. Instead, display the Event Processor log in real time (using the command **autosyslog -e**). Running a monitor adds another connection to the database and establishes an additional process that is continually polling the database. That has a significant impact on system performance.

The procedure for defining a monitor or browser starts with the assumption that AutoSys has been launched and the **AutoSys GUI Control Panel** is being displayed.

Table 14.4-17 presents (in a condensed format) the steps required to define a monitor or browser. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

1 Single-click on the Monitor/Browser button on the AutoSys GUI Control Panel.

- The **Monitor/Browser** GUI is displayed.
- Monitor/Browser defaults are:
 - **Monitor** for **Mode**.
 - **ALL EVENTS** for **Types of Events**.
 - **ALL Jobs** for **Job Selection Criteria**.

2 In the **Name** field enter:

<name>

3 Verify that the appropriate **Mode** button is selected.

- The selected button is yellow.
- If necessary, **single-click** on the appropriate **Mode** button.
- Options are **Monitor** and **Browser**.
 - If **Monitor** is selected, settings are defined for a monitor.
 - If **Browser** is selected, settings are defined for a report.

- 4 To select “all events” for the types of events (in the **Monitor/Browse these Types of Events** area) verify that the **ALL EVENTS** toggle button has been selected.
- If necessary, **single-click** on the **ALL EVENTS** toggle button.
 - The button is yellow when it has been selected.

--- OR ---

To select **Alarms** and/or **All Job CHANGE-STATUS Events** and/or the available individual **Job Status Event(s)** **single-click** on the appropriate button(s).

- **Job CHANGE_STATUS Event** options are **Running, Success, Failure, Terminated, Starting, and ReStart**.
 - The button(s) is/are yellow when selected.
- 5 **Single-click** on the appropriate button to select the desired **Job Selection Criteria**.
- Options are **All Jobs, Box with its Jobs, or Single Job**.
 - The selected button is yellow.
- 6 If **Single Job** is specified for **Job Selection Criteria**, in the **Job Name** field enter:
<job name>
- 7 If a monitor is being defined, verify that the desired **Monitor Options** are selected.
- If necessary, **single-click** on the appropriate toggle button(s).
 - Options are **Sound and Verification Required for Alarms**.
 - The button(s) is/are yellow when selected.
- 8 If a browser is being defined, verify that the desired **Browser Time Criteria** are selected.
- If necessary, **single-click** on the appropriate button to specify whether the report should concern the **Current Run Only**.
 - Options are **Yes and No**.
 - The selected button is yellow.
- 9 If **No** was selected for **Current Run Only**, in the **Events After Date/Time** field enter:
<MM/DD/YYYY hh:mm>
- 10 **Single-click** on the **Save** button.
- Monitor/browser definition is saved to the database.
 - You must **Save** the configuration first before monitor/browser can be viewed.
- 11 To run the monitor/browser that has just been defined **single-click** on the **Run MonBro** button.
- Monitor/browser is displayed in a separate window.

- 12 Review the monitor/browser results.
- 13 To exit from a browser or monitor, in the monitor/browser window enter:
Ctrl-C
 - Monitor/browser window is dismissed.
- 14 To exit from the **Monitor/Browser** GUI **single-click** on the **Exit** button
 - The **Monitor/Browser** GUI is dismissed.

Table 14.4-17. Define a Monitor or Browser - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Monitor/Browser button (on the AutoSys GUI Control Panel)	single-click
2	<name> (of monitor or browser) (in Name field)	enter text
3	Either Monitor or Browser button (as applicable)	single-click
4	<event> button(s) (in Monitor/Browse these Types of Events area)	single-click
5	<job selection criteria> button (Job Selection Criteria area)	single-click
6	<job name> (in Job Name field) (if applicable)	enter text
7	Sound and/or Verification Required for Alarms button(s) (as applicable)	single-click
8	Yes or No button (in Browser Time Criteria area) (as applicable)	single-click
9	<MM/DD/YYYY hh:mm> (in Events After Date/Time field) (if applicable)	enter text
10	Save button	single-click
11	Run MonBro button	single-click
12	Review the monitor/browser results	read text
13	Ctrl-C (in the monitor/browser window) (when applicable)	enter text
14	Exit button (when applicable)	single-click

14.4.14 Run a Monitor or Browser

There are two procedures for running monitors/browsers:

- Run a Monitor or Browser from the Monitor/Browser GUI
- Run a Monitor or Browser from the Command Shell

14.4.14.1 Run a Monitor or Browser from the Monitor/Browser GUI

The procedure for running a monitor or browser starts with the assumption that AutoSys has been launched and the **AutoSys GUI Control Panel** is being displayed.

Table 14.4-18 presents (in a condensed format) the steps required to run a previously defined monitor or browser using the **Monitor/Browser** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1** **Single-click** on the **Monitor/Browser** button on the **AutoSys GUI Control Panel**.
 - The **Monitor/Browser** GUI page is displayed.

- 2** If the desired monitor or browser has not been previously defined, define the monitor or browser.
 - For detailed instructions refer to the **Define a Monitor or Browser** procedure (Section 14.4.13).
 - After defining the monitor or browser go to Step 7.

- 3** If the name of the monitor/browser is known exactly, in the **Name** field enter:
 <name>
 - Proceed to Step 7.

- 4** If the name of the monitor/browser is **not** known exactly, in the **Name** field enter:
 %
 - The percent sign is used as a wild card.

- 5** **Single-click** on the **Search** button.
 - A dialogue box containing a list of previously defined monitors and browsers is displayed.

- 6** If the name of the desired monitor or browser is displayed in the dialogue box, **double-click** on the name to retrieve the desired monitor/browser definition.

- 7** **Single-click** on the **Run MonBro** button.
 - Monitor/browser is displayed in a separate window.

- 8** Review the monitor/browser results.

- 9** To exit from the **Monitor/Browser** GUI **single-click** on the **Exit** button
 - The **Monitor/Browser** GUI is dismissed.

10 To exit from a browser or monitor, in the monitor/browser window enter:

Ctrl-C

- Monitor/browser window is dismissed.

Table 14.4-18. Run a Monitor or Browser from the Monitor/Browser GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Monitor/Browser button (on the AutoSys GUI Control Panel)	single-click
2	<name> (of monitor or browser) (in Name field)	enter text
3	Run MonBro button	single-click
4	Review the monitor/browser results	read text
5	Exit button (on the Monitor/Browser GUI) (when applicable)	single-click
6	Ctrl-C (in the monitor/browser window) (when applicable)	enter text

14.4.14.2 Run a Monitor or Browser from the Command Shell

The procedure for running a monitor or browser starts with the assumption that AutoSys has been launched and the **AutoSys GUI Control Panel** is being displayed.

Table 14.4-19 presents (in a condensed format) the steps required to run a previously defined monitor or browser from the command shell. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 If the desired monitor or browser has not been previously defined, define the monitor or browser.
 - For detailed instructions refer to the **Define a Monitor or Browser** procedure (Section 14.4.13).
- 2 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

3 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:

cd /<path>

- Change directory to the directory (e.g., /usr/ecs/<MODE>/COTS/autotreeb/autouser, /usr/ecs/<MODE>/COTS/autotree/autouser, /data1/SHARED/COTS/autotree/autouser) containing the set-up files (e.g., FMR.autosys.csh.x0sps02).
- The particular path to be typed may vary from site to site.

4 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:

source <AUTOSYS INSTANCE>.autosys.csh.<host name>

- An **AUTOSYS INSTANCE** (also called an AUTOSERV instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
 - Examples of AUTOSYS (AUTOSERV) instances at DAACs include **FMR** and **SPG**.
 - Multiple AUTOSYS instances may be installed at a DAAC.

6 At the UNIX command line prompt enter:

monbro -N <name> &

- The monitor or report (browser) must have been previously defined and saved under an appropriate file <name> using the **Monitor/Browser** GUI.
- The report is displayed.
- Refer to the *AutoSys® Reference Guide for UNIX* for all options and displays for **monbro** reports.
 - The *AutoSys® Reference Guide for UNIX*, the *AutoSys® User Guide for UNIX*, and the *AutoSys®/Xpert User Guide for UNIX* can be downloaded from the following web site:
<http://support.ca.com/autosysmanuals/atsys.html>.

7 Review the monitor/browser results.

8 Enter **Ctrl-C** to exit from a browser or monitor.

Table 14.4-19. Run a Monitor or Browser from the Command Shell - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server host))	single-click or use procedure in Section 14.2.1
2	cd /<path> (to the directory containing the AutoSys set-up files) (if applicable)	enter text, press Enter
3	source <AUTOSYS INSTANCE>.autosys.csh.<host name> (if applicable)	enter text, press Enter
4	monbro -N <name> &	enter text, press Enter
5	Review the monitor/browser results	read text
6	Ctrl-C (in the monitor/browser window) (when applicable)	enter text

14.5 Tuning System Parameters

The values assigned to system parameters affect the functioning and performance of the system. When certain parameters are modified, the system operates differently. Changes to some other parameters may not appear to affect the system although there may in fact be subtle effects. In any case before system parameters are modified it is essential to understand what will happen to system functioning and performance.

Many system parameters may be subject to control by Configuration Management (CM). When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable).

Values are assigned to Data Processing Subsystem and Planning Subsystem parameters in the following databases:

- Configuration Registry database.
- PDPS database.

Parameters in the Configuration Registry Database

The Configuration Registry Server provides a single interface (via a Sybase server) for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry database. When ECS servers are started, they access the Configuration Registry Database to obtain needed configuration parameters.

The Database Administrator has access to a Configuration Registry GUI for viewing and editing configuration data in the database. Therefore, it is necessary to coordinate with the Database Administrator when changes to configuration parameters are needed. Also, as previously

mentioned, changes to configuration-controlled parameters are subject to approval through the site CM process.

Default and adjusted values assigned to system parameters vary from site to site. For guidance concerning the assignment of values to parameters included in the Configuration Registry refer to document 910-TDA-022, *Custom Code Configuration Parameters for ECS*. The document is available at <http://cmdm.east.hitc.com/baseline/> under “Technical Documents.”

The following parameters are examples of parameters whose values may be modified to enhance system functioning or performance:

- AppLogSize [parameter applies to all servers].
 - Maximum size of the application log (ALOG) file for a particular application.
 - Recommended size varies considerably depending the nature of the application for which the file is being written.
- AppLogLevel [parameter applies to all servers].
 - Level of detail provided in the ALOG file for a particular application.
 - Acceptable values are 0, 1, 2, or 3.
 - A setting of “0” provides the most data.
- DebugLevel [parameter applies to all servers].
 - Level of detail provided in the debug log file for a particular application.
 - Normally acceptable values are 0, 1, 2, or 3.
 - A setting of “0” turns off logging; a setting of “3” provides a significant amount of data.
- DpPr_MAX_RETRIES [EcDpPrEM and EcDpPrDeletion parameter (also EcDpPrQaMonitorGUI and several Science Software Integration and Test programs)].
 - Number of retries (e.g., 30) to the Science Data Server for acquires/inserts before giving up.
- DpPr_WAIT_PERIOD [EcDpPrEM and EcDpPrDeletion parameter (also EcDpPrQaMonitorGUI and several Science Software Integration and Test programs)].
 - Time in seconds (e.g., 120) to wait between retries to the Science Data Server.
- DpPrRM_MAX_RETRIES [EcDpPrEM, EcDpPrGE, EcDpPrJobMgmt, EcDpPrDeletion parameter].
 - Maximum number (e.g., 100) of attempts to allocate a computer resource.
- DpPrRM_RETRY_PERIOD [EcDpPrEM, EcDpPrGE, EcDpPrJobMgmt, EcDpPrDeletion parameter].
 - Number of seconds (e.g., 120) between retries when trying to allocate a resource.
- DpPrMaxConcurrentDPRs [EcDpPrJobMgmt parameter].
 - Maximum allowed jobs.
 - Three integer values (e.g., 100 100 100) are assigned to DpPrMaxConcurrentDPRs; the first for routine processing; the second for on-demand processing; and the third for reprocessing jobs.

- DpPrMinConcurrentDPRs [EcDpPrJobMgmt parameter].
 - Minimum allowed jobs.
 - Three integer values (e.g., 0 0 0) are assigned to DpPrMaxConcurrentDPRs; the first for routine processing; the second for on-demand processing; and the third for reprocessing jobs.
 - Minimum number of concurrent DPRs for each job class (i.e., routine, on demand, reprocessing) NOT CURRENTLY USED.
- DpPrAutoSysMaxDPRs [EcDpPrJobMgmt parameter].
 - Maximum number of completed DPRs (i.e., in SUCCESS or FAILEDPGE state) in AutoSys.
 - When the maximum number of completed DPRs are in AutoSys, the next DPR that succeeds or fails causes the oldest completed DPR to be deleted from AutoSys.
 - If the value assigned to DpPrAutoSysMaxDPRs is too low, completed jobs are swept out of AutoSys very quickly, which may not allow the operator enough time to see that the job was completed.
- DpPrDeleteFailedPGEJobs [EcDpPrJobMgmt parameter].
 - If TRUE, failed PGE Jobs are removed by Job Management, as necessary, when space is needed for another job that is ready to run. This is recommended to keep job management straightforward. However, this may be confusing for the operator, since they may not get a chance to see the failure if the system is busy.
 - If FALSE (the usual value), failed PGE Jobs are left in AutoSys. They must not be removed manually from AutoSys, however, since they will be removed by the Production Request Editor when a Production Request or DPR is cancelled.
- DBConnections [EcPoConnections (includes EcPISubMgr, EcPIOdMgr, EcDpPrDeletion, EcDpPrJobMgmt and EcDpPrJobMgmtClient) parameter].
 - Number of connections needed by a particular application (e.g., 10 for EcPIOdMgr).
 - Optional parameter that specifies the number of connections to maintain in the connection pool.
 - The parameter is a list of positive integers. There must be one entry for each DbHandle in the DbHandleList.
 - Generally it should be set to the maximum number of connections that are expected to be used simultaneously in a process. If one connection per thread is used, this will be the same as the number of concurrent threads expected to execute. When the pool is used up there is a performance penalty to allocate and deallocate connections on the fly.
 - If this parameter is not specified or is given as “NONE”, it defaults to 1.
- SleepDelayForFailures [EcPISubMgr parameter].
 - Amount of time in seconds (e.g., 60) to wait before reprocessing failed notifications. If the specified value is less than 60, a default value of 60 seconds would be assumed.

- Duration of the sleep delay used by the failed notification thread in seconds.
- Less frequent checking can increase speed for the other threads.
- SleepDelayForTimers [EcPlSubMgr parameter].
 - Amount of time in seconds (e.g., 60) the Subscription Manager should sleep between checking for expired timers. It should be set to the minimum amount of time a timer will be set for at this DAAC. The minimum it can be set to is 60 seconds.
 - Duration of sleep delay used by the timer checking thread in seconds.
 - Less frequent checking can increase speed for the other threads.
- SleepDelayForExp [EcPIOdMgr parameter].
 - Sleep delay for expiration thread in seconds (e.g., 86400).
 - Should be considerably greater than the sleep delay for completion threads (SleepDelayForCmp).
- SleepDelayForCmp [EcPIOdMgr parameter].
 - Sleep delay for completion threads in seconds (e.g., 300).
 - Should be considerably less than the sleep delay for expiration threads (SleepDelayForExp).
- SocketLimit [EcDpPrDeletion, EcDpPrJobMgmt, EcPIOdMgr, EcPlSubMgr parameter].
 - Number of connections (e.g., 200) to a server through the Hubble Space Telescope (HST) sockets middleware.
 - Too low a number misses connections.
 - Too high a number may adversely affect the memory of the server's host.

NOTE: When the value assigned to a parameter has been changed and saved in the Configuration Registry, the modified value does not take effect until the affected server has been restarted. For example, if the debug level for the Subscription Manager log has been changed from “2” to “3” in the Configuration Registry, the modification does not affect the recording of data in the log until after a warm restart of the Subscription Manager (at which time the server would read the parameters in the Configuration Registry).

Parameters in the PDPS Database

The following two tables in the PDPS database have significant effects on the running of DPRs:

- DpPrPgeLimits - controls where DPRs run.
- DpPrClassSchedulingLimits - controls how many DPRs run at a time.

DpPrPgeLimits imposes restrictions on the number of DPRs of a particular PGE that can run simultaneously on the same virtual computer. A database record defines each pgeId/computerName (PGE/virtual computer) combination that will be run and how many jobs (DPRs) associated with the particular combination can run at the same time.

The DpPrPgeLimits table has the following columns:

- pgeId – PGE ID.
- computerName – virtual computer name.
- maxConcurrent - maximum number of jobs (DPRs) associated with a particular pgeId/computerName combination that can run at the same time.
- numConcurrent - number of jobs (DPRs) currently running in AutoSys for a particular pgeId/computerName combination.
- numScheduled - shows how many jobs (DPRs) are currently scheduled on a specific pgeId/computerName combination.

Unless a particular host is specified (using the Production Request Editor) when a Production Request is created, all jobs in a chain are scheduled to run on the machine(s) [virtual computer(s)] specified for the PGE in the DpPrPgeLimits table in the PDPS database. However, if no machine is specified in either the Production Request or in the DpPrPgeLimits table, the jobs run on the computer entered in the PIResourceRequirement table during PGE registration.

An easy way to balance the load on two or more virtual computers is to specify an equal number of pgeIds to run on each virtual computer. If the number is large (e.g., 10,000), potentially all ready-to-run DPRs specifying the PGE can run and the number is balanced on the valid computers. If the number is small (e.g., two per machine), the number of DPRs using the PGE can be throttled, with the excess DPRs being queued.

Now, if controlling the total number of DPRs that can run at any one time is considered necessary, the DpPrClassSchedulingLimits table is involved. The table controls the total number of concurrent DPRs scheduled for Routine, Reprocessing and On-demand processing. When a slot is free, all ready-to-run DPRs that have empty slots in DpPrPgeLimits are considered and the DPR with the oldest time stamp in the PIDataProcessingRequest table is selected.

As previously mentioned the DpPrClassSchedulingLimits table controls the total number of concurrent DPRs scheduled for the following classes of processing:

- Routine.
- Reprocessing.
- On Demand.

Consequently, the DpPrClassSchedulingLimits table has three records, one for each type of processing. Each record has the following fields:

- dprClass - assigned value identifies the type of processing.
 - 0 = Routine Processing.
 - 1 = On-Demand Processing.
 - 2 = Reprocessing.
- maxDprs - maximum number of jobs (DPRs) of the type (specified in dprClass) that are allowed to run on the system.
- minDprs - currently not used.

- currentDprs - number of jobs (DPRs) of the type (specified in dprClass) that are currently running.

If the DpPrClassSchedulingLimits table has no record for a particular type of processing, DPRs of that type are not allowed into AutoSys.

Values for the maxDprs and minDprs columns in the DpPrClassSchedulingLimits table are loaded at Job Management Server startup using data from the following two configuration parameters:

- DpPrMaxConcurrentDPRs - maximum allowed jobs
- DpPrMinConcurrentDPRs - minimum allowed jobs

Each parameter has three integer values; the first for routine processing; the second for on-demand processing; and the third for reprocessing jobs.

- For example, the Configuration Registry may have the following entries:

DpPrMaxConcurrentDPRs = **100 60 40**
DpPrMinConcurrentDPRs = **0 0 0**

- In this case the maximum allowed jobs is 100 for routine processing, 60 for on-demand processing, and 40 for reprocessing.
- The minimum allowed jobs is 0 for each type of processing.

Modifying the DpPrPgeLimits and DpPrClassSchedulingLimits Tables (PDPS Database)

Either the DpPrPgeLimits table or the DpPrClassSchedulingLimits table can be loaded by running the EcDpPrLoadTable.pl script from the Job Management Client tool (using the appropriate option).

- The Job Management Client tool is accessed through the AutoSys Job Activity Console.
- The EcDpPrLoadTable.pl script loads values from an input data file.
- Instructions for using the script are available in the EcDpPrLoadTable.README file in the /usr/ecs/*MODE*/CUSTOM/data/DPS directory on the Queuing Server host.
 - The same directory has a template for constructing the necessary input data file.

The Job Management Client tool has the following options for modifying the DpPrPgeLimits table or the DpPrClassSchedulingLimits table:

8) Change Max Concurrent Jobs for PGE Limits table

- For DpPrPgeLimits table modifications.

9) Change Max/Min Dprs for Job Class

- For DpPrClassSchedulingLimits table modifications.

For detailed instructions on modifying the DpPrPgeLimits table or the DpPrClassSchedulingLimits table using the Job Management Client tool refer to the **Perform Job Management Client Functions** procedure (Section 14.4.10).

An alternative method of modifying the DpPrPgeLimits table or the DpPrClassSchedulingLimits table is to create one's own load script using SQL statements. It is acceptable to add pgeId entries for a machine, add new machines to the DpPrPgeLimits table, or change the maximum number of DPRs that can concurrently execute in DpPrClassSchedulingLimits. However, values for the number of currently scheduled or running DPRs in the tables must not be changed.

Also, note that the DpPrPgeLimits table can be empty but DpPrClassSchedulingLimits must be fully populated. As previously mentioned, default values for the maxDprs and minDprs columns in the DpPrClassSchedulingLimits table are loaded at Job Management Server startup using data from configuration parameters in the Registry database.

Table 14.5-1, below, provides an Activity Checklist table of System Tuning activities.

Table 14.5-1. Tuning System Parameters - Activity Checklist

Order	Role	Task	Section	Complete?
1	Resource Planner/ Production Planner/ Production Monitor	Monitor the Load on Processing Resources	(P) 14.5.1	
2	Production Monitor Database Administrator	Change AutoSys Event Processor Database Maintenance Time	(P) 14.5.2	

14.5.1 Monitor the Load on Processing Resources

The Production Planner and Production Monitor should work with the Resource Planner to make optimum use of processing resources. The Resource Planner allocates the disk partitions, CPUs, and RAM available for processing among the active modes (e.g., OPS, TS1, or TS2). The Production Planner and Production Monitor monitor the load on the processing resources.

The Resource Planner assigns the bulk (typically 60% - 80%) of the processing resources to the OPS mode. The remainder of the processing assets are divided among the modes used for SSI&T and new version software checkout.

The Production Planner and Production Monitor monitor the load on the processing resources to identify whether the actual load is appropriately distributed among modes. They inform the Resource Planner of under- or over-use of resources as allocated.

When monitoring the load on the processing resources, the Production Planner and Production Monitor should take the following considerations into account:

- Disk space allocated to OPS mode is likely to be used to capacity.
- Disk space assigned to the other two modes may not fill up.

- There is no one-to-one mapping of CPU allocation with actual CPUs on the science processor.
- The operating system (OS) takes care of true CPU and RAM allocation.
 - Actual CPU usage during processing is limited by the OS.
 - If ten CPUs have been specified for a particular mode, only ten Data Processing Requests (DPRs) can be running the Execute job at a given time.
 - What is really being defined is the maximum number of DPRs that will execute at a given time.
- CPUs can be over-allocated or under-allocated as necessary to get the most out of the CPUs on each science processor.
- If monitoring indicates that the processor is underused when OPS mode is at full processing capacity, the number of CPUs allocated to OPS mode could probably be increased.
- If the science processor is at full capacity when OPS mode is at full processing capacity (and the processor may be overworked) the number of CPUs allocated to OPS mode should be reduced.
- Random-access memory (RAM) is subject to the same considerations as CPUs.
 - RAM can be over-allocated or under-allocated as necessary to get the most out of the memory on each science processor.

Strategies for Tuning

A scenario that demonstrates how DPRs might be processed under a particular set of conditions and some strategies for tuning the system are presented in the paragraphs that follow. The processing conditions include the following types of items:

- The total number of jobs allowed into AutoSys.
- The number of CPUs available for processing.
- Characteristics of the PGEs to be processed.

The total number of jobs allowed into AutoSys is controlled by the DpPrPgeLimits table in the PDPS database. An example of some of the types of data maintained in the DpPrPgeLimits table is shown in Table 14.5-2.

Table 14.5-2. Example of PDPS Database DpPrPgeLimits Table Contents (Selected Columns)

computerName [Virtual Computer]	pgeld	maxConcurrent [DPRs]
A	1	20
B	1	20
A	2	20
B	2	20

The scenario assumes that each of the virtual computers (i.e., A and B) listed in Table 14.5-2 has 16 CPUs. (There are 32 CPUs total.)

Relevant PGE characteristics are shown in Table 14.5-3.

Table 14.5-3. PGE Characteristics

PGE	# CPUs Used	Average Execution Time	Average Stage Time	Destage Time
1	1	5 minutes	5 minutes	5 minutes
2	1	60 minutes	5 minutes	5 minutes

Assuming that 100 DPRs of each type (i.e., PGE 1 and PGE 2 - 200 DPRs total) are ready to run and are released at once into AutoSys, the following actions occur:

- Eighty (80) DPRs enter AutoSys. The remaining 120 are queued, with their assignments already made:
 - Machine (Virtual Computer) A: 20 PGE 1s start staging; 30 PGE 1s are queued on Machine A; 20 PGE 2s start staging; 30 PGE 2s are queued on Machine A.
 - Machine (Virtual Computer) B: 20 PGE 1s start staging; 30 PGE 1s are queued on Machine B; 20 PGE 2s start staging; 30 PGE 2s are queued on Machine B.
- After about five (5) minutes, all 80 DPRs that were staging have finished staging and are ready for execution. However, only 32 CPUs are available.
- The first 32 DPRs that ask for CPUs get them and start running [sixteen (16) on Machine A and sixteen (16) on Machine B]. Forty-eight (48) DPRs are waiting.
 - Assuming that in the Registry database DpPrRM_RETRY_PERIOD is set to 120 seconds and DpPrRM_MAX_RETRIES is set to 100, the waiting DPRs keep trying every two minutes for up to 100 times each before timing out (after 200 minutes).
 - Note that in this example timing out is a real possibility.
- The quick jobs complete processing after five (5) minutes, freeing up sixteen (16) CPUs. In the current example, the sixteen (16) CPUs are subsequently occupied with about eight (8) five-minute PGEs and eight (8) 60-minute PGEs because CPUs are given randomly to whichever DPR gets back first to asking for them after waiting for the retry period (i.e., 120 seconds). Priorities are not used.
 - At first, there was a 50:50 ratio of fast:slow DPRs, now there is a 25:75 ratio of fast:slow. After another five (5) minutes, the ratio becomes 12.5:87.5 fast:slow, so 87.5 % of the CPUs are occupied by 60-minute DPRs.

- Apparently, the 60-minute DPRs tend to dominate the CPUs. After one (1) hour the first batch of sixteen (16) 60-minute PGEs vacates the CPUs to be replaced by eight (8) five-minute PGEs and eight (8) 60-minute PGEs, but the five-minute PGEs become extinguished again by the slow ones.
 - If the staging and destaging times were not the same (so the DPRs didn't have the same opportunity to hit the execution stage at the same time) the scenario would proceed differently.

Various strategies can be employed to tune the system:

- Limit the number of DPRs through the use of the DpPrPgeLimitsTable.
 - In the preceding example if the number of slow DPRs allowed into AutoSys is less than the number of CPUs, there is always a channel for the fast jobs to squeeze through.
 - The big disadvantage to this approach is that the slow jobs are also being prevented from staging.
- Increase the declared number of CPUs for the processors to more than the actual number (overallocate CPUs).
 - This approach allows more of each type of PGE into the science processors.
 - The disadvantage is that it could overwhelm the science computers. However, they are kept busy.
- Create new virtual computers (assigning CPUs on the processors to them) and assign (via the DpPrPgeLimits table) PGEs to run on the new virtual computers.
 - This approach is another way to guarantee bandwidth (CPUs) to PGEs.
 - The disadvantage of this approach is that some CPUs could remain idle, not being seen by one of the virtual computers.
 - In the past, there may have also been some code problems with supporting this, but those difficulties should have been resolved.

Probably some combination of the first two of the preceding strategies is best; i.e., increase the number of declared CPUs to be more than the total number of slow jobs allowed into AutoSys, always leaving some CPUs for a channel of fast jobs. The total number of faster-moving jobs should be increased to make sure that there is always be a queue of them available to get their channel occupied.

The staging and destaging times have to be accounted for and this could change things in terms of using the DpPrPgeLimits table and the number of CPUs per processor to tune the job flow.

Also, it is important to perform regular garbage collection on all of the virtual computers. Procedures for cleaning the PDPS database and DPS disks (i.e., “garbage collection”) are provided in Chapter 13, Production Planning.

14.5.2 Change AutoSys Event Processor Database Maintenance Time

Once a day, the Event Processor (also known as the AutoSys daemon) goes into an internal database maintenance cycle. During this time, the Event Processor does not process any events

and waits for completion of the maintenance activities before resuming normal operations. The time of day that this maintenance cycle starts up is pre-set to 3:30 PM. If necessary to change the time at which it runs, it should be reset to a time of minimal activity. The time required for the database maintenance cycle is approximately one minute.

Table 14.5-4 presents (in a condensed format) the steps required to modify the AutoSys Event Processor database maintenance time. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 In the terminal window, at the command line prompt, enter:
cd /usr/ecs/ <MODE>/COTS/autotree/autouser
 - **<MODE>** is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T)
 - TS2 - New Version Checkout
 - OPS - Normal Operations
 - “autouser” is the directory containing the AutoSys configuration files.
 - The path may vary with the specific site installation; e.g., the **autotree** directory may be identified as **autotreeb** at some sites.

- 3 At the UNIX command line prompt enter:
vi config.<AUTOSYS INSTANCE>
 - The configuration file is displayed by the vi text editor.
 - Although this procedure has been written for the vi command, any UNIX editor can be used to edit the configuration file.

- 4 Using vi editor commands find **DBMaintTime = <hh:mm>**.
 - **<hh:mm>** refers to the current database maintenance time.

- 5 Using vi editor commands replace the current database maintenance time with the desired time.
 - The time may already have been changed to some value other than 03:30 (e.g., **DBMaintTime=04:00**).
 - The following vi editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).

- **a** (append text).
- **i** (insert text).
- **r** (replace single character).
- **x** (delete a character).
- **dw** (delete a word).
- **dd** (delete a line).
- **ndd** (delete *n* lines).
- **u** (undo previous change).
- **Esc** (switch to command mode).

6 Press the **Esc** key.

7 To save the configuration file enter:

ZZ

- New database maintenance time is entered and saved in the configuration file.
- UNIX prompt is displayed.

Table 14.5-4. Change AutoSys Event Processor Database Maintenance Time - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server host)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/COTS/<autotree>/autouser	enter text, press Enter
3	vi config.<AUTOSERV INSTANCE>	enter text, press Enter
4	Use vi editor commands to find DBMaintTime = <hh:mm>	enter text
5	Use vi editor commands to replace <hh:mm>	enter text
6	Esc key	enter text
7	ZZ	enter text, press Enter

14.6 Troubleshooting Processing Problems

Troubleshooting is a process of identifying the source of problems on the basis of observed trouble symptoms. One common source of problems involves connections with other subsystems for the transmission of messages or data. Like many other operational areas in ECS, Processing has interfaces with many other subsystems. Consequently, problems with processing can be traced to either the Data Processing Subsystem or one of many other ECS subsystems, including (but not necessarily limited to) those in the following list:

- Planning Subsystem (PLS).

- Data Server Subsystem (DSS).
- Communications Subsystem (CSS).

Table 14.6-1, below, provides an Activity Checklist for troubleshooting Processing problems.

Table 14.6-1. Troubleshooting Processing Problems - Activity Checklist (1 of 2)

Order	Role	Task	Section	Complete?
1	Production Monitor	Troubleshoot a Processing Problem	(P) 14.6.1	
2	Production Monitor	Check Connections to Hosts/Servers	(P) 14.6.1.1	
3	Production Monitor	Check Log Files	(P) 14.6.1.2	
4	Production Monitor	Respond to Hanging of the Processing System	(P) 14.6.2	
5	Production Monitor	Check AutoSys Status	(P) 14.6.2.1	
6	Production Monitor	Check the AutoSys Log	(P) 14.6.2.2	
7	Production Monitor	Check for Database Deadlocks	(P) 14.6.2.3	
8	Production Monitor	Check for Resource Locks in the PDPS Database	(P) 14.6.2.4	
9	Production Monitor	Respond to Failure of Jobs to Start in AutoSys	(P) 14.6.3	
10	Production Monitor	Check Job Management Server Status	(P) 14.6.3.1	
11	Production Monitor	Check to Determine Whether the DPR Is Waiting in the AutoSys Queue	(P) 14.6.3.2	
12	Production Monitor	Use ISQL to Check Database Tables	(P) 14.6.3.3	
13	Production Monitor	Check to Determine Whether AutoSys Is Full	(P) 14.6.3.4	
14	Production Monitor	Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure	(P) 14.6.3.5	
15	Production Monitor	Handle Subscription Server Problems	(P) 14.6.3.6	
16	Production Monitor	Respond to a DPR That Was Released But Failed Due to an AutoSys ID Failure	(P) 14.6.3.7	
17	Production Monitor	Respond to a DPR That Was Released But Failed Due to Invalid DPR	(P) 14.6.3.8	
18	Production Monitor	Respond to a DPR That Was Released But Failed to Be Received by Job Management Server	(P) 14.6.3.9	
19	Production Monitor	Respond to a Single DPS Job That Has Failed or Is Hanging	(P) 14.6.4	
20	Production Monitor	Handle a Box Job that is Hanging in AutoSys	(P) 14.6.4.1	
21	Production Monitor	Handle a Hanging Allocation Function	(P) 14.6.4.2	
22	Production Monitor	Run Execution Management Outside of AutoSys	(P) 14.6.4.3	
23	Production Monitor	Handle a Failed Allocation Function	(P) 14.6.4.4	

Table 14.6-1. Troubleshooting Processing Problems - Activity Checklist (2 of 2)

Order	Role	Task	Section	Complete?
24	Production Monitor	Force-Start a Job	(P) 14.6.4.5	
25	Production Monitor	Respond to a Restart of a Job That Fails Although All Known Problems Have Been Corrected	(P) 14.6.4.6	
26	Production Monitor	Handle a Hanging Staging Function	(P) 14.6.4.7	
27	Production Monitor	Handle a Failed Staging Function	(P) 14.6.4.8	
28	Production Monitor	Clean Up the DPS File Tables	(P) 14.6.4.9	
29	Production Monitor	Handle a Failed Preprocessing Job	(P) 14.6.4.10	
30	Production Monitor	Handle a Hanging Execution Job	(P) 14.6.4.11	
31	Production Monitor	Handle a Failed Execution Job	(P) 14.6.4.12	
32	Production Monitor	Respond to Execution Job and/or Postprocessing Job That Have (Has) Failed	(P) 14.6.4.13	
33	Production Monitor	Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing	(P) 14.6.4.14	
34	Production Monitor	Handle a Failed Postprocessing Job	(P) 14.6.4.15	
35	Production Monitor	Handle Failure of Both Execution and Postprocessing Jobs	(P) 14.6.4.16	
36	Production Monitor	Handle a Failed Insertion Function	(P) 14.6.4.17	
37	Production Monitor	Handle a Failed Deallocate Function	(P) 14.6.4.18	
38	Production Monitor	Handle a Failed On-Demand Processing Request	(P) 14.6.5	
39	Production Monitor	Respond to a DPR that Failed in OdMgr because the PGE ID Could Not Be Found	(P) 14.6.5.1	

Fault Recovery

Refer to the **Fault Recovery** topic in the section on **Troubleshooting Production Planning Problems** (Chapter 13).

14.6.1 Troubleshoot a Processing Problem

Use the following procedure to troubleshoot a processing problem:

- 1 If it is not possible to log in to the Queuing Server host, ask the Operations Controller/System Administrator to verify that the host is "up."
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.

- 2 If the **AutoSys GUI Control Panel** is not displayed when the start-up script has been properly invoked, ensure that the `DISPLAY` variable was set properly.
 - For detailed instructions refer to the procedure to **Launch the AutoSys GUI Control Panel** (Section 14.2.2).
- 3 If the entire processing system hangs, ensure that it is possible to connect to the necessary hosts and servers.
 - For detailed instructions refer to the **Check Connections to Hosts/Servers** procedure (Section 14.6.1.1).
- 4 If the entire processing system hangs, go to the **Respond to Hanging of the Processing System** procedure (Section 14.6.2).
 - If no jobs change state over time, it is likely that the entire processing system is hanging.
- 5 If jobs are activated but do not get started in AutoSys, go to the **Respond to Failure of Jobs to Start in AutoSys** procedure (Section 14.6.3).
- 6 If an AutoSys box job hangs, go to the **Handle a Box Job that is Hanging in AutoSys** procedure (Section 14.6.4.1).
 - If a box job does not change state over time, it is likely that the job is hanging.
- 7 If a “preprocess” function fails, go to the **Handle a Failed Preprocessing Job** procedure (Section 14.6.4.10).
 - If a preprocessing job has turned red on **JobScope** or **TimeScope**, the job has failed.
- 8 If an “execute” job hangs, go to the **Handle a Hanging Execution Job** procedure (Section 14.6.4.11).
 - If an “execute” job has turned orange or oscillates between orange and green on **JobScope** or **TimeScope**, it is likely that the job is hanging.
- 9 If an “execute” job fails, go to the **Handle a Failed Execution Job** procedure (Section 14.6.4.12).
 - If an “execute” job has turned red on **JobScope** or **TimeScope**, the job has failed.
- 10 If a “postprocess” job fails, go to the **Handle a Failed Postprocessing Job** procedure (Section 14.6.4.15).
 - If a “postprocess” job has turned red on **JobScope** or **TimeScope**, the job has failed.
- 11 If both the “execute” and “postprocess” jobs fail, go to the **Handle Failure of Both Execution and Postprocessing Jobs** procedure (Section 14.6.4.16).
 - If both the “execute” and “postprocess” jobs have turned red on **JobScope** or **TimeScope**, the jobs have failed.

- 12 If an on-demand processing request fails, go to the **Handle a Failed On-Demand Processing Request** procedure (Section 14.6.5).
- 13 If some other type of problem is encountered, check the log files for error messages.
 - Examples of log files include `EcDpPrJobMgmt.ALOG`, `EcDpPrJobMgmt.Debug.log`, `EcDpPrDeletion.ALOG`, `DPR#.ALOG`, `DPR#.err`.
 - Log files are located in the `/usr/ecs/<MODE>/CUSTOM/logs` directory.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 14.6.1.2).
- 14 If the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

14.6.1.1 Check Connections to Hosts/Servers

The procedure to **Check Connections to Hosts/Servers** is a part of the **Troubleshoot a Processing Problem** procedure (Section 14.6.1). Table 14.6-2 presents (in a condensed format) the steps required to check connections to hosts/servers. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include `e0sps04`, `g0sps06`, and `l0sps03`.
 - Most other ECS hosts are acceptable for checking connections.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:


```
cd /usr/ecs/<MODE>/CUSTOM/utilities
```

 - Change directory to the directory containing the utility scripts.
- 3 At the command line prompt enter:


```
EcCsIdPingServers <MODE>
```

 - The following type of response is displayed (only a few representative lines are shown):


```
/usr/ecs/TS2/CUSTOM/bin/CSS/Sweeper -nsh x0icg01 -nsp 18202
FoSwSweeper application started...
We made a connection with EntryId =x0acs06:38709:23057 ---
EcSrTransportSubServer
We made a connection with EntryId =x0acs06:38712:23057 ---
EcSrTransportSubEventServer
```

We made a connection with EntryId =x0acs06:33379:17033 --- DsShQuitIDL [...]

- 4 Observe the results displayed on the screen to determine whether connections can be made with the necessary hosts and servers.
 - The necessary hosts and servers are listed in Table 14.6-3, Hosts, Servers, Clients and Other Software Relevant to Production Planning and Processing.
- 5 If pinging the servers (Step 3) indicated a problem with any connection, ping the servers again (at the command line prompt enter: **EcCsIdPingServers <MODE>**).
- 6 Observe the results displayed on the screen to determine whether connections can be made with the necessary hosts and servers.
- 7 If it is not possible to connect to any needed host(s)/server(s), notify the Operations Controller/System Administrator to check the hosts/servers and bring them back up if necessary.
- 8 Return to the procedure that recommended checking connections to hosts.

Table 14.6-2. Check Connections to Hosts/Servers - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text, press Enter
3	EcCsIdPingServers <MODE>	enter text, press Enter
4	EcCsIdPingServers <MODE> [again]	enter text, press Enter
5	Identify hosts and servers with which connections cannot be made	read text
6	Notify the Operations Controller/System Administrator to bring hosts/servers back up (if applicable)	contact Operations Controller
7	Return to the procedure that recommended checking connections to hosts	

Table 14.6-3. Hosts, Servers, Clients and Other Software Relevant to Production Planning and Processing

HOST	SERVER/CLIENT/OTHER SOFTWARE
Planning/Management Workstation	Production Request Editor (EcPIPREditor) Planning Workbench GUI (EcPIWb) Production Strategies GUI (EcPIProdStrat) Production Planning Master Timeline (EcPITI) Message Handler (EcPIMsh) System Name Server (EcPISns) Resource Model (EcPIRm)
Queuing Server (e.g., x0sps02)	Job Management Server (EcDpPrJobMgmt) Deletion Server (EcDpPrDeletion) Execution Management (EcDpPrEM) AutoSys Event Processor (event_demon) AutoSys Event Server (Sybase server) (e.g., x0sps02_svr) On-Demand Manager (EcPIOdMgr) Subscription Manager (EcPISubMgr) PDPS database Sybase server (e.g., x0sps02_svr)
Science Processor (e.g., x0spg11)	PGE Management (EcDpPrRunPGE) Resource Usage (EcDpPrRusage) PGE
Access/Process Coordinators (APC) Server (e.g., x0acg01)	Archive Server (EcDsStArchiveServer) FTP Server (EcDsStFtpServer) Cache Manager Server (EcDsStCacheManagerServer) Staging Disk Server (EcDsStStagingDiskServer) Pull Monitor Server (EcDsStPullMonitorServer)
Ingest Server (e.g., x0icg01)	Name Server (EcCsldNameServer) Registry Server (EcCsRegistry)
Sun internal server (e.g., x0acs06)	Science Data Server (EcDsScienceDataServer) Data Dictionary (EcDmDictServer) Subscription Server (EcSbSubServer) Event Server (EcSbEventServer)

NOTE: Depending on the installation, software may be loaded on hosts other than the examples provided.

14.6.1.2 Check Log Files

Log files can provide indications of the following types of problems:

- Communication problems.
- Database problems.

- Lack of disk space.

Table 14.6-4 presents (in a condensed format) the steps required to check log files. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the appropriate host.
 - In general Planning Subsystem applications are installed on the Planning/Management Workstation (e.g., **e0pls03**, **g0pls01**, or **l0pls02**).
 - In general Data Processing Subsystem (PRONG) applications are installed on the Queuing Server (e.g., **e0sps04**, **g0sps06**, or **l0sps03**).
 - However, QA Monitor is on the Planning/Management Workstation.
 - Subscription Manager is on the Queuing Server host (e.g., **e0sps04**, **g0sps06**, or **l0sps03**).
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:

cd /usr/ecs/<MODE>/CUSTOM/logs

 - **<MODE>** is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T)
 - TS2 - New Version Checkout
 - OPS - Normal Operations
 - “logs” is the directory containing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, EcPlSubMgrDebug.log, and EcDpPrJobMgmtDebug.log).
- 3 At the command line prompt enter:

pg <file name>

 - **<file name>** refers to the log file to be reviewed (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPlSubMgrDebug.log, or EcDpPrJobMgmtDebug.log).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **more**, **vi**, **view**) can be used to review the log file.
- 4 Review the log file to identify problems that have occurred.
 - To exit from **pg** at the **:** prompt enter:

q

 - The command line prompt is displayed.

- 5 Respond to problems as follows:
- Production Processing-related problems.
 - Perform the appropriate procedure(s) from Table 14.6-1, Troubleshooting Processing Problems.
 - Communication problems.
 - Notify the Operations Controller/System Administrator of suspected communication problems.
 - Database problems.
 - Verify that relevant database servers are running.
 - Check for lack of (or corruption of) data in the database using either a database browser or interactive structured query language (isql) commands.
 - Notify the Database Administrator of suspected database problems.
 - Lack of disk space.
 - Remove unnecessary files.
 - Notify the Operations Controller/System Administrator of recurring disk space problems.

Table 14.6-4. Check Log Files - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (appropriate host)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>	enter text, press Enter
4	Identify problems indicated in the log file	read text
5	Respond to problems as necessary	

14.6.2 Respond to Hanging of the Processing System

If the entire processing system is hanging (if no jobs are changing state), it is probably due to one of the following conditions:

- AutoSys is not functional (e.g., the AutoSys event processor is not running).
- Database is deadlocked [refer to the **Check for Database Deadlocks** procedure (Section 14.6.2.3)].

Use the following procedure to respond to hanging of the processing system:

- 1 Check AutoSys status.
 - For detailed instructions refer to the **Check AutoSys Status** procedure (Section 14.6.2.1).

- 2 Check the AutoSys log.
 - For detailed instructions refer to the **Check the AutoSys Log** procedure (Section 14.6.2.2).

14.6.2.1 Check AutoSys Status

Like any other program AutoSys can crash or experience connectivity problems between its server and its clients.

Table 14.6-5 presents (in a condensed format) the steps required to check AutoSys status. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:
cd /<path>
 - Change directory to the directory (e.g., /usr/ecs/<MODE>/COTS/autotreeb/autouser, /usr/ecs/<MODE>/COTS/autotree/autouser, /data1/SHARED/COTS/autotree/autouser) containing the set-up files (e.g., FMR.autosys.csh.x0sps02).
 - The particular path to be typed may vary from site to site.
- 3 If the AutoSys .csh file has not already been sourced, in the terminal window, at the command line prompt, enter:
source <AUTOSYS INSTANCE>.autosys.csh.<host name>
 - An **AUTOSYS INSTANCE** (also called an AUTOSERV instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
 - Examples of AUTOSYS (AUTOSERV) instances at DAACs include **FMR** and **SPG**.
 - Multiple AUTOSYS instances may be installed at a DAAC.
- 4 At the command line prompt, enter:
autoping -m ALL
 - The following type of message is displayed:
**AutoPinging Machine [x0spsg11]
AutoPing WAS SUCCESSFUL!**

**AutoPinging Machine [x0spg07]
AutoPing WAS SUCCESSFUL!**

**AutoPinging Machine [x0sps06]
AutoPing WAS SUCCESSFUL!**

- In the example the statements “**AutoPing WAS SUCCESSFUL!**” indicate that the server and client machines are properly configured and are communicating successfully.
- To check all machines and verify their database access, type **autoping -m ALL -D** then press **Return/Enter**.
 - If successful, the following type of message is displayed:
**AutoPinging Machine [x0spg11] AND checking the Remote Agent's DB Access.
AutoPing WAS SUCCESSFUL!**

[...]

5 If the results of the **autoping** command (Step 4) indicated anything other than a **SUCCESSFUL** response from any machine(s) [host(s)], notify the Operations Controller/System Administrator to have the affected host(s) brought back up.

6 At the command line prompt, enter:
chk_auto_up

- The following type of message is displayed:
**Attempting (1) to Connect with Database: x0sps02_srvr:FMR
*** Have Connected successfully with Database: x0sps02_srvr:FMR. *****

Connected with Event Server: x0sps02_srvr:FMR

**Checking Machine: x0sps02
Primary Event Processor is RUNNING on machine: x0sps02**

**Checking Machine: x0spg01
No Event Processor is RUNNING on machine: x0spg01**

Checking Machine: x0ais01

No Event Processor is RUNNING on machine: x0ais01

- In the example the statements “**Have Connected successfully with Database: x0sps02_srvr:FMR**” and “**Connected with Event Server: x0sps02_srvr:FMR**” indicate that the AutoSys Event Server (database server) is running and a connection has been made with the appropriate AutoSys database.
- In the example the statement “**Primary Event Processor is RUNNING on machine: x0sps02**” indicates that the Primary Event Processor is running on the Queuing Server (as it should).

7 If the Primary Event Processor is **not** running, either notify the Operations Controller/System Administrator to have it brought back up or (if authorized to do so) enter:

eventor

- The AutoSys **eventor** command starts the Primary Event Processor.
 - First **eventor** ensures that there is no other Event Processor of the same instance (e.g., FMR) running on the machine where the instance is being started.
 - Then **eventor** runs the **chase** command, which inspects the database to determine which jobs are supposed to be running and checks each machine to verify that the jobs are there. [If it detects problems, **chase** sends alarms and/or failure events (depending on the options specified) for any missing jobs. If the missing jobs can be restarted, they are automatically restarted.]
- If the Primary Event Processor does not stay up (e.g., it is brought up and it goes down right away) one of the following problems may be occurring:
 - It may be possible that too many events were queued up to AutoSys while it was down. If AutoSys detects a certain number of events in a short time period, it brings itself down. The only way to handle this is to keep bringing AutoSys back up. Each time it will work through a few of the events before it detects "too many" and shuts down. Eventually the events will be cleared out and AutoSys will stay up.
 - It may be that the Sybase ASE server for AutoSys (the Event Server) is not up. (The **chk_auto_up** command would determine the status of the Event Server.)

8 If the Event Processor is running, check for database-related error messages in the AutoSys log or when attempting to bring up the **JobScape** GUI.

- Refer to the **Check the AutoSys Log** procedure (Section 14.6.2.2).
- Example of database-related error messages:

Couldn't create DBPROCES

Unable to get encoded and plaintext passwords for x0sps02_srvr:FMR

- The error messages in the example indicate that the AutoSys Event Server (database server) may not be up.

- 9 If the results of the **chk_auto_up** command (Step 6) indicated that multiple Primary Event Processors were running (for the same AUTOSERV instance), either notify the Operations Controller/System Administrator to have the Primary Event Processors stopped and a fresh instance of the Primary Event Processor started or (if authorized to do so) enter:
- sendevent -E STOP_DEMON**
- An alternative method of sending a STOP_DEMON event to an Event Processor is to use the **Send Event GUI**.
 - For detailed instructions refer to the **Send an Event to a Job from the Send Event GUI** procedure (Section 14.4.8.3).
- 10 If a STOP_DEMON event was sent to stop the Event Processor(s) and if authorized to do so, enter:
- eventor**
- The AutoSys **eventor** command starts the Primary Event Processor.
 - If not authorized to send the **eventor** command, wait for the Operations Controller/System Administrator to do so.
- 11 If the results of the **chk_auto_up** command (Step 6) indicated that the Event Server (database server) is **not** running, notify the Database Administrator to have it brought back up.
- 12 If the Event Processor or Event Server had to be started or restarted, return to Step 4.
- 13 If no Event Processor or Event Server problems were detected, check the AutoSys log.
- For detailed instructions refer to the **Check the AutoSys Log** procedure (Section 14.6.2.2).

Table 14.6-5. Check AutoSys Status - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server host))	single-click or use procedure in Section 14.2.1
2	cd /<path> (to the directory containing the AutoSys set-up files) (if applicable)	enter text, press Enter
3	source <AUTOSYS INSTANCE>.autosys.csh.<host name> (if applicable)	enter text, press Enter
4	autoping -m ALL	enter text, press Enter
5	Notify the Operations Controller/System Administrator to have the affected host(s) brought back up (if applicable)	contact Operations Controller

Table 14.6-5. Check AutoSys Status - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
6	chk_auto_up	enter text, press Enter
7	eventor (if applicable) or notify the Operations Controller/System Administrator to have Primary Event Processor brought back up (if necessary)	enter text, press Enter or contact Operations Controller
8	Check for database-related error messages in the AutoSys log	Use procedure in Section 14.6.2.2
9	sendevent -E STOP_DEMON (if applicable) or notify the Operations Controller/System Administrator to have the Primary Event Processors stopped (if necessary)	enter text, press Enter or contact Operations Controller
10	eventor (if applicable) or notify the Operations Controller/System Administrator to have Primary Event Processor brought back up (if necessary)	enter text, press Enter or contact Operations Controller
11	Notify the Operations Controller/System Administrator to check the AutoSys Event Server and bring it back up if necessary	contact Operations Controller
12	Return to Step 4 (if applicable)	
13	Check the AutoSys log (if applicable)	Use procedure in Section 14.6.2.2

14.6.2.2 Check the AutoSys Log

The AutoSys event demon log tells how a DPR has progressed through AutoSys, showing failures and force-starts of jobs.

The procedure that follows describes the use of the UNIX **grep** command on the DPR Id in the event demon log file. An alternative is to use the **vi** command to view the full log, which contains timestamps. Another alternative is to request either a Summary Report or an Event Report from the **Job Activity Console (Ops Console)** as described in the **Monitor/Control Job Processing** procedure (Section 14.4.1).

Table 14.6-6 presents (in a condensed format) the steps required to check the AutoSys log. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

2 At the command line prompt, enter:

cd /<path>

- Change directory to the directory (e.g.,
/usr/ecs/<MODE>/COTS/autotreeb/autouser/out,
/usr/ecs/<MODE>/COTS/autotree/autouser/out,
/data1/SHARED/COTS/autotree/autouser/out) containing the event demon log file
(e.g., event_demon.FMR).
- The AutoSys event demon log is named event_demon.<AutoSys Instance>.
– A typical AutoSys Instance at a DAAC is **FMR**.
- The particular path to be typed may vary from site to site.

3 At the command line prompt, enter:

grep <job name> event_demon.<AutoSys Instance>

- If there were no problems, the results should appear as follows:

```
grep MoPGE02#2014193500OPS event_demon.FMR
```

```
EVENT: STARTJOB      JOB: MoPGE02#2014193500OPS  
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:  
MoPGE02#2014193500OPS  
EVENT: CHANGE_STATUS STATUS: STARTING JOB:  
MoPGE02#2014193500OPSR  
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:  
MoPGE02#2014193500OPSR  
EVENT: CHANGE_STATUS STATUS: SUCCESS  JOB:  
MoPGE02#2014193500OPSR  
EVENT: CHANGE_STATUS STATUS: STARTING JOB:  
MoPGE02#2014193500OPSE  
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:  
MoPGE02#2014193500OPSE  
EVENT: CHANGE_STATUS STATUS: SUCCESS  JOB:  
MoPGE02#2014193500OPSE  
EVENT: CHANGE_STATUS STATUS: STARTING JOB:  
MoPGE02#2014193500OPSP  
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:  
MoPGE02#2014193500OPSP  
EVENT: CHANGE_STATUS STATUS: SUCCESS  JOB:  
MoPGE02#2014193500OPSP  
EVENT: CHANGE_STATUS STATUS: STARTING JOB:  
EVENT: CHANGE_STATUS STATUS: SUCCESS  JOB:  
MoPGE02#2014193500OPS
```

- When there are no problems, each command job goes through the following changes of status: STARTING, RUNNING, SUCCESS.
- If there are problems, something similar to the following results may be obtained:

```
grep MoPGE02#2014193500OPS event_demon.FMR
```

```
EVENT: STARTJOB      JOB: MoPGE02#2014193500OPS
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:
MoPGE02#2014193500OPS
EVENT: CHANGE_STATUS STATUS: STARTING JOB:
MoPGE02#2014193500OPSR
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:
MoPGE02#2014193500OPSR
EVENT: CHANGE_STATUS STATUS: FAILURE  JOB:
MoPGE02#2014193500OPSR
EVENT: ALARM        ALARM: JOBFAILURE JOB:
MoPGE02#2014193500OPSR
EVENT: FORCE_STARTJOB JOB: MoPGE02#2014193500OPSR
EVENT: CHANGE_STATUS STATUS: STARTING JOB:
MoPGE02#2014193500OPSR
EVENT: CHANGE_STATUS STATUS: RUNNING  JOB:
MoPGE02#2014193500OPSR
EVENT: CHANGE_STATUS STATUS: SUCCESS  JOB:
MoPGE02#2014193500OPSR
```

.....

- The job in the example had some failures and a force-start.
- 4 If the AutoSys event log does not indicate any problems, check for database deadlocks.
- For detailed instructions refer to the **Check for Database Deadlocks** procedure (Section 14.6.2.3).

Table 14.6-6. Check the AutoSys Log - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /<path> (to event demon log file)	enter text, press Enter
3	grep <job name> event_demon.<AutoSys Instance>	Enter text, press Enter
4	Check for database deadlocks (if applicable)	Use procedure in Section 14.6.2.3

14.6.2.3 Check for Database Deadlocks

A deadlock occurs when a database transaction locks a record that another transaction needs and the second transaction locks the record that first transaction needs. Each program must wait until the other completes. However, neither can complete (because each is waiting for the other) so both end up waiting indefinitely.

Table 14.6-7 presents (in a condensed format) the steps required to check for database deadlocks. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Log in to the appropriate PDPS database.
 - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- 2 At the **1>** prompt enter:
sp_lock
- 3 At the **2>** prompt enter:
go
 - Results displayed include the following features:
 - **spid** column shows the process id. The database user that owns a process can be determined using the **sp_who** isql command.
 - **locktype** column indicates a problem if the entry starts with "Ex_" (exclusive).
 - **table_id** column identifies the table that the corresponding spid has locked. The name of the table can be determined using the **select** command [i.e., **select object_name (table_id)**].
- 4 At the **1>** prompt enter:
select object_name (<table id>)
 - For example, to check the exclusive locks related to spid 24, table ID 197575742, enter:
1> select object_name (197575742)
- 5 At the **2>** prompt enter:
go
 - The object name is displayed (e.g., PIDprData).
- 6 At the **1>** prompt enter:

sp_who

7 At the 2> prompt enter:

go

- A listing of connections to the database is displayed.
- The listing includes data in the following columns:
 - **spid.**
 - **status.**
 - **loginame.**
 - **hostname.**
 - **blk.**
 - **dbname.**
 - **cmd.**

8 Analyze the results of the request.

- The **blk** column shows the spid of the process that is doing the blocking.
- The **cmd** column shows the command that the blocked process is trying to complete.

9 To exit from **isql** at the 1> prompt enter:

quit

- The connection with the database is discontinued.

10 If there is a deadlock in the database, ask the Operations Controller to bounce the server that is causing the deadlock.

11 If there is no deadlock, perform the **Check for Resource Locks in the PDPS Database** procedure (Section 14.6.2.4).

Table 14.6-7. Check for Database Deadlocks - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Log in to the PDPS database	Use procedure in Section 14.6.3.3
2	sp_lock	enter text, press Enter
3	go	enter text, press Enter
4	select object_name (<table id>)	enter text, press Enter
5	go	enter text, press Enter
6	sp_who	enter text, press Enter
7	go	enter text, press Enter
8	Analyze the results of the request	read text
9	quit	enter text, press Enter

Table 14.6-7. Check for Database Deadlocks - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
10	Ask the Operations Controller to bounce any server that is causing a deadlock (if applicable)	contact Operations Controller
11	Check for resource locks in the PDPS database (if there is no deadlock)	Use procedure in Section 14.6.2.4

14.6.2.4 Check for Resource Locks in the PDPS Database

Resource locks used to occur if there was an attempt to delete DPRs/PRs while their corresponding jobs were still running in AutoSys or jobs had been explicitly killed before the DPRs/PRs were deleted. However, resource locking has been removed for all Resource Management calls (e.g., for allocating CPUs and disk space). The locks have been replaced with the following features:

- Sybase stored procedures that use transactions.
- Database triggers.

Resource locking is still used for disk space reclamation. Momentary system interruptions occur during the process of disk space reclamation. The interruptions may happen several times a day. The system may look like it is "hung" during such periods. The procedure that follows should be performed to verify that disk space reclamation is proceeding normally:

Although the procedure for checking for resource locks in the PDPS database includes the use of isql commands, an acceptable alternative is to use a database browser to check the contents of the DpPrResourceLock table.

Table 14.6-8 presents (in a condensed format) the steps required to check for resource locks in the PDPS database. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Log in to the appropriate PDPS database.
 - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- 2 At the 1> prompt enter:
select * from DpPrResourceLock
 - Prepare a request to view the contents of the DpPrResourceLock table.
- 3 At the 2> prompt enter:
go

- The contents of the **DpPrResourceLock** table are displayed.
 - The listing includes data in the following columns:
 - **jobId.**
 - **priority.**
 - **ecsUnit.**
 - **attempts.**
 - **state.**
 - **pid.**
 - **queuePosition.**
- 4** Analyze the results of the request.
- A jobId with a state $\diamond 0$ would indicate a resource lock.
 - If there are entries in the **DpPrResourceLock** table and there are no other jobs running in AutoSys, all entries in the table need to be deleted before the DPR/PR deletion can complete.
 - If other jobs (DPRs) are currently being executed in AutoSys and the other jobs should not be deleted, the entries in the table that need to be deleted are those related to the job to be deleted only. The entries concerning the other (running) jobs must be left in the table.
 - If there is no evidence of a resource lock, go to Step 8.
- 5** If all entries in the DpPrResourceLock table are to be deleted, at the **1>** prompt enter:
delete DpPrResourceLock
- Go to Step 7.
- 6** If some (but not all) entries in the DpPrResourceLock table are to be deleted, at the **1>** prompt enter:
delete DpPrResourceLock where jobId like "<job Id>"
- **<job Id>** specifies the job whose entries are to be deleted.
- 7** At the **2>** prompt enter:
go
- Entries in the **DpPrResourceLock** table are deleted.
 - The DPR/PR deletion that was delayed by the resource lock should go to completion.
- 8** To exit from **isql** at the **1>** prompt enter:
quit
- The connection with the database is discontinued.
 - If entries were deleted from the DpPrResourceLock table the procedure is finished; otherwise, continue with Step 9.

- 9 Access a terminal window logged in to the Queuing Server.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 10 At the command line prompt enter:

cd /usr/ecs/<MODE>/CUSTOM/logs

 - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).

- 11 At the command line prompt enter:

tail -f <job Id>.err

 - **<job Id>.err** refers to the data processing log file to be reviewed.

- 12 Observe the log file to determine whether entries are being made in the file.
 - If messages are being entered in the log file, there is probably no resource lock.

- 13 To quit tailing the log in the terminal window enter:

Ctrl-C

 - A command line prompt is displayed in the terminal window.

- 14 Ensure that it is possible to connect to the necessary hosts and servers.
 - For detailed instructions refer to the **Check Connections To Hosts/Servers** procedure (Section 14.6.1.1).

- 15 If no there is no database deadlock or resource lock and the Data Processing Subsystem servers (especially Deletion Server and Job Management Server) are up, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 14.6-8. Check for Resource Locks in the PDPS Database - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Log in to the PDPS database	Use procedure in Section 14.6.3.3
2	Select * from DpPrResourceLock	enter text, press Enter
3	go	enter text, press Enter
4	Analyze the results of the request.	read text
5	delete DpPrResourceLock or delete DpPrResourceLock where jobld like "<job Id>" (as applicable)	enter text, press Enter
6	go (if applicable)	enter text, press Enter

Table 14.6-8. Check for Resource Locks in the PDPS Database - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
7	quit	enter text, press Enter
8	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
9	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
10	tail -f <job Id>.err	enter text, press Enter
11	Observe the log file (Are entries are being made in the log file?)	read text
12	Ctrl-C	enter text
13	Check connections to hosts/servers	Use procedure in Section 14.6.1.1
14	Call the help desk and submit a trouble ticket (if applicable)	Use procedure in Chapter 8

14.6.3 Respond to Failure of Jobs to Start in AutoSys

The following events trigger the Job Management Server to check its queue, check information in the limits tables (i.e., DpPrPgeLimits and DpPrClassSchedulingLimits), and ascertain which job should be placed in AutoSys next:

- DPR is released by the Planning Workbench.
- Subscription Manager sets a DPR completionState (PIDataProcessingRequest table in the PDPS database) to PENDING.
- Job finishes in AutoSys.
- Job is cancelled through the Production Request Editor.

On very rare occasions, it is possible for DPS processing to freeze up because no triggering events can occur. In such cases the Production Monitor can use the Job Management Client to "wake up" (trigger) the Job Management Server.

Subscriptions are processed and cause jobs to be released into AutoSys by means of the following process:

- An ESDT is "registered" to the Science Data Server (SDSRV). The ESDT information includes three events (insert, delete, and update metadata) and a datatype. It is possible to enter a subscription for any of the events.
- The Production Request Editor (PRE) sends the datatype short name and version ID, the action type (e.g., insert) and the Subscription Manager (SubsMgr) name to the Subscription Server (SUBSRV) in order to register a subscription. The value in the subscriptionFlag column (PIDataTypeMaster table in the PDPS database) for the data type is updated.
- When an "insert" event (or a "delete" event or an "update metadata" event) occurs, SDSRV sends notification to SUBSRV, which sends the Subscription ID to the PLS

Subscription Manager. The Subscription Manager is identified by name in the SUBSRV database in connection with the Subscription ID.

- Subscription Manager gets the UR for the inserted granule from the SDSRV and updates the UR information in the PIDataGranule table in the PDPS database. In the simple case (e.g., for Production Requests that do not require optional inputs or alternate inputs) SubsMgr checks to see if all of the datatypes in PIDprData that have an ioFlag of 0 (input) for the DPR are present in the data archive and can be acquired. If this is the case, SubsMgr sends a ReleaseDprJob request to the Job Management Server to release the job into AutoSys.

Jobs that are activated may not get started in AutoSys for any of the following reasons:

- Job Management Server is down.
- DPR is waiting in the AutoSys queue (never got released).
- DPR was released but failed due to an AutoSys ID failure.
- DPR was released but failed due to invalid DPR.
- DPR was released but was not received by the Job Management Server.

Use the following procedure to respond to the failure of jobs to start in AutoSys:

- 1 Perform the appropriate procedure(s) related to checking Job Management Server status:
 - **Check Job Management Server Status** (Section 14.6.3.1).
 - **Check to Determine Whether the DPR Is Waiting in the AutoSys Queue** (Section 14.6.3.2).
 - **Use ISQL to Check Database Tables** (Section 14.6.3.3).
 - **Check to Determine Whether AutoSys Is Full** (Section 14.6.3.4)
 - **Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure** (Section 14.6.3.5)
 - **Handle Subscription Server Problems** (Section 14.6.3.6)
- 2 Check for a DPR that was released but failed due to an AutoSys ID failure procedure.
 - For detailed instructions refer to the **Respond to a DPR That Was Released But Failed Due to an AutoSys ID Failure** procedure (Section 14.6.3.7).
- 3 Check for a DPR that was released but failed due to invalid DPR.
 - For detailed instructions refer to the **Respond to a DPR That Was Released But Failed Due to Invalid DPR** procedure (Section 14.6.3.8).
- 4 Check for a DPR that was released but failed to be received by the Job Management Server.
 - For detailed instructions refer to the **Respond to a DPR That Was Released But Failed to Be Received by Job Management Server** procedure (Section 14.6.3.9).

14.6.3.1 Check Job Management Server Status

If jobs that are activated do not get started in AutoSys, it may be because the Job Management Server is down. Consequently, one of the first steps in investigating why jobs do not get started in AutoSys is to check the status of the Job Management Server.

Table 14.6-9 presents (in a condensed format) the steps required to check Job Management Server status. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt, enter:
ps -ef | grep EcDpPrJobMgmt
 - The following type of response is displayed:
cmshared 110 1 0 09:21:30 ? 0:05
/usr/ecs/TS2/CUSTOM/bin/DPS/EcDpPrJobMgmt ConfigFile
/usr/ecs/TS2/CUSTOM/cfg/Ec

cmshared 3594 1 0 Jun 17 ? 3:02
/usr/ecs/OPS/CUSTOM/bin/DPS/EcDpPrJobMgmt ConfigFile
/usr/ecs/OPS/CUSTOM/cfg/Ec

cmshared 16104 15434 0 13:08:36 pts/13 0:00 grep EcDpPrJobMgmt
 - The preceding example indicates that the Job Management Server is running in TS1 mode and OPS mode.
 - If the Job Management Server were **not** running, only the following type of message would be displayed:
cmshared 16104 15434 0 13:08:36 pts/13 0:00 grep EcDpPrJobMgmt

- 3 If the server has gone down, notify the Operations Controller/System Administrator to have the server brought back up.

- 4 If the Job Management Server (EcDpPrJobMgmt) is “up,” continue with the **Check to Determine Whether the DPR Is Waiting in the AutoSys Queue** procedure (Section 14.6.3.2).

Table 14.6-9. Check Job Management Server Status - Quick-Step Procedures)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	ps -ef grep EcDpPrJobMgmt	enter text, press Enter
3	Notify the Operations Controller/System Administrator to have the server brought back up (if applicable)	contact Operations Controller
4	Determine whether the DPR is waiting in the AutoSys queue	Use procedure in Section 14.6.3.2

14.6.3.2 Check to Determine Whether the DPR Is Waiting in the AutoSys Queue

The Job Management Server may have never received a ReleaseDprJob command from the PLS Subscription Manager. As a result the job would wait in the AutoSys queue and would not be able to start processing.

Table 14.6-10 presents (in a condensed format) the steps required to check to determine whether the DPR is waiting in the AutoSys queue. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Manually trigger the release of DPRs.
 - For detailed instructions refer to the **Perform Job Management Client Functions** procedure (Section 14.4.10).
- 2 Check for job activation in AutoSys.
 - For detailed instructions refer to the **Monitor/Control Job Processing** procedure (Section 14.4.1).
 - End of procedure if the job was activated in AutoSys.
- 3 If the job was not activated in AutoSys, access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

4 If the job was not activated in AutoSys, use isql or a database browser to check for an entry for the job (by searching on the **dprId** column) in the **DpPrCreationQueue** table in the applicable PDPS database.

- For detailed instructions refer to the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- For example:

```
x0sps02{cmshared}43: isql -U pdps_role -S x0sps02_srvr
```

```
Password:
```

```
1> use pdps
```

```
2> go
```

```
1> select * from DpPrCreationQueue
```

```
2> go
```

dprId	autosysId	priority	hold
ETS#syn1#014020000OPS	FMR	250	1
ETS#syn1#014020010OPS	FMR	250	1
ETS#syn1#014020020OPS	FMR	250	1
ETS#syn1#014020030OPS	FMR	250	1
ETS#syn1#014020040OPS	FMR	250	1
ETS#syn1#014020050OPS	FMR	250	1
ETS#syn1#014020100OPS	FMR	250	1
ETS#syn1#014020110OPS	FMR	250	1
ETS#syn1#014020130OPS	FMR	250	1

(9 rows affected)

- If the job is listed in the **DpPrCreationQueue** table, it probably never got a ReleaseDprJob command from the PLS Subscription Manager [unless AutoSys is full - refer to the **Check to Determine Whether AutoSys Is Full** procedure (Section 14.6.3.4).]

5 In the terminal window logged in to the Queuing Server at the command line prompt enter:

```
cd /usr/ecs/<MODE>/CUSTOM/logs
```

- Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPlSubMgrDebug.log, EcDpPrJobMgmtDebug.log).

6 At the command line prompt enter:

```
pg EcDpPrJobMgmtDebug.log
```

- The first page of the log file is displayed.

- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

7 Review the Job Management debug log file for an entry indicating that Job Management received the ReleaseDprJob command for the job.

- For example:

```
03/30/00 11:38:09: -----
```

```
DpPrScheduler_1_0_Mgr::ReleaseDprJob( dpr_id dpr ) CALLED.
ETS#syn1#004130123OPS
```

```
-----
```

```
03/30/00 11:38:09: In DpPrScheduler::ReleaseDprJob, dpr=
ETS#syn1#004130123OPS
```

```
03/30/00 11:38:09: DpPrCreationQueue::SetDprHoldStatus, dprId=
ETS#syn1#004130123OPS
```

```
DpPrCreationQueue::SetDprHoldStatus, autoSysId= VAT
```

```
DpPrCreationQueue::SetDprHoldStatus, holdStatus= 0
```

```
03/30/00 11:38:09: DpPrCreationQueue::HasAutosysId, autosysId= 0xee4534d8
```

```
03/30/00 11:38:09: DpPrCreationQueue::HasAutosysId, autosysId= 0xee4534d8
```

```
03/30/00 11:38:09: removed ETS#syn1#004130123OPS
```

```
there are now 0entries on this queue
queue priority of this node is now 250
```

- If Job Management received the ReleaseDprJob command for the job, there may have been a JIL (AutoSys Job Information Language) processor problem.
 - If necessary, refer to the **Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure** procedure (Section 14.6.3.5).
- If there is no evidence that Job Management received the ReleaseDprJob command for the job, the PLS Subscription Manager did not send the command.
 - Subscription Manager does not send the ReleaseDprJob command unless it thinks that all of the DPR's required inputs have been received.
- To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.

8 If the DPR is a regular one (e.g., with no alternate or optional inputs), access a terminal window logged in to the appropriate PDPS database.

9 At the **1>** prompt enter:

```
select dprId,granuleId,ioFlag from PIDprData where dprId like "<DPR ID>"
```

- For example:

```
1> select dprId,granuleId,ioFlag from PIDprData where dprId like
"ETS#syn1#004130123OPS"
```

10 At the 2> prompt enter:

```
go
```

- Contents of the following columns of the **PIDprData** table are displayed:
 - **dprId.**
 - **granuleId.**
 - **ioFlag.**
- For example:

```

dprId
  granuleId
  ioFlag
-----
-----
-----
-----
-----
ETS#syn1#004130123OPS
  AST_05#00102141998020120000
    1
ETS#syn1#004130123OPS
  AST_08#00102141998020120000
    1
ETS#syn1#004130123OPS
  AST_09T#00102141998020120000
    0

ETS#syn1#004130123OPS
  AST_ANC#001L1004
    0

```

(4 rows affected)

- In the preceding example there are four **granuleId** column entries for the example DPR (ETS#syn1#004130123OPS); two have an **ioFlag** column entry of 0 (an input granule) and two have an **ioFlag** column entry of 1 (output granule).

11 At the 1> prompt enter:

```
select universalReference from PIDataGranule where granuleId like "<granule
ID>"
```

- For example:

1> select universalReference from PIDataGranule where granuleId like "AST_09T#00102141998020120000"

12 At the **2>** prompt enter:

go

- Contents of the **universalReference** column of the **PIDataGranule** table are displayed:
- For example:

universalReference

UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST_09T.001:5672

(1 row affected)

13 Repeat Steps 11 and 12 for each applicable **granuleId**.

- If all of the input granules have URs (as opposed to granuleId), the Subscription Manager *should* have sent a ReleaseDprJob command to Job Management.
- To check the preceding example observe the entries for granuleId AST_ANC#001L1004.

14 To exit from **isql** at the **1>** prompt enter:

quit

- The connection with the database is discontinued.

15 Access a terminal window logged in to the Queuing Server host.

- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
- For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

16 At the command line prompt enter:

cd /usr/ecs/<MODE>/CUSTOM/logs

- Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPISubMgrDebug.log, EcDpPrJobMgmtDebug.log).

17 At the command line prompt enter:

pg EcPISubMgrDebug.log

- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

18 Review the Subscription Manager debug log file for an entry indicating that Subscription Manager sent the ReleaseDprJob command for the job to Job Management.

- For example:

```
DpPrSchedulerProxy::ReleaseDprJob :  
ETS#syn1#004130123OPS  
03/30/00 11:37:07: Destroying DpPrSchedulerProxy object
```

19 Review the Subscription Manager debug log file for subscription notification from the Subscription Server concerning dynamic data that the DPR needs.

- For example:

```
03/30/00 11:36:58: ***** Begining of PlSubMsgCb::HandleCbMsg() *****  
03/30/00 11:36:58: Entire message = Subscription Notification::  
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:A  
ST_09T.001:5478  
  
ESDT Information: AST_09T.001:INSERT  
  
User Information: SubsMgr  
  
EventID: 805  
  
Subscription ID: 82  
  
Qualifier List:  
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:A  
ST_09T.001:5478 AsterGranule 03/30/2000 16:36:27 Day This is a quality flag  
Passed 30 20 GuruTej 1 AST_09T  
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:A  
ST_L1B.001:5400  
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:A  
ST_ANC.001:5369 (((90.0000, -180.0000), (90.0000, 180.0000), (-90.0000,  
180.0000), (-90.0000, -180.0000))) 13:01:23.000000Z 07/04/1997 1.0 5478 SC  
AST_09T.001 AST_09T#001070419971301230000000  
:SC:AST_09T.001:5478:1.HDF-EOS 0 40367 DRP1_OPS:AST_09T.001 1 None  
0.04036699980497360
```

...

- The preceding example shows subscription notification for a granule of AST_09T (input for ETS) that has been inserted into the archive.

- 20 If there is no Subscription Server notification to Subscription Manager or if it seems likely that all of the necessary input files for the DPR have been inserted by another DPR, investigate Subscription Server problems.
- For detailed instructions refer to the **Handle Subscription Server Problems** procedure (Section 14.6.3.6).
- 21 If there are no Subscription Server Problems, all of the input granules for the DPR have URs, and/or Subscription Manager received notification for all dynamic granules, notify the Operations Controller/System Administrator that there may be a problem with the Subscription Manager.

Table 14.6-10. Check to Determine Whether the DPR Is Waiting in the AutoSys Queue - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Manually trigger the release of DPRs	Use procedure in Section 14.4.10
2	Check for job activation in AutoSys.	Use procedure in Section 14.4.1
3	Access a terminal window logged in to the Queuing Server host (if applicable)	Use procedure in Section 14.2.1
4	Log in to the appropriate PDPS database	Use procedure in Section 14.6.3.3
5	select * from DpPrCreationQueue	enter text, press Enter
6	go	enter text, press Enter
7	Determine whether the job got a ReleaseDprJob command from the PLS Subscription Manager (would not be listed in the DpPrCreationQueue table)	read text
8	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
9	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
10	pg EcDpPrJobMgmtDebug.log	enter text, press Enter
11	Determine whether Job Management received the ReleaseDprJob command for the job	read text
12	If the DPR is a regular one, access a terminal window logged in to the appropriate PDPS database	single-click
13	select dprId,granuleId,ioFlag from PIDprData where dprId like "<DPR ID>"	enter text, press Enter
14	go	enter text, press Enter
15	select universalReference from PIDataGranule where granuleId like "<granule ID>"	enter text, press Enter
16	go	enter text, press Enter
17	Repeat Steps 15 and 16 for each applicable granuleId	
18	quit	enter text, press Enter

Table 14.6-10. Check to Determine Whether the DPR Is Waiting in the AutoSys Queue - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
19	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
20	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
21	pg EcPISubMgrDebug.log	enter text, press Enter
22	Determine whether Subscription Manager sent the ReleaseDprJob command for the job to Job Management	read text
23	Determine whether Subscription Manager received subscription notification from the Subscription Server concerning dynamic data that the DPR needs	read text
24	If there is no Subscription Server notification to Subscription Manager or if it seems likely that all of the necessary input files for the DPR have been inserted by another DPR, investigate Subscription Server problems	Use procedure in Section 14.6.3.6
25	If there are no Subscription Server Problems, all of the input granules for the DPR have URs, and/or Subscription Manager received notification for all dynamic granules, notify the Operations Controller/System Administrator that there may be a problem with the Subscription Manager	contact Operations Controller

14.6.3.3 Use ISQL to Check Database Tables

The PDPS database is the repository of data concerning PGEs, Production Requests, Data Processing Requests, Production Strategies, Production Plans and other production-related data. The Subscription Server (SUBSRV) database contains data concerning subscriptions.

The data stored in databases can be checked using either a database browser or isql commands. The procedure in this section describes how to check the tables using isql commands.

Table 14.6-11 presents (in a condensed format) the steps required to use isql to check database tables. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the appropriate host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - Examples of Subscription Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, and **l0acs06**.

- For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2** At the command line prompt enter:
isql -U <user ID> -S <database server>
- **<user ID>** is the database user's identification; e.g., **pdps_role**.
 - **<database server>** is the database server; e.g., **g0sps06_srvr**.
- 3** At the **Password:** prompt enter:
<database password>
- **<database password>** is the password for logging in to the database using the specified **<user ID>**.
 - A **1>** prompt is displayed, indicating that a connection has been made with the database.
- 4** At the **1>** prompt enter:
use <database name>
- The **<database name>** is likely to be one of the following names:
 - **pdps** [OPS mode].
 - **pdps_TS1** [TS1 mode].
 - **pdps_TS2** [TS2 mode].
- 5** At the **2>** prompt enter:
go
- 6** At the **1>** prompt enter:
select * from <table name>
- Alternatively, enter:
select <column name> from <table name>
 - Another alternative:
select <column name1>,<column name2>[,<column name3>,...] from <table name>
- 7** At the **2>** prompt enter:
go
- Table contents are displayed.
 - If ***** was specified, all entries in the table are displayed.
 - If specific column names were entered, the data associated with those columns only are displayed.

8 To exit from **isql** at the **1>** prompt enter:

quit

- The connection with the database is discontinued.

Table 14.6-11. Use ISQL to Check Database Tables - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (appropriate host)	single-click or use procedure in Section 14.2.1
2	isql -U <user ID> -S <database server>	enter text, press Enter
3	<database password>	enter text, press Enter
4	use <database name>	enter text, press Enter
6	go	enter text, press Enter
5	select * from <table name>	enter text, press Enter
7	go	enter text, press Enter
8	quit	enter text, press Enter

14.6.3.4 Check to Determine Whether AutoSys Is Full

This is an unlikely problem and would occur only when the DPR completionState in the PIDataProcessingRequest database table is CQ_RELEASE.

Table 14.6-12 presents (in a condensed format) the steps required to check to determine whether AutoSys is full. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

1 Log in to the appropriate PDPS database.

- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).

- For example:

```
x0sps02{cmshared}43: isql -U pdps_role -S x0sps02_srvr
```

```
Password:
```

```
1> use pdps
```

```
2> go
```

- 2 At the 1> prompt enter:
- ```
select dprId,completionState from PIDataProcessingRequest where dprId like
"<DPR ID>"
```
- For example:
 

```
1> select dprId,completionState from PIDataProcessingRequest where dprId like
"ETS#syn1#014020000OPS"
```
- 3 At the 2> prompt enter:
- ```
go
```
- Contents of the following columns of the **PIDataProcessingRequest** table are displayed:
 - **dprId.**
 - **completionState.**
 - For example:

dprId	completionState
ETS#syn1#014020000OPS	CQ_HOLD

(1 row affected)
- 4 To exit from **isql** at the 1> prompt enter:
- ```
quit
```
- The connection with the database is discontinued.
- 5 If the value in the **completionState** column for the DPR in the PDPS database **PIDataProcessingRequest** table is "CQ\_RELEASE" wait for a DPR to finish, so that the next waiting one can be put into AutoSys.
- The Job Management Server got the command from Subscription Manager to release the job but AutoSys cannot accommodate any more jobs at present.
- 6 If the value in the **completionState** column for the DPR in the PDPS database **PIDataProcessingRequest** table is "JIL\_FAILUR," respond to the JIL failure.
- For detailed instructions refer to the **Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure** procedure (Section 14.6.3.5).

**Table 14.6-12. Check to Determine Whether AutoSys Is Full - Quick-Step Procedures**

| Step | What to Enter or Select                                                                                                                                       | Action to Take                    |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1    | Log in to the appropriate PDPS database (if applicable)                                                                                                       | Use procedure in Section 14.6.3.3 |
| 2    | <b>select dprId,completionState from PIDataProcessingRequest where dprId like "&lt;DPR ID&gt;"</b>                                                            | <b>enter text, press Enter</b>    |
| 3    | <b>go</b>                                                                                                                                                     | <b>enter text, press Enter</b>    |
| 4    | <b>quit</b>                                                                                                                                                   | <b>enter text, press Enter</b>    |
| 5    | If the value in the <b>completionState</b> column for the DPR is "CQ_RELEASE," wait for a DPR to finish, so that the next waiting one can be put into AutoSys | <b>wait</b>                       |
| 6    | If the value in the <b>completionState</b> column for the DPR is "JIL_FAILUR," respond to the JIL failure                                                     | Use procedure in Section 14.6.3.5 |

### 14.6.3.5 Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure

A "JIL Failure" means that the Job Management Server had some problem placing the DPR in AutoSys. The Job Interface Language (JIL) processor rejected the "create job" command sent to it by the Job Management Server. The principal reasons for a JIL failure are as follows:

- There is already a job with an identical name in AutoSys.
- The AutoSys event processor is down. (Refer to the **Check AutoSys Status** procedure (Section 14.6.2.1).)
- The job had a problem when it was loaded into AutoSys and a malformed or mutant job box is the result.

Table 14.6-13 presents (in a condensed format) the steps required to respond to a condition where a DPR was released but failed due to a JIL failure. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Check whether there is already a job with an identical name in AutoSys.
  - For detailed instructions refer to the **Monitor/Control Job Processing** procedure (Section 14.4.1).

- When specifying job selection criteria, type a portion of the job name in the "Job Name" box, bracketed by the "\*" or "%" wildcard character.
    - For detailed instructions refer to the **Specify Job Selection Criteria** procedure (Section 14.4.6).
- 2 If there is a job with an identical name already in AutoSys, either request the Production Planner to delete it using the **Production Request Editor** or delete the job using the Job Management Client tool.
    - For detailed instructions on deleting a job using the Job Management Client tool refer to the **Perform Job Management Client Functions** procedure (Section 14.4.10).
    - Jobs should **not** be deleted using the AutoSys **Job Definition** GUI because it does not communicate with the PDPS database.
  - 3 If there is not a job with an identical name already in AutoSys, observe the characteristics of the job box in **JobScope**.
    - For detailed instructions refer to the **Monitor/Control Job Processing** procedure (Section 14.4.1).
    - If the job box is malformed or mutant, it will stay dark blue (meaning that it was not activated) and may be missing one of the three job steps.
  - 4 If the job box is malformed or mutant, in **JobScope** place the mouse cursor on the job, **single-click** and **hold** the **right** mouse button, **move** the mouse cursor to **Job Definition** (highlighting it), then **release** the mouse button.
    - Pop-up menu appears with the options <job name>, **Show Children, Show All Descendants, Hide All Descendants, Show Job Arrows, Hide Job Arrows, Show Box Arrows, Hide Box Arrows, Job Definition, View Dependencies, Set Simulation, Overrides** [grayed out], **Start Job, Kill Job, Force Start Job, On Hold, Off Hold, On Ice, Off Ice**.
    - The **Job Definition** GUI is displayed.
  - 5 If the job box is malformed or mutant, **single-click** on the **Delete** button.
- NOTE:** In general, it is bad practice to delete a job from AutoSys using the AutoSys **Job Definition** GUI because the AutoSys database and PDPS database lose their synchronization. However, there is no other solution in this case and the PDPS database must be updated manually.
- 6 To exit from the **Job Definition** GUI **single-click** on the **Exit** button.
    - The **Job Definition** GUI is dismissed.
  - 7 If a malformed or mutant job box was deleted, log in to the appropriate PDPS database.

- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- For example:  
**x0sps02:/usr/ecs/OPS/CUSTOM/[4] > isql -U pdps\_role -S x0sps02\_srvr**  
**Password:**  
**1> use pdps**  
**2> go**

**8** If a malformed or mutant job box was deleted, at the **1>** prompt enter:  
**update PIDataProcessingRequest set completionState="" where dprId like "<DPR ID>"**

- For example:  
**1> update PIDataProcessingRequest set completionState="" where dprId like "MoPGE02#2014193500OPS"**

**9** If a malformed or mutant job box was deleted, at the **2>** prompt enter:  
**go**

- The **completionState** of the DPR is updated in the **PIDataProcessingRequest** database table.
- The **completionState** is set equal to NULL.

**10** If a malformed or mutant job box was deleted, at the **1>** prompt enter:  
**select completionState from PIDataProcessingRequest where dprId like "<DPR ID>"**

- For example:  
**1> select completionState from PIDataProcessingRequest where dprId like "MoPGE02#2014193500OPS"**

**11** If a malformed or mutant job box was deleted, at the **2>** prompt enter:  
**go**

- Value in the **completionState** column of the **PIDataProcessingRequest** table for the specified DPR is displayed:
- For example:  
**completionState**  
**-----**  
**NULL**  
**(1 row affected)**

- Verify that the **completionState** of the DPR is set to NULL.

**12** To exit from **isql** at the **1>** prompt enter:

**quit**

- The connection with the database is discontinued.

**13** If a malformed or mutant job box was deleted, request the Production Planner to delete the DPR that maps to the job then recreate the DPR and any subsequent DPRs.

- Only the DPR that had the mutant job box and any DPRs that depend on it have to be deleted. It may not be necessary to delete entire production requests.

**Table 14.6-13. Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure - Quick-Step Procedures**

| Step | What to Enter or Select                                                                                                                                                             | Action to Take                    |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1    | Check whether there is already a job with an identical name in AutoSys                                                                                                              | Use procedure in Section 14.4.9   |
| 2    | Either request the Production Planner to delete the duplicate job using the <b>Production Request Editor</b> or delete the job using the Job Management Client tool (if applicable) | Use procedure in Section 14.4.10  |
| 3    | If there is not a job with an identical name already in AutoSys, observe the characteristics of the job box in <b>JobScope</b>                                                      | Use procedure in Section 14.4.1   |
| 4    | <b>Job Definition</b> (if the job box is malformed or mutant)                                                                                                                       | <b>right-click</b>                |
| 5    | <b>Delete</b> button (if applicable)                                                                                                                                                | <b>single-click</b>               |
| 6    | <b>Exit</b> button (if applicable)                                                                                                                                                  | <b>single-click</b>               |
| 7    | Log in to the appropriate PDPS database (if applicable)                                                                                                                             | Use procedure in Section 14.6.3.3 |
| 8    | <b>update PIDataProcessingRequest set completionState="" where dprId like "&lt;DPR ID&gt;"</b> (if applicable)                                                                      | <b>enter text, press Enter</b>    |
| 9    | <b>go</b> (if applicable)                                                                                                                                                           | <b>enter text, press Enter</b>    |
| 10   | <b>select completionState from PIDataProcessingRequest where dprId like "&lt;DPR ID&gt;"</b> (if applicable)                                                                        | <b>enter text, press Enter</b>    |
| 11   | <b>go</b> (if applicable)                                                                                                                                                           | <b>enter text, press Enter</b>    |
| 12   | <b>quit</b> (if applicable)                                                                                                                                                         | <b>enter text, press Enter</b>    |
| 13   | Request the Production Planner to delete the DPR that maps to the job then recreate the DPR and any subsequent DPRs (if applicable)                                                 | <b>contact Production Planner</b> |

### 14.6.3.6 Handle Subscription Server Problems

Handling Subscription Server problems involves determining whether the Subscription Manager is getting notification from Subscription Server after a dynamic granule has been inserted. If no notification is received, the Subscription Manager does not send a ReleaseDprJob request to the Job Management Server to release the affected job(s) into AutoSys. So the job(s) is (are) not processed.

Table 14.6-14 presents (in a condensed format) the steps required to handle Subscription Server problems. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Subscription Server host.
  - Examples of Subscription Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, and **l0acs06**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
  
- 2 Log in to the appropriate Subscription Server database.
  - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
  - For example:

```
x0acs06{cmshared}45: isql -U css_role -S x0acs06_srvr
Password:
1> use SubServer
2> go
```
  - If the Subscription Manager debug log file was previously searched for subscription notification from the Subscription Server concerning dynamic data that the DPR needs, the following types of information will have been discovered (if not for the specific granule required, at least for the datatype):
    - ESDT Information (data type and event).
    - User (i.e., Subscription Manager).
    - Event ID.
  - For example:

```
03/30/00 11:36:58: Entire message = Subscription Notification::
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:A
ST_09T.001:5478

ESDT Information: AST_09T.001:INSERT

User Information: SubsMgr

EventID: 805
```

3 At the 1> prompt enter:

```
select * from EcSbSubscription where eventID=<number>
```

- The <number> represents the relevant **eventID** (e.g., from the Subscription Manager debug log file).
- For example:

```
1> select * from EcSbSubscription where eventID=805
```

4 At the 2> prompt enter:

```
go
```

- Contents of the following columns of the **EcSbSubscription** table are displayed:
  - **subID.**
  - **eventID.**
  - **userID.**
  - **expDate.**
  - **object.**
- For example:

```
subID eventID userID
 expDate
 object
```

```



```

```

 82 805 SubsMgr
 Jan 18 2001 12:00AM
 82
805
7
"SubsMgr"26
"Subscription\x20Notification:"0
""17
"SubscriptionQueue"4
"XDC"2451563
2451928
13
```

```

"EcSbGenAction":16386
\9
"UnnamedPL"0
"":32808
\0
\]:16386
\9
"UnnamedPL"0
"":32808
\0
\]

```

**(1 row affected)**

- In the example note that **subID** 82 is entered for **eventID** 805 (AST\_09T.001:INSERT) and the **userID** is SubsMgr.

**5** To exit from **isql** at the **1>** prompt enter:

**quit**

- The connection with the database is discontinued.

**6** Access a terminal window logged in to the Queuing Server host.

- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
- For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

**7** At the command line prompt enter:

**cd /usr/ecs/<MODE>/CUSTOM/logs**

- Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPISubMgrDebug.log, EcDpPrJobMgmtDebug.log).

**8** At the command line prompt enter:

**pg <file name>**

- The **<file name>** is the name of the .err file for the DPR that inserted data (e.g., ACT#syn1#004130123OPS.err).
- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

9 Review the log file for an entry indicating that the data were in fact inserted.

- For example:

**03/30/00 11:38:02:**

**DpPrDSSInterface::CheckStatusParameters** The request results returned from request.GetStatus() is :

**-ReqUpdate[CmdCount(1) ReqSuccess(1)]**

**03/30/00 11:38:02: Request status indicates success**

**03/30/00 11:38:02: DpPrDSSInterface::CheckResultParameters** The request results returned from request.GetResults() is :

**-ReqResults[**

**--CmdResults[**

**---Insert results[**

**----**

**DATAFILEGROUP[userDataFile(/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data//DpPrRm/x0spg11\_disk/AST\_09T#00107041997130123000000) ESDTStatus(1) archiveDescription(None)]**

**UR(UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST\_09T.001:5478) CmdSuccess(1)]**

**03/30/00 11:38:02: DpPrDSSInterface::RequestOK,** The request results returned from this method is :

**-ReqResults[**

**--CmdResults[**

**---Insert results[**

**----**

**DATAFILEGROUP[userDataFile(/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data//DpPrRm/x0spg11\_disk/AST\_09T#00107041997130123000000) ESDTStatus(1) archiveDescription(None)]**

**UR(UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST\_09T.001:5478) CmdSuccess(1)]**

**03/30/00 11:38:02: ~~~~ RPC ID completed**

**ACT#syn1#004130123OPSAST\_09T**

**03/30/00 11:38:02: DpPrDSSInterface::~DpPrDSSInterface()**

**03/30/00 11:38:02: inserted**

**UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST\_09T.001:5478** into **ursVector =**

**ursVector.length()= 1**

**UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST\_09T.001:5478**

**03/30/00 11:38:02: About to update PIDataGranule**

**granuleId = AST\_09T#00107041997130123000**

**03/30/00 11:38:02: Successfully updated PIDataGranule**

**granuleId = AST\_09T#00107041997130123000**

- 10 Access a terminal window logged in to the Subscription Server host.
- Examples of Subscription Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, and **l0acs06**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 11 At the command line prompt enter:
- ```
cd /usr/ecs/<MODE>/CUSTOM/logs
```
- Change directory to the directory containing the log files (e.g., EcSbSubServer.ALOG, EcSbSubServerDebug.log).
- 12 At the command line prompt enter:
- ```
pg EcSbSubServer.ALOG
```
- The first page of the log file is displayed.
  - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 13 Correlate the data insertion time (as specified in the .err file for the DPR that inserted data) with activity in the Subscription Server ALOG file:
- For example, the following entries are in the Subscription Server ALOG file around AST\_09T data insertion time of 11:38 (as discovered in the ACT#syn1#004130123OPS.err log file):
- ```
Msg: Getting event for EventID = 805 Priority: 0 Time : 03/30/00 11:38:07
PID : 25042:MsgLink :0 meaningfulname :DsDbInterface::Connect()
Msg: Connected to server: Priority: 2 Time : 03/30/00 11:38:07
PID : 25042:MsgLink :0 meaningfulname
:EcSbTriggerEventRequestTriggerTrigger
Msg: Triggering event for EventID = 805 Priority: 0 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname
:EcSbTriggerEventRequestTriggerTrigger0
Msg: Firing subscriptions for event #805 Priority: 0 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname :DsDbInterface::Connect()
Msg: Connected to server: Priority: 2 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname :EcSbSubscriptionExecuteExecute
Msg: No action specified. Priority: 0 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname :EcSbSubscriptionExecuteExecute2
Msg: Email notification sent Priority: 0 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname :EcSbSubscriptionExecuteExecute
Msg: No action specified. Priority: 0 Time : 03/30/00 11:38:08
PID : 25042:MsgLink :0 meaningfulname :EcSbSubscriptionExecuteExecute2
Msg: Email notification sent Priority: 0 Time : 03/30/00 11:38:08
```

**PID : 25042:MsgLink :0 meaningfulname :EcMpMsgQueueOutInvokeInvoke
Msg: DCE Exception: Object not found (dce / rpc) Priority: 2 Time : 03/30/00
11:38:09**

**PID : 25042:MsgLink :0 meaningfulname :EcMpMsgQueueOutInvoke2
Msg: Exception: Unknown Priority: 2 Time : 03/30/00 11:38:09**

**PID : 25042:MsgLink :0 meaningfulname
:EcSbGetEventRequestGetEventDataGetEventData
Msg: Getting event for EventID = 8 Priority: 0 Time : 03/30/00 11:38:16**

**PID : 25042:MsgLink :0 meaningfulname :DsDbInterface::Connect()
Msg: Connected to server: Priority: 2 Time : 03/30/00 11:38:16**

**PID : 25042:MsgLink :0 meaningfulname
:EcSbTriggerEventRequestTriggerTrigger
Msg: Triggering event for EventID = 8 Priority: 0 Time : 03/30/00 11:38:16**

**PID : 25042:MsgLink :0 meaningfulname
:EcSbTriggerEventRequestTriggerTrigger0
Msg: Firing subscriptions for event #8 Priority: 0 Time : 03/30/00 11:38:16**

**PID : 25042:MsgLink :0 meaningfulname :DsDbInterface::Connect()
Msg: Connected to server: Priority: 2 Time : 03/30/00 11:38:16**

- In the example note that at 11:38 Subscription Server received Event 805 and recorded a log entry "**Msg: Firing subscriptions for event #805**" but that this did not include any event for SubsMgr for subId 82. Note, in particular:

**PID : 25042:MsgLink :0 meaningfulname :EcMpMsgQueueOutInvokeInvoke
Msg: DCE Exception: Object not found (dce / rpc) Priority: 2 Time : 03/30/00
11:38:09**

- In the example, it is clear that a file was inserted at 11:38, but that the Subscription Server never sent event notification to the PLS Subscription Manager.
- To exit from **pg** at the **:** prompt enter:

q

– The command line prompt is displayed.

14 If a Subscription Server problem has been identified, notify the Operations Controller/System Administrator of the problem.

15 If **no** Subscription Server problem has been identified, return to the procedure that specified handling Subscription Server problems.

- For example, the **Check to Determine Whether the DPR Is Waiting in the AutoSys Queue** procedure (Section 14.6.3.2).

Table 14.6-14. Handle Subscription Server Problems - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Subscription Server)	single-click or use procedure in Section 14.2.1
2	Log in to the appropriate Subscription Server database	Use procedure in Section 14.6.3.3
3	select * from EcSbSubscription where eventID=<number>	enter text, press Enter
4	go	enter text, press Enter
5	quit	enter text, press Enter
6	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
7	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
8	pg <file name> (.err log file for the DPR that inserted data)	enter text, press Enter
9	Determine whether the data were in fact inserted	read text
10	UNIX window (Subscription Server)	single-click or use procedure in Section 14.2.1
11	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
12	pg EcSbSubServer.ALOG	enter text, press Enter
13	Correlate the data insertion time (as specified in the .err file for the DPR that inserted data) with activity in the Subscription Server ALOG file	read text
14	If a Subscription Server problem has been identified, notify the Operations Controller/System Administrator of the problem	contact Operations Controller
15	If no Subscription Server problem has been identified, return to the procedure that specified handling Subscription Server problems	

14.6.3.7 Respond to a DPR That Was Released But Failed Due to an AutoSys ID Failure

An "AutoSys ID" failure occurs when the Job Management Server cannot associate the AutoSys ID with the DPR that was activated. When the Job Management Server is started, it reads various tables in the PDPS database that provide the linkage between processing resources and the AutoSys instance. If data is missing from the tables or was added after the Job Management Server was started, an "AutoSys ID" failure can occur when any jobs are activated by the Planning Workbench.

Table 14.6-15 presents (in a condensed format) the steps required to respond to a DPR that was released but failed due to an AutoSys ID failure. If you are already familiar with the procedures,

you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt enter:
cd /usr/ecs/<MODE>/CUSTOM/logs
 - Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPlSubMgrDebug.log, EcDpPrJobMgmtDebug.log).

- 3 At the command line prompt enter:
pg EcDpPrJobMgmt.ALOG
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 4 Review the Job Management ALOG file for an **“unable to find autosys id”** message.
 - For example:
**PID : 7668:MsgLink :0 meaningfulname
:DpPrAutosysMapList::GetAutosysIDByDpr
Msg: unable to find autosys id for dpr: ACT#syn1#004130123TS1 Priority: 2
Time : 03/09/001:33:51
PID : 7668:MsgLink :9 meaningfulname :CantFindAutoSysId
Msg: Unable to find autosys id Priority: 2 Time : 03/09/00 11:33:51
PID : 7668:MsgLink :10 meaningfulname
:DpPrSchedulerDObjSmainCreateFailed
Msg: RqFailed=CreateDpr DprID=ACT#syn1#004130123TS1 Priority: 2 Time :
03/09/00 11:33:51**
 - To exit from **pg** at the **:** prompt enter:
q
 - The command line prompt is displayed.

- 5 If an **“unable to find autosys id”** message was present in the log, log in to the appropriate PDPS database.
 - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).

- For example:
x0sps02:/usr/ecs/TS1/CUSTOM/[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps_TS1
2> go

6 If there is an “unable to find autosys id” message in the Job Management ALOG file, at the 1> prompt enter:

select * from PIResource

- Verify that the **PIResource** table in the PDPS database has at least one entry for a processing string and at least one entry for an AutoSys Instance.

7 At the 2> prompt enter:

go

- Contents of the following columns of the **PIResource** table are displayed:
 - **resourceId.**
 - **resourceName.**
 - **resourceState.**
 - **resourceType.**
 - **activityTypeId.**
 - **onLineState.**
- For example:

resourceId	resourceName	resourceState	resourceType	activityTypeId	onLineState
1	x0spg11_disk	1	DEVICE	1	1
2	x0spg11_vc	1	MACHINE	1	1
3	x0spg11	0	REALCOMP	1	1
4	x0spg11_string	0	VIRTUAL	1	1
5	FMR	0	AUTOSYS	1	1
6	x0aqq02_disk	0	DEVICE	1	1
7	x0aqq02_vc	0	MACHINE	1	1

```

8 x0aqq02
    0 REALCOMP          1      1
9 x0aqq02_string
    0 VIRTUAL          1      1

```

(9 rows affected)

- In the example resourceId 4 is a string (x0spg11_string) and resourceId 5 is an AutoSys Instance (FMR).

8 If the **PIResource** table in the PDPS database either has no entry for a processing string or no entry for an AutoSys Instance, make a request to the Resource Planner to create the necessary entry(ies).

9 At the 1> prompt enter:

```
select * from PIRscString
```

- Verify that the **PIRscString** table in the PDPS database has at least one entry and that **autosysIdKey** matches the entry in the **PIResource** table.

10 At the 2> prompt enter:

```
go
```

- Contents of the following columns of the **PIRscString** table are displayed:
 - **stringId.**
 - **stringName.**
 - **autosysIdKey.**
- For example:

```

stringId  stringName
autosysIdKey
-----
-----
4 x0spg11_string
5
9 x0aqq02_string
5

```

(2 rows affected)

- In the example the **PIRscString** table in the PDPS database has at least one entry and the **autosysIdKey** for each matches the entry (i.e., 5) in the **PIResource** table.

11 If the **PIRscString** table in the PDPS database either has no entry or if the **autosysIdKey** does not match the entry in the **PIResource** table, make a request to the Resource Planner to make the necessary adjustments.

12 At the 1> prompt enter:

select * from DpPrAutosysMapList

- Verify that the **DpPrAutosysMapList** table in the PDPS database has at least one entry and that **resourceString** and **autosysIdKey** match the entries in the **PIRscString** table.

13 At the 2> prompt enter:

go

- Contents of the following columns of the **PIRscString** table are displayed:
 - **resourceString.**
 - **autosysId.**
 - **autosysIdKey.**

- For example:

resourceString	autosysId	autosysIdKey
x0aqq02_string	FMR	5
x0spg11_string	FMR	5

(2 rows affected)

- In the example the **DpPrAutosysMapList** table in the PDPS database has at least one entry and the **resourceString** and **autosysIdKey** entries match the entries in the **PIRscString** table.

14 To exit from **isql** at the 1> prompt enter:

quit

- The connection with the database is discontinued.

15 If the **DpPrAutosysMapList** table in the PDPS database either has no entry or if either the **resourceString** or **autosysIdKey** does not match the corresponding entry in the **PIRscString** table, make a request to the Resource Planner to make the necessary adjustments.

16 If Resource Planning has been done since the Job Management Server was brought up, make a request to the Operations Controller/System Administrator to bounce the server.

- The Job Management Server reads resource information at start-up; any changes since it was brought up will not have taken effect.

Table 14.6-15. Respond to a DPR That Was Released But Failed Due to an AutoSys ID Failure - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg EcDpPrJobMgmt.ALOG	enter text, press Enter
4	Review the Job Management ALOG file for an “unable to find autosys id” message	read text
5	If an “unable to find autosys id” message was present in the log, log in to the appropriate PDPS database	Use procedure in Section 14.6.3.3
6	select * from PIResource	enter text, press Enter
7	go	enter text, press Enter
8	If the PIResource table in the PDPS database either has no entry for a processing string or no entry for an AutoSys Instance, make a request to the Resource Planner to create the necessary entry(ies)	contact Resource Planner
9	select * from PIRscString	enter text, press Enter
10	go	enter text, press Enter
11	If the PIRscString table in the PDPS database either has no entry or if the autosysIdKey does not match the entry in the PIResource table, make a request to the Resource Planner to make the necessary adjustments	contact Resource Planner
12	select * from DpPrAutosysMapList	enter text, press Enter
13	go	enter text, press Enter
14	quit	enter text, press Enter
15	If the DpPrAutosysMapList table in the PDPS database either has no entry or if either the resourceString or autosysIdKey does not match the corresponding entry in the PIRscString table, make a request to the Resource Planner to make the necessary adjustments	contact Resource Planner
16	If Resource Planning has been done since the Job Management Server was brought up, make a request to the Operations Controller/System Administrator to bounce the server	contact Operations Controller

14.6.3.8 Respond to a DPR That Was Released But Failed Due to Invalid DPR

If a job that was activated does not get started in AutoSys, it may be that Job Management released the DPR but the job failed to start because the DPR was invalid. Table 14.6-16 presents (in a condensed format) the steps required to respond to a DPR that was released but failed due to invalid DPR. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:
cd /usr/ecs/<MODE>/CUSTOM/logs
 - Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPISubMgrDebug.log, EcDpPrJobMgmtDebug.log).
- 3 At the command line prompt enter:
pg EcDpPrJobMgmt.ALOG
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 4 Review the Job Management ALOG file for an “**invalid DPR object**” message.
 - For example:
PID : 13169:MsgLink :0 meaningfulname :EnteringCreateDprJob
Msg: Entering CreateDprJob... Priority: 0 Time : 01/22/00 19:01:24
PID : 13169:MsgLink :10 meaningfulname :InvalidDprObject
Msg: invalid DPR object Priority: 2 Time : 01/22/00 19:01:24
PID : 13169:MsgLink :0 meaningfulname :CantFindAutoSysRecord
Msg: Unable to locate autosys record Priority: 2 Time : 01/22/00 19:01:24
PID : 13169:MsgLink :12 meaningfulname
:CreateDprJob:ModAutoSysJobCounterProblem
Msg: ModAutoSysJobCounter problem Priority: 2 Time : 01/22/00 19:01:24
PID : 13169:MsgLink :13 meaningfulname
:DpPrSchedulerDObjSmainCreateFailed
Msg: RqFailed=CreateDpr DprID=ETS#OnDema01093011DEV04 Priority: 2
Time : 01/22/00 19:01:24

- An invalid DPR object is usually caused by missing **Performance** or **Resource** information for the PGE.
- To exit from **pg** at the **:** prompt enter:

q

- The command line prompt is displayed.

5 Log in to the appropriate PDPS database.

- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- For example:

```
x0sps02:/usr/ecs/TS1/CUSTOM[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps_TS1
2> go
```

6 To check for an entry for the job (by searching on the **pgeId** column) in the **PIPgePerformance** table in the applicable PDPS database at the **1>** prompt enter:

```
select * from PIPgePerformance where pgeId like "<PGE ID>"
```

- For example:

```
1> select * from PIPgePerformance where pgeId like "ACT#syn4#001"
```

7 At the **2>** prompt enter:

go

- Contents of the following columns of the **PIPgePerformance** table are displayed:
 - **pgeId.**
 - **cpuTime.**
 - **pgeElapsedTime.**
 - **dprElapsedTime.**
 - **maxMemory.**
 - **faults.**
 - **swaps.**
 - **blockInputOperation.**
 - **blockOutputOperation.**
 - **runCpuTime.**
 - **runMaxMemory.**
 - **runPgeElapsed.**
 - **runDprElapsed.**
 - **runFaults.**

```

- runSwaps.
- runBlockInOperation.
- runBlockOutOperation.
- sharedMemory.
- runSharedMemory.
• Example 1:
1> select * from PIPgePerformance where pgeId like "ACT#syn4#001"
2> go
pgeId          cpuTime  pgeElapsedTime dprElapsedTime
maxMemory      faults  swaps  blockInputOperation
blockOutputOperation runCpuTime runMaxMemory  runPgeElapsed
runDprElapsed runFaults runSwaps  runBlockInOperation
runBlockOutOperation sharedMemory  runSharedMemory
-----
-----
-----
-----
-----
ACT#syn4#001          55    1800    1800
      10.000000    100    100    100
      100    55    10.000000    1800
      1800    100    100    100
      100    0.000000    0.000000

```

(1 row affected)

```

• Example 2:
1> select * from PIPgePerformance where pgeId like "ACT#syn5#001"
2> go
pgeId          cpuTime  pgeElapsedTime dprElapsedTime
maxMemory      faults  swaps  blockInputOperation
blockOutputOperation runCpuTime runMaxMemory  runPgeElapsed
runDprElapsed runFaults runSwaps  runBlockInOperation
runBlockOutOperation sharedMemory  runSharedMemory
-----
-----
-----
-----
-----
ACT#syn5#001          0      0      0
      0.000000    0      0      0

```

	0	0	0.000000	0
0	0	0	0	
	0	0.000000	0.000000	

(1 row affected)

- 8 Observe the entries in the **PIPgePerformance** table to determine whether the non-schedulable PGE(s) has (have) non-zero values in the various columns of the table.
- In Example 1 in Step 7 the entries (for pgeID ACT#syn4#001) are mostly non-zero values whereas all of the Example 2 entries (for pgeID ACT#syn5#001) are zero values.
 - There is performance data in the table for Example 1 (pgeID ACT#syn4#001) but none for Example 2 (pgeID ACT#syn5#001).
- 9 To check for an entry for the job (by searching on the **sswId** column) in the **PIResourceRequirement** table in the applicable PDPS database at the **1>** prompt enter:
- ```
select * from PIResourceRequirement where sswId like "<software ID>"
```

**NOTE:** The **sswId** (science software ID) is the first part of the **pgeId**. For example:

```
pgeId = ACT#syn4#001
sswId = ACT#syn4
```

- 10 At the **2>** prompt enter:

**go**

- Contents of the following columns of the **PIResourceRequirement** table are displayed:
  - **sswId.**
  - **string.**
  - **numOfCPUs.**
  - **computer.**
  - **diskSpace.**
  - **topLevelShellName.**
  - **exeTarFileDiskSpace.**
  - **mcfName.**
  - **ramSize.**
  - **exeUntarFileDiskSpace.**
  - **exeTarUR.**
  - **pgeId.**
  - **toolkitArchitecture.**
  - **pgeCommands.**

- Example 1:

```
1> select * from PIResourceRequirement where sswId like "ACT#syn4"
```

```
2> go
```

```
sswId
```

```
string
```

```
numOfCPUs
```

```
computer
```

```
diskSpace topLevelShellName
```

```
exeTarFileDiskSpace mcfName
```

```
ramSize exeUntarFileDiskSpace
```

```
exeTarUR
```

```
pgeId toolkitArchitecture pgeCommands
```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```

```
ACT#syn4
```

```
x0spg11_string
```

```
1
```

```
NULL
```

```
10.000000 synpge_sgi6n32
```

```
1.787376 NULL
```

```
0.000000 1.805250
```

```
UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:18:LM:P
```

```
GEEEXE.001:3839
```

```
ACT#syn4#01
```

```
sgi32
```

```
1110
```

```
(1 row affected)
```

- Example 2:

```
1> select * from PIResourceRequirement where sswId like "ACT#syn5"
```

```
2> go
```

```
sswId
```

```
string
```



- 13 If entries for the non-schedulable PGE(s) in either the **PIPgePerformance** table or **PIResourceRequirement** table are all zero (0) or NULL, request the SSI&T team to run the SSIT Operational Metadata GUI and enter correct performance values.
- 14 If entries for the non-schedulable PGE(s) in either the **PIPgePerformance** table or **PIResourceRequirement** table are all zero (0) or NULL, request the Production Planner to delete and re-create the applicable DPRs (after the SSI&T team has run the SSIT Operational Metadata GUI and entered correct performance values).
- Activation should succeed on the next attempt after the corrections have been made.

**Table 14.6-16. Respond to a DPR That Was Released But Failed Due to Invalid DPR - Quick-Step Procedures**

| Step | What to Enter or Select                                                                                                                                 | Action to Take                                         |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 1    | UNIX window (Queuing Server)                                                                                                                            | <b>single-click</b> or use procedure in Section 14.2.1 |
| 2    | <b>cd /usr/ecs/&lt;MODE&gt;/CUSTOM/logs</b>                                                                                                             | <b>enter text, press Enter</b>                         |
| 3    | <b>pg EcDpPrJobMgmt.ALOG</b>                                                                                                                            | <b>enter text, press Enter</b>                         |
| 4    | Review the Job Management ALOG file for an "invalid DPR object" message                                                                                 | <b>read text</b>                                       |
| 5    | Log in to the appropriate PDPS database                                                                                                                 | Use procedure in Section 14.6.3.3                      |
| 6    | <b>Select * from PIPgePerformance where pgedl like "&lt;PGE ID&gt;"</b>                                                                                 | <b>enter text, press Enter</b>                         |
| 7    | <b>go</b>                                                                                                                                               | <b>enter text, press Enter</b>                         |
| 8    | Determine whether the non-schedulable PGE(s) has (have) non-zero values in the various columns of the <b>PIPgePerformance</b> table                     | <b>read text</b>                                       |
| 9    | <b>Select * from PIResourceRequirement where sswld like "&lt;software ID&gt;"</b>                                                                       | <b>enter text, press Enter</b>                         |
| 10   | <b>go</b>                                                                                                                                               | <b>enter text, press Enter</b>                         |
| 11   | Determine whether the non-schedulable PGE(s) has (have) non-zero values in the various columns of the <b>PIResourceRequirement</b> table                | <b>read text</b>                                       |
| 12   | <b>Quit</b>                                                                                                                                             | <b>enter text, press Enter</b>                         |
| 13   | If entries for the non-schedulable PGE(s) in either database table are all zero (0) or NULL, request the SSI&T team to enter correct performance values | <b>contact SSI&amp;T team</b>                          |
| 14   | Request the Production Planner to delete and re-create the applicable DPRs (when applicable)                                                            | <b>contact Production Planner</b>                      |

### 14.6.3.9 Respond to a DPR That Was Released But Failed to Be Received by Job Management Server

If a DPR was released but failed to be received by the Job Management Server, the Planning Workbench would think it had successfully activated the DPR(s) but the Job Management Server would not have received the proper notification. Consequently, Job Management would not release the affected job(s) into AutoSys.

Table 14.6-17 presents (in a condensed format) the steps required to respond to a DPR that was released but failed to be received by Job Management Server. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
  - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:  
**cd /usr/ecs/<MODE>/CUSTOM/logs**
  - Change directory to the directory containing the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, <DPR number>.ALOG, <DPR number>.err, EcPlSubMgrDebug.log, EcDpPrJobMgmtDebug.log).
- 3 At the command line prompt enter:  
**pg EcDpPrJobMgmtDebug.log**
  - The first page of the log file is displayed.
  - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 4 Review the EcDpPrJobMgmtDebug.log file for problems with communication.
  - To exit from **pg** at the **:** prompt enter:  
**q**
    - The command line prompt is displayed.
- 5 Notify the Operations Controller/System Administrator of suspected communication problems.

**Table 14.6-17. Respond to a DPR That Was Released But Failed to Be Received by Job Management Server - Quick-Step Procedures**

| Step | What to Enter or Select                                                                                   | Action to Take                                         |
|------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 1    | UNIX window (Queuing Server)                                                                              | <b>single-click</b> or use procedure in Section 14.2.1 |
| 2    | <b>cd /usr/ecs/&lt;MODE&gt;/CUSTOM/logs</b>                                                               | <b>enter text, press Enter</b>                         |
| 3    | <b>pg EcDpPrJobMgmtDebug.log</b>                                                                          | <b>enter text, press Enter</b>                         |
| 4    | Determine whether there have been problems with communication                                             | <b>read text</b>                                       |
| 5    | Notify the Operations Controller/System Administrator of suspected communication problems (if applicable) | <b>contact Operations Controller</b>                   |

#### 14.6.4 Respond to a Single DPS Job That Has Failed or Is Hanging

A single DPS job that has failed or is hanging represents one of the following conditions:

- Entire job box is hanging.
- Allocation function is hanging.
- Allocation function has failed.
- Staging function is hanging.
- Staging function has failed.
- Preprocessing job has failed.
- Execution job is hanging.
- Execution job has failed.
- Postprocessing job has failed.
- Insertion function has failed.

Perform the appropriate procedure(s) related to responding to a single DPS job that has failed or is hanging:

- **Handle a Box Job that is Hanging in AutoSys** (Section 14.6.4.1).
- **Handle a Hanging Allocation Function** (Section 14.6.4.2).
- **Run Execution Management Outside of AutoSys** (Section 14.6.4.3).
- **Handle a Failed Allocation Function** (Section 14.6.4.4).
- **Force-Start a Job** (Section 14.6.4.5).
- **Respond to a Restart of a Job That Fails Although All Known Problems Have Been Corrected** (Section 14.6.4.6).
- **Handle a Hanging Staging Function** (Section 14.6.4.7).
  - Perform the **Handle a Hanging Allocation Function** procedure (Section 14.6.4.2).
- **Handle a Failed Staging Function** (Section 14.6.4.8).

- **Clean Up the DPS File Tables** (Section 14.6.4.9).
- **Handle a Failed Preprocessing Job** (Section 14.6.4.10).
- **Handle a Hanging Execution Job** (Section 14.6.4.11).
  - Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).
- **Handle a Failed Execution Job** (Section 14.6.4.12).
  - Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).
- **Respond to Execution Job and/or Postprocessing Job That Have (Has) Failed** (Section 14.6.4.13).
- **Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing** (Section 14.6.4.14).
- **Handle a Failed Postprocessing Job** (Section 14.6.4.15).
- **Handle Failure of Both Execution and Postprocessing Jobs** (Section 14.6.4.16).
- **Handle a Failed Insertion Function** (Section 14.6.4.17).
- **Handle a Failed Deallocate Function** (Section 14.6.4.18).

#### 14.6.4.1 Handle a Box Job that is Hanging in AutoSys

This condition is determined by noting that the entire Job Box on **JobScape** (including all three job steps) is the same color, and that color is the one indicated for "Inactive" jobs or "On Hold" jobs. (Typically dark blue is used to indicate both conditions.)

Use the following procedure to handle a box job that is hanging in AutoSys:

- 1 Check to determine whether the AutoSys Event server or one of the AutoSys clients is down.
  - For detailed instructions refer to the **Check AutoSys Status** procedure (Section 14.6.2.1).
- 2 Check to determine whether a "glitch" could have caused the job to go into AutoSys in an "inactive" state.
  - For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).

#### 14.6.4.2 Handle a Hanging Allocation Function

A hanging allocation function may be indicated when the Preprocessing job, which had turned green on **JobScape** or **TimeScape** to indicate that it was running, never turns either red (failed) or blue (success). Any of the following conditions may cause the allocation function to hang:

- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but the file cannot be distributed because Storage Management (STMGT) is down.

- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but the file cannot be distributed because Storage Management cannot ftp the file to the data directory on the science processor disk.
- The request may be waiting for the archive to stage the file. If there are several other requests in progress, the PGE “acquire” request may have to wait until one or more of the other requests completes.

Table 14.6-18 presents (in a condensed format) the steps required to handle a hanging allocation function. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
  - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:
 

**tail -f /usr/ecs/<MODE>/CUSTOM/logs/<job name>.err**

  - **<job name>** refers to the name of the AutoSys job for which the .err log file (e.g., ACT#syn1#004130123OPS.err) is to be reviewed.
  - If there is no activity or if the job is in a retry loop, the job is hanging.
- 3 If there is no activity in the .err log, request the Distribution Technician or Operations Controller (as appropriate) to determine the status of the distribution request for the PGE tar file.
  - The requester should be EcDpPrEM.
  - If the status is "Suspended with Errors," Storage Management servers may have to be bounced, then the Distribution Technician can resume the request.
  - If the status is "Staging," the request may be waiting for the archive to stage the file.
    - If there are several other requests in progress, the PGE acquire may have to wait until one or more of them completes.
    - If the request is in the "Staging" state, it may eventually complete.
- 4 If distribution of the PGE tar file does not resume, at the command line prompt enter:
 

**/usr/ecs/<MODE>/CUSTOM/pdps/<processor>/data/DpPrRm/<processor>\_disk**

  - **<processor>** refers to the Science Processor host (e.g., **e0spg11**, **g0spg11**, or **l0spg11**).
  - The **<processor>\_disk** directory (e.g., e0spg11\_disk) or one of its subdirectories is the target directory where the data server puts the inputs needed for processing.

5 If distribution of the PGE tar file does not resume, at the command line prompt enter:

**ls -al**

- A listing of the files and subdirectories on the science processor disk (for the mode) is displayed.
- The target directory for the PGE tar file is a subdirectory identified by the sswID (science software identification) of the PGE.
  - For example, if the job in AutoSys is **ACT#syn1#004130123OPS** on the science processor disk there should be an **ACT#syn1** subdirectory.

6 If the target directory does not exist, notify the Operations Controller/System Administrator of the problem.

7 If the target directory does exist, at the command line prompt enter:

**ftp x0spg11**

- For example:

**x0sps02:/usr/ecs/OPS/CUSTOM/logs[109] > ftp x0spg11**

- The following type of reply should be received:

**Connected to x0spg11.xdc.ecs.nasa.gov.**

**220-NOTICE: ,**

**220-\*\*\*\*\***

**220-**

**220-THIS U.S. GOVERNMENT COMPUTING SYSTEM IS FOR  
AUTHORIZED USERS**

**220-ONLY. ANYONE USING IT IS SUBJECT TO MONITORING AND  
RECORDING**

**220-OF ALL KEYSTROKES WITHOUT FURTHER NOTICE. THIS  
RECORD MAY BE**

**220-PROVIDED AS EVIDENCE TO LAW ENFORCEMENT OFFICIALS.**

**220-**

**220-\*\*\*\*\***

**220-**

**220-**

**220-**

**220 x0spg11.xdc.ecs.nasa.gov FTP server ready.**

**Name (x0spg11:cmshared):**

- 8 If the target directory does exist, at the **Name (<host>:<user ID>):** prompt enter:  
[Return/Enter]
- or -
- <user ID>
- The following type of reply should be received:  
**331 Password required for cmshared.**  
**Password:**
- 9 If the target directory does exist, at the **Password:** prompt enter:  
<password>
- The following type of reply should be received:  
**230 User cmshared logged in.**  
**ftp>**
- 10 If the target directory does exist, at the **ftp>** prompt enter:  
**cd /usr/ecs/<MODE>/CUSTOM/pdps/<processor>/data/DpPrRm/  
<processor>\_disk/<PGE subdirectory>**
- For example:  
**ftp> cd /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11\_disk/  
ACT#syn1**
  - The following type of reply should be received:  
**250 CWD command successful.**  
**ftp>**
- 11 If the target directory does exist, at the **ftp>** prompt enter:  
**put <file name>**
- For example:  
**ftp> put ACT#syn1#004130123OPS.ALOG**
  - The following type of reply should be received:  
**200 PORT command successful.**  
**150 Opening ASCII mode data connection for  
'ACT#syn1#004130123OPS.ALOG'.**  
**226 Transfer complete.**  
**local: ACT#syn1#004130123OPS.ALOG remote:  
ACT#syn1#004130123OPS.ALOG**

13055 bytes sent in 0.034 seconds (3.7e+02 Kbytes/s)  
ftp>

12 If the target directory does exist, at the ftp> prompt enter:

**quit**

- The following type of reply should be received:  
**221 Goodbye.**

13 If the target directory does exist, at the command line prompt enter:

**cd /usr/ecs/<MODE>/CUSTOM/pdps/<processor>/data/DpPrRm/  
<processor>\_disk/<PGE subdirectory>**

- For example:

**cd /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11\_disk/  
ACT#syn1**

14 If the target directory does exist, at the command line prompt enter:

**ls -al**

- The following type of reply should be received:

**total 5760  
drwxrwxr-x 2 cmshared cmshared 65536 Apr 17 10:45 .  
drwxrwxr-x 23 cmshared cmshared 65536 Apr 14 13:17 ..  
-rw-r--r-- 1 cmshared cmshared 12898 Apr 17 10:45  
ACT#syn1#004130123OPS.ALOG**

- In the examples shown in Steps 7 through 14 the log file **ACT#syn1#004130123OPS.ALOG** was successfully transferred by ftp from **x0sps02 /usr/ecs/OPS/CUSTOM/logs** to **x0spg11 /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11\_disk/ACT#syn1** as verified by changing directory to the **x0spg11\_disk/ACT#syn1** subdirectory and performing a long listing of the directory contents.

15 If the ftp fails, notify the Operations Controller/System Administrator to have the ftp problem fixed.

16 If the Allocation job is in a retry loop, ensure that it is possible to connect to the necessary hosts and servers.

- For detailed instructions refer to the **Check Connections to Hosts/Servers** procedure (Section 14.6.1.1).

- Note that the first retry is designed to fail, because the software is retrieving server-side information to refresh the client-side at this point. However, multiple subsequent retries indicate a “retry loop.”

- 17 If no problem has been identified and the job is still hanging, run the Execution Manager in the debugger.
- For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).
  - Execution Manager (EcDpPrEM) is the DPS program that runs during allocation (Preprocessing).

**Table 14.6-18. Handle a Hanging Allocation Function - Quick-Step Procedures (1 of 2)**

| Step | What to Enter or Select                                                                                                                                                                         | Action to Take                                         |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 1    | UNIX window (Queuing Server)                                                                                                                                                                    | <b>single-click</b> or use procedure in Section 14.2.1 |
| 2    | <b>tail -f /usr/ecs/&lt;MODE&gt;/CUSTOM/logs/&lt;job name&gt;.err</b>                                                                                                                           | <b>enter text, press Enter</b>                         |
| 3    | If there is no activity in the .err log, request the Distribution Technician or Operations Controller (as appropriate) to determine the status of the distribution request for the PGE tar file | <b>contact Distribution Technician</b>                 |
| 4    | <b>/usr/ecs/&lt;MODE&gt;/CUSTOM/pdps/&lt;processor&gt;/data/DpPrRm/&lt;processor&gt;_disk</b> (if applicable)                                                                                   | <b>enter text, press Enter</b>                         |
| 5    | <b>ls -al</b> (if applicable)                                                                                                                                                                   | <b>enter text, press Enter</b>                         |
| 6    | If the target directory does not exist, notify the Operations Controller/System Administrator of the problem                                                                                    | <b>contact Operations Controller</b>                   |
| 7    | <b>ftp x0spg11</b> (if applicable)                                                                                                                                                              | <b>enter text, press Enter</b>                         |
| 8    | [Return/Enter] or <b>&lt;user ID&gt;</b> (as applicable)                                                                                                                                        | <b>enter text, press Enter</b>                         |
| 9    | <b>&lt;password&gt;</b> (if applicable)                                                                                                                                                         | <b>enter text, press Enter</b>                         |
| 10   | <b>cd /usr/ecs/&lt;MODE&gt;/CUSTOM/pdps/&lt;processor&gt;/data/DpPrRm/ &lt;processor&gt;_disk/&lt;PGE subdirectory&gt;</b> (if applicable)                                                      | <b>enter text, press Enter</b>                         |
| 11   | <b>put &lt;file name&gt;</b> (if applicable)                                                                                                                                                    | <b>enter text, press Enter</b>                         |
| 12   | <b>quit</b> (if applicable)                                                                                                                                                                     | <b>enter text, press Enter</b>                         |
| 13   | <b>cd /usr/ecs/&lt;MODE&gt;/CUSTOM/pdps/&lt;processor&gt;/data/DpPrRm/ &lt;processor&gt;_disk/&lt;PGE subdirectory&gt;</b> (if applicable)                                                      | <b>enter text, press Enter</b>                         |
| 14   | <b>ls -al</b> (if applicable)                                                                                                                                                                   | <b>enter text, press Enter</b>                         |

**Table 14.6-18. Handle a Hanging Allocation Function - Quick-Step Procedures (2 of 2)**

| Step | What to Enter or Select                                                                                            | Action to Take                       |
|------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| 15   | If the ftp fails, notify the Operations Controller/System Administrator to have the ftp problem fixed              | <b>contact Operations Controller</b> |
| 16   | If the Allocation job is in a retry loop, ensure that it is possible to connect to the necessary hosts and servers | Use procedure in Section 14.6.1.1    |
| 17   | Run the Execution Manager in the debugger (if applicable)                                                          | Use procedure in Section 14.6.4.3    |

#### 14.6.4.3 Run Execution Management Outside of AutoSys

To debug problems or to run unit tests, it is sometimes necessary to run Execution Manager (EcDpPrEM) outside of AutoSys.

Table 14.6-19 presents (in a condensed format) the steps required to run Execution Management outside of AutoSys. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1     **Single-click** on the name of the job displayed on the **JobScape** GUI.
  - The job name is displayed in the **Current Job Name** field in the Control Region of the **JobScape** GUI.
  
- 2     **Single-click** on the **Job Console** button on the **JobScape** GUI.
  - The **Job Activity Console** GUI (also known as the **Ops Console** GUI) is displayed with information concerning the current job.
  
- 3     Access a terminal window logged in to the Queuing Server host.
  - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
  
- 4     At the command line prompt enter:
 

```
cd /usr/ecs/<MODE>/CUSTOM/bin/DPS
```
  
- 5     At the command line prompt enter:

**sh**

- A Bourne shell is started.

6 At the command line prompt enter:

**auto.profile**

7 If running in the debugger is desired, at the command line prompt enter:

**debugger EcDpPrEM &**

- The Execution Manager is brought up in the debugger.

8 At the prompt enter:

**<command>**

- **<command>** is the command listed in the **Command** field of the **Job Activity Console GUI (Ops Console GUI)**.
  - The command listed in the **Command** field of the **Job Activity Console GUI (Ops Console GUI)** is the command that AutoSys was going to use to run EM.
- For example:  
**EcDpPrEM ConfigFile /usr/ecs/OPS/CUSTOM/cfg/EcDpPrEM.CFG ecs\_mode OPS -alloc PGE07#1.0#01080596155400**
- EcDpPrEM starts running.

**Table 14.6-19. Run Execution Management Outside of AutoSys - Quick-Step Procedures**

| Step | What to Enter or Select                                                                    | Action to Take                                         |
|------|--------------------------------------------------------------------------------------------|--------------------------------------------------------|
| 1    | <b>&lt;job name&gt;</b> (on <b>JobScape</b> GUI)                                           | <b>single-click</b>                                    |
| 2    | <b>Job Console</b> button                                                                  | <b>single-click</b>                                    |
| 3    | UNIX window (Queuing Server)                                                               | <b>single-click</b> or use procedure in Section 14.2.1 |
| 4    | <b>cd /usr/ecs/&lt;MODE&gt;/CUSTOM/bin/DPS</b>                                             | <b>enter text, press Enter</b>                         |
| 5    | <b>sh</b>                                                                                  | <b>enter text, press Enter</b>                         |
| 6    | <b>auto.profile</b>                                                                        | <b>enter text, press Enter</b>                         |
| 7    | <b>debugger EcDpPrEM &amp;</b>                                                             | <b>enter text, press Enter</b>                         |
| 8    | <b>&lt;command&gt;</b> (from <b>Command</b> field of the <b>Job Activity Console GUI</b> ) | <b>enter text, press Enter</b>                         |

#### 14.6.4.4 Handle a Failed Allocation Function

If allocation fails, the Preprocessing job turns red on **JobScape** or **TimeScape**.

Table 14.6-20 presents (in a condensed format) the steps required to handle a failed allocation function. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
  - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
  
- 2 At the command line prompt enter:  
**cd /usr/ecs/<MODE>/CUSTOM/logs**
  - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).
  
- 3 If there is an ALOG file for the job, at the command line prompt enter:  
**pg <file name>**
  - **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.ALOG).
  - The first page of the log file is displayed.
  - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
  - If there is no ALOG file for the job, go to Step 12.
  
- 4 If there is an ALOG file for the job, review the log file for the following types of error messages.
  - **Error: unable to update Machine in Autosys**
  - **Unable to determine type of UR**
  - An "**Error: unable to update Machine in Autosys**" message means that DPS is unable to access the AutoSys database. The auto.profile in /usr/ecs/<MODE>/CUSTOM/bin/DPS has the wrong settings for AUTOSYS and AUTOUSER parameters.
    - Although they may differ slightly from DAAC to DAAC, the expected values are generally as follows:  
**AUTOSYS = /usr/ecs/<MODE>/COTS/autotreeb/autosys**  
**AUTOUSER = /usr/ecs/<MODE>/COTS/autotreeb/autouser**
  - A message of "**Unable to determine type of UR**" means that the PGE tar file has not been inserted.
  - To exit from **pg** at the **:** prompt enter:  
**q**
    - The command line prompt is displayed.

5 If an **“Error: unable to update Machine in Autosys”** message was present in the log, notify the Operations Controller/System Administrator to have the auto.profile file corrected.

- Either AutoSys Mkcfg has to be run again or the auto.profile file has to be changed manually.

6 If an **“Unable to determine type of UR”** message was present in the log, log in to the appropriate PDPS database.

- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).

- For example:

```
x0sps02:/usr/ecs/OPS/CUSTOM[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps
2> go
```

7 To check the **PIResourceRequirement** table in the PDPS database for a non-null entry for the field **exeTarUR** at the **1>** prompt enter:

```
select sswId,exeTarUR from PIResourceRequirement where sswId like "<software ID>"
```

- For example:

```
1> select sswId,exeTarUR from PIResourceRequirement where sswId like
"ACT#syn1"
```

8 At the **2>** prompt enter:

```
go
```

- Contents of the following columns of the **PIResourceRequirement** table are displayed:

- **sswId.**
- **exeTarUR.**

- Example 1:

```
1> select sswId,exeTarUR from PIResourceRequirement where sswId like
"ACT#syn1"
```

```
2> go
```

```
sswId
```

```
exeTarUR
```

```

```

```

```

```

```

-----  
**ACT#syn1**

**UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[DAC:DSSDSRV]:18:LM:PGEEEXE.001:5521**

**(1 row affected)**

- Example 2:

**1> select sswId,exeTarUR from PIResourceRequirement where sswId like "AM1Eph#2.0"**

**2> go**

**sswId**

**exeTarUR**

-----

-----  
**AM1Eph#2.0**

**NULL**

**(1 row affected)**

- In Example 1 (where sswId like "ACT#syn1"), there is a value listed for the exeTarUR for ACT#syn1.
- In Example 2 (where sswId like "AM1Eph#2.0"), there is a null value for the exeTarUR for AM1Eph#2.0.

**9** To exit from **isql** at the **1>** prompt enter:

**quit**

- The connection with the database is discontinued.

**10** If the value for **exeTarUR** in the **PIResourceRequirement** table in the PDPS database is null, make a request to the SSI&T team to have the EXE Tar File inserted.

- When the EXE Tar File has been inserted, it should be possible to restart the job and have it complete successfully.

**11** If the value for **exeTarUR** in the **PIResourceRequirement** table in the PDPS database was null, after the EXE Tar File is inserted restart the job.

- For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).

**12** If there is **no** ALOG file for the job, **single-click** on the name of the job displayed on the **JobScape** GUI.

- The job name is displayed in the **Current Job Name** field in the Control Region of the **JobScape** GUI.
- 13 Single-click** on the **Job Console** button on the **JobScape** GUI.
- The **Job Activity Console** GUI (**Ops Console** GUI) is displayed with information concerning the current job.
- 14** Review the entry in the **Exit Code** field on the **Job Activity Console** GUI.
- A value of 122 means that owner of the job does not have “write” permission to the log files directory.
- 15** Determine the ownership of the job.
- For detailed instructions refer to the **Determine the Ownership of an AutoSys Job** procedure (Section 14.4.7).
- 16** Access a terminal window logged in to the Queuing Server host.
- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
  - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 17** At the command line prompt enter:
- ```
cd /usr/ecs/<MODE>/CUSTOM/logs
```
- Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).
- 18** At the command line prompt enter:
- ```
ls -al
```
- A long listing of the logs directory is displayed.
  - For example:
- ```
x0sps02:/usr/ecs/OPS/CUSTOM/logs[137] > ls -al
total 178600
drwxrwxr-x  2 cmops  cmops    3584 Apr 17 12:55 .
drwxrwxr-x 18 cmops  cmops    1024 Oct 11 1999 ..
-rwxrwxrwx  1 cmshared cmshared 12898 Mar 30 11:38
ACT#syn1#004130123OPS.ALOG
-rw-rw-r--  1 cmshared cmshared 105397 Mar 30 11:38
ACT#syn1#004130123OPS.err
-rwxrwxrwx  1 cmshared cmshared 12565 Mar 31 13:24
ACT#syn1#014020000OPS.ALOG
-rw-rw-r--  1 cmshared cmshared  98501 Mar 31 13:24
ACT#syn1#014020000OPS.err
...
```

- 19 Compare the “write” permission for logs in the logs directory with the owner of the job.
- In the preceding example the user cmshared (and others in the “cmshared” group) has “write” permission for the log files listed.
 - If cmshared is the “owner” of the jobs listed in the directory, there should be no problem.
- 20 If there is a discrepancy between the “write” permission for logs in the logs directory and the owner of the job, report the problem to the Operations Controller/System Administrator for resolution.
- 21 If there is **no** discrepancy between the “write” permission for logs in the logs directory and the owner of the job, at the command line prompt enter:
- pg /var/adm/messages**
- The first page of the “messages” file is displayed.
 - For example:


```
x0sps02:/usr/ecs/OPS/CUSTOM/logs[139] > pg /var/adm/messages
Apr  4 10:13:39 x0sps02 unix: NFS server x0mss04 not responding still trying
Apr  4 10:13:39 x0sps02 unix: NFS server x0mss04 not responding still trying
Apr  4 10:14:39 x0sps02 unix: NFS server x0mss04 ok
Apr  4 10:14:39 x0sps02 unix: NFS server x0mss04 ok
Apr  4 10:16:37 x0sps02 reboot: rebooted by root
Apr  4 10:16:37 x0sps02 syslogd: going down on signal 15
Apr  4 10:20:04 x0sps02 unix: cpu0: SUNW,UltraSPARC (upaid 6 impl 0x10 ver
0x40 clock 168 MHz)
Apr  4 10:20:04 x0sps02 unix: cpu1: SUNW,UltraSPARC (upaid 7 impl 0x10 ver
0x40 clock 168 MHz)
:
```
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 22 Review the entries in the message log for a message indicating that the security file EcSeRandomDataFile could not be found.
- To exit from **pg** at the **:** prompt enter:


```
q
```

 - The command line prompt is displayed.
- 23 If there is a message indicating that that the security file EcSeRandomDataFile could not be found, notify the Operations Controller/System Administrator to have the file created.
- The allocation function should run successfully when the security file has been created.

- 24 If no problem has been identified, run the Execution Manager in the debugger.
- For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).
 - Execution Manager (EcDpPrEM) is the DPS program that runs during allocation (Preprocessing).

Table 14.6-20. Handle a Failed Allocation Function - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name> (if applicable)	enter text, press Enter
4	Review the log file for error messages	read text
5	If an "Error: unable to update Machine in Autosys" message was present in the log, notify the Operations Controller/System Administrator to have the auto.profile file corrected	contact Operations Controller
6	If an "Unable to determine type of UR" message was present in the log, log in to the appropriate PDPS database	Use procedure in Section 14.6.3.3
7	select sswld,exeTarUR from PIResourceRequirement where sswld like " <software ID> " (if applicable)	enter text, press Enter
8	go (if applicable)	enter text, press Enter
9	quit (if applicable)	enter text, press Enter
10	If the value for exeTarUR is null, make a request to the SSI&T team to have the EXE Tar File inserted	contact SSI&T team
11	Restart the job (if applicable)	Use procedure in Section 14.6.4.5
12	<job name> (JobScape GUI) (if applicable)	single-click
13	Job Console button (if applicable)	single-click
14	Review the Exit Code (on Job Activity Console GUI) (if applicable)	read text
15	Determine the ownership of the job (if applicable)	Use procedure in Section 14.4.7
16	UNIX window (Queuing Server) (if applicable)	single-click or use procedure in Section 14.2.1
17	cd /usr/ecs/<MODE>/CUSTOM/logs (if applicable)	enter text, press Enter
18	ls -al (if applicable)	enter text, press Enter
19	Compare the "write" permission for logs in the logs directory with the owner of the job (if applicable)	read text

**Table 14.6-20. Handle a Failed Allocation Function - Quick-Step Procedures
(2 of 2)**

Step	What to Enter or Select	Action to Take
20	Report the problem to the Operations Controller/System Administrator for resolution (if applicable)	contact Operations Controller
21	pg /var/adm/messages (if applicable)	enter text, press Enter
22	Determine whether the security file EcSeRandomDataFile could/could not be found	read text
23	Notify the Operations Controller/System Administrator to have the file created (if applicable)	contact Operations Controller
24	Run the Execution Manager in the debugger (if applicable)	Use procedure in Section 14.6.4.3

14.6.4.5 Force-Start a Job

To solve or recover from many problems it is necessary to restart the job by force-starting it.

Guidelines for Force-Starting Jobs:

- Force-start command jobs (e.g., preprocessing, postprocessing) only; do not attempt to force-start a box job.
 - The software does not support box job force-starts. (Although it may work fine in some cases, it can cause the PDPS database to get out of sync and prevent the DPR (and possibly other DPRs) from running successfully.)
 - If a box job were force-started, the allocation function would run again. Allocation might choose a different science processor than was chosen the previous time the job ran. Using a different science processor could cause failure of the job.
 - After each job (and often within each job) the state of the DPR is tracked in various tables in the database. Box job force-starts lack the code needed to check the state of the box and perform the cleanup activities necessary for starting over.
- Ensure that the GUI has refreshed and the job to be force-started is not already running before trying to force-start a job. (If a job is already running, it should not be force-started.)
 - If using AutoSys/AutoXpert 3.4.2 or a later version, it should not be possible to force-start jobs that are already running.
 - If you need to restart a job that is still running, you need to kill it via the AutoSys menu (the same one that has the Force Start choice) and then Force Start it.
- If any command job other than execution fails, force-start the job that failed only. Do not force start any preceding or succeeding jobs in the box.

- If execution fails, it is not safe to restart it unless the postprocessing job had been put on hold and the failure was detected before postprocessing started running.
- If execution fails and the failure was not detected before postprocessing started running, the DPR must run to completion as a failed PGE and the DPR must be deleted and recreated.

Table 14.6-21 presents (in a condensed format) the steps required to force-start a job. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1** If the **AutoSys GUI Control Panel** is not already being displayed, launch the **AutoSys GUI Control Panel** (refer to Section 14.2.2).
 - The **AutoSys GUI Control Panel** is displayed.
- 2** If the AutoXpert **JobScape** or **TimeScape** GUI is not already in operation, **single-click** on the **JobScape** or **TimeScape** button on the **AutoSys GUI Control Panel**.
 - The **JobScape** GUI page or **TimeScape** GUI page is presented.
- 3** **Place** the mouse cursor on the applicable job symbol in the AutoXpert **JobScape** or **TimeScape** GUI, **single-click** and **hold** with the **right** mouse button, **move** the mouse cursor to **Force Start Job** (highlighting it), then **release** the mouse button.
 - Pop-up menu appears with the options <job name>, **Show Children**, **Show All Descendants**, **Hide All Descendants**, **Show Job Arrows**, **Hide Job Arrows**, **Show Box Arrows**, **Hide Box Arrows**, **Job Definition**, **View Dependencies**, **Set Simulation**, **Overrides** [grayed out], **Start Job**, **Kill Job**, **Force Start Job**, **On Hold**, **Off Hold**, **On Ice**, **Off Ice**.
 - Select **Force Start Job** from the pop-up menu.
 - The job symbol in AutoXpert **JobScape** or **TimeScape** GUI should turn green (“starting”) within a short period of time.
- 4** If the job symbol in AutoXpert **JobScape** or **TimeScape** GUI does **not** turn green (“starting”) within a short period of time, return to Step 3.

Table 14.6-21. Force-Start a Job - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the AutoSys GUI Control Panel (if necessary)	Use procedure in Section 14.2.2
2	JobScape button or TimeScape button (if necessary)	single-click
3	Force Start Job	right-click
4	Return to Step 3 (if necessary)	

14.6.4.6 Respond to a Restart of a Job That Fails Although All Known Problems Have Been Corrected

If a job fails to restart although all known problems have been corrected, the retry information in the **DpPrRpcID** database table may not be synchronized between servers.

Table 14.6-22 presents (in a condensed format) the steps required to respond to a restart of a job that fails although all known problems have been corrected. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Log in to the appropriate PDPS database.
 - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
 - For example:

```
x0sps02:/usr/ecs/OPS/CUSTOM[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps
2> go
```

- 2 To examine the **readableTag** column in the **DpPrRpcID** table of the applicable PDPS database (to identify the out-of-sync entry) at the **1>** prompt enter:

```
select * from DpPrRpcID
```

- 3 At the **2>** prompt enter:

```
go
```

 - Contents of the following columns of the **DpPrRpcID** table are displayed:
 - **readableTag**.
 - **object**.

- 4 Observe the entries in the **DpPrRpcID** table to identify the retry information that is not synchronized between servers.

- 5 At the **1>** prompt enter:

```
delete * from DpPrRpcID where readableTag like "<readable tag>"
```

 - Delete the out-of-sync entry (retry information) from the **DpPrRpcID** table.

- 6 At the **2>** prompt enter:

```
go
```

 - The out-of sync entry in the **DpPrRpcID** table is deleted.

- 7 Restart the job.
 - For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).

Table 14.6-22. Respond to a Restart of a Job That Fails Although All Known Problems Have Been Corrected - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Log in to the appropriate PDPS database	Use procedure in Section 14.6.3.3
2	select * from DpPrRpciD	enter text, press Enter
3	go	enter text, press Enter
4	Identify the retry information that is not synchronized between servers	read text
5	delete * from DpPrRpciD where readableTag like "<readable tag>"	enter text, press Enter
6	go	enter text, press Enter
7	Restart the job	Use procedure in Section 14.6.4.5

14.6.4.7 Handle a Hanging Staging Function

The problems that cause a staging function to hang are generally the same as those that cause an allocation function to hang. Likely causes include the following problems:

- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but the file cannot be distributed because Storage Management (STMGT) is down.
- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute the PGE tar file, but the file cannot be distributed because Storage Management cannot ftp the file to the data directory on the science processor disk.
- The request may be waiting for the archive to stage the file(s). If there are several other requests in progress, the “acquire” request may have to wait until one or more of the other requests completes.

Perform the **Handle a Hanging Allocation Function** procedure (Section 14.6.4.2).

14.6.4.8 Handle a Failed Staging Function

If staging fails, the Preprocessing job turns red on **JobScope** or **TimeScope**.

Table 14.6-23 presents (in a condensed format) the steps required to handle a failed staging function. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt enter:


```
cd /usr/ecs/<MODE>/CUSTOM/logs
```

 - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).

- 3 If there is an ALOG file for the job, at the command line prompt enter:


```
pg <file name>
```

 - **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **more**) can be used to review the log file.

- 4 If there is an ALOG file for the job, review the log file for the following types of error messages.
 - **ESDT Acquire Failed for UR....**
 - A message of "**ESDT Acquire Failed for UR....**" means that SDSRV had trouble processing one of the acquire requests.
 - **found no meta data entry for UR....**
 - A message of "**found no meta data entry for UR....**" means that for some reason the tables that DPS uses to keep track of files on the local disks are no longer synchronized (have gotten out of sync).
 - **GetESDTReferenceFailed**
 - A message of "**GetESDTReferenceFailed**" means that the ESDT Reference could not be created for the UR displayed in the message containing "Inside AcquireOneGranuleToSDSRV".
 - It is likely that the granule that is attempting to stage was **not** inserted into the Data Server or has been deleted.
 - Database deadlock error messages.
 - A **deadlock problem** accessing the PDPS database is indicated by the following type of message:


```
SybaseErrorCode1 =1205;SybaseErrorMessage1 ="x0sps02_srvr"
SybaseErrorCode2 =13;SybaseErrorMessage2 ="40001"
Priority : 0 Time : 10/19/99 01:53:48
PID : 19909:MsgLink :0 meaningfulname :EcPoErrorA1
```

**Msg: EcPoError::HandleRWEError RogueWaveDBToolsError#
RogueWaveDBToolsErrorCode =21;RogueWaveDBToolsErrorMessage
="[NOREADER] This object cannot support readers"**

Priority : 0 Time : 10/19/99 01:53:48

PID : 19909:MsgLink :0 meaningfulname

:DpPrDbIF::SelectAndReadColumns

**Msg: SelectAndReadColumns failed due to [NOREADER] This object
cannot support readers Priority : 2 Time : 10/19/99 01:53:48**

- While most deadlock problems are retried, deadlocks on the reading of tables (though rare) currently cannot be retried.
 - The error in the example could indicate that a “read” deadlock occurred.
 - To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.
- 5** If an "**ESDT Acquire Failed for UR....**" message was present in the log, restart the job.
- For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).
 - The job should restart and run successfully.
- 6** If a "**found no meta data entry for UR....**" message was present in the log, restart the job.
- For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).
- 7** If a "**found no meta data entry for UR....**" message was present in the log and restarting the job was not successful, clean up the DPS file tables.
- For detailed instructions refer to the **Clean Up the DPS File Tables** procedure (Section 14.6.4.9).
- 8** If a "**found no meta data entry for UR....**" message was present in the log and the DPS file tables have been cleaned up, restart the job.
- For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).
 - The job should restart and run successfully.
- 9** If a "**GetESDTReturnFailed**" message was present in the log, notify the Production Planner to take the following actions:
- Request to have the granule re-inserted.
 - Delete the affected DPR(s).
 - Re-create the affected DPR(s).
- 10** If a message indicating a “read” deadlock was present in the log, restart the job.
- A “read” deadlock is shown in the example in Step 4.
 - For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).

- The job should restart and run successfully.
- 11** If no problem has been identified, run the Execution Manager in the debugger.
- For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).
 - Execution Manager (EcDpPrEM) is the DPS program that runs during staging (Preprocessing).

Table 14.6-23. Handle a Failed Staging Function - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>	enter text, press Enter
4	Identify error messages in the ALOG file for the job (if applicable)	read text
5	If an " ESDT Acquire Failed for UR.... " message was present in the log, restart the job	Use procedure in Section 14.6.4.5
6	If a " found no meta data entry for UR.... " message was present in the log, restart the job	Use procedure in Section 14.6.4.5
7	If a " found no meta data entry for UR.... " message was present in the log and restarting the job was not successful, clean up the DPS file tables	Use procedure in Section 14.6.4.9
8	If a " found no meta data entry for UR.... " message was present in the log and the DPS file tables have been cleaned up, restart the job	Use procedure in Section 14.6.4.5
9	If a " GetESDTReferenceFailed " message was present in the log, notify the Production Planner to request to have the granule re-inserted, delete the affected DPR(s), and re-create the affected DPR(s)	contact Production Planner
10	If a message indicating a "read" deadlock was present in the log, restart the job	Use procedure in Section 14.6.4.5
11	If no problem has been identified, run the Execution Manager in the debugger	Use procedure in Section 14.6.4.3

14.6.4.9 Clean Up the DPS File Tables

To solve or recover from some problems, it is necessary to clean up the DPS file tables in the applicable PDPS database. The DPS file tables are as follows:

- **DpPrFile** - a list of staged files and metadata files.
- **DpPrGranuleLocation** - the location of the staged files.
- **DpPrDiskAllocation** - how much disk space the files require.

The offending entries have to be deleted from the tables. The "offending entries" are found using a universalReference (for DpPrFile), a granuleId (for DpPrGranuleLocation), or a fileName (for DpPrDiskAllocation).

Table 14.6-24 presents (in a condensed format) the steps required to clean up the DPS file tables. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Log in to the appropriate PDPS database.
 - Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
 - For example:

```
x0sps02:/usr/ecs/OPS/CUSTOM[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps
2> go
```
- 2 To determine what granules affect the job at the 1> prompt enter:

```
select dprId,granuleId from PIDprData where dprId like "<DPR ID>"
```

 - For example:

```
1> select dprId,granuleId from PIDprData where dprId like
"ACT#syn1#014020000OPS"
```
- 3 At the 2> prompt enter:

```
go
```

 - Contents of the following columns of the **PIDprData** table for the specified DPR are displayed:
 - **dprId.**
 - **granuleId.**

- For example:

dprId

granuleId

ACT#syn1#014020000OPS

AST_09T#00102141998020000000

ACT#syn1#014020000OPS

AST_ANC#001L1004

ACT#syn1#014020000OPS

AST_L1B#00102141998020000000

(3 rows affected)

- 4 Observe the entries in the **granuleId** column of the **PIDprData** table to determine what granules affect the job.

- In the preceding example the following three granules affect the job:
 - AST_09T#00102141998020000000
 - AST_ANC#001L1004
 - AST_L1B#00102141998020000000

- 5 To locate the correct entries in the **DpPrGranuleLocation** table at the 1> prompt enter:
select * from DpPrGranuleLocation where granuleId like "<granule ID>"

- For example:

```
1> select * from DpPrGranuleLocation where granuleId like
"AST_L1B#00102141998020000000"
```

- 6 At the 2> prompt enter:

go

- Contents of the following columns of the **DpPrGranuleLocation** table for the specified granule are displayed:
 - **granuleId.**
 - **machineId.**
 - **stageState.**
 - **dprId.**

- For example:

```

granuleId
machineId
stageState dprId

```

```

-----
-----
-----
-----
-----

```

```

AST_L1B#00102141998020000000
x0spg11
2 ACT#syn1#014020000OPS

```

(1 row affected)

7 Repeat Steps 5 and 6 as necessary to identify the correct entries in the **DpPrGranuleLocation** table for all granules that affect the job (as determined in Step 4).

8 At the 1> prompt enter:

```
delete * from DpPrGranuleLocation where granuleId like "<granule ID>"
```

- For example:

```
1> delete * from DpPrGranuleLocation where granuleId like
"AST_L1B#00102141998020000000"
```

- Delete from the **DpPrGranuleLocation** table the entries that match the **granuleId** entries from the **PIDprData** table.

9 At the 2> prompt enter:

```
go
```

- Entries in the **DpPrGranuleLocation** table related to the specified **granuleId** are deleted.

10 At the 1> prompt enter:

```
select * from DpPrGranuleLocation where granuleId like "<granule ID>"
```

- For example:

```
1> select * from DpPrGranuleLocation where granuleId like
"AST_L1B#00102141998020000000"
```

- Granules that affect the job were determined in Step 4.

11 At the 2> prompt enter:

go

- There should be no entries in the **DpPrGranuleLocation** table related to the specified **granuleId**

12 Repeat Steps 10 and 11 as necessary to verify that all applicable entries have been deleted from the **DpPrGranuleLocation** table.

13 To locate the corresponding entries in the **PIDataGranuleShort** table at the 1> prompt enter:

select granuleId,dataTypeId,universalReference from PIDataGranuleShort where granuleId like "<granule ID>"

- For example:

1> select granuleId,dataTypeId,universalReference from PIDataGranuleShort where granuleId like "AST_L1B#00102141998020000000"

- Use the **granuleId** entries from the **PIDprData** table (Step 4) to locate the corresponding entries in the **PIDataGranuleShort** table.

14 At the 2> prompt enter:

go

- Contents of the following columns of the **PIDataGranuleShort** table for the specified granule are displayed:

- **granuleId.**
- **dataTypeId.**
- **universalReference.**

- For example:

granuleId
dataTypeId
universalReference

```
-----
-----
-----
-----
-----
-----
-----
```

AST_L1B#00102141998020000000
AST_L1B#001

UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST_L1B.001:5528

(1 row affected)

15 Repeat Steps 13 and 14 as necessary to identify the correct entries in the **PIDataGranuleShort** table for all granules that affect the job (as determined in Step 4).

16 To locate the corresponding **fileName** entries in the **DpPrFile** table at the **1>** prompt enter:

select fileName,universalReference from DpPrFile where universalReference like "<Universal Reference>"

- For example:
1> select fileName,universalReference from DpPrFile where universalReference like "%AST_L1B.001:5528"
- The use of a wild card (as shown by the use of the percent sign in the example) is recommended because isql will not provide a reliable search on a **universalReference**.
- Use the **universalReference** entries from the **PIDataGranuleShort** table to identify corresponding **fileName** entries in the **DpPrFile** table.

17 At the **2>** prompt enter:

go

- Contents of the following columns of the **DpPrFile** table for the specified UR are displayed:
 - **fileName.**
 - **universalReference.**
- For example:

fileName
universalReference

AST_L1B#0010214199802000000.hdf

UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST_L1B.001:5528

AST_L1B#001021419980200000000000.met

UR:10:DsShESDTUR:UR:15:DsShSciServerUR:13:[XDC:DSSDSRV]:19:SC:AST_L1B.001:5528

(2 rows affected)

- There should be two **fileName** entries in the **DpPrFile** table (i.e., one **.hdf** and one **.met** file) for each **universalReference**.

18 Repeat Steps 16 and 17 as necessary to identify the correct **fileName** entries in the **DpPrFile** table for all URs that affect the job (as determined in Step 14).

19 At the **1>** prompt enter:

delete * from DpPrFile where fileName like "<file name>"

- For example:

**1> delete * from DpPrFile where fileName like
"AST_L1B#0010214199802000000%"**

- Delete from the **DpPrFile** table the entries that match the **universalReference** entries from the **PIDataGranuleShort** table.
- In the example in Step 17 the **.hdf** and **.met** **fileName** entries are of different lengths; consequently, the shorter of the two (the **.hdf** **fileName**) has been used with the wild card to specify which files are to be deleted.

20 At the **2>** prompt enter:

go

- Entries in the **DpPrFile** table related to the specified file name are deleted.

21 Repeat Steps 19 and 20 as necessary to delete the entries in the **DpPrFile** table for all URs that affect the job (as determined in Step 14).

22 To locate the corresponding **fileName** entries in the **DpPrFile** table at the **1>** prompt enter:

**select fileName,universalReference from DpPrFile where universalReference like
"<Universal Reference>"**

- For example:

**1> select fileName,universalReference from DpPrFile where universalReference
like "%AST_L1B.001:5528"**

- URs that affect the job were determined in Step 14.

23 At the 2> prompt enter:

go

- There should be no entries in the **DpPrFile** table related to the relevant **file name**.

24 Repeat Steps 22 and 23 as necessary to verify that all applicable entries have been deleted from the **DpPrFile** table.

25 To locate the correct entries in the **DpPrDiskAllocation** table at the 1> prompt enter:

select * from DpPrDiskAllocation where fileName like "<file name>"

- For example:

1> select * from DpPrDiskAllocation where fileName like "AST_L1B#0010214199802000000%"

- Use the **fileName** entries from the **DpPrFile** table to locate the correct entries in the **DpPrDiskAllocation** table.

26 At the 2> prompt enter:

go

- Contents of the following columns of the **DpPrDiskAllocation** table for the specified file name are displayed:

- **diskAllocationId.**
- **computerId.**
- **diskPartitionId.**
- **diskAllocationType.**
- **path.**
- **diskAllocationSize.**
- **diskAllocationUser.**
- **diskAllocationActual.**
- **fileName.**

- For example:

```

diskAllocationId computerId diskPartitionId diskAllocationType
path
diskAllocationSize diskAllocationUser
diskAllocationActual
fileName

```

```

-----
-----
-----
-----
-----

```

```
2001957      3      1      1
/x0spg11_disk/
50.085064 ACT#syn1#014020000OPS
50.085064
AST_L1B#00102141998020000000.hdf
```

(1 row affected)

27 Repeat Steps 25 and 26 as necessary to identify the correct **fileName** entries to be deleted from the **DpPrDiskAllocation** table (as determined in Step 17).

28 At the 1> prompt enter:

delete * from DpPrDiskAllocation where fileName like "<file name>"

- For example:

```
1> delete * from DpPrDiskAllocation where fileName like
"AST_L1B#00102141998020000000%"
```

- Delete from the **DpPrDiskAllocation** table the entries that match the **fileName** entries from the **DpPrFile** table.

29 At the 2> prompt enter:

go

- Entries in the **DpPrDiskAllocation** table related to the specified file name are deleted.

30 Repeat Steps 28 and 29 as necessary to delete the entries in the **DpPrDiskAllocation** table for all **fileName** entries that affect the job (as determined in Step 17).

31 At the 1> prompt enter:

select * from DpPrDiskAllocation where fileName like "<file name>"

- For example:

```
1> select * from DpPrDiskAllocation where fileName like
"AST_L1B#00102141998020000000%"
```

- Use the **fileName** entries from the **DpPrFile** table to locate the correct entries in the **DpPrDiskAllocation** table.
- File names that affect the job were determined in Step 17.

32 At the 2> prompt enter:

go

- There should be no entries in the **DpPrDiskAllocation** table related to the relevant **file name**.

33 Repeat Steps 31 and 32 as necessary to verify that all applicable entries have been deleted from the **DpPrDiskAllocation** table.

Table 14.6-24. Clean Up the DPS File Tables - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Log in to the appropriate PDPS database	Use procedure in Section 14.6.3.3
2	select dprId,granuleId from PIDprData where dprId like "<DPR ID>"	enter text, press Enter
3	go	enter text, press Enter
4	Determine what granules affect the job	read text
5	select * from DpPrGranuleLocation where granuleId like "<granule ID>"	enter text, press Enter
6	go	enter text, press Enter
7	Repeat Steps 5 and 6 as necessary to identify the correct entries in the DpPrGranuleLocation table for all granules that affect the job	
8	delete * from DpPrGranuleLocation where granuleId like "<granule ID>"	enter text, press Enter
9	go	enter text, press Enter
10	select * from DpPrGranuleLocation where granuleId like "<granule ID>"	enter text, press Enter
11	go	enter text, press Enter
12	Repeat Steps 10 and 11 as necessary to verify that all applicable entries have been deleted from the DpPrGranuleLocation table	
13	select granuleId,dataTypId,universalReference from PIDataGranuleShort where granuleId like "<granule ID>"	enter text, press Enter
14	go	enter text, press Enter
15	Repeat Steps 13 and 14 as necessary to identify the correct entries in the PIDataGranuleShort table for all granules that affect the job	
16	select fileName,universalReference from DpPrFile where universalReference like "<Universal Reference>"	enter text, press Enter
17	go	enter text, press Enter
18	Repeat Steps 16 and 17 as necessary to identify the correct fileName entries in the DpPrFile table for all URs that affect the job	

Table 14.6-24. Clean Up the DPS File Tables - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
19	delete * from DpPrFile where fileName like "<file name>"	enter text, press Enter
20	go	enter text, press Enter
21	Repeat Steps 19 and 20 as necessary to delete the entries in the DpPrFile table for all URs that affect the job	
22	select fileName,universalReference from DpPrFile where universalReference like "<Universal Reference>"	enter text, press Enter
23	go	enter text, press Enter
24	Repeat Steps 22 and 23 as necessary to verify that all applicable entries have been deleted from the DpPrFile table	
25	select * from DpPrDiskAllocation where fileName like "<file name>"	enter text, press Enter
26	go	enter text, press Enter
27	Repeat Steps 25 and 26 as necessary to identify the correct fileName entries to be deleted from the DpPrDiskAllocation table	
28	delete * from DpPrDiskAllocation where fileName like "<file name>"	enter text, press Enter
29	go	enter text, press Enter
30	Repeat Steps 28 and 29 as necessary to delete the entries in the DpPrDiskAllocation table for all fileName entries that affect the job	
31	select * from DpPrDiskAllocation where fileName like "<file name>"	enter text, press Enter
32	go	enter text, press Enter
33	Repeat Steps 31 and 32 as necessary to verify that all applicable entries have been deleted from the DpPrDiskAllocation table	

14.6.4.10 Handle a Failed Preprocessing Job

If preprocessing fails, the Preprocessing job turns red on **JobScape** or **TimeScape**.

Table 14.6-25 presents (in a condensed format) the steps required to handle a failed preprocessing job. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt enter:
cd /usr/ecs/<MODE>/CUSTOM/logs
 - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).

- 3 If there is an ALOG file for the job, at the command line prompt enter:
pg <file name>.ALOG
 - **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 4 If there is an ALOG file for the job, review the log file for the following type of error message:
 - **NOFREECPUS**
 - A message of "**NOFREECPUS**" means that all of the Science Processor CPUs are busy and the Preprocessing job went through its maximum number of retries to find an available CPU, possibly for one of the following reasons: (1) PGEs are taking longer to run than expected. DPS plans for execution times specified during SSIT, and if those times are exceeded by a large margin (by an executing PGE) it is possible that a PGE that is "ready to run" will be CPU-starved. (2) Somebody has scheduled a PGE that takes up more CPUs than will ever be available. If a PGE is defined (at SSIT) to require five CPUs and there are only three on any given machine, the job will never succeed.
 - To exit from **pg** at the **:** prompt enter:
q
 - The command line prompt is displayed.

- 5 If a "**NOFREECPUS**" message was present in the log, restart the job.
 - For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).

- 6 If the preceding problem was not mentioned in the log file, at the command line prompt enter:
pg <file name>.err

- **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.err).
- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

7 If using either the **pg** or **more** command, at the **:** prompt enter:

/-prep

- The start of the Preprocessing job log is displayed.
- The following type of entry indicates the start of the Preprocessing activities:

**Command used => 'EcDpPrEM ConfigFile
/usr/ecs/OPS/CUSTOM/cfg/EcDpPrEM.CFG ecs_mode OPS -preproc
AM1Eph#30012312200OPS' START_TIME: 03/30/00 10:50:32**

- The **-preproc** indicates “Preprocessing.”

8 Review the Preprocessing portion of the .err log file for the following type of error message:

“rm: Unable to remove directory <long directory pathname>: File exists”

- The **“rm: Unable to remove directory <long directory pathname>: File exists”** type of error message means that there is a permission problem and the Execution Manager job could **not** delete the files within the directory.
- The **<long directory pathname>** will be similar to the following example:

**/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/
AM1Eph#30001/AM1Eph#30012312200OPS_x0spg11/**

- To exit from **pg** or **more** at the **:** prompt enter:

q

- The command line prompt is displayed.

9 If the **“rm: Unable to remove directory <long directory pathname>: File exists”** type of message was present in the Preprocessing portion of the .err file, at the command line prompt enter:

cd <long directory pathname>

10 At the command line prompt enter:

ls -al

- A long listing of the directory is displayed, for example:

**x0sps02:/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/
AM1Eph#30001/AM1Eph#30012312200OPS_x0spg11[82] > ls -al**

```

total 3712
drwxr-xr-x  2 cmshared cmshared  65536 Apr 18 11:00 .
drwxrwxr-x  3 cmshared cmshared  65536 Apr 18 10:59 ..
-rw-rw-r--  1 cmshared cmshared   5384 Apr 18 10:59 AM1ATTH0#001.MCF
-rw-rw-r--  1 cmshared cmshared   5385 Apr 18 10:59 AM1ATTN0#001.MCF
-rw-rw-r--  1 cmshared cmshared   7183 Apr 18 10:59 AM1EPHH0#001.MCF
-rw-rw-r--  1 cmshared cmshared   7183 Apr 18 10:59 AM1EPHN0#001.MCF
-rw-r--r--  1 cmshared cmshared   4437 Apr 18 11:00
AM1Eph#30012312200OPS.Log
-rw-rw-r--  1 cmshared cmshared   31764 Apr 18 11:00
AM1Eph#30012312200OPS.Pcf
-rw-rw-r--  1 cmshared cmshared    382 Apr 18 11:00
AM1Eph#30012312200OPS.Profile
-rw-rw-r--  1 cmshared cmshared    958 Apr 18 11:00
AM1Eph#30012312200OPS.TkReport
-rw-rw-r--  1 cmshared cmshared   3299 Apr 18 11:00
AM1Eph#30012312200OPS.TkStatus
-rw-rw-r--  1 cmshared cmshared    956 Apr 18 11:00
AM1Eph#30012312200OPS.TkUser
-rw-rw-r--  1 cmshared cmshared   1195 Apr 18 11:00
AM1Eph#30012312200OPS_PGE.IN
-rw-rw-r--  1 cmshared cmshared   7291 Apr 18 11:00 MCFWrite.temp
-rw-rw-r--  1 cmshared cmshared  434111 Apr 18 11:00
pc19811823201201485810900110024
-rw-rw-r--  1 cmshared cmshared   7291 Apr 18 11:00
pc19811823201201485810900110024.met
-rw-rw-r--  1 cmshared cmshared  451584 Apr 18 11:00
pc19811823201201485810900110025

```

- 11 Review the contents of the directory to determine who has write permission for files in the directory.
 - In the preceding example the user **cmshared** and members of the **cmshared** group have write permission for the directory.

- 12 If possible (assuming write permission), at the command line prompt enter:

```
mv <file name 1> [... <file name x>] <destination directory>
```

 - Move the files to another directory.

- 13 If write permission is not available, notify the System Administrator of the need to remove the files from the directory.

- 14 If no problem has been identified, run the Execution Manager in the debugger.

- For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).
- Execution Manager (EcDpPrEM) is the DPS program that runs during Preprocessing.

Table 14.6-25. Handle a Failed Preprocessing Job - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>.ALOG (if applicable)	enter text, press Enter
4	Identify error messages in the log file (if applicable)	read text
5	If a " NOFREECPUS " message was present in the log, restart the job	Use procedure in Section 14.6.4.5
6	After the problem has been corrected restart the job (when applicable)	Use procedure in Section 14.6.4.5
7	pg <file name>.err (if applicable)	enter text, press Enter
8	/-prep (if applicable)	enter text, press Enter
9	Identify the following type of error message: " rm: Unable to remove directory <long directory pathname>: File exists " (if present)	read text
10	cd <long directory pathname> (if applicable)	enter text, press Enter
11	ls -al (if applicable)	enter text, press Enter
12	Determine who has write permission for files in the directory (if applicable)	read text
13	mv <file name 1> [... <file name x>] <destination directory> (if applicable)	enter text, press Enter
14	Notify the System Administrator of the need to remove the files from the directory (if applicable)	contact System Administrator
15	If no problem has been identified, run the Execution Manager in the debugger	Use procedure in Section 14.6.4.3

14.6.4.11 Handle a Hanging Execution Job

This condition is determined by noting that the Execution job has turned orange or oscillates between orange and green on **JobScape** or **TimeScape**. It is most likely that the AutoSys client is down.

Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).

14.6.4.12 Handle a Failed Execution Job

This condition is indicated when the Execution (PGE) job only is red on **JobScape** or **TimeScape**. This is hard to do, because the AutoSys job definition for this job says to allow **any**

exit code to indicate success. It is set up this way so the next job, the Postprocessing job, continues even when the Execution job fails. The Execution job goes to a "success" state even when the PGE Wrapper job, EcDpPrRunPGE, does not exist. However, the Execution job can fail if AutoSys cannot see the machine.

Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).

14.6.4.13 Respond to Execution Job and/or Postprocessing Job That Have (Has) Failed

This condition is determined by noting that the Execution job has turned red in **JobScope** or **TimeScope** or the entire job box has turned red (failedPGE scenario).

Perform the appropriate procedure(s) related to responding to Execution and/or Postprocessing Jobs that have failed:

- **Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing** (Section 14.6.4.14).
- **Handle a Failed Postprocessing Job** (Section 14.6.4.15).
- **Handle Failure of Both Execution and Postprocessing Jobs** (Section 14.6.4.16).

14.6.4.14 Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing

This condition is indicated when the entire job box has turned red in **JobScope** or **TimeScope** along with the Postprocessing job. A Failed PGE tar file has been created and archived.

A PGE may fail for many reasons. For example, the following conditions can cause PGE failure:

- The PGE has the wrong architecture.
- One of the expected inputs for the PGE is missing.
- The leap seconds file is incorrect.
- The file-watcher program detected that the PGE was writing files much larger than expected.
- There are problems accessing the Toolkit on the Science Processor.
- The PGE has not been staged.

Table 14.6-26 presents (in a condensed format) the steps required to respond to an Execution job that has failed and the DPR has gone into "Failed-PGE" processing. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1** Notify the SSI&T team to check the PGE architecture using the SSIT tools.
 - If the PGE has the wrong architecture, it is probably because the PGE was improperly defined as **New32**, **Old32** or **64** from the SSIT Operational Metadata GUI.
 - The PGE core dumps because of this problem.

- After the SSI&T team has entered the correct architecture using the SSIT Operational Metadata GUI the Production Planner has to delete and recreate all DPRs created for that PGE.
- 2 Access a terminal window logged in to the Queuing Server host.
- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 3 At the command line prompt enter:
- cd /<path>**
- Change directory to the run-time directory for the job (e.g.,
/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/
ACT#syn1#004130123OPS_x0spg11/).
- 4 At the command line prompt enter:
- ls**
- A listing of the directory is displayed, for example:


```
x0sps02:/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/
AM1Eph#30001/AM1Eph#30012312200OPS_x0spg11[82] > ls
AM1ATTH0#001.MCF
AM1ATTN0#001.MCF
AM1EPHH0#001.MCF
AM1EPHN0#001.MCF
AM1Eph#30012312200OPS.Log
AM1Eph#30012312200OPS.Pcf
AM1Eph#30012312200OPS.Profile
AM1Eph#30012312200OPS.TkReport
AM1Eph#30012312200OPS.TkStatus
AM1Eph#30012312200OPS.TkUser
AM1Eph#30012312200OPS_PGE.IN
MCFWrite.temp
pc19811823201201485810900110024
pc19811823201201485810900110024.met
pc19811823201201485810900110025
```
- 5 Review the contents of the runtime directory of the PGE/DPR to determine whether status logs were created for the PGE.
- Status logs have the following formats:
 - <DPR number>.TkStatus
 - <DPR number>.Tkuser
 - <DPR number>.TkLog

- DPS uses a Toolkit command to start the PGE. So if no status logs were created for the PGE, it is very likely that the Toolkit was not installed properly on the Science Processor.

6 If no status logs were created for the PGE, at the command line prompt enter:

cd /<path>

- Change directory to the CUSTOM directory for the mode (e.g., /usr/ecs/OPS/CUSTOM).

7 If no status logs were created for the PGE, at the command line prompt enter:

ls -al

- The following type of directory listing is displayed:

```
x0spg11:/usr/ecs/OPS/CUSTOM[45] > ls -al
total 392
drwxrwxrwx 20 cmops cmops 4096 Apr 6 17:05 .
drwxr-xr-x 4 root sys 37 Oct 7 1997 ..
-rw-rw-r-- 1 cmops cmops 3834 Mar 27 12:41 .applications
-rw-rw-r-- 1 cmops cmops 1603 Mar 27 12:42 .cache
-rw-rw-r-- 1 cmops cmops 16547 Mar 27 12:41 .cfgpatch
-rw-rw-r-- 1 cmops cmops 6160 Mar 27 12:41 .envvars
-rw-rw-r-- 1 cmops cmops 22841 Mar 27 12:41 .executables
-rw-rw-r-- 1 cmops cmops 4368 Mar 27 12:41 .hostmap
drwxrwxr-x 6 cmops cmops 61 Oct 8 1999 .installed
-rw-rw-r-- 1 cmops cmops 12616 Mar 27 12:41 .installtypes
-rw-rw-r-- 1 cmops cmops 8657 Mar 27 12:41 .sitehostmap
-rw-rw-r-- 1 cmops cmops 72760 Mar 27 12:41 .sitemap
-rw-rw-r-- 1 cmops cmops 1845 Mar 27 12:41 .subsystems
drwxr-xr-x 6 cmops cmops 4096 Dec 14 09:14 Aadata
drwxrwxr-x 9 cmops cmops 122 Mar 27 12:35 HDF
drwxrwxr-x 4 cmops cmops 45 Nov 18 15:01 HDFEOS
drwxrwxrwx 3 cmops cmops 25 Oct 11 1999 TOOLKIT
drwxrwxr-x 3 cmops cmops 21 Oct 11 1999 WWW
drwxr-xr-x 27 cmops cmops 4096 Nov 18 15:02 backup
drwxrwxr-x 6 cmops cmops 142 Nov 30 15:38 bin
drwxrwxr-x 2 cmops cmops 9 Oct 11 1999 cfg
drwxr-xr-x 4 cmops cmops 4096 Sep 27 1999 daac_toolkit_f77
drwxrwxr-x 7 cmops cmops 69 May 7 1999 data
drwxrwxr-x 3 cmops cmops 21 Oct 11 1999 dbms
drwxrwxr-x 6 cmops cmops 57 Oct 11 1999 lib
drwxrwxr-x 2 cmops cmops 4096 Apr 18 19:52 logs
drwxr-xr-x 4 root sys 41 Jun 24 1998 pdps
```

```

drwxrwxr-x  2 cmops  cmops    36 Mar 27 12:41 security
drwxr-xr-x  3 root   sys     25 Dec 18 1997 ssit
lrwxr-xr-x  1 cmops  cmops    36 Mar 27 17:13 toolkit ->
/usr/ecs/OPS/CUSTOM/daac_toolkit_f77
drwxrwxr-x  2 cmops  cmops    4096 Mar 27 12:41 utilities

```

- There should be a “toolkit” subdirectory as shown in the example.

8 If the Toolkit was not properly installed, notify the Operations Controller/System Administrator to have the problem corrected.

9 If the Toolkit was properly installed and there are status logs in the runtime directory, at the command line prompt enter:

cd /<path>

- Change directory to the run-time directory for the job (e.g., /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/ACT#syn1#004130123OPS_x0spg11/).

10 If the Toolkit was properly installed and there are status logs in the runtime directory, at the command line prompt enter:

pg <DPR number>.TkStatus

- <DPR number> refers to the name of the job (e.g., AM1Eph#30012312200OPS or ACT#syn1#004130123OPS).
- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

11 Review the <DPR number>.TkStatus log in the runtime directory of the PGE/DPR for messages concerning a missing input or inability to get number of files.

- If the PGE is missing an input, it is probably because the DPR was released into AutoSys although not all of its inputs were available at the Data Server.
- To exit from **pg** at the **:** prompt enter:

q

- The command line prompt is displayed.

12 If a **logicalId** is mentioned in the context of a missing input or inability to get number of files, at the command line prompt enter:

pg <DPR number>.Pcf

- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 13** If a **logicalId** is mentioned in the context of a missing input or inability to get number of files, review the <**DPR number**>.Pcf file in the runtime directory of the PGE/DPR to determine whether that **logicalId** is present in the file.
- If the PGE is missing an input, the **logicalId** will not be present in the <**DPR number**>.Pcf file.
 - To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.
- 14** Log in to the PDPS database.
- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
 - For example:


```
x0sps02:/usr/ecs/OPS/CUSTOM[4] > isql -U pdps_role -S x0sps02_svr
Password:
1> use pdps
2> go
```
- 15** To search on the **dprId** for the **logicalId** and the corresponding value in the **accepted** column in the **PIDprData** table at the **1>** prompt enter:
- ```
select dprId,granuleId,logicalId,accepted from PIDprData where dprId like "<DPR ID>"
```
- For example:
 

```
1> select dprId,granuleId,logicalId,accepted from PIDprData where dprId like "ACT#syn1#014020000OPS"
```
- 16** At the **2>** prompt enter:
- ```
go
```
- Contents of the following columns of the **PIDprData** table for the specified DPR are displayed:
 - **dprId.**
 - **granuleId.**
 - **logicalId.**
 - **accepted.**

- For example:

```
dprId
  granuleId
  logicalId  accepted
```

```
-----
-----
-----
```

```
ACT#syn1#014020000OPS
  AST_09T#00102141998020000000
    2000      6
ACT#syn1#014020000OPS
  AST_ANC#001L1008
    1200      5
ACT#syn1#014020000OPS
  AST_L1B#00102141998020000000
    1100      5
ACT#syn1#014020000OPS
  GDAS_0ZF#001O1006
    1101      5
```

(4 rows affected)

- 17 Record (write down) the entries the values of all inputs to the DPR in the “**accepted**” field in the **PIDprData** table.
- 18 If the **accepted** field has “0” as its value, notify the Production Planner to delete the DPR and re-create it.
 - If the **accepted** field has “0” as its value, the DPR was released without all of its inputs and that is why the PGE failed.
- 19 To exit from **isql** at the **1>** prompt enter:


```
quit
```

 - The connection with the database is discontinued.
- 20 At the command line prompt enter:


```
cd /<path>
```

 - Change directory to the directory containing the log files for the DPR (e.g., /usr/ecs/OPS/CUSTOM/logs).

- 21** At the command line prompt enter:
- ls**
- A listing of files in the logs directory is displayed.
- 22** At the command line prompt enter:
- pg <file name>**
- The **<file name>** refers to the name of the log file (e.g., ACT#syn1#014020000OPS.err, ACT#syn1#014020000OPS.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 23** Review the DPR log file(s) for message(s) concerning a missing **logicalId**.
- Search for error messages concerning a missing Logical Id.
 - The error message may refer to either “missing” or “Logical Id” in lower case or upper case depending on the type of log file.
 - “Logical Id” may be one word or two (e.g., Logical Id, logicalId) depending on the type of log file.
 - If one of the expected inputs for the PGE is missing, it is possible that an expected input of the PGE is not defined in the PGE ODL file.
 - To exit from **pg** at the **:** prompt enter:

q

 - The command line prompt is displayed.
- 24** Access a terminal window logged in to the AIT Workstation host.
- Examples of AIT Workstation host names include **e0ais02**, **g0ais05**, and **l0ais09**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 25** At the command line prompt enter:
- cd /<path>**
- Change directory to the directory containing the ODL files (e.g., /usr/ecs/OPS/CUSTOM/data/DPS/ODL).
- 26** At the command line prompt enter:
- ls**
- A listing of files in the ODL directory is displayed.

27 At the command line prompt enter:

PGE_<PGE number>.odl

- <**PGE number**> refers to the name of the PGE (e.g., ACT#syn1#01).
- The first page of the ODL file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

28 Review the PGE ODL file for the expected **logicalId** (listed as **LOGICAL_ID** in the ODL file).

- For example:

OBJECT = PCF_ENTRY

CLASS = 11

LOGICAL_ID = 1100

PCF_FILE_TYPE = 1

DATA_TYPE_NAME = "AST_L1B"

DATA_TYPE_VERSION = "001"

DATA_TYPE_REQUIREMENT = 1

BEGIN_PERIOD_OFFSET = 0

END_PERIOD_OFFSET = 0

INPUT_TYPE = "Required"

NUMBER_NEEDED = 1

KEY_INPUT = "Y"

/* Entry needed for all I/O (except for Temporary) */

/* Only modify if multiple files and/or file types for this PCF entry */

OBJECT = FILETYPE

FILETYPE_NAME = "Single File Granule"

CLASS = 1

END_OBJECT = FILETYPE

END_OBJECT = PCF_ENTRY

- The example shows the PGE ODL entry for **logicalId** 1100 (AST_L1B), which is input for ACT PGEs. There are additional PCF_ENTRY objects in the ODL file for the other files associated with the PGE.
- If the PGE is synthetic, it is possible that the ODL was filled out incorrectly because of special parameters that the synthetic PGE expects.
- To exit from **pg** at the **:** prompt enter:

q

- The command line prompt is displayed.

29 If the ODL file is incorrect, notify the SSI&T team to have the file corrected.

30 If not still logged in, log in to the PDPS database.

- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).

31 To search on the **granuleId** to determine the corresponding value in the **availability** column in the **PIDataGranuleShort** table at the **1>** prompt enter:

```
select granuleId,availability from PIDataGranuleShort where granuleId like "<granule ID>"
```

- For example:

```
select granuleId,availability from PIDataGranuleShort where granuleId like "AST_L1B#00102141998020000000"
```

32 At the **2>** prompt enter:

```
go
```

- Contents of the following columns of the **PIDataGranuleShort** table for the specified granule are displayed:
 - **granuleId.**
 - **availability.**

33 Observe the entries in the **PIDataGranuleShort** table to determine whether all inputs to the DPR have “1” as their **availability** flag setting.

- For example:

```
1> select granuleId,availability from PIDataGranuleShort where granuleId like "AST_L1B#00102141998020000000"
```

```
2> go
```

```
granuleId
availability
```

```
-----
```

```
-----
```

```
AST_L1B#00102141998020000000
```

```
1
```

```
(1 row affected)
```

- In the example the availability flag of the granule is set at “1,” which indicates that the granule is available.
- The same sort of query would be accomplished for the other two inputs; i.e., granuleId **AST_ANC#001L1008** and granuleId **GDAS_OZF#001O1006**.

- 34** Observe the entries in the **PIDprData** table to determine whether all inputs to the DPR have “1” in their “**accepted**” field.
- As shown in Step 16, the “**accepted**” fields for the inputs for the example have the following values:

– AST_ANC#001L1008	5
– AST_L1B#00102141998020000000	5
– GDAS_0ZF#001O1006	5
 - Note that AST_09T#00102141998020000000 is an output, not an input.
 - A miscommunication can cause the Subscription Manager to release a PGE despite the fact that it is missing one (or more) input(s).
- 35** To exit from **isql** at the **1>** prompt enter:
- quit**
- The connection with the database is discontinued.
- 36** Access a terminal window logged in to the Queuing Server host.
- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 37** At the command line prompt enter:
- cd /<path>**
- Change directory to the run-time directory for the job (e.g.,
/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/
ACT#syn1#004130123OPS_x0spg11/).
- 38** At the command line prompt enter:
- pg <DPR number>.TkStatus**
- **<DPR number>** refers to the name of the job (e.g., AM1Eph#30012312200OPS or ACT#syn1#004130123OPS).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 39** Review the **<DPR number>.TkStatus** log in the runtime directory of the PGE/DPR for an error message indicating that the Toolkit had trouble processing some time associated with the PGE.
- An error message indicating that the Toolkit had trouble processing some time associated with the PGE may indicate that the leap seconds file is incorrect.

- To exit from **pg** at the **:** prompt enter:
q
 - The command line prompt is displayed.
- 40** If it is suspected that that the leap seconds file is incorrect, notify the SSI&T team to have the leap seconds file updated.
- An error message indicating that the Toolkit had trouble processing some time associated with the PGE may indicate that the leap seconds file is incorrect.
- 41** At the command line prompt enter:
pg <DPR number>.Log
- The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 42** Review the **<DPR number>.Log** file for the PGE in the runtime directory of the PGE/DPR for a message from the file watcher indicating that the PGE was killed because of output file size.
- The file watcher runs in the background and verifies that the PGE does not exceed its output file sizes by a configurable amount.
 - If a PGE creates a file that is "too large" the file watcher kills the PGE.
 - To exit from **pg** at the **:** prompt enter:
q
 - The command line prompt is displayed.
- 43** If file watcher killed the PGE because the output file exceeded its expected size, notify the SSI&T team of the problem.
- 44** If no file watcher-associated problem was found in the **<DPR number>.Log** file, at the command line prompt enter:
cd /<path>
- Change directory to the directory where the PGE should have been staged (e.g., `/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/`).
- 45** If no file watcher-associated problem was found in the **<DPR number>.Log** file, at the command line prompt enter:
ls
- A listing of files in the directory is displayed.

- 46 Review the directory listing to determine the presence of the PGE executable.
- DPS must acquire (stage) the PGE from Science Data Server before it runs for the first time.
 - In the subdirectory that matches the <PGE Name>#<science software ID> (i.e., ACT#syn1 in the example) the PGE should have been staged and untarred. If no PGE executable exists in the directory, that is the reason for the PGE failure.
 - Possible reasons why DPS would have run the PGE execution job without a PGE:
 - The DpPrExecutable table has entries after the database has been cleaned.
 - There is a file permission problem.
- 47 If not still logged in, log in to the PDPS database.
- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
- 48 To search on the **sswId** to determine the corresponding value in the **execLayer** column in the **DpPrExecutable** table at the 1> prompt enter:
- ```
select sswId,execLayer from DpPrExecutable where sswId like "<software ID>"
```
- For example:
 

```
select sswId,execLayer from DpPrExecutable where sswId like "ACT#syn1"
```
- 49 At the 2> prompt enter:
- ```
go
```
- Contents of the following columns of the **DpPrExecutable** table for the specified granule are displayed:
 - **sswId**.
 - **execLayer**.
- 50 Observe the entries in the **DpPrExecutable** table to determine whether there is an entry for the failing PGE with a setting of “0” in the **execLayer** column.
- For example:


```
1> select sswId,execLayer from DpPrExecutable where sswId like "ACT#syn1"
2> go
sswId      execLayer
-----
ACT#syn1      0
```

(1 row affected)
 - If there is an entry for the failing PGE in the **DpPrExecutable** database table and it has an entry of “0” in the **execLayer** column, DPS thinks that it has already staged the PGE.

- 51** If there is an entry for the failing PGE in the **DpPrExecutable** database table and it has an entry of “0” in the **execLayer** column, at the **1>** prompt enter:
- delete * from DpPrExecutable where sswId like "<software ID>"**
- For example:
- 1> delete * from DpPrExecutable where sswId like "ACT#syn1"**
- 52** At the **2>** prompt enter:
- go**
- Entries in the **DpPrExecutable** table related to the specified sswId are deleted.
- 53** At the **2>** prompt enter:
- quit**
- The connection with the database is discontinued.
- 54** If the **DpPrExecutable** database table contained an entry (for the failing PGE) that was deleted, make a request to the Production Planner to replan the DPR(s).
- 55** If the **DpPrExecutable** database table has an entry of some value other than “0” in the **execLayer** column, access a terminal window logged in to the Queuing Server host.
- Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 56** If the **DpPrExecutable** database table has an entry of some value other than “0” in the **execLayer** column, at the command line prompt enter:
- cd /<path>**
- Change directory to the run-time directory for the job (e.g.,
/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/
ACT#syn1#004130123OPS_x0spg11/).
- 57** If the **DpPrExecutable** database table has an entry of some value other than “0” in the **execLayer** column, at the command line prompt enter:
- pg <DPR number>.TkStatus**
- **<DPR number>** refers to the name of the job (e.g., AM1Eph#30012312200OPS or ACT#syn1#004130123OPS).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

58 If the **DpPrExecutable** database table has an entry of some value other than “0” in the **execLayer** column, review the **<DPR number>.TkStatus** log in the runtime directory of the PGE/DPR to identify the file or type of file (i.e., metadata file or data file) to which the PGE is having trouble writing.

- To exit from **pg** at the **:** prompt enter:

q

- The command line prompt is displayed.

59 At the command line prompt enter:

cd /<path>

- Change directory to the directory containing the file to which the PGE is having trouble writing.
- The directory structure under which DPS manages its files is defined by the machines (science processors), what are called the DataRoots for those machines, and the disks defined by the system. The directory structure can be represented as follows:

{machine name}_DataRoot

{disk one} {disk two}

{PGENAME}#{software version}

{DPR Name}_{machine name}

- The **{machine name}_DataRoot** parameter is found in the Configuration Registry for Execution Management (EcDpPrEM). The **{machine name}** is the name(s) of the science processor(s). There is a data root for each science processor in the system. The **{machine name}_DataRoot** is considered the top-level directory, where a directory for each disk in the system is placed. So under this directory are directories named after the various disks on the system.
 - In the disk directories input and output files are acquired and produced.
 - Underneath the disk directories are directories for each PGE of the form **{PGENAME}#{Software Version}**. This is where the PGE tar files and toolkit files are staged.
 - Beneath the PGE directories is a directory for each DPR (**{DPR Name}_{machine name}**) which is where the toolkit status files, PGE logs and temporary files are placed.
- The PGE creates the following files:
 - An output file for every granule that it produces.
 - Each output file has the form **{granuleId}.{file number}**, where the Granule Id matches the granuleId in the **PIDataGranuleShort** and **DpPrGranuleLocation** database tables. File number is added to differentiate different files within a granule.
 - A .met file for every granule that it produces.
 - Each .met file has the form **{granule Id}.met**.

- Toolkit status logs.
 - The toolkit status logs have the form {DPRID}.Tkstatus, {DPRID}.Tkuser and {DPRID}.TkLog. They are placed in the runtime directory of the PGE/DPR.

60 At the command line prompt enter:

ls -al

- A long listing of files in the directory is displayed.
- For example:

```
x0sps02:/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk[94]
> ls -al | pg
total 14185088
drwxrwxr-x 26 cmshared cmshared 65536 Apr 18 19:52 .
drwxrwxr-x 3 cmops cmops 30 Apr 30 1999 ..
drwxrwxr-x 2 cmshared cmshared 65536 Apr 17 10:49 ACT#syn1
-rw-r--r-- 1 EcDpPrEm users 384 Apr 18 16:06
AM1ANC#001010120000000000000000
-rw-r--r-- 1 EcDpPrEm users 20988 Apr 18 16:06
AM1ANC#001010120000000000000000.met
-rw-r--r-- 1 EcDpPrEm users 450048 Apr 18 16:06
AM1ANC#001010120000000000000001
-rw-r--r-- 1 EcDpPrEm users 384 Apr 18 16:11
AM1ANC#001010120000200000000000
-rw-r--r-- 1 EcDpPrEm users 20988 Apr 18 16:11
AM1ANC#001010120000200000000000.met
-rw-r--r-- 1 EcDpPrEm users 449984 Apr 18 16:11
AM1ANC#001010120000200000000001
-rw-r--r-- 1 EcDpPrEm users 384 Nov 23 13:32
AM1ANC#001073119970600000000000
-rw-r--r-- 1 EcDpPrEm users 20988 Nov 23 13:32
AM1ANC#001073119970600000000000.met
-rw-r--r-- 1 EcDpPrEm users 449984 Nov 23 13:32
AM1ANC#001073119970600000000001
-rw-r--r-- 1 EcDpPrEm users 384 Nov 23 13:33
AM1ANC#001073119970800000000000
-rw-r--r-- 1 EcDpPrEm users 20988 Nov 23 13:33
AM1ANC#001073119970800000000000.met
-rw-r--r-- 1 EcDpPrEm users 450048 Nov 23 13:33
AM1ANC#001073119970800000000001
-rw-r--r-- 1 EcDpPrEm users 384 Apr 18 16:05
AM1ANC#001123119992200000000000
```


Table 14.6-26. Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing - Quick-Step Procedures (2 of 4)

Step	What to Enter or Select	Action to Take
4	ls	enter text, press Enter
5	Determine whether status logs were created for the PGE	read text
6	cd /usr/ecs/<MODE>/CUSTOM (if applicable)	enter text, press Enter
7	ls -al (if applicable)	enter text, press Enter
8	If there is no toolkit directory, notify the Operations Controller/System Administrator to have the problem corrected	contact Operations Controller
9	cd /<path> (run-time directory for the job) (if applicable)	enter text, press Enter
10	pg <DPR number>.TkStatus (if applicable)	enter text, press Enter
11	Identify messages concerning a missing input or inability to get number of files (if any)	read text
12	pg <DPR number>.Pcf (if applicable)	enter text, press Enter
13	Determine whether that logicalld is present in the file(if applicable)	read text
14	Log in to the PDPS database	Use procedure in Section 14.6.3.3
15	select dprld,granuleld,logicalld,accepted from PIDprData where dprld like "<DPR ID>"	enter text, press Enter
16	go	enter text, press Enter
17	Record the values of all inputs to the DPR in the "accepted" field in the PIDprData table	write text
18	If the accepted field has "0" as its value, notify the Production Planner to delete the DPR and re-create it	contact Production Planner
19	quit	enter text, press Enter
20	cd /<path> (log file for the DPR)	enter text, press Enter
21	ls	enter text, press Enter
22	pg <file name> (log file for the DPR)	enter text, press Enter
23	Identify message(s) concerning a missing logicalld (if any)	read text
24	UNIX window (AIT Workstation)	single-click or use procedure in Section 14.2.1
25	cd /<path> (ODL files)	enter text, press Enter
26	ls	enter text, press Enter
27	PGE_<PGE number>.odl	enter text, press Enter
28	Review the PGE ODL file for the expected logicalld (listed as LOGICAL_ID in the ODL file)	read text
29	Notify the SSI&T team to have the ODL file corrected (if applicable)	contact SSI&T team

Table 14.6-26. Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing - Quick-Step Procedures (3 of 4)

Step	What to Enter or Select	Action to Take
30	Log in to the PDPS database (if necessary)	Use procedure in Section 14.6.3.3
31	select granuleId,availability from PIDataGranuleShort where granuleId like "<granule ID>"	enter text, press Enter
32	go	enter text, press Enter
33	Determine whether all inputs to the DPR have "1" as their availability flag setting in the PIDataGranuleShort table	read text
34	Determine whether all inputs to the DPR have "1" in their " accepted " field in the PIDprData table (refer to Step 17))	read text
35	quit	enter text, press Enter
36	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
37	cd /<path> (run-time directory for the job)	enter text, press Enter
38	pg <DPR number>.TkStatus	enter text, press Enter
39	Identify error message (if any) indicating that the Toolkit had trouble processing some time associated with the PGE	read text
40	Notify the SSI&T team to have the leap seconds file updated (if applicable)	contact SSI&T team
41	pg <DPR number>.Log	enter text, press Enter
42	Identify message from the file watcher indicating that the PGE was killed because of output file size	read text
43	Notify the SSI&T team of the problem (if applicable)	contact SSI&T team
44	cd /<path> (PGE staging directory)	enter text, press Enter
45	ls	enter text, press Enter
46	Determine whether the PGE executable is present in the directory	read text
47	Log in to the PDPS database (if necessary)	Use procedure in Section 14.6.3.3
48	select sswld,execLayer from DpPrExecutable where sswld like "<software ID>"	enter text, press Enter
49	go	enter text, press Enter
50	Determine whether there is an entry for the failing PGE with a setting of "0" in the execLayer column in the DpPrExecutable table	read text
51	delete * from DpPrExecutable where sswld like "<software ID>" (if applicable)	enter text, press Enter
52	go	enter text, press Enter

Table 14.6-26. Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing - Quick-Step Procedures (4 of 4)

Step	What to Enter or Select	Action to Take
53	quit	enter text, press Enter
54	Make a request to the Production Planner to replan the DPR(s) (if applicable)	contact Production Planner
55	UNIX window (Queuing Server) (if applicable)	single-click or use procedure in Section 14.2.1
56	cd /<path> (run-time directory for the job) (if applicable)	enter text, press Enter
57	pg <DPR number>.TkStatus (if applicable)	enter text, press Enter
58	Identify the file or type of file (i.e., metadata file or data file) to which the PGE is having trouble writing (if applicable)	read text
59	cd /<path> (directory containing the file to which the PGE is having trouble writing) (if applicable)	enter text, press Enter
60	ls -al (if applicable)	enter text, press Enter
61	Determine who has "write" permission for the file to which the PGE is having trouble writing (if applicable)	read text
62	If there is a discrepancy between the "write" permission for the file and the owner of the job, report the problem to the Operations Controller/System Administrator for resolution	contact Operations Controller/System Administrator
63	Make a request to the Production Planner to replan the affected DPR(s) (when applicable)	contact Production Planner

14.6.4.15 Handle a Failed Postprocessing Job

If postprocessing fails, the Postprocessing job turns red on **JobScope** or **TimeScope**.

Table 14.6-27 presents (in a condensed format) the steps required to handle a failed Postprocessing job. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:

```
cd /usr/ecs/<MODE>/CUSTOM/logs
```

- Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).
- 3** If there is an ALOG file for the job, at the command line prompt enter:
- pg <file name>.ALOG**
- **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **more**) can be used to review the log file.
- 4** If there is an ALOG file for the job, review the log file for an error message concerning DPS having trouble finding a log file.
- An error message concerning DPS having trouble finding a log file means that the PGE probably did not run due to one of the following problems:
 - The toolkit links on the science processor are not correct.
 - The **auto.profile** configuration file has not been generated correctly.
 - To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.
- 5** Access a terminal window logged in to the applicable Science Processor.
- Examples of Science Processor host names include **e0spg11**, **g0spg11**, and **l0spg11**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 6** At the command line prompt enter:
- cd /usr/ecs/<MODE>/CUSTOM**
- 7** At the command line prompt enter:
- ls -al**
- A listing of the directory is displayed.
 - There should be a “toolkit” subdirectory in the listing.
- 8** If there is **no** toolkit directory, notify the Operations Controller/System Administrator to have the directory created and linked correctly.
- 9** If there is a toolkit directory, notify the Operations Controller/System Administrator that the **auto.profile** file(s) may need to be corrected.
- There is an auto.profile file in the /usr/ecs/<MODE>/CUSTOM/bin/DPS directory on the Queuing Server and on each Science Processor.

- There may be a discrepancy between the auto.profile file and what is specified in the EcDpPrAutosysMkcfg or EcDpScAutosysMkcfg file (in the /usr/ecs/<MODE>/CUSTOM/utilities directory).
 - The EcDpPrAutosysMkcfg (Queuing Server) and EcDpScAutosysMkcfg (Science Processor) files are used in generating the auto.profile files.
- The AutoSys Mkcfg may have to be run again or the auto.profile file may have to be changed manually.

- 10** If no problem has been identified, run the Execution Manager in the debugger.
- Execution Manager (EcDpPrEM) is the DPS program that runs during insertion.
 - For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).

Table 14.6-27. Handle a Failed Postprocessing Job - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>.ALOG (if applicable)	enter text, press Enter
4	Determine whether DPS was having trouble finding a log file (if applicable)	read text
5	UNIX window (Science Processor)	single-click or use procedure in Section 14.2.1
6	cd /usr/ecs/<MODE>/CUSTOM	enter text, press Enter
7	ls -al	enter text, press Enter
8	If there is no toolkit directory, notify the Operations Controller/System Administrator to have the directory created and linked	contact Operations Controller
9	If there is a toolkit directory, notify the Operations Controller/System Administrator that the auto.profile file(s) may need to be corrected	contact Operations Controller
10	Run the Execution Manager in the debugger (if applicable)	Use procedure in Section 14.6.4.3

14.6.4.16 Handle Failure of Both Execution and Postprocessing Jobs

This condition is indicated when both the Execution and Postprocessing Jobs are red in **JobScope** or **TimeScope**, but no other jobs are red. This indicates that the Postprocessing job has read the log file created by EcDpPrRunPGE in the runtime directory and has found an exit status not equal to zero (0). However, it failed to destage (insert) the failed PGE tar file.

Table 14.6-28 presents (in a condensed format) the steps required to handle failure of both Execution and Postprocessing jobs. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt enter:

cd /usr/ecs/<MODE>/CUSTOM/logs

 - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).

- 3 At the command line prompt enter:

pg <file name>.err

 - **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.err).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 4 Review the .err file for a “FAILPGE” string.

- 5 Review the .err file for the return value from the Science Data Server around the insertion of the failed PGE tar file.
 - To exit from **pg** at the **:** prompt enter:

q

 - The command line prompt is displayed.

- 6 If a problem with insertion of the FAILPGE tar file is suspected, continue with the **Handle a Failed Insertion Function** procedure (Section 14.6.4.17).

Table 14.6-28. Handle Failure of Both Execution and Postprocessing Jobs - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>.err	enter text, press Enter

Table 14.6-28. Handle Failure of Both Execution and Postprocessing Jobs - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
4	Determine whether there is a "FAILPGE" string in the log file	read text
5	Determine the return value from the Science Data Server around the insertion of the failed PGE tar file	read text
6	Handle a failed insertion function (if applicable)	Use procedure in Section 14.6.4.17

14.6.4.17 Handle a Failed Insertion Function

If the insertion function fails, the Postprocessing job turns red on **JobScape** or **TimeScape**.

Table 14.6-29 presents (in a condensed format) the steps required to handle a failed insertion function. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).

- 2 At the command line prompt enter:


```
cd /usr/ecs/<MODE>/CUSTOM/logs
```

 - Change directory to the directory containing the data processing log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG).

- 3 At the command line prompt enter:


```
pg <file name>.err
```

 - **<file name>** refers to the data processing log file to be reviewed (e.g., <DPR number>.err).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 4 Review the .err file for the following types of error messages:
 - Failure inserting metadata into catalog**
 - Error archiving files**

Error modifying file usage

- Possible causes of a "**Failure inserting metadata into catalog**" message include the following items:
 - Problem with Storage Management.
 - Problem with a SDSRV temporary directory getting filled up.
 - Metadata file (and possibly the data file) cannot be located by Science Data Server because the mount point between the Science Processor and the Science Data Server machine may have been lost.
 - File names sent to the Science Data Server are invalid or null (e.g., if the **DpPrFile** table in the PDPS database has duplicate entries).
 - Duplicate file entries in the DPS file tables.
- A message that indicates "**Error archiving files**" means that SDSRV is having trouble getting Storage Management to place the file(s) in the archive.
- A message that indicates "**Error modifying file usage**" means that the **numberOfUsage** column in the **DpPrFile** table for a particular file is at zero (0) and the software is trying to decrement it, which it cannot do.
- To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.

5 If a "**Failure inserting metadata into catalog**" message was present in the log and the problem occurred for an existing ESDT that has previously worked within the past day or two, notify the Operations Controller or Archive Manager that there may be a problem with Storage Management.

- The STMGT log files may contain information concerning changes/defects in the stored procedures.

6 If a "**Failure inserting metadata into catalog**" message was present in the log and the problem occurred for a new or recently installed ESDT, at the command line prompt enter:

cd /<path>

- Change directory to the run-time directory for the job (e.g.,
/usr/ecs/OPS/CUSTOM/pdps/x0spg11/data/DpPrRm/x0spg11_disk/ACT#syn1/
ACT#syn1#004130123OPS_x0spg11/).

7 If a "**Failure inserting metadata into catalog**" message was present in the log, at the command line prompt enter:

pg <DPR number>.MCF

- **<DPR number>** refers to the name of the job (e.g., AM1Eph#30012312200OPS or ACT#syn1#004130123OPS).

- The first page of the MCF file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 8** Review the MCF file in the runtime directory of the PGE/DPR to determine values of the mandatory parameters in the metadata file.
- To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.
- 9** If a "**Failure inserting metadata into catalog**" message was present in the log (Step 4), report values of the mandatory parameters in the metadata file to the Operations Controller or Science Data Specialist so they can be compared with "valids" from the SDSRV database.
- In the GIPParameter list from Science Data Server there may be error messages that may indicate which metadata values the Data Server did not like.
- 10** If a "**Failure inserting metadata into catalog**" message was present in the log, at the command line prompt enter:
- cd /<path>**
- Change directory to the pdps mount point (e.g., /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data).
- 11** If the mount point is missing, notify the Operations Controller/System Administrator to have it restored.
- 12** If a "**Failure inserting metadata into catalog**" message was present in the log (Step 4), access a terminal window logged in to the SDSRV Server host.
- Examples of SDSRV Server (Sun internal server) host names include **e0acs06**, **g0acs06**, and **l0acs06**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 13** If a "**Failure inserting metadata into catalog**" message was present in the log, at the command line prompt enter:
- cd /<path>**
- Change directory to the pdps mount point (e.g., /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data).
 - The pdps mount point should be visible from both the Queuing Server and the Sun internal server hosts (and several other hosts as well).

- 14 If the mount point is missing, notify the Operations Controller/System Administrator to have it restored.
- 15 If a "**Failure inserting metadata into catalog**" message was present in the log (Step 4), log in to the appropriate PDPS database.
- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
 - For example:


```
x0sps02:/usr/ecs/OPS/CUSTOM[4] > isql -U pdps_role -S x0sps02_srvr
Password:
1> use pdps
2> go
```
- 16 If a "**Failure inserting metadata into catalog**" message was present in the log, search in the **DpPrFile** table on the **fileName** corresponding to the ".err" log file name that failed to be inserted (refer to Step 4).
- For example:


```
1> select fileName from DpPrFile where fileName like
"AST_09T#0010214199802012%"
2> go
```

fileName
AST_09T#001021419980201200000000
AST_09T#001021419980201200000000.met

(2 rows affected)
 - Look for duplicate entries in the table.
 - There should be two entries for each file in the **DpPrFile** table; i.e., one for the data file and one for the metadata file (as shown in the example). If there are three or more entries for a file, the table has duplicate entries that are causing the problem.
- 17 If a "**Failure inserting metadata into catalog**" message was present in the log and if duplicate entries were found in the **DpPrFile** table, notify the Production Planner to delete the DPR whose Insertion job failed.
- 18 If a "**Failure inserting metadata into catalog**" message was present in the log and if duplicate entries were found in the **DpPrFile** table, clean up the DPS file tables.

- For detailed instructions refer to the **Clean Up the DPS File Tables** procedure (Section 14.6.4.9).
- 19** If a "**Failure inserting metadata into catalog**" message was present in the log, when the DPS file tables have been cleaned up, notify the Production Planner to recreate the DPR whose Insertion job failed.
- 20** If an "**Error archiving files**" message was present in the log (Step 4), notify the Operations Controller or Archive Manager that there may be a problem with Storage Management.
- An "**Error archiving files**" message means that SDSRV is having trouble getting Storage Management to place the file(s) in the archive.
 - When the "**Error archiving files**" has been corrected, it should be possible to restart the job and have it complete successfully.
 - For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).
- 21** If an "**Error archiving files**" message was present in the log (Step 4), access a terminal window logged in to the SDSRV Server host.
- Examples of SDSRV Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, and **l0acs06**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 22** If an "**Error archiving files**" message was present in the log, at the command line prompt enter:
- cd /<path>**
- Change directory to the pdps mount point (e.g., /usr/ecs/OPS/CUSTOM/pdps/x0spg11/data).
- 23** If the mount point is missing, notify the Operations Controller/System Administrator to have it restored.
- 24** If an "**Error modifying file usage**" message was present in the log (Step 4), log in to the appropriate PDPS database.
- Database log-in is described in Steps 1 through 5 of the **Use ISQL to Check Database Tables** procedure (Section 14.6.3.3).
 - Refer to the example in Step 15.
 - A message that indicates "**Error modifying file usage**" means that the **numberOfUsage** column in **DpPrFile** table for a particular file is at zero (0) and the software is trying to decrement it.

- The **numberOfUsage** column is an increment/decrement counter and is not normally decremented more times than it is incremented when under software control.
- However, if someone manually changes the database, the value may get out of sync.

25 If an "**Error modifying file usage**" message was present in the log, update the **numberOfUsage** column in **DpPrFile** table for the particular file so it is set at one (1).

- For example:
 - 1> update DpPrFile set numberOfUsage=1 where fileName like "AST_09T#0010214199802012%"**
 - 2> go**
- When the database has been corrected, it should be possible to restart the job and have it complete successfully.
 - For detailed instructions refer to the **Force-Start a Job** procedure (Section 14.6.4.5).

26 If no problem has been identified, run the Execution Manager in the debugger.

- Execution Manager (EcDpPrEM) is the DPS program that runs during insertion.
- For detailed instructions refer to the **Run Execution Management Outside of AutoSys** procedure (Section 14.6.4.3).

Table 14.6-29. Handle a Failed Insertion Function - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>.err	enter text, press Enter
4	Review the file for error messages	read text
5	Notify the Operations Controller or Archive Manager that there may be a problem with Storage Management (if applicable)	contact Operations Controller
6	cd /<path> (run-time directory for the job) (if applicable)	enter text, press Enter
7	pg <DPR number>.MCF (if applicable)	enter text, press Enter
8	Determine values of the mandatory parameters in the metadata file (if applicable)	read text
9	Report values to the Operations Controller or Science Data Specialist (if applicable)	contact Operations Controller
10	cd /<path> (pdps mount point) (if applicable)	enter text, press Enter

**Table 14.6-29. Handle a Failed Insertion Function - Quick-Step Procedures
(2 of 2)**

Step	What to Enter or Select	Action to Take
11	If the mount point is missing, notify the Operations Controller/System Administrator (if applicable)	contact Operations Controller
12	UNIX window (Sun internal server host) (if applicable)	single-click or use procedure in Section 14.2.1
13	cd /<path> (pdps mount point) (if applicable)	enter text, press Enter
14	If the mount point is missing, notify the Operations Controller/System Administrator (if applicable)	contact Operations Controller
15	Log in to the appropriate PDPS database (if applicable)	Use procedure in Section 14.6.3.3
16	Search in the DpPrFile table on the fileName corresponding to the ".err" log file name (if applicable)	Use procedure in Section 14.6.3.3
17	If duplicate entries were found in the DpPrFile table, notify the Production Planner to delete the DPR whose Insertion job failed	contact Production Planner
18	Clean up the DPS file tables (if applicable)	Use procedure in Section 14.6.4.9
19	Notify the Production Planner to recreate the DPR whose Insertion job failed (if applicable)	contact Production Planner
20	Notify the Operations Controller or Archive Manager that there may be a problem with Storage Management (if applicable)	contact Operations Controller
21	UNIX window (Sun internal server host) (if applicable)	single-click or use procedure in Section 14.2.1
22	cd /<path> (pdps mount point) (if applicable)	enter text, press Enter
23	If the mount point is missing, notify the Operations Controller/System Administrator (if applicable)	contact Operations Controller
24	Log in to the appropriate PDPS database (if applicable)	Use procedure in Section 14.6.3.3
25	Update the numberOfUsage column in DpPrFile table for the particular file so it is set at one (1) (if applicable)	Use procedure in Section 14.6.3.3
26	Run the Execution Manager in the debugger (if applicable)	Use procedure in Section 14.6.4.3

14.6.4.18 Handle a Failed Deallocate Function

If the deallocate function fails, the Postprocessing job turns red on **JobScope** or **TimeScope**.

Table 14.6-30 presents (in a condensed format) the steps required to handle a failed deallocate function. If you are already familiar with the procedures, you may prefer to use the quick-step

table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Ensure that it is possible to connect to the necessary hosts and servers.
 - For detailed instructions refer to the **Check Connections to Hosts/Servers** procedure (Section 14.6.1.1).
- 2 If hosts/servers are all “up,” check the log files for error messages.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 14.6.1.2).

Table 14.6-30. Handle a Failed Deallocate Function - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Check connections to hosts/servers	Use procedure in Section 14.6.1.1
2	Check log files (if applicable)	Use procedure in Section 14.6.1.2

14.6.5 Handle a Failed On-Demand Processing Request

An On-Demand Processing request can fail for any of the following reasons:

- Failures in Submitting the On-Demand Request from EDG.
- Failures in OdMgr getting the On-Demand Request to Run in AutoSys.
 - The Job Management Server is down.
 - The DPR is waiting in the AutoSys queue (never got released).
 - The DPR failed in Job Management due to Invalid DPR.
 - The DPR failed in OdMgr due to a failure in getting the PGE ID.
 - Subscription Server Problems.
 - The DPR failed in Job Management due to a JIL failure.
 - The DPR failed in Job Management due to an AutoSys ID failure.
 - The DPR failed to be received by Job Management Server.
 - AutoSys is not functional.
 - AutoSys is full.
- Failures in AutoSys of the On-Demand PGE(s).
- Failures in OdMgr Distribution of the On-Demand product.

When the DPR for an On-Demand Processing Request is in AutoSys, the jobs can fail for any of the same reasons that any other type of job might fail and might be restarted in the same manner as any other type of job (as described in preceding sections).

Perform the appropriate procedure(s) related to handling a failed on-demand processing request:

- **Check Connections to Hosts/Servers** (Section 14.6.1.1).
- **Check Log Files** (Section 14.6.1.2).
- **Respond to Hanging of the Processing System** (Section 14.6.2).

- **Check AutoSys Status** (Section 14.6.2.1).
- **Check the AutoSys Log** (Section 14.6.2.2).
- **Check for Database Deadlocks** (Section 14.6.2.3).
- **Check for Resource Locks in the PDPS Database** (Section 14.6.2.4).
- **Respond to Failure of Jobs to Start in AutoSys** (Section 14.6.3).
- **Check Job Management Server Status** (Section 14.6.3.1).
- **Check to Determine Whether the DPR Is Waiting in the AutoSys Queue** (Section 14.6.3.2).
- **Use ISQL to Check Database Tables** (Section 14.6.3.3).
- **Check to Determine Whether AutoSys Is Full** (Section 14.6.3.4).
- **Respond to a Condition Where a DPR Was Released But Failed Due to a JIL Failure** (Section 14.6.3.5).
- **Handle Subscription Server Problems** (Section 14.6.3.6).
- **Respond to a DPR That Was Released But Failed Due to an AutoSys ID Failure** (Section 14.6.3.7).
- **Respond to a DPR That Was Released But Failed Due to Invalid DPR** (Section 14.6.3.8).
- **Respond to a DPR That Was Released But Failed to Be Received by Job Management Server** (Section 14.6.3.9).
- **Respond to a Single DPS Job That Has Failed or Is Hanging** (Section 14.6.4).
- **Handle a Box Job that is Hanging in AutoSys** (Section 14.6.4.1).
- **Handle a Hanging Allocation Function** (Section 14.6.4.2).
- **Run Execution Management Outside of AutoSys** (Section 14.6.4.3).
- **Handle a Failed Allocation Function** (Section 14.6.4.4).
- **Force-Start a Job** (Section 14.6.4.5).
- **Respond to a Restart of a Job That Fails Although All Known Problems Have Been Corrected** (Section 14.6.4.6).
- **Handle a Hanging Staging Function** (Section 14.6.4.7).
 - Perform the **Handle a Hanging Allocation Function** procedure (Section 14.6.4.2).
- **Handle a Failed Staging Function** (Section 14.6.4.8)
- **Clean Up the DPS File Tables** (Section 14.6.4.9).
- **Handle a Failed Preprocessing Job** (Section 14.6.4.10)
- **Handle a Hanging Execution Job** (Section 14.6.4.11).
 - Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).
- **Handle a Failed Execution Job** (Section 14.6.4.12)
 - Perform the **Check AutoSys Status** procedure (Section 14.6.2.1).
- **Respond to Execution Job and/or Postprocessing Job That Have (Has) Failed** (Section 14.6.4.13)
- **Respond to Execution Job That Has Failed and the DPR Has Gone into "Failed-PGE" Processing** (Section 14.6.4.14)

- **Handle a Failed Postprocessing Job** (Section 14.6.4.15).
- **Handle Failure of Both Execution and Postprocessing Jobs** (Section 14.6.4.16).
- **Handle a Failed Insertion Function** (Section 14.6.4.17).
- **Handle a Failed Deallocate Function** (Section 14.6.4.18).
- **Respond to a DPR that Failed in OdMgr because the PGE ID Could Not Be Found** (Section 14.6.5.1).

14.6.5.1 Respond to a DPR that Failed in OdMgr because the PGE ID Could Not Be Found

If a DPR failed in OdMgr because the PGE ID could not be found, the options selected on the EDG screen do not match any of the Profiles for the PGE associated with the selected input. The parameters selected on EDG for the product are passed to OdMgr and are used to select the appropriate PGE Profile. The selection of a PGE Profile fails if the parameters passed by EDG to OdMgr do not exactly match those in one of the profiles.

Table 14.6-31 presents (in a condensed format) the steps required to respond to a DPR that failed in OdMgr because the PGE ID could not be found. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedures:

- 1 Access a terminal window logged in to the Queuing Server host.
 - Examples of Queuing Server host names include **e0sps04**, **g0sps06**, and **l0sps03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 14.2.1).
- 2 At the command line prompt enter:


```
cd /usr/ecs/<MODE>/CUSTOM/logs
```

 - Change directory to the directory containing the Data Processing Subsystem log files (e.g., EcDpPrJobMgmt.ALOG or EcDpPrDeletionDebug.log).
- 3 At the command line prompt enter:


```
pg <file name>
```

 - **<file name>** refers to the Data Processing Subsystem log file to be reviewed (e.g., OdMgr.ALOG).
 - The first page of the log file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **more**, **vi**, **view**) can be used to review the log file.
- 4 Review the ALOG file for the following type of error message:

Getting PGEID failed from POrderFactory

 - For example:

PID : 24890:MsgLink :0 meaningfulname :READFAILED
Msg: Getting PGEID failed from POrderFactory Priority: 2 Time : 01/27/00
13:41:43

PID : 24890:MsgLink :10 meaningfulname :PGELISTFAILED
Msg: Getting PgeList from GIPParameterList failed Priority: 2 Time : 01/27/00
13:41:54

PID : 24890:MsgLink :11 meaningfulname :CANTCREATEORDER
Msg: Unable to create a POrder Priority: 2 Time : 01/27/00 13:41:54

- The problem is most likely caused by not having the latest ODLs.
- To exit from **pg** at the **:** prompt enter:

q

– The command line prompt is displayed.

- 5 If an error message of the type shown in the previous step was present in the log, notify the SSI&T team of the problem.
 - The SSI&T team should recopy the On Demand ODLs and re-register the PGEs.

Table 14.6-31. Respond to a DPR that Failed in OdMgr because the PGE ID Could Not Be Found - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Queuing Server)	single-click or use procedure in Section 14.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name>	enter text, press Enter
4	Review the log file for " Getting PGEID failed from POrderFactory " error message	read text
5	Notify the SSI&T team of the problem (if applicable)	contact SSI&T team

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15. Quality Assurance

This section describes the procedures for setting Quality Assurance flags in the metadata for science granules using the QA Monitor tool and the QA Metadata Update Tool (QAMUT).

Operational Quality Assessment is performed by DAAC operations personnel authorized to modify the value of the Operational QA flag attribute value for a product generated at the DAAC. The QA Monitor tool provides the capability to retrieve granules for viewing and to retrieve production history files. The QAMUT provides a tool for updating the QA metadata for multiple granules in a batch. Figure 15-1 provides an overview of the quality assurance process.

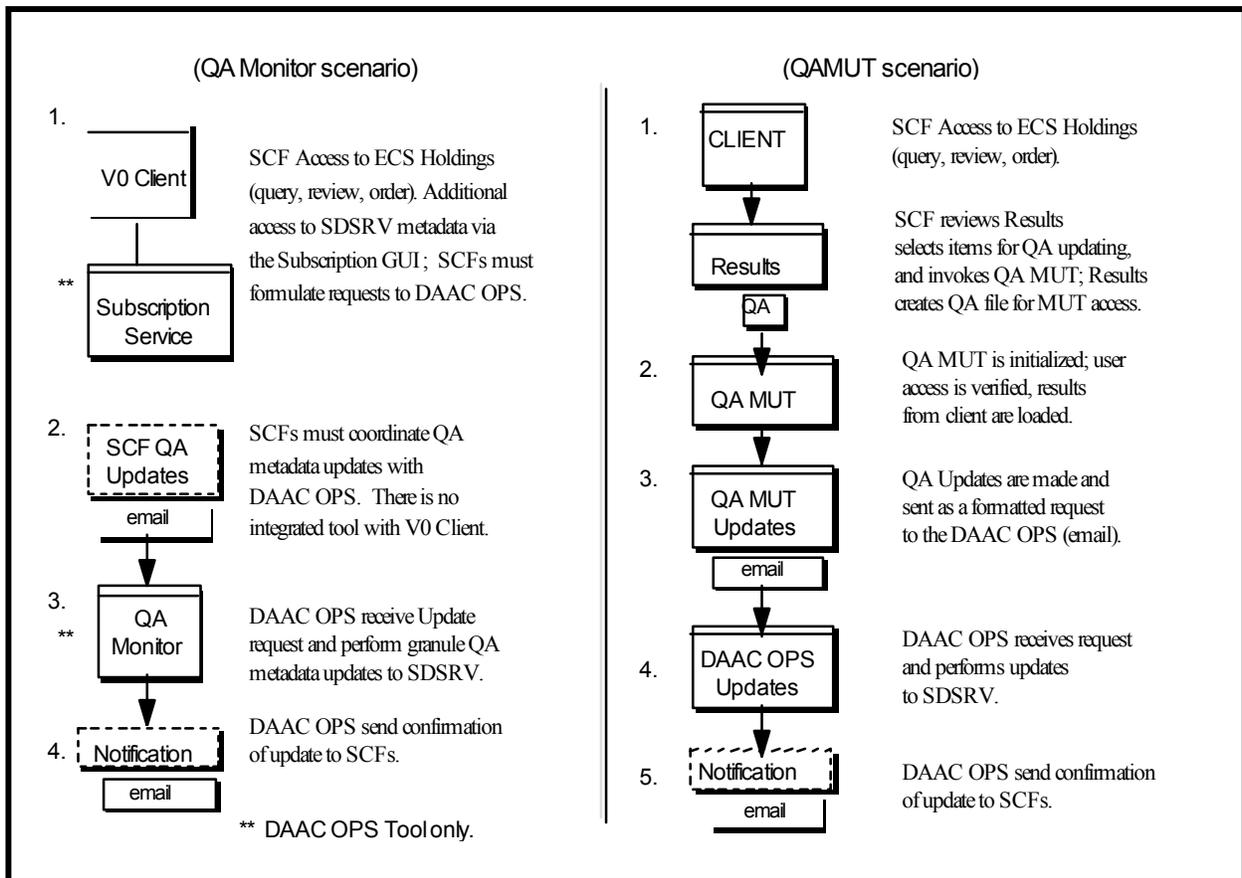


Figure 15-1. QA Metadata Update Process

Subsequent sections related to Quality Assurance address procedures for the following functions:

- Section 15.1 Using the QA Monitor.
- Section 15.2 Using the QA Metadata Update Tool.

For each set of functions, an **Activity Checklist** table provides an overview of the tasks to be completed. The outline of the Activity Checklist is as follows:

Column one - **Order** shows the order in which tasks could be accomplished.

Column two - **Role** lists the Role/Manager/Operator responsible for performing the task.

Column three - **Task** provides a brief explanation of the task.

Column four - **Section** provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

Column five - **Complete?** is used as a checklist to keep track of which task steps have been completed.

15.1 Using the QA Monitor

The purpose of the QA Monitor is to enable DAAC technicians to modify ScienceQualityFlag and OperationalQualityFlag attributes of core metadata for a granule, based either on a request from the Science Computing Facility (SCF) or on an operations review, respectively.

The QA Monitor can be used to request the Science Data Server to search for specific types of Data Granules; Query, Retrieve, and Update (QRU) Metadata; transfer Data Granules to the operator's computer; and transfer Production History to the operator's computer. It can also be used to update data granule metadata, view graphical images of data granules, and print/display lists of data granules and data types.

Table 15.1-1 provides an Activity Checklist for Using the QA Monitor.

Table 15.1-1. Using the QA Monitor - Activity Checklist

Order	Role	Task	Section	Complete?
1	Production Monitor	Launch the QA Monitor	(P) 15.1.1	
2	Production Monitor	Retrieve and View DAAC Product Using the QA Monitor	(P) 15.1.2	
3	Production Monitor	Update QA Metadata using the QA Monitor	(P) 15.1.3	
4	Production Monitor	Retrieve and View Production History	(P) 15.1.4	

15.1.1 Launch the QA Monitor

Table 15.1-2 presents the steps required to launch the QA Monitor. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

NOTE: Commands in Steps 1 through 7 are typed at a UNIX system prompt.

- 1 Type **setenv DISPLAY *clientname*:0.0** then press the **Return/Enter** key.
 - Use either the X terminal/workstation IP address or the machine-name for the *clientname*.
 - When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.

- 2 Start the log-in to the Planning/Management Workstation by typing **/tools/bin/ssh *hostname*** (e.g., **e0pls03**, **g0pls01**, or **l0pls02**) in the new window then press the **Return/Enter** key.
 - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type yes (“y” alone will not work).
 - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 3.
 - If you have not previously set up a secure shell passphrase; go to Step 4.

- 3 If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** then press the **Return/Enter** key.
 - Go to Step 5.

- 4 At the **<user@remotehost>'s password:** prompt type your **Password** then press the **Return/Enter** key.

- 5 Type **setenv ECS_HOME /usr/ecs/** then press the **Return/Enter** key.
 - When logging in as a system user (e.g., **cmshared**), the ECS_HOME variable may be set automatically so it may not be necessary to perform this step.

- 6 Type **cd /usr/ecs/MODE/CUSTOM/utilities** then press **Return/Enter**.
 - Change directory to the directory containing the QA Monitor start script (e.g., **EcDpPrQaMonitorGUIStart**).
 - The **MODE** will most likely be one of the following operating modes:
 - OPS (for normal operation).
 - TS1 (for SSI&T).
 - TS2 (new version checkout).
 - Note that the separate subdirectories under **/usr/ecs** apply to (describe) different operating modes.

- 7 Type **EcDpPrQaMonitorGUIStart MODE** then press **Return/Enter** to launch the **QA Monitor GUI**.
 - The **QA Monitor** GUI is displayed.

Table 15.1-2. Launch the QA Monitor

Step	What to Do	Action to Take
1	setenv DISPLAY <i>clientname</i> :0.0	enter text; press Return/Enter
2	/tools/bin/ssh <i>hostname</i>	enter text; press Return/Enter
3	<i>Passphrase</i> (or Step 4)	enter text; press Return/Enter
4	<i>Password</i>	enter text; press Return/Enter
5	setenv ECS_HOME /usr/ecs/	enter text; press Return/Enter
6	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text; press Return/Enter
7	EcDpPrQaMonitorGUIStart <MODE>	enter text; press Return/Enter

15.1.2 Retrieve and View DAAC Product Using the QA Monitor

The QA process begins with launching the QA Monitor application. The DAAC operations personnel query the Science Data Server database for the selected products, retrieve those specific products and perform a visual check using the Visualize Data option of QA Monitor.

Table 15.1-3 presents the steps required to query, retrieve and view data granules. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Launch the QA Monitor GUI (refer to Section 15.1.1, **Launch the QA Monitor**).
- 2 Click on the **QRU data** tab (if it is not already selected).
 - The **QRU data** window is displayed on the GUI.
- 3 In the **Data Types** field, click on the data type to be checked.
 - It may be necessary to scroll through the **Data Types** list.
 - The selected data type is highlighted.
 - Only one data type can be selected at a time.
 - Alternatively, the Find field and button can be used for specifying a data type.
 - The **Find** field is case-sensitive.
- 4 Click in the appropriate **Data Granule Insert** window field(s) and either type or use the up/down arrow buttons to enter the **Begin** date and **End** date in *MM/DD/YYYY* format.
 - In the **Data Granule Insert** window it is necessary to specify the range of dates (between the **Begin** date and the **End** date) to formulate a query for searching for the desired granule(s) to be checked.
 - Time is based upon day of insert into the data server. If no dates are entered, an error message is displayed.

- The up and down arrows next to the duration fields may be used for modifying entries in each field.
 - The Tab key may be used to move from field to field.
- 5 Click on the **Query** button.
- Granules within the specified date range appear in the **Data Granules** field.
- 6 In the **Data Granules** field, click on the granule to be retrieved.
- It may be necessary to scroll through the list of granules.
 - The selected granule is highlighted.
 - Alternatively, the **Find** field and button may be used for specifying a data granule.
 - The **Find** field is case-sensitive.
- 7 Click on the **Retrieve DataGranule** button.
- The Status field displays a message . . . **Acquiring Science Data granule . . .**, and upon completion of the acquire, the GUI becomes active again.
- 8 Click on the **Visualize data** tab.
- The **Visualize data** window is displayed on the GUI with a **Filter** field at the top showing the path for location of the acquired science data granule, a **Directory** field listing directories on the host, and a **Files** field listing files in the selected path.
- 9 Click on the file to be viewed
- The selection is highlighted.
- 10 To visualize the selected data granule, click on the **Visualize** button.
- The **EOS View** GUI is displayed in a separate window.
 - **Note:** The EOSView GUI requires operator input to produce a graphical image of the science data file. The EOSView GUI can only read data products that are in HDF format.
- 11 To open the HDF product file from which to view metadata, select the **File→Open** button from the main menu bar.
- A **File Selection Dialog** window opens and the operator is able to select the appropriate directory and file to open.
 - Once the desired product file has been opened, the specific types of HDF objects in the file is listed in the **Contents** window.
- 12 In the **Contents** window, double-click on a particular HDF Object (e.g., **Vgroup**, **SDS**).
- The structure of the HDF object appears in a dialog window with buttons on the bottom portion of the window to view the data of the object itself.

- 13 Display the science data values of this particular HDF object by selecting the **Table** button to display the table data of the object.
 - The values are listed.
- 14 View the attribute values of this particular HDF object by selecting the **Attributes** button.
 - Metadata is referred to as **attribute data**.
 - Any metadata associated with the object is displayed in another text window.
- 15 To quit when done, type **Q** then press the **Return/Enter** key.

Table 15.1-3. Retrieving and Viewing Data Granules

Step	What to Do	Action to Take
1	Launch the QA Monitor	Use procedure in Section 15.1.1
2	Select the QRU data tab (if necessary)	single-click
3	In the Data Types field, select the data type	single-click
4	Move cursor to appropriate Data Granule Insert field(s) and enter Begin date and End date	click and enter text or set date(s) using up/down arrow buttons
5	Activate the Query button	single-click
6	In the Data Granules field, highlight the granule to be retrieved	single-click
7	Activate the Retrieve DataGranule button	single-click
8	Select the Visualize data tab	single-click
9	In the Files list, highlight the file to be viewed	single-click
10	Activate the Visualize button	single-click
11	File→Open	single-click
12	From the Contents window, display the information categories for the HDF object	double-click
13	To display the table of science data values for the HDF object, activate the Table button	single-click
14	To display the attribute values for the HDF object, activate the Attributes button	single-click
15	To quit, enter Q	enter text; press Return/Enter

15.1.3 Update QA Metadata

After viewing the Data Granules, the operator will update the Operational QA flag for that specific product as appropriate. The operator also updates the Science QA flags in response to an email request from SCF personnel, who have the responsibility for performing QA of their own products.

This procedure for updating QA metadata starts with the assumption that all applicable servers are currently running and the **QA Monitor** GUI **QRU data** tab is being displayed.

Table 15.1-4 summarizes the QA metadata attributes and their descriptions.

Table 15.1-4. QA Metadata Attributes

Field Name	Data Type	Description
OperationalQualityFlag ScienceQualityFlag	character	DAAC and SCF quality status setting of a data granule parameter, selected by the user. The valid values are: - passed - failed - being investigated - not investigated - inferred passed - inferred failed
OperationalQualityFlagExplanation ScienceQualityFlagExplanation	character	Text describing quality status (less than 255 characters), input by user.
AutomaticQualityFlag	character	DAAC and SCF quality status setting of a data granule parameter, set during data processing.
AutomaticQualityFlagExplanation	character	Text describing quality status of a data granule parameter - set during data processing.

Table 15.1-5 presents the steps required to update QA Flags using the QA Monitor. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1 In the **Data Types** field, click on the data type to be checked.
 - It may be necessary to scroll through the **Data Types** list.
 - The selected data type is highlighted.
 - Only one data type can be selected at a time.
 - Alternatively, the **Find** field and button can be used for specifying a data type.
 - The **Find** field is case-sensitive.

- 2 Click in the appropriate **Data Granule Insert** window field(s) and either type or use the up/down arrow buttons to enter the **Begin** date and **End** date in **MM/DD/YYYY** format.
 - In the **Data Granule Insert** window it is necessary to specify the range of dates (between the **Begin** date and the **End** date) to formulate a query for searching for the desired granule(s) to be checked.
 - Time is based upon day of insert into the data server. If no dates are entered, an error message is displayed.
 - The up and down arrows next to the duration fields may be used for modifying entries in each field.
 - The **Tab** key may be used to move from field to field.

- 3 Click on the **Query** button.
 - Granules within the specified date range appear in the **Data Granules** field.
- 4 In the **Data Granules** field, click on the granule for which metadata are to be updated.
 - It may be necessary to scroll through the list of granules.
 - The selected granule is highlighted.
 - Alternatively, the **Find** field and button may be used for specifying a data granule.
 - The **Find** field is case-sensitive.
- 5 Click on the **Update Metadata** button.
 - The **Granule Parameters** window is displayed.
 - The **Granule Parameters** window displays one line for each parameter for the selected granule.
- 6 In the **Granule Parameters** window click on a parameter for which the metadata are to be updated.
 - The **Update Meta Data** window is displayed.
- 7 Click and hold on the **Operational QA Flag** option button, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
 - The selected metadata flag is displayed on the **Operational QA Flag** option button.
 - The following options are available:
 - **Passed.**
 - **Failed.**
 - **Being Investigated.**
 - **Not Being Investigated.**
- 8 Click in the **Explanation** field and type an explanation of the QA flag selection.
- 9 If the SCF has specified that the SCF Quality Flag should be set to a particular value, click and hold on the **SCF Quality Flag** option button, move the mouse cursor to the SCF-specified selection (highlighting it), then release the mouse button.
 - The selected metadata flag is displayed on the **SCF Quality Flag** option button.
 - The same options are available as those on the **Operational Quality Flag** option button.
- 10 Click in the **Explanation** field and type an explanation of the QA flag selection.

NOTE: The **Auto Quality Flag** option button should not be accessible.

- 11 When the QA flags have been set with the desired values, click on the **OK** button.
 - The settings are accepted and the **Update Meta Data** window is dismissed.

- To cancel the settings and dismiss the **Update Meta Data** window click on the **Cancel** button.
 - The **Granule Parameters** window is displayed.
- 12** Observe the entries in the **Granule Parameters** window to verify that the QA flag settings have actually been applied to the granule.
- The QA flag values and explanations entered using the **Update Meta Data** window are displayed.
 - Repeat Steps 6 through 11 as necessary to revise the QA metadata for the granule parameter.
- 13** Repeat Steps 6 through 12 to update the QA metadata for any additional granule parameters.
- 14** When the QA flags for all relevant parameters have been set with the desired values and verified, click on the **OK** button in the **Granule Parameters** window.
- The **Granule Parameters** window is dismissed.
 - The directory for visualizing data retrieved from the archive is as follows:
/usr/ecs/<MODE>/CUSTOM/data/DPS.

Table 15.1-5. Updating Quality Assurance (QA) Metadata using the QA Monitor (1 of 2)

Step	What to Do	Action to Take
1	With the QA Monitor GUI open and the QRU data tab displayed, in the Data Types field, select the data type	single-click
2	Move cursor to appropriate Data Granule Insert field(s) and enter Begin date and End date	click and enter text or set date(s) using up/down arrow buttons
3	Activate the Query button	single-click
4	In the Data Granules field, highlight the granule for which metadata are to be updated	single-click
5	Activate the Update Metadata button	single-click
6	In the Granule Parameters window, select a parameter for which the metadata are to be updated	single-click
7	Use the Operational QA Flag option button to select the desired QA flag option	click and drag to select option
8	Move the cursor to the Explanation field and type an explanation for the QA flag selection	click; enter text
9	To set an SCF Quality Flag, Use the SCF Quality Flag option button to select the desired QA flag option	click and drag to select option
10	Move the cursor to the Explanation field and type an explanation for the QA flag selection	click; enter text
11	Activate the OK button	single-click
12	In the Granule Parameters window, verify that the QA flag settings have actually been applied to the granule	read text

Table 15.1-5. Updating Quality Assurance (QA) Metadata using the QA Monitor (2 of 2)

Step	What to Do	Action to Take
13	Repeat Steps 6 through 12 to update the QA metadata for any additional granule parameters	
14	In the Granule Parameters window, activate the OK button	single-click

15.1.4 Retrieve and View Production History

The Production History (PH) is created during PGE execution within the Planning and Data Processing Subsystems (PDPS) and then Inserted into the Data Server upon PGE completion. Included in the PH are the PGE log files. Accessing a Production History associated with a particular PGE run requires the DPR ID of the PGE run.

Table 15.1-6 presents the steps required to query, retrieve and view Production History granules. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Launch the QA Monitor GUI (refer to Procedure 15.1.1 **Launch the QA Monitor**).
- 2 Click on the **QRU data** tab (if it is not already selected).
 - The **QRU data** window is displayed on the GUI.
- 3 In the **Data Types** field, click on the data type for the Production History to be retrieved.
 - It may be necessary to scroll through the **Data Types** list.
 - The selected data type is highlighted.
 - Only one data type can be selected at a time.
 - Alternatively, the Find field and button can be used for specifying a data type.
 - The **Find** field is case-sensitive.
- 4 Click in the appropriate **Data Granule Insert** window field(s) and either type or use the up/down arrow buttons to enter the **Begin** date and **End** date in **MM/DD/YYYY** format.
 - In the **Data Granule Insert** window it is necessary to specify the range of dates (between the **Begin** date and the **End** date) to formulate a query for searching for the desired granule(s) to be checked. In retrieving a granule's Production History, use **Begin** date and **End** date values that encompass the granule's RangeBeginningDateTime and RangeEndingDateTime.
 - Time is based upon day of insert into the data server. If no dates are entered, an error message is displayed.
 - The up and down arrows next to the duration fields may be used for modifying entries in each field.

- The Tab key may be used to move from field to field.
- 5 Click on the **Query** button.
 - Granules within the specified date range appear in the **Data Granules** field.
 - For each granule that meets the query conditions and is displayed in the **Data Granules** field, the granule's UR, its Production History tar file's UR, and the name of the Production History tar file are shown.
 - 6 In the **Data Granules** field, click on the granule for which the Production History is to be retrieved.
 - It may be necessary to scroll through the list of granules.
 - The selected granule is highlighted.
 - Alternatively, the **Find** field and button may be used for specifying a data granule.
 - The **Find** field is case-sensitive.
 - 7 Click on the **Retrieve ProdHistory** button.
 - The Status field displays a message . . . **Acquiring Production History granule . . .**, and upon completion of the acquire, the GUI becomes active again.
 - The Production History tar file is acquired to a directory that is configurable.
 - The name of the configuration parameter is **DpPrQA_DATA_DIR**.
 - The default value for the parameter is **SECS_HOME/<MODE>/CUSTOM/data/DPS**.
 - 8 In a UNIX window, to change to the directory containing the Production History granule, type **cd /usr/ecs/<MODE>/CUSTOM/data/DPS** and then press the **Return/Enter** key.
 - The working directory is changed to **/usr/ecs/<MODE>/CUSTOM/data/DPS**.
 - 9 To extract the files from the Production History granule (tar file), type the command: **tar -xvf tarfilename** and then press the **Return/Enter** key.
 - The tar function lists its actions as the files are extracted.
 - 10 View any desired file(s) using an available viewer or editor program (e.g., **view**, **pg**, **vi**).

Table 15.1-6. Retrieving and Viewing Production History (1 of 2)

Step	What to Do	Action to Take
1	Launch the QA Monitor	Use procedure in Section 15.1.1
2	Select the QRU data tab (if necessary)	single-click
3	In the Data Types field, select the data type	single-click
4	Move cursor to appropriate Data Granule Insert field(s) and enter Begin date and End date	click and enter text or set date(s) using up/down arrow buttons
5	Activate the Query button	single-click

Table 15.1-6. Retrieving and Viewing Production History (2 of 2)

Step	What to Do	Action to Take
6	In the Data Granules field, highlight the granule for which the Production History is to be retrieved	single-click
7	Activate the Retrieve ProdHistory button	single-click
8	In a UNIX window, cd /usr/ecs/<MODE>CUSTOM/data/DPS	enter text; press Return/Enter
9	tar -xvf tarfilename	enter text; press Return/Enter
10	View desired file(s)	use viewer/editor program

15.2 Using the QA Metadata Update Tool

The QA Metadata Update Tool (QAMUT) is an operational support tool used for updating the values of the Quality Assessment (QA) flags in the ECS inventory metadata in the Science Data Server database. The QAMUT sets QA values for data granules containing one or more measured parameters after they have been assessed by Science Computing Facility (SCF) or DAAC staff to determine their quality.

The QAMUT is used to update the Science and Operational QA flags and the corresponding fields only.

QA flags can have the following values:

- Passed.
- Failed.
- Being Investigated.
- Not Investigated.
- Inferred Passed.
- Inferred Failed.
- Suspect
- Hold

During one run the QAMUT can update the metadata QA flags for multiple granules. In fact, the strength of the tool derives from its ability to update batches of granules at a time. This is in contrast to the QA Monitor GUI, which can be used to update the QA flags for just one granule at a time. There is no set limit on the number of granules that may be specified for a run. In fact, depending on how frequently the originators of requests for QA flag updates submit their requests, the DAAC may receive requests for updates of thousands of granules at a time. However, this creates the potential for extreme database loading (e.g., requirements for temporary storage of granule information). Specific practical limits may depend on individual site capacities and requirements, and the DAAC may need to work with the originators of requests to formulate requests of appropriate size to minimize QAMUT processing times and associated database impacts. In practice, it is likely that requests should be kept to updates for no more than 10,000 granules at a time. If a request is for significantly more than that, consideration should be given to breaking it up into multiple requests.

The granules with QA flags to be updated using the QAMUT may each contain several different measured parameters. The tool can update the QA flag associated with each parameter for each granule listed in a metadata update request. Updates for different measured parameters related to a particular granule may be grouped contiguously on separate lines in the request so that all the updates for the granule are accomplished at the same time.

The input needed to run the QAMUT is a uniformly formatted update request. SCF personnel typically send their metadata update requests to the DAAC by e-mail. Each update request contains an e-mail header (including the requester's return address) and a list of the granules to be updated, along with the new QA flag values for the specified parameters.

The body of the request starts with the statement "begin QAMetadataUpdate <Science or Operational> <LGID, GranuleUR or ESDT>". The body ends with an "end QAMetadataUpdate" statement. Each request can be based on 3 possible origins: LGID, GranuleUR, or ESDT with temporal range. In between is at least one parameter/QA value statement with the following components (which are separated by tabs):

- Short Name
- Version ID
- LGID, GranuleUR, or Range Beginning Date <tab> Range Ending date
- Measured Parameter Name/ALL
- QA Flag Value
- QA Flag Explanation Value

Each parameter/QA value statement starts on a new line.

The example in Figure 15-2 is an ESDT type of change and has four statements requesting science QA flag updates to parameters associated with four different granules. All are to be set to "Passed" based on a Performance Test.

This information must be properly arranged and placed in the SDSRV database (a designated directory or file).

Once a request to update the metadata has been received, the correctly formatted information must be saved to the designated directory or file. Once the data has been copied to this directory, the metadata can be updated by using QAMUT (see procedure 15.2.3).

The QAMUT has been designed to run independently of the SDSRV process. The system directly updates the inventory metadata database instead of going through the SDSRV services to update the database. The QAMUT is accessible on the SDSRV Server database host (e.g., e0acg11, g0acg01, l0acg02, n0acg01).

The QAMUT includes three scripts:

- **EcDsQAMUT.pl** -- the main script that does the update.
- **EcDsQAMUTBcp.pl** -- an assistant script that helps the DAAC load the DsQAMUTESDTSite table in the SDSRV database with information about the sites and the related ESDTs each site may request to have updated.

- **EcDsQAMUTEmailScript.pl** -- a script generated by EcDsQAMUTEmailScriptMkcfg and used to direct the email QAMUT update requests to the proper request directories.

```

begin QAMetadataUpdate Science ESDT
DFLAXENG 1 May 27 1999 9:00:00:000PM May 28 1999 9:00:00:000PM ALL Passed ESDT Perf Test
DFLAXLSM 1 May 27 1999 9:00:00:000PM May 28 1999 9:00:00:000PM ALL Passed ESDT Perf Test
DFLAXSTR 1 May 27 1999 9:00:00:000PM May 28 1999 9:00:00:000PM ALL Passed ESDT Perf Test
DFLAXMIS 1 May 28 1999 12:00:00:000AM May 28 1999 9:00:00:000PM ALL Passed ESDT Perf Test
End QA Metadata Update Science ESDT

```

Figure 15-2. Sample Metadata QA Update Request

Table 15.2-1 provides an Activity Checklist for Using the QAMUT.

Table 15.2-1. Using the QAMUT - Activity Checklist

Order	Role	Task	Section	Complete?
1	System Administrator/ Database Administrator	Configure the QAMUT	(P) 15.2.1	
2	Production Monitor	Populate DsQAMUTESDTSite Table	(P) 15.2.2	
3	Production Monitor	Update QA Metadata Flags Using QAMUT	(P) 15.2.3	

15.2.1 Configure QAMUT

There are two configuration files developed for the QAMUT. These files are always developed as part of at the installation or when new ESDTs are added to the system. The site installer or Database Administrator is responsible for maintaining these files.

The first configuration file, used by the DAAC operator, contains a mapping of ESDT names and SCF sites. This file is a configurable data file that must be created and maintained by the operator, using an available editor (e.g., **vi**), in order to populate DsQAMUTESDTSite table in the SDSRV database using **EcDsQAMUTBcp.pl**. The file may be named appropriately by the operator when it is created (e.g., **bcpfile**). This file must use the following format:

<ESDTShortName><tab><SITEName>

Repeat this format for each SCF Site and all the ESDTs it can update. Note, no blank line is allowed in the file.

The second configuration file, used by the QAMUT, is called **EcDsQAMUT.CFG**. It contains details about how to connect to the Sybase database as well as DAAC specific information. Without this file, the utility can not run. The configuration file must be a single entry plain text ASCII file which has the following format:

```

SYB_USER = <string>
SYB_SQL_SERVER = <string>
SYB_DBNAME = <string>
SYB_PASSWD = <string>
NUM_RETRIES = <number>
SLEEP_SEC <integer>

QAMUTRequestDir = <string>
QAMUTCompleteRequestDir = <string>
QAMUTErrRequestDir = <string>
QAMUTUndoRequestDir = <string>
MAILX = <string>

<SCFSite>_FromAddress = <string1,string2,string3...>
...(repeat for each site)

<SCFSite>_ReplyAddress = <string1>
...(repeat for each site)

DAACAddresses=<string1,string2,string3>

<SCF>_Notification={Y/N}
...(repeat for each site)

VALIDQAFLAG = <string>
value1,value2,value3,value4,value5,value6,value7,value8
MAX_NUM_GRANULES = <integer>
UpdateBatchSite = <integer>

```

Table 15.2-2 lists these configuration parameters and provides a brief description of each.

Table 15.2-2. Configuration File Parameters for QAMUT (1 of 3)

Parameter Name	Description
SYB_USER	The user name for the Sybase connection.
SYB_SQL_SERVER	The name of the SQL sever for this Sybase connection.
SYB_DBNAME	The name of the database you intend to connect to

Table 15.2-2. Configuration File Parameters for QAMUT (2 of 3)

Parameter Name	Description
SYB_PASSWD	Program ID used to get Sybase password through a decryption program called EcDsDcrp.
NUM_RETRIES	The maximum number of times the utility will try to connect to the database or retry deadlock. The recommended default is 5.
SLEEP_SEC	The number of seconds the utility will wait ('sleep') between connect. Recommended default is 10.
QAMUTRequestDir	The directory where all the QAMUT update request files reside
QAMUTCompleteRequestDir	The directory where all the completed QAMUT update request files reside.
QAMUTErrRequestDir	The directory where all the QAMUT update requests with non retryable errors reside
QAMUTUndoRequestDir	The directory where all the information required to undo each request is stored in the same filename as the original request. If a request is run multiple times due to recoverable errors, there will be multiple
MAILX	The command including the full path for "mailx"
<SCFSite>_FromAddresses	Each SCF site can have multiple From email addresses separated by ",". These email address are used for authentication as well as email addresses for QAMUT to send notification back
<SCFSite>_ReplyAddress	Each SCF site can have 0 to 1 Reply-To address. Enter nothing after the "=" sign if the site doesn't have any Reply-To address. This address is used for email notification.
DAACAddresses	A list of internal DAAC e-mail addresses separated by "," to which email notification are Copied upon completion of a QA update run. The completion means finishes without retryable errors--internal errors in the DAAC.
<SCFSite>_Notification	Email notifications are sent in the following situations: Authentication failure. ESDT update not allowed. Format errors of the request Non retryable errors in the request and no retryable errors occurred (QAMUT reprocesses the request until it overcomes all the retryable errors before notifying the requester of the non retryable errors) Successful completion. This is when the Notification option makes the difference. If "Y", a notification will be sent upon successful completion, otherwise no notification will be sent.
VALIDQAFLAGS	Contains 8 valid values separated by ","

Table 15.2-2. Configuration File Parameters for QAMUT (3 of 3)

Parameter Name	Description
MAX_NUM_GRANULES	Contains the DAAC configurable maximum threshold
UpdateBatchSize	The number of granules the utility will update in a batch.

Table 15.2-3 presents the steps required to configure the QAMUT. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Log into the host for the SDSRV database (e.g., e0acg11, g0acg01, l0acg02, n0acg01).
- 2 To change to the directory for configuration files, type the command:
cd /usr/ecs/<MODE>/CUSTOM/cfg
and then press the **Return/Enter** key.
 - The working directory is changed to **/usr/ecs/<MODE>/CUSTOM/cfg**.
- 3 To start the **vi** editor and specify **bcpfile** as the name of the configuration file for mapping ESDT names and sites, type the command:
vi bcpfile
 - A new file is opened for editing, or, if a file named **bcpfile** already exists, the contents of the file are displayed, and the cursor is displayed on the first character at the upper left corner of the file.
 - **Note:** This procedure assumes use of the **vi** editor and naming of the file **bcpfile**. Other editors may be used, and the file may be given a different name.
- 4 If necessary, use the down arrow key on the keyboard to move the cursor down to a blank line.
 - The cursor is displayed at the beginning of the selected line.
- 5 Type **i** to put the **vi** editor into the insert mode.
 - The **vi** editor is in the insert mode, but no feedback is provided.

- 6 Enter data listing ESDTs and sites, one ESDT - site pair per line and the ESDT and site separated by a tab, with no blank lines, in the following format:
 <ESDTShortName><tab><SITEName>
 .
 .
 .
 - Continue until all ESDTs that may be updated by each site are entered. *Note:* To facilitate this data entry, it may be desirable to obtain lists from the SDSRV database using **isql** and copy the information into the file
- 7 To leave the insert mode and return to the command mode, press the **Esc** key.
 - The cursor moves one character to the left and the **vi** editor is in the command mode.
- 8 Type **ZZ** to save the file and exit the **vi** editor.
- 9 To start the **vi** editor and specify **EcDsQAMUT.CFG** as the name of the configuration file to be used by QAMUT, type the command:
vi EcDsQAMUT.CFG
 - A new file is opened for editing and the cursor is displayed on the first character at the upper left corner of the file.
 - *Note:* This procedure assumes use of the **vi** editor. Other editors may be used.
- 10 Type **i** to put the **vi** editor into the insert mode.
 - The **vi** editor is in the insert mode, but no feedback is provided.
- 11 Enter data to specify how to connect to the Sybase database and provide necessary DAAC-specific configuration information (see Table 15.2-2).
- 12 To leave the insert mode and return to the command mode, press the **Esc** key.
 - The cursor moves one character to the left and the **vi** editor is in the command mode.
- 13 Type **ZZ** to save the file and exit the **vi** editor.

Table 15.2-3. Configure QAMUT (1 of 2)

Step	What to Do	Action to Take
1	Log in at the host for the SDSRV database	enter text; press Return/Enter
2	cd /usr/ecs/<MODE>/CUSTOM/cfg	enter text; press Return/Enter
3	vi bcpfile	enter text; press Return/Enter
4	If necessary, use down arrow key to move cursor to a blank line	press arrow key
5	To put vi editor in insert mode, type i	enter text command

Table 15.2-3. Configure QAMUT (2 of 2)

Step	What to Do	Action to Take
6	Enter data listing ESDTs and sites	enter text (or copy data)
7	To put vi editor in command mode, press Esc key	press Esc key
8	Exit vi editor with ZZ	enter text; press Return/Enter
9	vi EcDsQAMUT.CFG	enter text; press Return/Enter
10	To put vi editor in insert mode, type i	enter text command
11	Enter data for QAMUT configuration	enter text (or copy data)
12	To put vi editor in command mode, press Esc key	press Esc key
13	Exit vi editor with ZZ	enter text; press Return/Enter

15.2.2 Populate DsQAMUTESDTSite Table

Table 15.2-4 presents the steps required to populate the DsQAMUTESDTSite table in the SDSRV database. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure.

- 1 Log into the host for the SDSRV database (e.g., e0acg11, g0acg01, l0acg02, n0acg01).
- 2 To change to the directory containing the QAMUT scripts, type the command:
cd /usr/ecs/<MODE>CUSTOM/utilities
 and then press the **Return/Enter** key.
 - The working directory is changed to **/usr/ecs/<MODE>CUSTOM/utilities**.
- 3 Type **EcDsQAMUTBcp.pl <MODE> filename**.
 - In the command, *filename* is the name of the configuration file containing the mapping of ESDTs and sites (e.g., **bcpfile**).
 - The contents in the DsQAMUTESDTSite table in the SDSRV database are replaced with the content in the named file (e.g., **bcpfile**). Before the replacement, the current content of the table is saved in a file called DsQAMUTESDTSite.out in the directory **/usr/ecs/<MODE>/CUSTOM/data/DSS/QAMUT/QAMUTUndo**.
 - *Note:* The script completely replaces the content of the DsQAMUTESDTSite table; it does not merely append data. Therefore, to update the table, the entire desired content of the table must be reflected in the configuration file (e.g., **bcpfile**).

Table 15.2-4. Populate DsQAMUTESDTSite Table

Step	What to Do	Action to Take
1	Log in at the host for the SDSRV database	enter text; press Return/Enter
2	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text; press Return/Enter
3	EcDsQAMUTBcp.pl <MODE> filename (e.g., bcpfile)	enter text; press Return/Enter

15.2.3 Update QA Metadata Flags Using QAMUT

Access to the QAMUT must be gained through the use of UNIX commands. The process of updating QA metadata flags using the QAMUT start-up scripts starts with the following assumptions:

- The applicable servers are running.
- The DAAC operator has logged in to the ECS system.
- A request for metadata update has been received in an acceptable format, such as that shown in Figure 15-2.
- The update request has been saved with the appropriate file name (i.e., **QAupdate_science.txt** or **QAupdate_operational.txt** as the case may be) in the **/usr/ecs/MODE/CUSTOM/utilities** subdirectory on the SDSRV database host (e.g., e0acg11, g0acg01, l0acg02, n0acg01).

Table 15.2-5 presents the steps required to update QA Metadata Flags using the QAMUT. If you are already familiar with the procedure, you may prefer to use this quick-step table. If you are new to the system, or have not performed this task recently, you should use the following detailed procedure:

- 1** At a UNIX system prompt type **setenv DISPLAY clientname:0.0**
 - Use either the X terminal/workstation IP address or the machine-name for the *clientname*.
 - When using secure shell, the **DISPLAY** variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.
- 2** Start the log-in to the SDSRV database host by entering **/tools/bin/ssh hostname** (e.g., e0acg11, g0acg01, l0acg02, n0acg01) then pressing the Return/Enter key.
 - If you receive the message, **Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?** type **yes** (“y” alone will not work).
 - If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears; continue with Step 3.
 - If you have not previously set up a secure shell passphrase, go to Step 4.
- 3** If a prompt to **Enter passphrase for RSA key '<user@localhost>'** appears, type your **Passphrase** then press the **Return/Enter** key.
 - Go to Step 5.
- 4** At the **<user@remotehost>**'s password: prompt type your **Password** then press the **Return/Enter** key.

- 5 Type **cd /usr/ecs/<MODE>/CUSTOM/utilities** then press the **Return/Enter** key.
- Change directory to the directory containing the ECS custom software start-up scripts for the applicable mode.
 - The <MODE> will most likely be one of the following operating modes:
 - OPS (for normal operation).
 - TS1 (for SSI&T).
 - TS2 (new version checkout).
- 6 Type **ls** then press the **Return/Enter** key.
- The monitor displays a list of the files in the **/usr/ecs/<MODE>/CUSTOM/utilities** directory.
- 7 Type one of the following command line entries and then press the **Return/Enter** key:
- **EcDsQAMUT.pl <MODE>**
 - This command processes data from the designated directory and displays detailed information to the operator about granules as they are updated. The operator is asked for a confirmation before the update. The utility exits the request when the first error occurs.
 - **EcDsQAMUT.pl <MODE> -noprompt**
 - This command processes data from the designated directory but does not display detailed information to the operator about granules as they are updated. The operator is not asked for a confirmation before the update. The utility exits the request when the first error occurs.
 - **EcDsQAMUT.pl <MODE> -noexitonerr**
 - This command processes data from the designated directory and displays detailed information to the operator about granules as they are updated. The operator is asked for a confirmation before the update. The utility continues processing when an error occurs.
 - **EcDsQAMUT.pl <MODE> -file <filename>**
 - This command processes data from the designated file and displays detailed information to the operator about granules as they are updated. The operator is asked for a confirmation before the update. The utility exits the request when the first error occurs.
 - **EcDsQAMUT.pl <MODE> -file <filename> -noprompt**
 - This command processes data from the designated file but does not display detailed information to the operator about granules as they are updated. The operator is not asked for a confirmation before the update. The utility exits the request when the first error occurs.
 - **EcDsQAMUT.pl <MODE> -file <filename> -noexitonerr**
 - This command processes data from the designated file and displays detailed information to the operator about granules as they are updated. The operator is asked for a confirmation before the update. The utility continues processing when an error occurs.
 - **EcDsQAMUT.pl <MODE> -file <filename> -noprompt**

- This command processes data from the designated file but does not display detailed information to the operator about granules as they are updated. The operator is not asked for a confirmation before the update. The utility continues processing when an error occurs.
- 8 If an additional request is to be processed, copy the request message into the utilities subdirectory with the appropriate file name.
- For example:


```
cp /home/allmode/mail/ScienceUpdateRequest
  /usr/ecs/<MODE>/CUSTOM/utilities/QAupdate_<science/operational>.txt
```
- 8 Repeat Steps 7 and 8 as necessary to process additional requests for QA metadata update.

Table 15.2-5. Updating QA Metadata Flags Using the QAMUT

Step	What to Do	Action to Take
1	setenv DISPLAY clientname:0.0	enter text; press Return/Enter
2	/tools/bin/ssh hostname	enter text; press Return/Enter
3	Passphrase (or Step 4)	enter text; press Return/Enter
4	Password	enter text; press Return/Enter
5	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text; press Return/Enter
6	To list files, ls	enter text; press Return/Enter
7	EcDsQAMUT.pl <command line parameters>	enter text; press Return/Enter
8	If an additional request is to be processed: cp <requestpath> /usr/ecs/<MODE>/CUSTOM/ utilities/QA_update_<science/operational>.txt	enter text; press Return/Enter
9	Repeat Steps 7 and 8 as appropriate	

16. Ingest

16.1 Ingest Process

The Ingest function brings data into ECS from external data providers. The Ingest function is characterized by a collection of hardware and software that supports receiving data and transferring it to the appropriate ECS repositories on either a routine or ad hoc basis. Data to be ingested may be of several types including:

- Science data.
- Science software packages.

Ingest triggers subsequent archiving of the data, which may activate a trigger for data processing or other actions (e.g., if there are subscriptions for the data being ingested).

Ingest is the responsibility of DAAC Ingest Technicians. They monitor the different types of automated ingest and set up ingest from hard media (e.g., tape cartridges).

Ingest includes the following activities:

- Data transfer and transmission checking.
- Data preprocessing (including data conversions if required).
- Metadata extraction (as required)
- Metadata validation (as required).
- Transferring ingested data to the Data Server Subsystem for long-term storage in the archive.

Ingest provides a single point of monitoring and control of data received from data providers outside the DAAC. The nominal ingest process is fully automated, with minimal operator intervention.

Subsequent sections related to Ingest address the following topics:

- Section 16.2 An overview of the process for processing ingest requests and step-by-step procedures for monitoring and controlling ingest requests.
- Section 16.3 An overview of the process and step-by-step procedures for performing media ingest operations.
- Section 16.4 An overview of the process and step-by-step procedures for tuning ingest parameters.
- Section 16.5 An overview of the process and step-by-step procedures for troubleshooting ingest failures.

16.2 Processing Ingest Requests

The Ingest Technicians use the ECS Ingest graphical user interface (GUI) and the Storage Management Control GUI to monitor and control ingest activities. Those activities involve

receiving data and transferring it to the appropriate ECS repositories by several different methods. Ingest supports the following types of interfaces:

- Polling ingest with delivery record.
- Polling ingest without delivery record.
- Hard (physical) media ingest.
- Cross-DAAC/cross-mode ingest.

The method(s) of ingesting data from a particular data provider is (are) dictated by the provisions of the Interface Control Document (ICD) and Operations Agreement negotiated with the data provider.

Each procedure outlined has an **Activity Checklist** table that provides an overview of the task to be completed. The outline of the **Activity Checklist** is as follows:

Column one - **Order** shows the order in which tasks could be accomplished.

Column two - **Role** lists the Role/Manager/Operator responsible for performing the task.

Column three -**Task** provides a brief explanation of the task.

Column four - **Section** provides the Procedure (P) section number or Instruction (I) section number where details for performing the task can be found.

Column five - **Complete?** is used as a checklist to keep track of which task steps have been completed.

Table 16.2-1, below, provides an Activity Checklist for monitoring/controlling ingest requests.

Table 16.2-1. Monitoring/Controlling Ingest Requests - Activity Checklist

Order	Role	Task	Section	Complete?
1	Ingest Technician	Log in to ECS Hosts	(P) 16.2.1	
2	Ingest Technician	Launch the ECS Ingest GUI	(P) 16.2.2	
3	Ingest Technician	Launch the Storage Management Control GUI	(P) 16.2.3	
4	Ingest Technician	Handle Cross-DAAC or Cross-Mode Ingest	(P) 16.2.4	
5	Ingest Technician	Monitor/Control Ingest Requests	(P) 16.2.5	
6	Ingest Technician	Resume Ingest Requests	(P) 16.2.6	
7	Ingest Technician	Cancel Ingest Requests	(P) 16.2.7	
8	Ingest Technician	View the Ingest History Log	(P) 16.2.8	
9	Ingest Technician	Transfer Files	(P) 16.2.9	
10	Ingest Technician	Verify the Archiving of Ingested Data	(P) 16.2.10	
11	Ingest Technician	Clean the Polling Directories	(P) 16.2.11	

16.2.1 Log in to ECS Hosts

Table 16.2-2 presents (in a condensed format) the steps required to log in to ECS hosts. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

1 At the UNIX command line prompt enter:

setenv DISPLAY <client name>:0.0

- Use either the X terminal/workstation IP address or the machine-name for the client name.
- When using secure shell, the DISPLAY variable is set just once, before logging in to remote hosts. If it were to be reset after logging in to a remote host, the security features would be compromised.

2 In the terminal window (at the command line prompt) start the log-in to the appropriate host by entering:

/tools/bin/ssh <host name>

- The **-l** option can be used with the ssh command to allow logging in to the remote host (or the local host for that matter) with a different user ID. For example, to log in to x0acs03 as user cmops enter:

/tools/bin/ssh -l cmops x0acs03

- Depending on the set-up it may or may not be necessary to include the path (i.e., /tools/bin/) with the ssh command. Using ssh alone is often adequate. For example:

ssh x0acs03

- or -

ssh -l cmops x0acs03

- Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
- Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, and **n0acs03**.
- Examples of Access/Process Coordinators (APC) Server host names include **e0acg11**, **g0acg01**, **l0acg02**, and **n0acg01**.
- Examples of FSMS Server host names include **e0drg11**, **g0drg01**, **l0drg01**, and **n0drg01**.
- Examples of Sun external server host names include **e0ins01**, **g0ins01**, **l0ins01**, and **n0ins01**.
- Examples of Sun internal server host names include **e0acs06**, **g0acs06**, **l0acs06**, and **n0acs06**.

- If you receive the message, “Host key not found from the list of known hosts. Are you sure you want to continue connecting (yes/no)?” enter **yes** (“y” alone will not work).
- If you have previously set up a secure shell passphrase and executed **sshremote**, a prompt to **Enter passphrase for RSA key ’<user@localhost>’** appears; continue with Step 3.
- If you have not previously set up a secure shell passphrase, go to Step 4.

3 If a prompt to **Enter passphrase for RSA key ’<user@localhost>’** appears, enter:

<passphrase>

- If a command line prompt is displayed, log-in is complete.
- If the passphrase is unknown, press **Return/Enter**, which should cause a **<user@remotehost>’s password:** prompt to appear (after the second or third try if not after the first one), then go to Step 4.
- If the passphrase is entered improperly, a **<user@remotehost>’s password:** prompt should appear (after the second or third try if not after the first one); go to Step 4.

4 If a prompt for **<user@remotehost>’s password:** appears, enter:

<password>

- A command line prompt is displayed.
- Log-in is complete.

Table 16.2-2. Log in to ECS Hosts - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	setenv DISPLAY <client name>:0.0	enter text, press Enter
2	/tools/bin/ssh <host name>	enter text, press Enter
3	<passphrase> (if applicable)	enter text, press Enter
4	<password> (if applicable)	enter text, press Enter

16.2.2 Launch the ECS Ingest GUI

The **ECS Ingest** GUI is invoked from a UNIX command line prompt. Table 16.2-3 presents (in a condensed format) the steps required to launch the **ECS Ingest** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Operations Workstation host.
 - Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, **n0acs03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 In the terminal window, at the command line, enter:

cd /usr/ecs/<MODE>/CUSTOM/utilities

 - **<MODE>** is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T)
 - TS2 - New Version Checkout
 - OPS - Normal Operations
 - “utilities” is the directory containing the **ECS Ingest** GUI start-up script (e.g., **EcInGUIStart**).

- 3 If there are no other instances of the Ingest GUI currently running, start the **ECS Ingest** GUI by entering:

EcInGUIStart <MODE>

 - The **ECS Ingest** GUI is launched.
 - The **ECS Ingest GUI Ingest Intro** screen is displayed.
 - Alternatively, enter:

EcInGUIStart <MODE> ea_instance EcInGUI
 - To determine whether there is already an instance of the Ingest GUI currently running, enter:

ps -ef | grep <MODE>

examine the response for the following type of statement:

```
cmshared 10528  1 7 08:48:49 pts/1  0:07
/usr/ecs/OPS/CUSTOM/bin/INS/EcInGUI ConfigFile
/usr/ecs/OPS/CUSTOM/cfg/EcInGUI.
```

 - Such a statement indicates that an instance of the Ingest GUI is currently running in OPS mode.

- 4 If there is already an instance of the Ingest GUI running, start the **ECS Ingest** GUI by entering:

EcInGUIStart <MODE> ea_instance <instance name>

 - The **<instance name>** refers to one of the instances that have been defined in a file named **.IngestGuiInstances** [note the dot that precedes the name] that is located in the **/usr/ecs/<MODE>/CUSTOM/data/INS/** subdirectory.

- The `.IngestGuiInstances` file in a particular mode might include the following instance names:
 - `EcInGUI` (instance set up for general ingest operations).
 - `EcInGUI.8MM` (instance set up for ingest from 8mm tape).
 - `EcInGUI.DTF` (instance set up for ingest from DTF-2 tape).
- Given the preceding entries in the `.IngestGuiInstances` file, an instance of the Ingest GUI to support ingest from DTF-2 tape would be started by entering the following command:


```
EcInGUIStart OPS ea_instance EcInGUI.DTF
```
- The **ECS Ingest GUI Ingest Intro** screen is displayed.
 - The GUI instance is displayed on the title bar at the top of the GUI.

Table 16.2-3. Launch the ECS Ingest GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Operations Workstation)	single-click or use procedure in Section 16.2.1
2	<code>cd /usr/ecs/<MODE>/CUSTOM/utilities</code>	enter text, press Enter
3	<code>EcInGUIStart <MODE> ea_instance <instance name></code>	enter text, press Enter

16.2.3 Launch the Storage Management Control GUI

The Storage Management Control GUI is used in Ingest hard media operations for putting media IDs into the Storage Management database and for marking stackers/drives/slots as being either on line or off line.

The Storage Management Control GUI is invoked from a UNIX command line prompt. Table 16.2-4 presents (in a condensed format) the steps required to launch the Storage Management Control GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Operations Workstation host.
 - Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, and **n0acs03**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 In the terminal window, at the command line, enter:
cd /usr/ecs/<MODE>/CUSTOM/utilities
 - <MODE> is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T).
 - TS2 - New Version Checkout.
 - OPS - Normal Operations.
 - “utilities” is the directory containing the **Storage Management Control** GUI startup script (e.g., EcDsStmgtGuiStart).

- 3 Start the **Storage Management Control** GUI by entering:
EcDsStmgtGuiStart <MODE>
 - The **Storage Management Control** GUI is launched.
 - The **Storage Management Control** GUI **Storage Config.** tab is displayed.

Table 16.2-4. Launch the Storage Management Control GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Operations Workstation)	single-click or use procedure in Section 16.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text, press Enter
3	EcDsStmgtGuiStart <MODE>	enter text, press Enter

16.2.4 Handle Cross-DAAC or Cross-Mode Ingest

Cross-DAAC or cross-mode ingest is launched via either an order or a subscription for the desired data.

- If the data are already in the archive, an order is submitted using the **EOS Data Gateway** (EDG) web client.
 - An order for data can be placed via the EDG from almost anyplace by almost anyone.
- If the data are not already in the archive (if future data are to be transferred), a subscription is entered using the **Subscription Service** GUI.
 - A subscription is likely to be entered by User Services personnel at the Distributing DAAC.

In either case either a subscription or order is entered in the mode (e.g., OPS) from which the data are to be transferred. The subscription or order specifies (among other things)...

- The data to be transferred.
 - Parameters of the specific granule(s) if the data are being ordered.

- Data type and other subscription parameters (e.g., from what date/time until what date/time) if a subscription is being entered.
- Media type is FtpPush.
- Media format is typically FILEFORMAT.
- User profile ID is the user profile ID of the nominal requester (if applicable).
- A username is specified for logging in to the ftp host at the receiving DAAC.
- A password is specified for logging in to the ftp host at the receiving DAAC.
- The ftp host is the host to which the data are to be pushed at the receiving DAAC (e.g., g0acg01u.ecs.nasa.gov).
- The ftp directory is the directory (on the ftp host) to which the data are to be pushed at the receiving DAAC/mode (e.g., /usr/ecs/OPS/CUSTOM/icl/a/data/XDAAC_Ingest/NSIDC/).
- The e-mail address is the address for the distribution notice (DN) that is sent by Data Distribution at the transmitting DAAC/mode to the Ingest E-Mail Parser (EcInEmailGWServer) in the receiving mode at the receiving DAAC.
 - The e-mail address for the Ingest E-Mail Parser has the following format:
EcInEmailGWServer_<MODE>@<host>
 - For example:
EcInEmailGWServer_TS1@e0ins01u.ecs.nasa.gov for data being sent for ingest in the TS1 mode at the Land Processes (LP) DAAC.

Assuming the processing of the subsequent acquire request(s) (from the subscription server or V0-ECS gateway as applicable) and processing of the distribution request(s) are successful, the following actions occur as the data are transferred from the transmitting DAAC/mode to the receiving DAAC/mode:

- The ftp daemon at the transmitting DAAC/mode performs the actual ftp of the files to the receiving DAAC/mode (e.g., /usr/ecs/OPS/CUSTOM/icl/a/data/XDAAC_Ingest/NSIDC/ on g0acg01u.ecs.nasa.gov).
- The Distribution Server at the transmitting DAAC/mode builds a distribution notice that the user's order has been fulfilled and sends the DN to Ingest at the receiving DAAC/mode via e-mail.
- The Ingest E-Mail Parser (EcInEmailGWServer) at the receiving DAAC/mode stores the DN as a text file (e.g., DDIST.notify11072001130203) in the EmailDirectory (e.g., /usr/ecs/OPS/CUSTOM/data/INS/local/InEmailGWServerPollingDirectory on g0ins01).
- While polling the EmailDirectory, the Ingest E-Mail Parser at the receiving DAAC/mode detects files matching the *.notify mask.
- The Ingest E-Mail Parser at the receiving DAAC/mode parses the Distribution Notice file.

- The Ingest E-Mail Parser at the receiving DAAC/mode generates a PDR file (e.g., DDIST11072001130203.PDR).
 - When generating the PDR, the Ingest E-Mail Parser uses the ESDT, FTPHOST, FTPDIR, FILENAME, and FILESIZE fields in the Distribution Notice.
 - The Ingest E-Mail Parser sets the ORIGINATING_SYSTEM in the PDR to “DDIST”.
 - If there is an error in generating a PDR, the e-mail message (Distribution Notice) is moved to the directory specified in the FailedDirectory configuration parameter (e.g., /usr/ecs/OPS/CUSTOM/data/INS/local/InEmailGWServerFailedDirectory).
- The Ingest E-Mail Parser at the receiving DAAC/mode copies the PDR file to the EcInPolling.DDIST polling directory (e.g., /usr/ecs/OPS/CUSTOM/data/INS/local/IngestPollingDirectory on g0ins01) at the receiving DAAC/mode.
- EcInPolling.DDIST at the receiving DAAC/mode detects files matching the *.PDR mask.
- EcInPolling.DDIST at the receiving DAAC/mode packages the PDR information into an Ingest Request.
- Ingest processing proceeds as a typical polling ingest with delivery record.

Table 16.2-5 presents (in a condensed format) the steps required to handle cross-DAAC or cross-mode ingest. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Submit a request to User Services (at the DAAC where the data are currently available) to create an order or subscription (as applicable) to have data transferred to a different mode or DAAC.
 - The following data (as applicable) are needed to create the order or subscription:
 - Parameters of the data to be transferred, including parameters of the specific granule(s) if the data are being ordered or data type and other subscription parameters (e.g., from what date/time until what date/time) if a subscription is being entered.
 - Media type (FtpPush).
 - Media format (typically FILEFORMAT).
 - User profile ID (if applicable).
 - Username for logging in to the ftp host at the receiving DAAC.
 - Password for logging in to the ftp host at the receiving DAAC.
 - ftp host to which the data are to be pushed at the receiving DAAC (e.g., g0acg01u.ecs.nasa.gov).
 - ftp directory (on the ftp host) to which the data are to be pushed at the receiving DAAC/mode (e.g., /usr/ecs/OPS/CUSTOM/icl/a/data/XDAAC_Ingest/NSIDC/).

- e-mail address for the DN sent to the Ingest E-Mail Parser (EcInEmailGWServer) in the receiving mode at the receiving DAAC (e.g., EcInEmailGWServer_TS1@e0ins01u.ecs.nasa.gov).
- 2 At the receiving DAAC monitor request processing to ensure that the data are received and ingested.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).
 - 3 If the data are not received as expected, contact (e.g., by telephone or e-mail) User Services at the DAAC where the order or subscription was submitted to determine the nature of the problem and have it corrected.

Table 16.2-5. Handle Cross-DAAC or Cross-Mode Ingest - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Request User Services to create an order or subscription (as applicable) to have data transferred to a different mode or DAAC	contact User Services at the DAAC where the data are currently available
2	If at the receiving DAAC, ensure that the data are received and ingested	Use procedure in Section 16.2.5
3	If the data are not received as expected, determine the nature of the problem and have it corrected	contact User Services at the DAAC where the order or subscription was submitted

16.2.5 Monitor/Control Ingest Requests

The Ingest Technician monitors and manages ingest requests primarily via the Ingest **Monitor/Control** screen on the **ECS Ingest** GUI. From the **Monitor/Control** screen the DAAC Ingest Technician can perform the following functions:

- View ingest requests.
 - Text View.
 - Graphical View.
- Cancel a request or granule within a request.
- Resume processing of a suspended request or granule within a request.
- Filter on all or specific requests by...
 - Request ID.
 - Data Provider.
 - All Requests.

Table 16.2-6 presents (in a condensed format) the steps required to monitor/control ingest requests. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If it is not already being displayed, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2 **Single-click** on the **ECS Ingest** GUI **Monitor/Control** tab.
 - The **Monitor/Control** screen is displayed.
- 3 **Single-click** on the appropriate button from the following selections:
 - **Request ID** - to display the status of a particular **ingest request**.
 - Go to Step 4.
 - **Data Provider** - to display the status of current and recent ingest requests for a particular **data provider** (e.g., **EDOS**).
 - Go to Step 5.
 - **All Requests** - to display the status of **all** current and recent ingest requests.
 - All ongoing and recently completed ingest requests are displayed.
 - Go to Step 6.
- 4 If the status of a particular **ingest request** is to be displayed, in the **Request ID** field enter:
<request ID>
 - An alternative method of designating the request ID is to copy and paste (if possible) the request ID into the **Request ID** field.
 - Go to Step 6.
- 5 If the status of current and recent ingest requests for a particular **data provider** (e.g., **EDOS**) is to be displayed, first **single-click** and **hold** on the option button to the right of the **Data Provider** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - An alternative method of designating the data provider is to first type it in the **Data Provider** field.
 - Ongoing requests from the selected data provider are displayed.
- 6 **Single-click** on the appropriate button from the following selections:
 - **Graphical View** - to display the following information, including a bar graph that indicates the percentage of the ingest process that has been completed:
 - **Request ID**.
 - **Processing Start Date/Time**.
 - **Percent Complete** (bar graph representing ingest completion in percent).

- **External Data Provider.**
- **Text View** - to display numerical values representing the percentage of the ingest process that has been completed in addition to much other information concerning the ingest request.
 - **Request ID.**
 - **Status** [of the request].
 - **Data Provider.**
 - **Ingest Type.**
 - **Priority** [of the request].
 - **Start Date.**
 - **Start Time.**
 - **End Date.**
 - **End Time.**
 - **Ttl # Gran** [total number of granules in the ingest request].
 - **Data Vol (MB)** [volume of data in Megabytes].
 - **Xfer Percent Complete** [percent of data transfer (into Ingest) that has been completed].
 - **Preproc Percent Complete** [percent of preprocessing that has been completed].
 - **Arch Percent Complete** [percent of data insertion into the data repository (archive) that has been completed].

- 7 Observe ingest requests displayed on the **Monitor/Control** screen.
 - Horizontal and vertical scroll bars appear as needed to allow viewing data that are not readily visible in the window.
 - **Double-clicking** on an ingest request on the **Monitor/Control** screen provides the status of the granules associated with the request.
- 8 If necessary, resume processing of suspended request(s) or granule(s).
 - Status of request(s), as displayed in the **Status** column on the **Monitor/Control** screen (**Text View**), change(s) to the appropriate state(s).
 - For detailed instructions refer to the **Resume Ingest Requests** procedure (Section 16.2.6).
- 9 If necessary, cancel request(s) or granule(s).
 - Status of request(s), as displayed in the **Status** column on the **Monitor/Control** screen (**Text View**), change(s) to the appropriate state(s).
 - For detailed instructions refer to the **Cancel Ingest Requests** procedure (Section 16.2.7).
- 10 If there is a data ingest failure, troubleshoot the problem.
 - For detailed instructions refer to the **Troubleshoot a Data Ingest Failure** procedure (Section 16.5.1).
- 11 Repeat Steps 3 through 10 as necessary to monitor ingest requests.

- 12 If necessary, exit from the **ECS Ingest** GUI by executing the following menu path:
File → Exit
- The **ECS Ingest** GUI disappears.

Table 16.2-6. Monitor/Control Ingest Requests - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Monitor/Control tab	single-click
3	Request ID button, Data Provider button, or All Requests button as applicable	single-click
4	<request ID> (if applicable)	enter text
5	Data Provider option (if applicable)	single-click
6	Graphical View button or Text View button as applicable	single-click
7	Observe ingest request information	read text
8	Resume processing of suspended request(s) or granule(s) if necessary	Use procedure in Section 16.2.6
9	Cancel ingest request(s) or granule(s) if necessary	Use procedure in Section 16.2.7
10	Troubleshoot data ingest failures as necessary	Use procedure in Section 16.5.1
11	Repeat Steps 3 through 10 as necessary	
12	File → Exit (when applicable)	single-click

16.2.6 Resume Ingest Requests

The procedure to **Resume Ingest Requests** is performed as part of the **Monitor/Control Ingest Requests** procedure (Section 16.2.5). If the system has suspended an ingest request or one or more granules in a request and the problem that caused the suspension has been resolved, the processing of the request/granule(s) should be resumed. The **Monitor/Control** tab on the **ECS Ingest** GUI provides the Ingest Technician with a means of resuming ingest requests.

Table 16.2-7 presents (in a condensed format) the steps required to resume ingest requests. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If an entire request is to be resumed, **single-click** on the request to be resumed on the **Monitor/Control** tab.
 - Either the selected ingest request is highlighted (Text View) or a checkmark is visible in the box to the left of the request information (Graphical View).
 - Proceed to Step 5 if processing of an entire request is to be resumed; otherwise, go to Step 2.
- 2 If resuming the processing of one or more granules in a request, **single-click** on the **Text View** button.
 - **ECS Ingest GUI Text View** is displayed.
- 3 If resuming the processing of one or more granules in a request, **double-click** on the request containing the granule(s) to be resumed.
 - Information concerning the state of each granule in the request is displayed (one row per granule).
- 4 If resuming the processing of one or more granules in a request, **single-click** on one of the granules to be resumed.
 - The selected granule is highlighted.
- 5 **Single-click** on the **Resume** button.
- 6 **Single-click** on the **OK** button at the bottom of the GUI.
 - A **Resume Request Confirmation Dialogue Box** is displayed.
- 7 **Single-click** on the appropriate button from the following selections:
 - **Yes** – to confirm resuming processing of the request or granule.
 - The **Resume Request Confirmation Dialogue Box** is dismissed.
 - The selected ingest request or granule resumes processing.
 - Status of the request or granule, as displayed in the **Status** column of the **Request Information** list (if using **Text View**), changes from “Suspended” to “Resuming” then to whatever state is appropriate for the continuation of request/granule processing (depending on its status when it was suspended).
 - A **Request Control Status Information Dialogue Box** is displayed.
 - **No** – to cancel resuming processing of the request or granule.
 - The **Resume Request Confirmation Dialogue Box** is dismissed.
 - The selected ingest request or granule remains in a “Suspended” state.
 - Proceed to Step 9.
- 8 **Single-click** on the **OK** button.
 - The **Request Control Status Information Dialogue Box** is dismissed.

- 9 Return to Step 4 to resume the processing of another granule in the request (if applicable).
- 10 Return to Step 1 to resume the processing of another request (if applicable).
- 11 Return to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.2-7. Resume Ingest Requests - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	<request ID> (if entire request is to be resumed)	single-click
2	Text View button (if resuming the processing of one or more granules in a request)	single-click
3	<request ID> (if resuming the processing of one or more granules in a request)	double-click
4	<granule ID> (if resuming the processing of one or more granules in a request)	single-click
5	Resume button	single-click
6	OK button	single-click
7	Yes button	single-click
8	OK button	single-click
9	Return to Step 4 (if applicable)	
10	Return to Step 1 (if applicable)	
11	Return to Monitor/Control Ingest Requests (when applicable)	Use procedure in Section 16.2.5

16.2.7 Cancel Ingest Requests

The procedure to **Cancel Ingest Requests** is performed as part of the **Monitor/Control Ingest Requests** procedure (Section 16.2.5). The **Monitor/Control** tab on the **ECS Ingest** GUI provides the Ingest Technician with a means of canceling ingest requests.

Table 16.2-8 presents (in a condensed format) the steps required to cancel ingest requests. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If an entire request is to be canceled, **single-click** on the request to be canceled on the **Monitor/Control** tab.
 - Either the selected ingest request is highlighted (Text View) or a checkmark is visible in the box to the left of the request information (Graphical View).
 - Proceed to Step 5 if an entire request is to be canceled; otherwise, go to Step 2.

- 2 If canceling the processing of one or more granules in a request, **single-click** on the **Text View** button.
 - **ECS Ingest GUI Text View** is displayed.
- 3 If canceling the processing of one or more granules in a request, **double-click** on the request containing the granule(s) to be canceled.
 - Information concerning the state of each granule in the request is displayed (one row per granule).
- 4 If canceling the processing of one or more granules in a request, **single-click** on one of the granules to be canceled.
 - The selected granule is highlighted.
- 5 **Single-click** on the **Cancel** button.
- 6 **Single-click** on the **OK** button at the bottom of the GUI.
 - A **Cancel Request Confirmation Dialogue Box** is displayed.
- 7 **Single-click** on the appropriate button from the following selections:
 - **Yes** – to confirm canceling the processing of the request or granule.
 - The **Cancel Request Confirmation Dialogue Box** is dismissed.
 - The selected ingest request or granule is canceled.
 - A **Request Control Status Information Dialogue Box** is displayed.
 - **No** – to prevent canceling the processing of the request or granule.
 - The **Cancel Request Confirmation Dialogue Box** is dismissed.
 - The selected ingest request is not canceled.
 - Proceed to Step 9.
- 8 **Single-click** on the **OK** button.
 - The **Request Control Status Information Dialogue Box** is dismissed.
- 9 Return to Step 4 to cancel the processing of another granule in the request (if applicable).
- 10 Return to Step 1 to cancel the processing of another request (if applicable).
- 11 Return to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.2-8. Cancel Ingest Requests - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	<request ID> (if entire request is to be canceled)	single-click
2	Text View button (if canceling the processing of one or more granules in a request)	single-click
3	<request ID> (if canceling the processing of one or more granules in a request)	double-click
4	<granule ID> (if canceling the processing of one or more granules in a request)	single-click
5	Cancel button	single-click
6	OK button	single-click
7	Yes button	single-click
8	OK button	single-click
9	Return to Step 4 (if applicable)	
10	Return to Step 1 (if applicable)	
11	Return to Monitor/Control Ingest Requests (when applicable)	Use procedure in Section 16.2.5

16.2.8 View the Ingest History Log

The **History Log** tab on the **ECS Ingest GUI Operator Tools** tab allows the Ingest Technician to view statistics on completed ingest transactions. When an ingest transaction has been completed, several things happen:

- A notice is automatically sent to the data provider indicating the status of the ingested data.
- The data provider sends an acknowledgment of that notice.
- Receipt of the acknowledgment is logged by ECS.
- The request ID of that ingest request is removed from the list of active requests.
- The Ingest History Log receives statistics on the completed transaction.

The following four search criteria can be used individually or in combination to view entries in the Ingest History Log:

- **Time Period** (Start and Stop Date/Time).
- **Data Provider ID** (e.g., EDOS, NOAA, or a science team).
- **Data Type** (e.g., AST_L1B).
- **Final Request Status** (e.g., Successful, Failed, or Terminated).

The Ingest History Log provides reports in the following formats:

- **Detailed Report** gives detailed information about each completed ingest request.
- **Summary Report** is a summary of ingest processing statistics, including the average and maximum time taken to perform each step in the ingest process.

- **Request-level** Summary Report provides ingest request processing statistics.
- **Granule-level** Summary Report provides ingest granule processing statistics organized by data provider and Earth Science Data Type (ESDT):

Table 16.2-9 presents (in a condensed format) the steps required to view the ingest history log. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If it is not already being displayed, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.

- 2 **Single-click** on the **ECS Ingest GUI History Log** tab.
 - The **History Log** screen is displayed.
 - If History Log entries are to be displayed on the basis of a particular...
 - **time period**, perform Steps 3 and 4. (If no time period is specified, log entries for the most recent 24-hour period will be displayed.)
 - **data provider**, perform Step 5.
 - **data type**, perform Step 6.
 - **final request status**, perform Step 7.
 - Any of the preceding criteria (time period, data provider, data type, or final request status) may be used individually or in combination to view entries in the Ingest History Log.

- 3 To view Ingest History Log entries for a particular time period, enter the desired data start date and time in the **Start Date/Time month/day/year hour/min/sec** fields in the following format:
<M(M)/D(D)/YYYY hh:mm:ss>
 - The **Tab** key may be pressed to move the cursor from field to field.
 - Use the 24-hour format to designate the hour (e.g., type **14** to designate 2 p.m.) in the **hour** fields.
 - If using the **Tab** key to advance from one field to the next, it is possible to bypass the entry of **seconds** by pressing the **Tab** key.

- 4 To view Ingest History Log entries for a particular time period, enter the desired data end date and time in the **Stop Date/Time month/day/year hour/min/sec** fields in the following format:
<M(M)/D(D)/YYYY hh:mm:ss>

- 5 To view log entries for a particular data provider **single-click** and **hold** on the option button to the right of the **Data Provider** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.

- An alternative method of designating the data provider is to type it in the **Data Provider** field.
- 6** To view log entries of a particular data type **single-click** and **hold** on the option button to the right of the **Data Type** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
- 7** To view log entries with a particular final request status **single-click** and **hold** on the option button to the right of the **Final Request Status** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
- An alternative method of designating the final request status is to type it in the **Final Request Status** field.
- 8** **Single-click** on the appropriate button from the following selections:
- **Detailed Report** – to see the following types of information on each completed ingest request:
 - **Request ID.**
 - **Data Provider.**
 - **Status.**
 - **Ingest Type.**
 - **Start Date.**
 - **Start Time.**
 - **End Date.**
 - **End Time.**
 - **Ttl # Gran** [total number of granules in the ingest request].
 - **#Success Gran** [total number of granules in the ingest request that were successfully ingested].
 - **Data Vol (MB)** [volume of data in Megabytes].
 - **File Count.**
 - **Time to Xfer (mins)** [transfer time in minutes].
 - **Time to Preproc (mins)** [preprocessing time in minutes].
 - **Time to Archive (mins).**
 - **Priority.**
 - **Restart Flag.**
 - **Summary Report** – to see a summary that includes the average and maximum time needed to perform each step in the ingest process. (Refer to the next step for additional information.)
- 9** If the **Summary Report** button was selected in the preceding step, **single-click** on the appropriate button from the following selections:
- **Request level** – to see the following Ingest request processing statistics:
 - **Data Provider.**
 - **Ttl Reqs** [total number of requests].
 - **Total Errs** [total number of errors per request].

- **Gran Avg** [average number of granules per request].
- **Gran Max** [maximum number of granules in a request].
- **File Avg** [average number of files per request].
- **File Max** [maximum number of files in a request].
- **Size (MB) Avg** [average request size in Megabytes].
- **Size (MB) Max** [maximum request size in Megabytes].
- **Transfer Time (mins) Avg** [average request transfer time in minutes].
- **Transfer Time (mins) Max** [maximum request transfer time in minutes].
- **Preproc Time (mins) Avg** [average request preprocessing time in minutes].
- **Preproc Time (mins) Max** [maximum request preprocessing time in minutes].
- **Archive Time (mins) Avg** [average request archiving time in minutes].
- **Archive Time (mins) Max** [maximum request archiving time in minutes].
- **Granule level** – to see the following types of information organized by data provider and Earth Science Data Type (ESDT):
 - **Data Provider.**
 - **Data Type.**
 - **Total Granules.**
 - **Total Errors.**
 - **File Avg.**
 - **File Max.**
 - **Size (MB) Avg.**
 - **Size (MB) Max.**
 - **Transfer Time (mins) Avg.**
 - **Transfer Time (mins) Max.**
 - **Preproc Time (mins) Avg.**
 - **Preproc Time (mins) Max.**
 - **Archive Time (mins) Avg.**
 - **Archive Time (mins) Max.**

10 Single-click on the **Display** button.

- Each ingest request that was completed, logged, and meets the specified criteria (time period, data provider, data type, and/or final status) is displayed.

11 Observe ingest request information.

- Ingest request information is displayed in the **History Log/Processing Statistics** field.

12 If a printed report is desired, execute the following menu path:

File → Print

- If it is not possible to print a report from the GUI, the corresponding file is available in the `/usr/ecs/<MODE>/CUSTOM/temp/INS` directory and can be printed using conventional UNIX commands (e.g., `lp` or `lpr`).

13 To clear the display after viewing the history log data on the screen, **single-click** on the appropriate button from the following selections:

- **Clear All** – to erase entries in the **Search Criteria** fields and the **History Log/Processing Statistics** field.
- **Go Back** – to erase entries in the **Search Criteria** fields and the **History Log/Processing Statistics** field.
 - The **Go Back** button is not always displayed on the GUI; it depends on the type of report being displayed on the screen.

Table 16.2-9. View the Ingest History Log - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	History Log tab	single-click
3	<M(M)/D(D)/YYYY hh:mm:ss> (in Start Date/Time month/day/year hour/min/sec fields) (if applicable)	enter text, press Tab
4	<M(M)/D(D)/YYYY hh:mm:ss> (in Stop Date/Time month/day/year hour/min/sec fields) (if applicable)	enter text, press Tab
5	<data provider> (from Data Provider list) (if applicable)	single-click
6	<data type> (from Data Type list) (if applicable)	single-click
7	<final request status> (from Final Request Status list) (if applicable)	single-click
8	Either Detailed Report or Summary Report button	single-click
9	Either Request level or Granule level button (if applicable)	single-click
10	Display button	single-click
11	Observe ingest request information	read text
12	File → Print (if applicable)	single-click
13	Either Clear All or Go Back button (if applicable)	single-click

16.2.9 Transfer Files

The **File Transfer** tool on the **ECS Ingest GUI Operator Tools** tab allows the Ingest Technician to transfer files to the science community. The file transfer tool allows the Ingest Technician to build a System Monitoring and Coordination Center (SMC) History File or select any file to be transferred from a specified point of origin to a destination desired by the user.

Table 16.2-10 presents (in a condensed format) the steps required to transfer files. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If it is not already being displayed, launch the **ECS Ingest GUI** (refer to Section 16.2.2).
 - The **ECS Ingest GUI** is displayed.
- 2 **Single-click** on the **ECS Ingest GUI Operator Tools** tab.
 - The **Operator Tool** screen is displayed.
- 3 Single-click on the **File Transfer** tab.
 - The **File Transfer** screen is displayed.
- 4 Single-click on the appropriate button from the following selections:
 - **Build SMC History Files** – creates the following two types of files in the /usr/ecs/<MODE>/CUSTOM/temp/INS directory:
 - SMCHheaderFile.
 - SMCdataFile.
 - **Generic File Transfer** – allows any type of directory or file to be transferred.
- 5 Verify that the path in the **Filter** field (in the **Transfer Origin** box) is appropriate for searching for the file to be transferred.
 - If the path in the **Filter** field is **not** appropriate for searching for the file to be transferred, in the **Filter** field enter:
<path>
 - Ensure that the path in the **Filter** field ends with a slash and an asterisk (/); otherwise, no files are listed.
- 6 **Single-click** on the **Filter** button.
 - A list of subdirectories in the last directory shown in the **Filter** field is displayed in the **Directories** field.
 - A list of files in the last directory shown in the **Filter** field is displayed in the **Files** field.

- 7 If the file to be transferred is not listed in the **Files** field but may be in one of the subdirectories listed in the **Directories** field, **single-click** on the subdirectory where the file may be located.
- 8 **Single-click** on the **Filter** button.
 - The path shown in the **Filter** field is modified to include the selected subdirectory.
 - A list of subdirectories in the last directory shown in the **Filter** field is displayed in the **Directories** field.
 - A list of files in the last directory shown in the **Filter** field is displayed in the **Files** field.
- 9 Repeat Steps 7 and 8 as necessary until the file to be transferred is listed in the **Files** field.
- 10 In the **Files** field **single-click** on the file to be transferred.
 - The highlighted file is entered into the **Selection** field.
- 11 **Single-click** on the **OK** button in the **Transfer Origin** box.
- 12 Verify that the file to be transferred (including the correct path to the file) is displayed in the **Selection** field.
 - Use either of the following methods to display the file to be transferred in the **Selection** field:
 - Repeat the Steps 5 through 11 as necessary to display the file to be transferred in the **Selection** field.
 - In the **Selection** field enter:
<path>/<file name>
- 13 In the **Transfer Destination** field enter:
<host name>/<path>
 - For example:
g0drg01/usr/ecs/OPS/CUSTOM/data
- 14 **Single-click** on the **OK** button at the bottom of the **Operator Tools: File Transfer** tab to execute the file transfer.
 - The file is transferred.

Table 16.2-10. Transfer Files - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Operator Tools tab	single-click
3	File Transfer tab	single-click
4	Either Build SMC History Files or Generic File Transfer button	single-click
5	<path> (Filter field, Transfer Origin box) (if applicable)	enter text
6	Filter button	single-click
7	<subdirectory> (Directories field)	single-click
8	Filter button	single-click
9	Repeat Steps 7 and 8 as necessary	single-click
10	<file> (Files field)	single-click
11	OK button (Transfer Origin box)	single-click
12	<path>/<file name> (Selection field)	enter text
13	<host name>/<path> (Transfer Destination field)	enter text
14	OK button (Operator Tools: File Transfer tab)	single-click

16.2.10 Verify the Archiving of Ingested Data

It is possible to determine whether Ingest has been successful by checking the appropriate directory on the appropriate File and Storage Management System (FSMS) host (e.g., g0drg01).

- The directories are identified by the type of data (e.g., aster, ceres, l7, modis) in them and correspond directly to tape volumes in the system.
- As long as one is checking for a limited range of granules the procedure is not likely to interfere with archive activities because it is just a matter of checking the relevant FSMS directory to determine whether the applicable files/granules have been transferred to tape volumes in the system.
- The procedure does not involve the use of any archive software.
- Before starting it is essential to know what data to look for. For example, End Date(s)/Time(s) and Data Volume(s) for ingest requests shown on the **ECS Ingest** GUI can be used for comparison with dates/times and file sizes listed for the files in the relevant directory on the FSMS host.

Table 16.2-11 presents (in a condensed format) the steps required to verify the archiving of ingested data. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the appropriate FSMS Server host.
 - Examples of FSMS Server host names include **e0drg11**, **g0drg01**, **l0drg01**, and **n0drg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:
cd /dss_stk1/<MODE>/<data type>
 - Change directory to the directory containing the archive data (e.g., /dss_stk1/OPS/modis/).
 - The specific path varies from site to site and with the operating mode and type of data being ingested.
 - The **<MODE>** will most likely be one of the following operating modes:
 - OPS (for normal operation).
 - TS1 (for SSI&T).
 - TS2 (new version checkout).

- 3 At the command line prompt enter:
ls -la | grep '<Month> <Day>'
 - For example, to list the granules inserted on March 17, enter the following statement:
ls -la | grep 'Mar 17'
 - To list the granules inserted between 2:00 P.M and 3:00 P.M. on March 17, enter the following statement:
ls -la | grep 'Mar 17' | grep 14:
 - It is important to limit the listing (e.g., to a particular day). If there are tens of thousands of granules in the directory, just doing a listing of the directory would cause serious performance problems.
 - A list of subdirectories and files in the current directory is displayed.
 - The list should include the ingested data.
 - If necessary, continue changing directory until the relevant granules/files have been located.

- 4 Compare the End Date(s)/Time(s) and Data Volume(s) for the applicable ingest request(s) shown on the Ingest GUI with the dates/times and file sizes listed for the files in the directory.

Table 16.2-11. Verify the Archiving of Ingested Data - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (FSMS Server)	single-click or use procedure in Section 16.2.1
2	cd /dss_stk1/<MODE>/<data type>	enter text, press Enter
3	ls -la grep '<Month> <Day>'	enter text, press Enter
4	Compare ingest request data on the Ingest GUI with data listed for the files in the directory	read text

16.2.11 Clean the Polling Directories

The polling directories should be cleaned up (have old files deleted) after successful archiving, otherwise they would quickly run out of disk space. Automatic clean-up should be available. However, it may still be useful to know how to use the clean-up scripts.

Table 16.2-12 presents (in a condensed format) the steps required to clean the polling directories. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Operations Workstation.
 - Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, and **n0acs03**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:


```
cd /usr/ecs/<MODE>/CUSTOM/utilities
```

 - Change directory to the directory containing the ingest polling directory clean-up script (e.g., EcInEDOSCleanupMain, EcInPollClean).

- 3 At the command line prompt enter:


```
<script name> /<path> <days>
```

 - **<script name>** refers to the name of the appropriate ingest polling directory clean-up script (e.g., EcInEDOSCleanupMain, EcInPollClean).
 - **<path>** refers to the directory path to the polling directory (e.g., /usr/ecs/<MODE>/CUSTOM/icl/<INS host>/data/pollEDOS).
 - **<days>** refers to a number of days; any files in the EDOS polling directory (and subdirectories) older than the specified number of days will be deleted.
 - If there are **no** files in the directory older than the specified number of days, the script quits after displaying the following message:

There is no file in this directory older than x days.
 ##### **Exit deletion.**

- If there are files in the directory older than the specified number of days, a message similar to the following message is displayed:
 ##### **The following are files older than x days in directory:.** #####
 ##### **polLEDOS**
 #####
 ##### **Please check before deleting them.**
Shall we continue deletion? Type y or n only :

4 If there are files in the directory older than the specified number of days, at the Shall we continue deletion? Type y or n only: prompt enter (as appropriate):

y

- or -

n

- Either lower-case or upper-case letters may be typed.
- If **n** was entered, the script quits after the following message is displayed:
 ##### **The answer is No.**
 ##### **Do not continue deletion.**
- If **y** was entered, the script continues after the following message is displayed:
 ##### **The answer is Yes.**
 ##### **Continue deletion.**
 - The script quits after the files that meet the specified age criteria have been deleted.

Table 16.2-12. Clean the Polling Directories - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Operations Workstation)	Single-click or use procedure in Section 16.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/utilities	Enter text, press Enter
3	<script name> /<path> <days>	Enter text, press Enter
4	Either y or n (as appropriate)	Enter text, press Enter

16.3 Performing Media Ingest Operations

There are three (3) general methods for performing hard media ingest. Each one uses one of the following interfaces:

- **ECS Ingest GUI** media interface.

- **INGEST Media Tape Reader GUI.**
- UNIX commands for reading data from tape and generating PDR and signal files.

Both the **ECS Ingest GUI (EcInGUI)** media interface and the **INGEST Media Tape Reader GUI (EcInTapeReaderGUI)** are used for ingesting data from either 8mm or DTF-2 tape cartridges. The GUIs support hard media ingest in the following circumstances:

- 8mm tape ingest of L7 IGS browse data and metadata.
- DTF-2 tape ingest of ASTER L1A/L1B data.

NOTE: Currently the **INGEST Media Tape Reader GUI** is the preferred interface for media ingest of L7 IGS browse/metadata and ASTER L1A/L1B data. Eventually the **ECS Ingest GUI (EcInGUI) media interface** may be phased out.

UNIX commands are used primarily for performing ingest of EDOS L0 replacement data from DTF-2 tape. However, it is possible to use UNIX commands under other circumstances to transfer data from either 8mm or DTF-2 tapes into directories where the data can be picked up by an appropriate polling process.

In all cases of media ingest the Ingest Technician uses the **ECS Ingest GUI (Monitor/Control screen)** to monitor and control ingest request processing after the data have been copied from tape and an ingest request has been generated.

DAAC policy may require a bar-code label on each tape that contains data to be ingested. The labels are typically already on the tape when received from the data provider. However, the Ingest Technician may affix the labels to the tape cartridges if necessary.

Table 16.3-1, below, provides an Activity Checklist for performing media ingest operations.

Table 16.3-1. Performing Media Ingest Operations - Activity Checklist (1 of 2)

Order	Role	Task	Section	Complete?
1	Ingest Technician	Perform Media Ingest from 8mm Tape Using the ECS Ingest GUI Media Interface	(P) 16.3.1	
2	Ingest Technician	Unload and Load Stackers	(P) 16.3.1.1	
3	Ingest Technician	Perform Media Ingest from DTF-2 Tape Using the ECS Ingest GUI Media Interface	(P) 16.3.2	
4	Ingest Technician	Load a DTF-2 Drive for Use with the ECS Ingest GUI	(P) 16.3.2.1	
5	Ingest Technician	Unload a DTF-2 Drive for Use with the ECS Ingest GUI	(P) 16.3.2.2	
6	Ingest Technician	Perform Media Ingest Using the INGEST Media Tape Reader GUI	(P) 16.3.3	
7	Ingest Technician	Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker	(P) 16.3.3.1	

Table 16.3-1. Performing Media Ingest Operations - Activity Checklist (2 of 2)

Order	Role	Task	Section	Complete?
8	Ingest Technician	Manually Unload an 8mm Tape Cartridge from a Stacker	(P) 16.3.3.2	
9	Ingest Technician	Unload and Load 8mm Tape Stackers for Sequential Mode Operation	(P) 16.3.3.3	
10	Ingest Technician	Perform DTF-2 Drive Loading	(P) 16.3.3.4	
11	Ingest Technician	Perform DTF-2 Drive Unloading	(P) 16.3.3.5	
12	Ingest Technician	Perform Ingest of Data from EDOS DTF-2 Archive Tapes	(P) 16.3.4	
13	Ingest Technician	Perform Media Ingest Using UNIX Commands	(P) 16.3.5	

16.3.1 Perform Media Ingest from 8mm Tape Using the ECS Ingest GUI Media Interface

The procedure to perform media ingest from 8mm tape starts with the following assumptions:

- The PDR/PMPDR file is available, either placed on the network by the data provider or embedded in the media.
- If applicable, the contents of the PDR/PMPDR on the tape have been compared with the contents of the hardcopy version of the PDR/PMPDR and there are no discrepancies.
 - If there had been any discrepancies between the contents of the PDR/PMPDR on the tape and the contents of the hardcopy version of the PDR/PMPDR, the data provider (e.g., IGS) was notified and subsequently supplied a corrected tape.
- All applicable servers are currently running.

Table 16.3-2 presents (in a condensed format) the steps required to perform media ingest from 8mm tape using the **ECS Ingest** GUI media interface. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** Load the tape containing the data to be ingested into a stacker by performing the **Unload and Load Stackers** procedure (Section 16.3.1.1).
- 2** Launch an 8mm instance of the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
 - During data transfer from tape, the instance of the **ECS Ingest** GUI being used for media ingest prevents any other function from being selected by that instance of the GUI until the transfer has been completed.
- 3** **Single-click** on the **ECS Ingest** GUI **Media Ingest** tab.

- The **Media Ingest** screen is displayed.
- 4 To enter the type of medium (i.e., **8mm Tape**) **single-click** and **hold** on the option button to the right of the **Media Type** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - The selected type of medium is displayed in the **Media Type** field.
 - 5 To enter the data provider **single-click** and **hold** on the option button to the right of the **Data Provider** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - The selected data provider is displayed in the **Data Provider** field.
 - For example, **IGSASA_Media** identifies a data provider.
 - 6 In the **Media ID** field enter:
<media ID>
 - <media ID> is the identification of the tape specified on the bar-code label attached to the tape cartridge.
 - 7 **Single-click** on the appropriate radio button in the **Data Delivery Record File Location** box.
 - Options are: **On Network** and **Embedded in Media**.
 - **On Network** indicates that the PMPDR file is located on the network.
 - **Embedded in Media** indicates that the PMPDR file is recorded on the tape.
 - 8 In the **Data Delivery Record File Name** field enter:
<delivery record file name>
 - For example, **IGSASA.19991020123845.PMPDR** is a data delivery record file name.
 - 9 **Single-click** on the **OK** button at the bottom of the GUI.
 - Data transfer is initiated.
 - 10 While waiting for completion of data transfer from the tape, monitor request processing by performing the **Monitor/Control Ingest Requests** procedure (Section 16.2.5) using another instance of the **ECS Ingest** GUI.
 - During data transfer from tape, the **ECS Ingest** GUI prevents any other function from being selected from the media-ingest instance of the GUI until the transfer has been completed.
 - A **Media-Ingest Request Completed** pop-up window is displayed when data transfer from the tape has been completed.
 - 11 **Single-click** on the **OK** button on the **Media-Ingest Request Completed** pop-up window associated with the **ECS Ingest** GUI.
 - The **Media-Ingest Request Completed** pop-up window is dismissed.

12 To exit from the **ECS Ingest** GUI execute the following menu path:

File → Exit

- The **ECS Ingest** GUI is dismissed.

Table 16.3-2. Perform Media Ingest from 8mm Tape Using the ECS Ingest GUI Media Interface - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Load the tape containing the data to be ingested into a stacker	Use procedure in Section 16.3.1.1
2	Launch an additional instance of the ECS Ingest GUI	Use procedure in Section 16.2.2
3	Media Ingest tab (ECS Ingest GUI)	single-click
4	<media type> (Media Type option button)	single-click
5	<data provider> (Data Provider option button)	single-click
6	<media ID> [Media ID field]	enter text
7	Either On Network or Embedded in Media radio button (as applicable)	single-click
8	<delivery record file name> (Data Delivery Record File Name field)	enter text
9	OK button	single-click
10	Monitor request processing while waiting for completion of data transfer	Use procedure in Section 16.2.5
11	OK button (Media-Ingest Request Completed pop-up window)	single-click
12	File → Exit (when applicable)	single-click

16.3.1.1 Unload and Load Stackers

The procedure that follows applies to ingest from 8mm tape cartridges only. It involves the use of the **Storage Management Control** GUI to perform the following activities:

- Unload a tape stacker.
- Load a tape stacker.

Table 16.3-3 presents (in a condensed format) the steps required to unload and load stackers. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

1 Launch the **Storage Management Control** GUI (refer to Section 16.2.3).

- The **Storage Management Control** GUI is displayed.

- 2 **Single-click** on the **Resource Mngmnt** tab on the **Storage Management Control** GUI.
 - The **Storage Management Control** GUI **Resource Mngmnt** tab is displayed.
- 3 **Single-click** and **hold** the **Media Type** option button to display a menu of media, **move** the mouse cursor to the appropriate type of medium (highlighting it), then **release** the mouse button.
 - The selected type of medium is displayed on the **Media Type** option button.
 - The relevant server(s) is (are) displayed in the **Media Type** window below the **Media Type** option button.
 - The following type of information is displayed for each server displayed in the window below the **Media Type** option button:
 - **Server ID.**
 - **Status.**
- 4 **Single-click** on the relevant server in the **Media Type** window.
 - The selected server is highlighted.
- 5 **Single-click** on the **Manage Hardware** button on the **Resource Mngmnt** tab.
 - The **Manage Stackers** window is displayed.
 - The available stackers are listed in the stacker information window near the top of the **Manage Stackers** window.
- 6 **Single-click** on the line in the stacker information window corresponding to the stacker to be loaded (or unloaded and reloaded).
 - The stacker(s) to be loaded (or unloaded and reloaded) is (are) highlighted.
 - The **Select All** button below the stacker information window can be selected if all listed stackers are to be unloaded/loaded.
- 7 Observe the status of tapes/slots and drives in the stacker to ensure that stacker tapes can be unloaded/loaded without interfering with any ongoing operations.
 - The status of tapes/slots in the stacker is displayed in the slot information window near the bottom of the **Manage Stackers** window.
 - **Loaded Status** column indicates whether the slot is loaded or empty. If the slot is "loaded," it has been assigned a particular tape (as described in Steps 22 through 26). If the slot is "empty," no tape has been identified for the slot.
 - **Allocated Status** column indicates whether or not the slot has been allocated for use by a request.
 - The status of stacker drives is displayed in the drive information window near the middle of the **Manage Stackers** window.
- 8 If one of the drives is unavailable for 8mm ingest, **single-click** on the line in the drive information window corresponding to the unavailable drive.
 - A drive may be unavailable for 8mm ingest if it is being used in a manual mode for reading or writing to a tape or if it is out of service for maintenance.

- 9** If one of the drives is unavailable for 8mm ingest and its **Online Status** is not **Offline**, **single-click** and **hold** the **Online Status** option button below the drive information window to display a menu of statuses, **move** the mouse cursor to **Offline** (highlighting it), then **release** the mouse button.

 - If one of the drives is unavailable for 8mm ingest, it should be marked offline in the database (via the **Storage Management Control GUI**) so Storage Management will assign the 8mm ingest to the drive that is available.
 - Stacker operations are managed through tables in the Storage Management database.
 - If an offline drive is not marked **Offline** in the database, the stacker may attempt to use the offline drive in response to an ingest request. In such a case the ingest request would fail and an “Unable to request mount media service” error message would be displayed.
- 10** Turn the key in the key-lock of the stacker to stop stacker unit operation.
- 11** Wait for the stacker cartridge handling mechanism to finish the current operation and move to the “park” position.

 - When the handling mechanism reaches the “park” position, the stacker unit’s door interlock mechanism releases and a **Status: Unlocked** message is displayed on the unit.
- 12** Open the front door of the stacker.
- 13** Remove the magazine (cartridge holder) by pulling out, first from the top, then the bottom.
- 14** If applicable, remove the tape cartridge(s) by gently pulling each one straight out from its slot.

 - Tapes can be removed and replaced individually without having to unload and load the entire stacker.
- 15** Verify that the write-protect switch (e.g., red tab) on each tape cartridge to be loaded is set correctly for the desired operation.

 - Options are **REC** (writable) and **SAVE** (read only).
 - Either position is acceptable for Ingest but **SAVE** is typically used.

- 16 If required by DAAC policy, verify that there is a bar-code label properly attached to the tape cartridge.
- 17 Hold the tape cartridge with the write-protect switch toward the right.
- 18 Insert the tape cartridge by pushing gently straight into a slot in the magazine (cartridge holder).
- 19 Repeat Steps 15 through 18 for each tape cartridge to be loaded into the tape stacker.
- 20 **Single-click** on the line(s) in the slot information window near the bottom of the **Manage Stackers** window corresponding to the slot(s) to be loaded (or unloaded and reloaded).
 - The slot(s) to be loaded (or unloaded and reloaded) is (are) highlighted.
 - The **Select All** button below the stacker information window can be selected if all slots are to be unloaded/loaded.
- 21 If loading a stacker and the slot(s) to be loaded has (have) **Online Status** of **Offline**, **single-click** and **hold** the **Online Status** button, **move** the mouse cursor to the **Online** option (highlighting it), then **release** the mouse button.
- 22 **Single-click** and **hold** the **Media ID Assignment** button on the **Storage Management Control** GUI to display a menu of media assignment options, **move** the mouse cursor to the desired option (highlighting it), then **release** the mouse button.
 - Options are: **Manual** and **Auto Increment**.
 - In **Manual** the technician must manually enter the "Media ID" for each tape loaded.
 - In **Auto Increment** the technician enters the first Media ID; any additional slots to be filled are assigned Media IDs that sequentially follow the Media ID entered by the technician.
 - When using a handheld bar-code reader, the **Media ID Assignment** button should be set to **Manual**.
- 23 **Single-click** and **hold** the Media Operations button to display a menu of media operations, **move** the mouse cursor to the appropriate selection (highlighting it), then **release** the mouse button.
 - The **Media Operations** pull-down menu offers options for loading and unloading media.
 - Options are: **Load Media**, **Unload Media**, **Replace Media**, and **Load Media Set**.
 - **Load Media** allows the operator to load one or more pieces of media (e.g., to load a tape with data to be ingested into a currently empty slot).
 - **Unload Media** allows the operator to unload one or more pieces of media (e.g., to remove a tape with data that have just been ingested).

- **Replace Media** allows the operator to both load and unload pieces of media as a single operation.
- **Load Media Set** allows the operator to load a group of associated media that have been identified as a media set. Media sets must be predefined using the **Manage Media Sets** window, which is accessible through the **Manage Media Sets** button on the **Resource Mngmnt** tab of the **Storage Management Control** GUI.
- In general **Load Media** should be selected if the slot is empty; **Replace Media** should be selected if the slot is loaded (already contains a tape that has to be removed so another tape can be loaded).
 - If **Load Media** is selected, a stacker management **Load Media** window is displayed.
 - If **Replace Media** is selected, a **Replace Media** window is displayed.
 - If **Unload Media** is selected, a stacker management **Unload Media** window is displayed.
 - If **Load Media Set** is selected, a **Load Media Set** window is displayed.

24 **Single-click** on a line in the media window corresponding to a slot that was loaded (or unloaded and reloaded).

- A slot that was loaded (or unloaded and reloaded) is highlighted.

25 If applicable, in the **Supply Next Media ID** field of the media window enter:

<media ID>

- **<media ID>** is the identification of the tape specified on the label attached to the tape cartridge that was put in the corresponding slot.
- The media ID may be entered either by typing the information or using a hand-held bar-code reader (if available).
- When typing media IDs, be sure to press the **Return/Enter** key after typing each ID in the **Supply Next Media ID** field.
 - The media ID is displayed in the media window on the line corresponding to the selected slot.

26 Repeat Steps 24 and 25 if multiple tapes are being loaded.

27 **Single-click** on the appropriate button from the following selections:

- **OK** – to save the changes to media ID(s) and dismiss the media window.
 - The media window is dismissed.
 - If **Load Media** or **Replace Media** was the selected action, the media ID(s) is (are) displayed in the **Media ID** column of the slot information window near the bottom of the **Manage Stackers** window.
 - If **Unload Media** was the selected action, there is no media ID displayed in the **Media ID** column of the slot information window.

- **Cancel** – to dismiss the media window without saving changes to media ID(s).
 - The media window is dismissed.
 - The media ID information in the slot information window near the bottom of the **Manage Stackers** window is unchanged.
- 28** Replace the magazine (cartridge holder) in the stacker by inserting the two orientation features on the bottom of the magazine into the bottom of the plate then pressing on the top and snapping the magazine in place.
- 29** Close the door to start the process of resuming tape stacker operation.
- 30** Lock the door by turning the key in the key-lock.
- 31** Observe the information displayed in the slot information window at the bottom of the **Manage Stackers** window to determine whether the "Access Mode" associated with each slot number is consistent with the setting of the write-protect switch on each tape loaded.
- The "Access Mode" associated with each slot number must be consistent with the setting of the write-protect switch on each tape loaded. (Refer to Step 15.)
 - The following "Access Modes" are available:
 - **RO** - read only.
 - **RW** - read/write.
 - If the "Access Mode" associated with any slot number does not need to be changed, go to Step 35; otherwise, continue with Step 32.
- 32** If the "Access Mode" for a slot is to be changed, **single-click** on the line in the slot information window corresponding to the slot with the "Access Mode" to be changed.
- The **Select All** button below the slot information window can be selected if all listed slots are to be set to the same "Access Mode."
- 33** **Single-click** and **hold** the **Access Mode** button to display a menu of access mode options, **move** the mouse cursor to the desired option (highlighting it), then **release** the mouse button.
- Options are: **RO** and **RW**.
 - The **Access Mode** entry in the slot information window corresponding to the selected **Slot Number** changes to the selected value.
- 34** Repeat Steps 32 and 33 for each tape cartridge with an "Access Mode" to be changed.
- 35** To close the **Manage Stackers** window **single-click** on the **Close** button at the bottom of the window.
- The **Manage Stackers** window is dismissed.

- 36 To exit from the **Storage Management Control** GUI execute the following menu path:
File → Exit
- The **Storage Management Control** GUI is dismissed.

Table 16.3-3. Unload and Load Stackers - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Launch the Storage Management Control GUI	Use procedure in Section 16.2.3
2	Resource Mngmnt tab (Storage Management Control GUI)	single-click
3	<media type> (Media Type option button)	single-click
4	<server> (Media Type window)	single-click
5	Manage Hardware button	single-click
6	<stacker> (to be taken off line) (stacker information window)	single-click
7	Ensure that stacker tapes can be unloaded/loaded without interfering with any ongoing operations	read text
8	Unlock stacker door	turn key
9	Wait for the stacker cartridge handling mechanism to move to the “park” position	wait
10	Open stacker door	pull
11	Remove the magazine (cartridge holder)	pull
12	Remove tape cartridge(s)	pull
13	SAVE position (tape cartridge write-protect switch) (if desired)	set switch
14	Attach bar-code label to the tape cartridge (if necessary)	attach
15	Hold the tape cartridge with the write-protect switch toward the right	orient
16	Insert the tape cartridge into a slot in the magazine (cartridge holder)	push
17	Repeat Steps 13 through 16 (as necessary)	
18	<slot> (in slot information window)	single-click
19	Either Manual , or Auto Increment (Media ID Assignment) button) (as applicable)	single-click
20	<media operation> (Media Operations button)	single-click
21	<slot> (in media window)	single-click
22	<media ID> (for tape cartridge to be loaded)	enter text, press Enter
23	Repeat Steps 21 and 22 (as applicable)	
24	OK button	single-click
25	Replace the magazine (cartridge holder) in the stacker	insert bottom; press top in

Table 16.3-3. Unload and Load Stackers - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
26	Close stacker door	push
27	Lock stacker door	turn key
28	Determine whether the "Access Mode" associated with each slot number is consistent with the setting of the write-protect switch on each tape loaded	read text
29	<slot> (with access mode to be changed) (slot information window) (if applicable)	single-click
30	RO (Access Mode button) (if applicable)	single-click
31	Repeat Steps 29 and 30 (as necessary)	
32	Close button (on Manage Stackers window) (when applicable)	single-click
33	File → Exit (when applicable)	single-click

16.3.2 Perform Media Ingest from DTF-2 Tape Using the ECS Ingest GUI Media Interface

The DAAC Ingest Technician may have to ingest data from a DTF-2 tape utilizing the **ECS Ingest** GUI and a Sony DTF-2 drive.

Table 16.3-4 presents (in a condensed format) the steps required to perform media ingest from DTF-2 tape using the **ECS Ingest** GUI media interface. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Load the tape containing the data to be ingested into a DTF-2 drive by performing the **Load a DTF-2 Drive for Use with the ECS Ingest GUI** procedure (Section 16.3.2.1).
- 2 Launch a DTF instance of the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
 - During data transfer from tape, the instance of the **ECS Ingest** GUI being used for media ingest prevents any other function from being selected (using that instance of the GUI) until the transfer has been completed.
- 3 **Single-click** on the **ECS Ingest** GUI **Media Ingest** tab.
 - The **Media Ingest** screen is displayed.
- 4 To enter the type of medium (i.e., **DTF Tape**) **single-click** and **hold** on the option button to the right of the **Media Type** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - The selected type of medium is displayed in the **Media Type** field.

- 5 To enter the data provider **single-click** and **hold** on the option button to the right of the **Data Provider** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - The selected data provider is displayed in the **Data Provider** field.
 - For example, **ASTERGDS** identifies a data provider.

- 6 In the **Media ID** field enter:
<**media ID**>
 - <**media ID**> is the identification of the tape.
 - The media ID must be same as the media ID entered on the **Storage Management Control GUI** when performing the procedure to **Load a DTF-2 Drive for Use with the ECS Ingest GUI** (Section 16.3.2.1).

- 7 **Single-click** on the appropriate radio button in the **Data Delivery Record File Location** box.
 - Options are: **On Network** and **Embedded in Media**.
 - **On Network** indicates that the PDR file is located on the network.
 - **Embedded in Media** indicates that the PDR file is recorded on the tape.

- 8 In the **Data Delivery Record File Name** field enter:
<**delivery record file name**>
 - For example, **SDA048C.PDR** is a data delivery record file name.

- 9 **Single-click** on the **OK** button at the bottom of the GUI.
 - Data transfer is initiated.

- 10 While waiting for completion of data transfer from the tape, monitor request processing by performing the **Monitor/Control Ingest Requests** procedure (Section 16.2.5) using another instance of the **ECS Ingest GUI**.
 - During data transfer from tape, the **ECS Ingest GUI** prevents any other function from being selected from the media-ingest instance of the GUI until the transfer has been completed.
 - A **Media-Ingest Request Completed** pop-up window is displayed when data transfer from the tape has been completed.

- 11 **Single-click** on the **OK** button on the **Media-Ingest Request Completed** pop-up window associated with the **ECS Ingest GUI**.
 - The **Media-Ingest Request Completed** pop-up window is dismissed.

- 12 Unload the tape from the DTF-2 drive as described in the procedure to **Unload a DTF-2 Drive for Use with the ECS Ingest GUI** (Section 16.3.2.2).

13 To exit from the **ECS Ingest** GUI execute the following menu path:

File → Exit

- The **ECS Ingest** GUI is dismissed.

Table 16.3-4. Perform Media Ingest from DTF-2 Tape Using the ECS Ingest GUI Media Interface - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Load the tape into a DTF-2 drive	Use procedure in Section 16.3.2.1
2	Launch an additional instance of the ECS Ingest GUI	Use procedure in Section 16.2.2
3	Media Ingest tab (ECS Ingest GUI)	single-click
4	<media type> (Media Type option button)	single-click
5	<data provider> (Data Provider option button)	single-click
6	<media ID> [Media ID field]	enter text
7	Either On Network or Embedded in Media radio button (as applicable)	single-click
8	<delivery record file name> (Data Delivery Record File Name field)	enter text
9	OK button	single-click
10	Monitor request processing while waiting for completion of data transfer	Use procedure in Section 16.2.5
11	OK button (Media-Ingest Request Completed pop-up window)	single-click
12	Unload the tape from the DTF-2 drive	Use procedure in Section 16.3.2.2
13	File → Exit (when applicable)	single-click

16.3.2.1 Load a DTF-2 Drive for Use with the ECS Ingest GUI

A DTF-2 drive supports the reading of data from several types of cassettes, including (but not limited to) cassettes of the following types:

- DTF-2 L [large] cassette.
- DTF-2 S [small] cassette.
- DTF-1 L [large] cassette.
- DTF-1 S [small] cassette.

The procedure for loading a DTF-2 drive for use with the **ECS Ingest** GUI applies to ingest from DTF-2 cassettes (although it should work for DTF-1 cassettes as well). It involves the use of the **Storage Management Control** GUI when loading a DTF-2 drive.

Table 16.3-5 presents (in a condensed format) the steps required to load a DTR-2 drive for use with the **ECS Ingest** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Ensure that the PDR (PMPDR) name has been written down so it will be available to be entered on the **ECS Ingest** GUI when performing media ingest from DTF-2 tape.
 - The PDR (PMPDR) name should be specified on the label attached to the Sony DTF tape cartridge or included in accompanying documentation.
 - If the PDR (PMPDR) name is not specified on the label attached to the Sony DTF tape cartridge or included in accompanying documentation, read the file name from the tape as described in Steps 1 through 4 of the **Perform Ingest of Data from EDOS DTF-2 Archive Tapes** procedure (Section 16.3.4).

- 2 Ensure that the media ID has been written down so it will be available to be entered on the **Storage Management Control** GUI and **ECS Ingest** GUI.
 - The media ID should be specified on the label attached to the Sony DTF tape cartridge.
 - If the media ID is not specified on the label attached to the Sony DTF tape cartridge, invent a unique ID for the tape.

- 3 Verify that **No Tape 0H** is indicated on the DTF tape drive's display window.
 - If **No Tape 0H** is not indicated on the DTF tape drive's display window, wait until the ongoing operation (if any) has terminated, then push the **UNLOAD** button on the front of the DTF tape drive and remove the tape from the drive after it has completed the unloading process.

- 4 Insert the Sony DTF tape containing the granules to be ingested into the cassette slot of the DTF tape drive.

- 5 Wait for **Loaded [00]** to be indicated on the DTF tape drive's display window.

- 6 Launch the **Storage Management Control** GUI (refer to Section 16.2.3).
 - The **Storage Management Control** GUI is displayed.

- 7 **Single-click** on the **Resource Mngmnt** tab on the **Storage Management Control** GUI.
 - The **Storage Management Control** GUI **Resource Mngmnt** tab is displayed.

- 8 **Single-click** and **hold** the **Media Type** option button to display a menu of media, **move** the mouse cursor to the appropriate type of medium (highlighting it), then **release** the mouse button.
 - The selected type of medium (e.g., DTF) is displayed on the **Media Type** option button.

- The relevant server(s) is (are) displayed in the **Media Type** window below the **Media Type** option button.
 - For each server displayed in the window below the **Media Type** option button the **Server ID** and **Status** are shown.
- 9 **Single-click** on the line corresponding to the relevant server in the **Media Type** window.
- The selected server (e.g., EcDsStDTFServerNONE) is highlighted.
- 10 **Single-click** on the **Manage Hardware** button on the **Resource Mngmnt** tab.
- The **Manage Drives** window is displayed.
 - The available drive(s) is (are) listed in the drive information area of the **Manage Drives** window.
 - The drive(s) listed in the drive information area of the **Manage Drives** window is (are) described in the following fields: **Drive Name**, **Access Mode**, **Media ID**, **Online Status**, **Loaded Status**, **Allocated Status**.
- 11 **Single-click** on the line (in the drive information window) corresponding to the drive to be loaded.
- The drive to be loaded is highlighted.
 - The **Select All** button below the drive information window can be selected if all listed drives are to be loaded.
- 12 Verify that the **Media ID Assignment** button on the **Manage Drives** window is set at the **Manual** option.
- If necessary, **single-click** and **hold** the **Media ID Assignment** button on the **Manage Drives** window to display a menu of media assignment options, **move** the mouse cursor to the **Manual** option (highlighting it), then **release** the mouse button.
- 13 **Single-click** and **hold** the **Media Operations** button to display a menu of media operations, **move** the mouse cursor to the **Load Media** option (highlighting it), then **release** the mouse button.
- A drive management **Load Media** window is displayed.
- 14 In the **Media ID** field of the **Load Media** window enter:
<media ID>
- <media ID> (e.g., DTF1) is the identification of the tape specified on the label attached to the tape cartridge.
 - When typing media IDs, be sure to press the **Return/Enter** key after typing the ID in the **Media ID** field.
 - The media ID is displayed in the media window.
- 15 **Single-click** on the appropriate button from the following selections:
- **OK** – to save the media ID and dismiss the media window.

- The media window is dismissed.
- The media ID is displayed in the **Media ID** column of the drive information area of the **Manage Drives** window.
- **Online** should be displayed in the **Online Status** column of the drive information area of the **Manage Drives** window. However, if **Offline** is displayed in the **Online Status** column of the drive information area of the **Manage Drives** window, perform Steps 16 and 17.
- **Loaded** is displayed in the **Loaded Status** column of the drive information area of the **Manage Drives** window.
- **Cancel** – to dismiss the media window without saving the media ID.
 - The media window is dismissed.
 - The media ID information in the drive information area of the **Manage Drives** window is unchanged.

16 If **Offline** is displayed in the **Online Status** column of the drive information area of the **Manage Drives** window, first **single-click** on the line in the drive information window corresponding to the drive being loaded.

17 If **Offline** is displayed in the **Online Status** column of the drive information area of the **Manage Drives** window, **single-click** and **hold** the **Online Status** button, **move** the mouse cursor to the **Online** option (highlighting it), then **release** the mouse button.

NOTE: It may be desirable (but it is not essential) to leave the **Manage Drives** window open while performing the procedures to **Perform Media Ingest from DTF-2 Tape Using the ECS Ingest GUI Media Interface** and **Unload a DTF-2 Drive for Use with the ECS Ingest GUI** (Sections 16.3.2 and 16.3.2.2) because the window is used when unloading the drive.

18 To close the **Manage Drives** window **single-click** on the **Close** button at the bottom of the window.

- The **Manage Drives** window is dismissed.

19 If it is necessary to exit from the **Storage Management Control** GUI, execute the following menu path:

File → Exit

- The **Storage Management Control** GUI is dismissed.

Table 16.3-5. Load a DTF-2 Drive for Use with the ECS Ingest GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Ensure that the PDR (PMPDR) name has been written down	write
2	Ensure that the media ID has been written down	write
3	Verify that the display indicates No Tape 0H (DTF tape drive)	read text
4	Insert the Sony DTF tape into the cassette slot	push
5	Wait for the display to indicate Loaded [00] (DTF tape drive)	wait
6	Launch the Storage Management Control GUI	Use procedure in Section 16.2.3
7	Resource Mngmnt tab (Storage Management Control GUI)	single-click
8	<media type> (Media Type option button)	single-click
9	<server> (for device to be loaded) (Media Type window)	single-click
10	Manage Hardware button	single-click
11	<drive> (drive information window)	single-click
12	Manual (Media ID Assignment button)	single-click
13	Load Media (Media Operations button)	single-click
14	<media ID> (for tape cartridge to be loaded)	enter text, press Enter
15	OK button	single-click

16.3.2.2 Unload a DTF-2 Drive for Use with the ECS Ingest GUI

The procedure that follows involves the use of the **Storage Management Control** GUI when unloading a DTF-2 drive for use with the **ECS Ingest** GUI.

Table 16.3-6 presents (in a condensed format) the steps required to unload a DTR-2 drive for use with the **ECS Ingest** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Push the **UNLOAD** button on the front of the DTF tape drive.
 - The tape goes through an unloading process.
 - At the end of the unloading process the tape is ejected from the drive.

- 2 After it has completed the unloading process, remove the DTF-2 tape cartridge from the tape drive cassette slot.

- 3 If an instance of the **Storage Management Control** GUI is not currently running, launch the GUI (refer to Section 16.2.3).
 - The **Storage Management Control** GUI **Storage Config.** tab is displayed.
- 4 **Single-click** on the **Resource Mngmnt** tab on the **Storage Management Control** GUI.
 - The **Storage Management Control** GUI **Resource Mngmnt** tab is displayed.
- 5 **Single-click** and **hold** the **Media Type** option button to display a menu of media, **move** the mouse cursor to the appropriate type of medium (highlighting it), then **release** the mouse button.
 - The selected type of medium (e.g., DTF) is displayed on the **Media Type** option button.
 - The relevant server(s) is (are) displayed in the **Media Type** window below the **Media Type** option button.
 - For each server displayed in the window below the **Media Type** option button the **Server ID** and **Status** are shown.
- 6 **Single-click** on the line corresponding to the relevant server in the **Media Type** window.
 - The selected server (e.g., EcDsStDTFServerNONE) is highlighted.
- 7 **Single-click** on the **Manage Hardware** button on the **Resource Mngmnt** tab.
 - The **Manage Drives** window is displayed.
 - The available drive(s) is (are) listed in the drive information area of the **Manage Drives** window.
 - The drive(s) listed in the drive information area of the **Manage Drives** window is (are) described in the following fields: **Drive Name**, **Access Mode**, **Media ID**, **Online Status**, **Loaded Status**, **Allocated Status**.
- 8 **Single-click** on the line (in the drive information window) corresponding to the drive to be unloaded.
 - The drive to be unloaded is highlighted.
 - The **Select All** button below the drive information window can be selected if all listed drives are to be unloaded.
- 9 **Single-click** and **hold** the **Media Operations** button to display a menu of media operations, **move** the mouse cursor to the **Unload Media** option (highlighting it), then **release** the mouse button.
 - A drive management **Unload Media** window is displayed.

- 10** **Single-click** on the line in the **Unload Media** window corresponding to the tape to be unloaded.
- The line in the **Unload Media** window corresponding to the tape to be unloaded is highlighted.
- 11** **Single-click** on the appropriate button from the following selections:
- **OK** – to remove the media ID and dismiss the media window.
 - The media window is dismissed.
 - The media ID is removed from the **Media ID** column of the drive information area of the **Manage Drives** window.
 - **Offline** should be displayed in the **Online Status** column and **Empty** should be displayed in the **Loaded Status** of the drive information area of the **Manage Drives** window. However, if **Online** is displayed in the **Online Status** column or **Loaded** is displayed in the **Loaded Status** of the drive information area of the **Manage Drives** window, perform Steps 12 and 13.
 - **Cancel** – to dismiss the media window without removing the media ID.
 - The media window is dismissed.
 - The media ID information in the drive information area of the **Manage Drives** window is unchanged.
- 12** If **Loaded** is displayed in the affected drive’s **Loaded Status** column or **Online** is displayed in the affected drive’s **Online Status** column of the **Manage Drives** window, first **single-click** on the **Close** button at the bottom of the window.
- The **Manage Drives** window is dismissed.
- 13** If **Loaded** was displayed in the affected drive’s **Loaded Status** column or **Online** was displayed in the affected drive’s **Online Status** column of the **Manage Drives** window, **single-click** on the **Manage Hardware** button on the **Resource Mngmnt** tab.
- The **Manage Drives** window is displayed.
 - **Empty** should be displayed in the affected drive’s **Loaded Status** column and **Offline** should be displayed in the affected drive’s **Online Status** column of the **Manage Drives** window.
 - If the conditions are as they should be, go to Step 17.
 - If **Loaded** is displayed in the **Loaded Status** column or **Online** is displayed in the **Online Status** column of the **Manage Drives** window, perform Steps 14 through 16 (as necessary).
- 14** If **Loaded** is displayed in the affected drive’s **Loaded Status** column or **Online** is displayed in the affected drive’s **Online Status** column of the **Manage Drives** window, first **single-click** on the line in the drive information window corresponding to the drive that was unloaded.
- The line (in the drive information window) corresponding to the drive that was unloaded is highlighted.

- 15 If **Loaded** is displayed in the affected drive's **Loaded Status** column of the **Manage Drives** window, **single-click** and **hold** the **Loaded Status** button, **move** the mouse cursor to the **Empty** option (highlighting it), then **release** the mouse button.
 - **Empty** is displayed in the **Loaded Status** column of the **Manage Drives** window.
- 16 If **Online** is displayed in the affected drive's **Online Status** column of the **Manage Drives** window, **single-click** and **hold** the **Online Status** button, **move** the mouse cursor to the **Offline** option (highlighting it), then **release** the mouse button.
 - **Offline** is displayed in the **Online Status** column of the **Manage Drives** window.
- 17 To close the **Manage Drives** window **single-click** on the **Close** button at the bottom of the window.
 - The **Manage Drives** window is dismissed.
- 18 To exit from the **Storage Management Control** GUI, execute the following menu path:
File → Exit
 - The **Storage Management Control** GUI is dismissed.

Table 16.3-6. Unload a DTF-2 Drive for Use with the ECS Ingest GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNLOAD button (DTF tape drive)	push
2	Remove DTF-2 tape cartridge from tape drive	pull
3	Launch the Storage Management Control GUI (if not already running)	Use procedure in Section 16.2.3
4	Resource Mngmnt tab (Storage Management Control GUI)	single-click
5	< media type > (Media Type option button)	single-click
6	< server > (for device to be unloaded) (Media Type window)	single-click
7	Manage Hardware button	single-click
8	< drive > (drive information window)	single-click
9	Unload Media (Media Operations button)	single-click
10	< media ID > (for tape cartridge to be unloaded)	single-click
11	OK button	single-click
12	Close button (Manage Drives window)	single-click
13	File → Exit (when applicable)	single-click

16.3.3 Perform Media Ingest Using the INGEST Media Tape Reader GUI

The Ingest Technician uses the **INGEST Media Tape Reader** GUI to generate the PDR(s) for the data files on the tape and put the PDR(s) and data files into the proper PDR and data directories for polling. Then the corresponding ingest polling process picks up the PDRs in the polling directory and creates the appropriate ingest request(s), which is (are) sent to the Ingest Request Manager. The Ingest Request Manager packages each request into granules and sends them to the Granule Server, which requests the Science Data Server to insert the data and/or metadata into the archive and/or catalog.

Table 16.3-7 presents (in a condensed format) the steps required to perform media ingest using the **INGEST Media Tape Reader** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Load the tape containing the data to be ingested as described in the appropriate procedure:
 - **Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker** (Section 16.3.3.1).
 - **Unload and Load 8mm Tape Stackers for Sequential Mode Operation** (Section 16.3.3.3).
 - **Perform DTF-2 Drive Loading** (Section 16.3.3.4).

- 2 Access a terminal window logged in to the Distribution Server host.
 - Examples of Distribution Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, **l0acs06**, and **n0acs06**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 3 In the terminal window (at the command line prompt) enter:
cd /usr/ecs/<MODE>/CUSTOM/utilities
 - Change directory to the directory containing the **INGEST Media Tape Reader** GUI startup script (e.g., **EcInTapeReaderGUI**).
 - The **<MODE>** will most likely be one of the following operating modes:
 - OPS (for normal operation).
 - TS1 (for SSI&T).
 - TS2 (new version checkout).
 - Note that the separate subdirectories under **/usr/ecs/** apply to different operating modes.

- 4 Start the **INGEST Media Tape Reader** GUI by entering:
EcInTapeReaderGUI <INSTANCE>
 - The **INGEST Media Tape Reader GUI Welcome Screen** is displayed.

- **<INSTANCE>** is the appropriate instance of the GUI, typically either **8mm** or **DTF1**.
 - To determine the available instances, check the names of the configuration files in the cfg subdirectory (i.e., /usr/ecs/<MODE>/CUSTOM/cfg).
 - The instances are included in the names of the configuration files; i.e., the portion of a file name between “EcInTapeReaderGUI.” and “.CFG”.
 - For example, if the following files are among those listed in the cfg subdirectory:
 - EcInTapeReaderGUI.8mm.CFG**
 - EcInTapeReaderGUI.DTF1.CFG**
 there are two possible instances of the **INGEST Media Tape Reader** GUI; i.e., **8mm** and **DTF1**.
 - Only one instance of the **INGEST Media Tape Reader** GUI may be run for each tape drive at a time (e.g., instances of the **INGEST Media Tape Reader** GUI for 8mm and DTF1 can run simultaneously but if there is only one DTF drive, only one DTF instance of the GUI should be launched).
 - Multiple instances of the **INGEST Media Tape Reader** GUI may run simultaneously on multiple tape drives as long as they have different instance names [e.g., if there are two instances of the **INGEST Media Tape Reader** GUI for DTF, with configuration files named EcInTapeReaderGUI.DTF1.CFG and EcInTapeReaderGUI.DTF2.CFG, it is permissible to run two instances (i.e., DTF1 and DTF2) of the **INGEST Media Tape Reader** simultaneously].

5 Single-click on the **INGEST Media Tape Reader** GUI **Read Tape** button.

- The **INGEST Media Tape Reader** GUI **Monitor Screen** is displayed.
- The **INGEST Media Tape Reader** GUI initiates reading of the tape in the tape drive.
 - The first tar file is read from the tape.
 - For DTF tape, the information in the first tar file is parsed and each tar file on the tape is displayed as a colored block on the GUI for further processing.
 - For 8mm tape, there is only one tar file on the tape to be displayed on the GUI.

6 Observe information displayed on the **INGEST Media Tape Reader** GUI **Monitor Screen**.

- Tar files are represented as colored blocks on the monitor pane.
- The first tar file is marked as "TarFile 0," the second as "TarFile 1," etc.
 - On 8mm tape there is only one tar file to be displayed on the GUI.
 - On DTF tape there are multiple tar files to be displayed on the GUI.
- Each tar file block is color-coded to draw attention to file status:
 - White New.
 - Green Running.
 - Red Error.
 - Yellow Selected.
 - Blue Successful.

- To select a specific tar file displayed on the GUI **single-click** on the block that represents the tar file.
 - The color of the block turns yellow, indicating that it has been selected.
 - **Single-clicking** on the block again deselects it.
 - **Single-clicking** on multiple blocks causes them to be selected (color of the blocks turns yellow).
- To see a list of files in a specific tar file displayed on the GUI (after the tar file has been read from the tape successfully – color-coded blue) **double-click** on the block that represents the tar file.
- If a problem is detected, **single-clicking** on the **Stop** button stops the ongoing tape reading process.
- **Single-clicking** on the **View Config** button causes the GUI **Current Configuration Screen** to be displayed.
 - **Single-clicking** on the **Go Back** button causes the previous screen to be displayed.
- Selecting **Help** → **Usage** from the pull-down menu causes the EcInTapeReaderGUI.usage document to be displayed in a pop-up window
- Selecting **Help** → **Notes** from the pull-down menu causes the EcInTapeReaderGUI.notes document to be displayed in a pop-up window.
- If reading an 8mm tape, when the file has been read successfully, (block color turns blue) go to Step 10.

7 After the first tar file has been read (block color turns blue) if reading a DTF tape and all files are to be read, **single-click** on the **Read All** button.

- All remaining tar files on the tape are read, the data files are saved in the data directory, PDR files are generated, and the PDR files are saved in the PDR directory.
- To see a list of files in a specific tar file displayed on the GUI (after the tar file has been read from the tape successfully – color-coded blue) **double-click** on the block that represents the tar file.
- If a problem is detected, **single-clicking** on the **Stop** button stops the ongoing tape reading process.
- If no problem is detected and the **Read All** button has been selected, go to Step 10.

8 After the first tar file has been read (block color turns blue) if reading a DTF tape and not all files are to be read, first **single-click** on each tar file to be read.

- The color of each clicked-on block turns yellow, indicating that it has been selected.
 - **Single-clicking** again on a selected block deselects it.

9 To initiate the process of reading selected tar file(s) from a DTF tape **single-click** on the **Read Selected** button.

- The selected tar files are read from the tape, the data files are saved in the data directory, PDR files are generated, and the PDR files are saved in the PDR directory.

- To see a list of files in a specific tar file displayed on the GUI (after the tar file has been read from the tape successfully – color-coded blue) **double-click** on the block that represents the tar file.
 - If a problem is detected, **single-clicking** on the **Stop** button stops the ongoing tape reading process.
- 10** To monitor Ingest request processing perform the **Monitor/Control Ingest Requests** procedure (Section 16.2.5) using an instance of the **ECS Ingest GUI**.
- 11** To exit from the **INGEST Media Tape Reader** GUI when all data have been read from the tape(s) select **File** → **Exit** from the pull-down menu.
- The **INGEST Media Tape Reader** GUI is dismissed.
- 12** Unload the tape drive as described in the appropriate procedure:
- **Manually Unload an 8mm Tape Cartridge from a Stacker** (Section 16.3.3.2).
 - **Unload and Load 8mm Tape Stackers for Sequential Mode Operation** (Section 16.3.3.3).
 - **Perform DTF-2 Drive Unloading** (Section 16.3.3.5).

Table 16.3-7. Perform Media Ingest Using the INGEST Media Tape Reader GUI - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Load the tape	Use procedure in Section 16.3.3.1, 16.3.3.3, or 16.3.3.4, as applicable
2	UNIX window (Sun internal server host)	Use procedure in Section 16.2.1
3	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text, press Enter
4	EclnTapeReaderGUI <INSTANCE>	enter text, press Enter
5	Read Tape button	single-click
6	Observe information displayed on the Monitor Screen	read text
7	Read All button (if applicable)	single-click
8	Block corresponding to each tar file to be read (as applicable)	single-click
9	Read Selected button (if applicable)	single-click
10	Monitor Ingest request processing	Use procedure in Section 16.2.5
11	File → Exit (when applicable)	single-click
12	Unload the tape drive	Use procedure in Section 16.3.3.2, 16.3.3.3, or 16.3.3.5, as applicable

16.3.3.1 Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker

The procedure that follows applies to ingest from 8mm tape cartridges only. It involves manually loading a tape cartridge into a tape drive in an 8mm tape stacker.

Table 16.3-8 presents (in a condensed format) the steps required to manually load an 8mm tape cartridge into a tape drive in an 8mm tape stacker. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Turn the key in the key-lock of the stacker to the “open” position.
- 2 Wait for the stacker cartridge handling mechanism to finish the current operation and move to the “park” position.
 - When the handling mechanism reaches the “park” position, the stacker unit’s door interlock mechanism releases and a **Status: Unlocked** message is displayed on the unit.
- 3 Open the front door of the stacker.
 - If the cartridge handling mechanism starts slowly settling downward, wait until it reaches the bottom of the stacker.
- 4 Insert the 8mm tape cartridge containing the granules to be ingested into the cartridge slot of the appropriate tape drive.
 - Stackers have two tape drives.
 - Hold the tape cartridge to be loaded into the tape drive with the write-protect switch toward the right.
- 5 Close the front door of the tape stacker.
- 6 Lock the door by turning the key in the key-lock.

Table 16.3-8. Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Unlock stacker door	turn key
2	Wait for the stacker cartridge handling mechanism to move to the “park” position	wait
3	Open stacker door	pull
4	Insert the 8mm tape cartridge into the cartridge slot of the appropriate tape drive	push

Table 16.3-8. Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
5	Close stacker door	push
6	Lock stacker door	turn key

16.3.3.2 Manually Unload an 8mm Tape Cartridge from a Stacker

The procedure that follows applies to ingest from 8mm tape cartridges only. It involves manually unloading a tape cartridge from a tape drive in an 8mm tape stacker.

Table 16.3-9 presents (in a condensed format) the steps required to manually unload an 8mm tape cartridge from a stacker. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Turn the key in the key-lock of the stacker to the “open” position.
- 2 Wait for the stacker cartridge handling mechanism to finish the current operation and move to the “park” position.
 - When the handling mechanism reaches the “park” position, the stacker unit’s door interlock mechanism releases and a **Status: Unlocked** message is displayed on the unit.
- 3 Open the front door of the stacker.
 - If the cartridge handling mechanism starts slowly settling downward, wait until it reaches the bottom of the stacker.
- 4 Press the eject button to the left of the cartridge slot of the appropriate tape drive.
 - Green light to the left of the cartridge slot starts to flash.
 - After a few seconds the tape cartridge is ejected from the tape drive.
- 5 Remove the tape cartridge from the tape drive.
- 6 If no replacement tape cartridge is to be loaded in the tape drive, close the front door of the tape stacker.

Table 16.3-9. Manually Unload an 8mm Tape Cartridge from a Stacker - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Unlock stacker door	turn key
2	Wait for the stacker cartridge handling mechanism to move to the "park" position	wait
3	Open stacker door	pull
4	Eject button	press
5	Remove the tape cartridge from the tape drive	pull
6	Close stacker door	push

16.3.3.3 Unload and Load 8mm Tape Stackers for Sequential Mode Operation

The procedure that follows applies to ingest from 8mm tape cartridges only. It involves the following activities:

- Unload a tape stacker.
- Load a tape stacker.

Table 16.3-10 presents (in a condensed format) the steps required to unload and load 8mm tape stackers for sequential mode operation. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Observe the front panel display of the stacker.
 - If the message **Seq. Wait for Drive** or **Seq. Mode Done** is displayed on the front panel of the stacker, go to Step 15; otherwise, continue with Step 2.
- 2 Turn the key in the key-lock of the stacker to the closed position.
- 3 Press the **Escape** key.
- 4 Press the arrow keys as necessary to move the cursor to **Interface Menu**.
- 5 Press the **Enter** key (to select **Interface Menu**).
- 6 Press the **Enter** key again (to select **Control Mode Menu**).
- 7 Press the arrow keys as necessary to move the cursor to **Sequential 1**.
- 8 Press the **Enter** key (to select **Sequential 1**).
 - The following type of message is displayed on the front panel of the stacker:

ACTIVE INTERFACE:

From: **SCSI**
To: **SEQ1**
Status: **DONE**

- 9** Press the **Enter** key.
 - An asterisk is displayed in front of **Sequential 1**.
- 10** Press the **Escape** key.
- 11** Press the **Escape** key again.
- 12** Press the arrow keys as necessary to move the cursor to **Main Screen**.
- 13** Press the **Enter** key.
- 14** Observe the front panel display of the stacker.
 - If the message **Seq. Wait for Drive** is displayed on the front panel of the stacker, go to Step 15; otherwise, return to Step 3.
- 15** Turn the key in the key-lock of the stacker to the open position.
- 16** Wait for the stacker cartridge handling mechanism to finish the current operation and move to the “park” position.
 - When the handling mechanism reaches the “park” position, the stacker unit’s door interlock mechanism releases and a **Status: Unlocked** message is displayed on the unit.
- 17** Open the front door of the stacker.
- 18** Remove the magazine (cartridge holder) by pulling out, first from the top, then the bottom.
- 19** If applicable, remove the tape cartridge(s) by gently pulling each one straight out from its slot.
- 20** Hold a tape cartridge to be loaded into the tape stacker with the write-protect switch toward the right.
- 21** Insert the tape cartridge by pushing gently straight into the top-most empty slot in the magazine (cartridge holder).
- 22** Repeat Steps 20 and 21 for each tape cartridge to be loaded into the tape stacker.

- 23 Replace the magazine (cartridge holder) in the stacker by inserting the two orientation features on the bottom of the magazine (cartridge holder) into the bottom of the plate then pressing on the top and snapping the magazine (cartridge holder) in place.
- 24 Close the door to start the process of resuming tape stacker operation.
- 25 Lock the door by turning the key in the key-lock.
- The message **Seq. Wait for Drive** should be displayed on the front panel of the stacker.
 - The stacker should check all slots and drives for tapes then take the tape from Slot 1 and insert it into a drive.

Table 16.3-10. Unload and Load 8mm Tape Stackers for Sequential Mode Operation - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Observe the stacker front panel display	read text
2	Lock stacker door (if applicable)	turn key
3	Escape key	press
4	Arrow keys (as necessary) (to Interface Menu)	press
5	Enter key (select Interface Menu)	press
6	Enter key (select Control Mode Menu)	press
7	Arrow keys (as necessary) (to Sequential 1)	press
8	Enter key (select Sequential 1)	press
9	Enter key	press
10	Escape key	press
11	Escape key	press
12	Arrow keys (as necessary) (to Main Screen)	press
13	Enter key	press
14	Observe the stacker front panel display	read text
15	Unlock stacker door	turn key
16	Wait for the stacker cartridge handling mechanism to move to the "park" position	wait
17	Open stacker door	pull
18	Remove the magazine (cartridge holder)	pull
19	Remove tape cartridge(s) (if applicable)	pull
20	Hold the tape cartridge with the write-protect switch toward the right	orient
21	Insert the tape cartridge into a slot in the magazine (cartridge holder)	push

Table 16.3-10. Unload and Load 8mm Tape Stackers for Sequential Mode Operation - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
22	Repeat Steps 20 and 21 (as necessary)	
23	Replace the magazine (cartridge holder) in the stacker	insert bottom; press top in
24	Close stacker door	Push
25	Lock stacker door	turn key

16.3.3.4 Perform DTF-2 Drive Loading

A DTF-2 drive supports the reading of data from several types of cassettes, including (but not limited to) cassettes of the following types:

- DTF-2 L [large] cassette.
- DTF-2 S [small] cassette.
- DTF-1 L [large] cassette.
- DTF-1 S [small] cassette.

The procedure that follows applies to ingest from DTF-2 cassettes (although it should work for DTF-1 cassettes as well).

Table 16.3-11 presents (in a condensed format) the steps required to perform DTF-2 drive loading. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Verify that **No Tape 0H** is indicated on the DTF tape drive's display window.
 - If **No Tape 0H** is not indicated on the DTF tape drive's display window, wait until the ongoing operation (if any) has terminated, then push the **UNLOAD** button on the front of the DTF tape drive, wait for the tape to complete the unloading process, and remove the tape from the drive.
- 2 Insert the Sony DTF tape containing the granules to be ingested into the cassette slot of the DTF tape drive.
- 3 Wait for **Loaded [00]** to be indicated on the DTF tape drive's display window.

Table 16.3-11. Perform DTF-2 Drive Loading - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Verify that the display indicates No Tape 0H (DTF tape drive)	read text
2	Insert the Sony DTF tape into the cassette slot	push
3	Wait for the display to indicate Loaded [00] (DTF tape drive)	wait

16.3.3.5 Perform DTF-2 Drive Unloading

Table 16.3-12 presents (in a condensed format) the steps required to perform DTF-2 drive unloading. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Push the **UNLOAD** button on the front of the DTF tape drive.
 - The tape goes through an unloading process.
 - At the end of the unloading process the tape is ejected from the drive.
- 2 After it has completed the unloading process, remove the DTF-2 tape cartridge from the tape drive cassette slot.

Table 16.3-12. Perform DTF-2 Drive Unloading - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNLOAD button (DTF tape drive)	push
2	Remove DTF-2 tape cartridge from tape drive	pull

16.3.4 Perform Ingest of Data from EDOS DTF-2 Archive Tapes

When performing ingest of EDOS L0 replacement data from DTF-2 tape, the Ingest Technician uses UNIX commands to read the data from the tape, then uses either UNIX editor commands or a script to generate the appropriate delivery record(s) and signal file(s) for the data files to be ingested. The applicable ingest polling process picks up the delivery record(s) [PDR(s)] in the polling directory and creates the appropriate ingest request(s), which is (are) sent to the Ingest Request Manager. The Ingest Request Manager packages each request into granules and sends them to the Granule Server, which requests the Science Data Server to insert the data into the archive and catalog the metadata.

In response to a request (via the **EOS Data Re-Order web tool**) from GES DAAC Operations EDOS furnishes L0 replacement data to the DAAC on DTF-2 tapes. Personnel from the Level

Zero Processing Facility (LZPF) hand the DTF-2 archive tape(s) containing the requested data to personnel at GES DAAC Operations. (DAAC Operations returns each tape to the LZPF as soon as the needed data have been archived in ECS.)

In addition to the requested PDS(s) each EDOS DTF-2 archive tape is likely to contain some additional (unneeded) PDSs. The Ingest Technician and/or Archive Manager need to determine which PDS(s) on the tape should be inserted into the archive.

Table 16.3-13 presents (in a condensed format) the steps required to perform ingest of data from EDOS DTF-2 archive tapes. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Load the tape containing the data to be ingested as described in the **Perform DTF-2 Drive Loading** procedure (Section 16.3.3.4).
- 2 Access a terminal window logged in to the appropriate host (e.g., Distribution Server).
 - Examples of Distribution Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, **l0acs06**, and **n0acs06**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 3 In the terminal window (at the command line prompt) enter:
cd <path>
 - **<path>** represents the directory path to the location where the data from the EDOS archive tape should be copied.
 - Using an empty directory would help identify the data from the tape.
- 4 In the terminal window (at the command line prompt) enter:
tar xvf <device>
 - **<device>** is the DTF-2 drive device name (e.g., **/dev/rmt/2n**) as it is known to the shell.
 - For example:
tar xvf /dev/rmt/2n
 - As files are read from the tape the file names, file sizes (in bytes), and number of blocks are listed on the screen.
 - For example:
x DZ9ZA49.MDR, 17393 bytes, 34 tape blocks
- 5 In the terminal window (at the command line prompt) enter:
pg <PPMUDR name>
 - **<PPMUDR name>** represents the file name of the PDS Physical Media Unit Delivery Record (PPMUDR).

- The PPMUDR file name has a **.MDR** extension.
- The PPMUDR is the first item on the EDOS archive tape.
- For example:
 - pg DZ9ZA49.MDR**
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

6 Observe the contents of the PPMUDR to identify the PDS(s) to be archived.

- Packet date/time ranges in the PPMUDR can be used to determine which PDS(s) is (are) to be archived.
 - In the PPMUDR the PDSs on the tape are listed in file groups, which represent data sets [i.e., science data file(s) and corresponding metadata file].
 - Each file group (data set) includes the date/time range of the data specified as **FIRST_PACKET_TIME** and **LAST_PACKET_TIME**.
- For example (extract from a PPMUDR):

OBJECT = FILE_GROUP

DATA_SET_ID = P0420064AAAAAAAAAAAAAAAA03101231459600

DATA_TYPE = MOD000

FIRST_PACKET_TIME = 2003-04-10T00:00:00.000000Z

LAST_PACKET_TIME = 2003-04-10T01:59:59.999999Z

PACKET_COUNT = NOT USED

OCTET_COUNT = NOT USED

TEST_FLAG = F

APID_COUNT = 1

OBJECT = APID_SPEC

APID_IN_PDS = 64

END_OBJECT = APID_SPEC

FILE_COUNT = 2

OBJECT = FILE_SPEC

DIRECTORY_ID = NOT USED

FILE_ID = P0420064AAAAAAAAAAAAAAAA03101231459600.PDS

FILE_TYPE = METADATA

FILE_SIZE = 384

END_OBJECT = FILE_SPEC

OBJECT = FILE_SPEC

DIRECTORY_ID = NOT USED

FILE_ID = P0420064AAAAAAAAAAAAAAAAA03101231459601.PDS

FILE_TYPE = DATA

FILE_SIZE = 108000

END_OBJECT = FILE_SPEC

END_OBJECT = FILE_GROUP

- In the preceding example one data set is defined (as a "FILE_GROUP").

The data type for the set is MOD000.

The data were collected on April 10, 2003 between midnight GMT (00:00:00.000000Z) (FIRST_PACKET_TIME) and just before 2:00 A.M. GMT (01:59:59.999999Z) (LAST_PACKET_TIME).

There are two files in the data set (FILE_COUNT = 2).

One file (P0420064AAAAAAAAAAAAAAAAA03101231459600.PDS) is a metadata file (in EDOS terminology, a "construction record").

The other file (P0420064AAAAAAAAAAAAAAAAA03101231459601.PDS) is a data file.

Based on information embedded in the file names, the data set was created on April 11, 2003 at 11:14:59 P.M. (as described under the next bullet).

- The EDOS archive tape may contain both nominal and reprocessed PDSs but creation times in file names differentiate between the versions.
 - Ingest the latest (most recent) version if there is more than one version.
 - PDS file names consist of 40 bytes (characters) and Bytes 23 through 33 specify the creation time of the file.
 - For example, **03101231459** is the creation time in the following file name:

P0420064AAAAAAAAAAAAAAAAA03101231459601.PDS

03 indicates the year (2003).

101 specifies the Julian day (April 11, the 101st day of the year).

231459 is the time of file creation (11:14:59 P.M.).

- Consult with the Archive Manager if there is any question concerning which PDSs should be archived.

7 In the terminal window (at the command line prompt) enter:

cp <file name 1> <file name 2> [... <file name n>] <path>

- **<file name1> <file name 2> [... <file name n>]** represent the file names of the PDS files to be ingested.
 - Copy both the data and metadata files (as identified in the PPMUDR) for each data set.
- **<path>** is the directory path to the Ingest polLEDOS directory; i.e., the directory in which the ECS software for EDOS ingest routinely looks for EDOS delivery records and data.
 - The EDOS polling directory is specified as a parameter in the Registry database or in the configuration file for EDOS polling (e.g., EcInPolling.EDOS.CFG).
- For example:

```
cp P0420064AAAAAAAAAAAAAAAA03101231459600.PDS  
P0420064AAAAAAAAAAAAAAAA03101231459601.PDS  
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS
```

NOTE: If a DAAC-unique script is available for creating delivery records and signal files and placing the files in the polling directory, use the script and skip Steps 8 through 18 (go to Step 19 after running the script). Otherwise, manually generate delivery records and signal files as described in Steps 8 through 18.

8 In the terminal window (at the command line prompt) enter:

cd <path>

- **<path>** is the directory path to the Ingest polLEDOS directory.
- For example:

```
cd /usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS
```

NOTE: Steps 9 through 13 describe how to use an old delivery record (PDR) as a template for generating a new PDR.

9 In the terminal window (at the command line prompt) enter:

cp <old PDR file name> <new PDR file name>

- **<old PDR file name>** represents the file name of an old PDR that is being used as a template for creating a PDR for PDS files to be ingested.
- **<new PDR file name>** represents the file name of the new PDR that is being created for PDS files to be ingested.
 - Use the EDOS file-naming convention for PDRs (refer to the EDOS ICD, 423-ICD-EDOS/EGS):

PDR file names consist of 38 bytes (characters).

Byte 1 identifies the file as either a PDS Delivery Record (“X”) or EDS Delivery Record (“Y”).

Bytes 2 through 8 identify the spacecraft ID (SCID) (three bytes) and first Applications Process Identifier (APID) (four bytes) in the data set (right-justified and, if necessary, zero-filled on the left).

Bytes 9 through 15 identify the SCID and second APID in the data set (right-justified and, if necessary, zero-filled on the left), if applicable. If no second APID is present in the data set, this item has a value of “AAAAAAA”.

Bytes 16 through 22 identify the SCID and third APID in the data set (right-justified and, if necessary, zero-filled on the left), if applicable. If no second APID is present in the data set, this item has a value of “AAAAAAA”.

Bytes 23 through 33 identify the GMT/ZULU time when the data set was created.

Byte 34 is a numeric identification in the range of “0” to “9” to aid in distinguishing the order of data set creation during the day and to provide uniqueness to the file name.

Bytes 35 through 38 are the file name extension (i.e., “.PDR” or “.EDR”)

For example:

X0420064AAAAAAAAAAAAAAAA031012314596.PDR

X identifies the file as a PDS Delivery Record.

0420064 identifies the SCID (**042** = Terra) and first APID (**0064** = MOD000 data type) in the data set.

AAAAAAAA indicates that there is no second APID in the data set.

AAAAAAAA indicates that there is no third APID in the data set.

03101231459 is the GMT/ZULU time when the data set was created [**03** indicates the year (2003); **101** specifies the Julian day (April 11, the 101st day of the year); **231459** is the time of data set creation (11:14:59 P.M.)].

6 is a numeric identifier (sixth data set of the day).

.PDR is the file-name extension for a PDS Delivery Record.

10 In the terminal window (at the command line prompt) enter:

vi <new PDR file name>

- The PDR template file is opened (displayed by the vi text editor).
- Although this procedure has been written for the **vi** editor, any UNIX editor can be used to create the PDR.

11 Using vi editor commands modify the PDR file to specify ingest of one of the data sets to be ingested.

- Create a separate PDR for each data set [science data file(s) and corresponding metadata file – refer to the PPUADR “file group” example in Step 6].
- The following vi editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).
 - **a** (append text).
 - **i** (insert text).
 - **r** (replace single character).
 - **x** (delete a character).
 - **dw** (delete a word).
 - **dd** (delete a line).
 - **ndd** (delete *n* lines).
 - **u** (undo previous change).
 - **Esc** (switch to command mode).

12 Press the **Esc** key.

13 In the terminal window (at the command line prompt) enter:

ZZ

- New PDR file is saved.
- UNIX prompt is displayed.

14 In the terminal window (at the command line prompt) enter:

vi <XFR file name>

- A new file with the specified **<XFR file name>** is opened.
 - Use the EDOS file-naming convention for signal files (refer to the EDOS ICD, 423-ICD-EDOS/EGS):

Signal file name is the corresponding PDR file name plus the signal file name extension (i.e., “.XFR”).

For example:

X0420064AAAAAAAAAAAAAAAA031012314596.PDR.XFR

- The signal file indicates that the relevant data files and PDR have been put in the polling directory and are ready to be ingested.

- Although this procedure has been written for the **vi** editor, any UNIX editor can be used to create the signal file.

15 Using vi editor commands create a file that contains the name of the relevant PDR.

- A signal file contains the name of the relevant PDR only.
- For example:

X0420064AAAAAAAAAAAAAAAA031012314596.PDR

16 Press the **Esc** key.

17 In the terminal window (at the command line prompt) enter:

ZZ

- New signal file is saved.
- UNIX prompt is displayed.
- At the next polling occasion, the EDOS polling client should detect the signal file and initiate ingest of the data specified in the corresponding PDR.

18 Repeat Steps 8 through 17 as required to create delivery records and signal files for all remaining data sets (from the EDOS archive tape) to be ingested.

19 To monitor Ingest request processing perform the **Monitor/Control Ingest Requests** procedure (Section 16.2.5) using an instance of the **ECS Ingest** GUI.

20 Unload the tape drive as described in the **Perform DTF-2 Drive Unloading** procedure (Section 16.3.3.5).

21 Verify that the data have been inserted into the archive as described in the **Verify the Archiving of Ingested Data** procedure (Section 16.2.10).

22 When insertion into the archive has been verified, notify the Archive Manager that "set delete" can be issued for the replaced data/metadata.

- The replaced data/metadata should be marked for deletion from the archive.

23 When insertion into the archive has been verified, ensure that the EDOS archive tape is returned to the EDOS LZPF.

NOTE: Clean up (as described in Steps 24 through 28) the directory into which data were originally copied from the EDOS archive tape. If preferred, skip Steps 24 through 28 and use the script described in the **Clean the Polling Directories** procedure (Section 16.2.11).

24 In the terminal window (at the command line prompt) enter:

cd <path>

- <path> represents the directory path to the location where the data from the EDOS archive tape were first copied.

25 In the terminal window (at the command line prompt) enter:

ls

- A listing of the files in the current directory is displayed.

26 In the terminal window (at the command line prompt) enter:

rm <file name 1> <file name 2> [... <file name n>]

- <file name 1> <file name 2> [... <file name n>] represent the names of the files to be removed from the directory.
- A wildcard may be used if some of the files have common characteristics.
 - For example:
rm *.PDS
- A prompt is displayed requesting whether or not a particular file should be removed.
 - For example:
rm: remove DZ9ZA49.MDR (yes/no)?

27 In the terminal window (at the command line prompt) enter:

y

- The specified file is deleted and (if applicable) a prompt is displayed requesting whether or not another particular file should be removed.

28 Repeat Step 27 as necessary.

Table 16.3-13. Perform Ingest of Data from EDOS DTF-2 Archive Tapes - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Load the tape containing the data to be ingested into a DTF-2 drive	Use procedure in Section 16.3.3.4
2	UNIX window (Sun internal server host)	Use procedure in Section 16.2.1
3	cd <path>	enter text, press Enter
4	tar xvf <device>	enter text, press Enter
5	pg <PPMUDR name>	enter text, press Enter
6	Observe the contents of the PPMUDR [identify the PDS(s) to be archived]	read text
7	cp <file name 1> <file name 2> [... <file name n>] <path>	enter text, press Enter
8	cd <path>	enter text, press Enter
9	cp <old PDR file name> <new PDR file name>	enter text, press Enter
10	vi <new PDR file name>	enter text, press Enter
11	Use vi editor commands to modify the PDR as necessary	enter text
12	Esc key	press
13	ZZ (or :wq!)	enter text, press Enter
14	vi <XFR file name>	enter text, press Enter
15	Use vi editor commands to create a file that contains the name of the relevant PDR	enter text
16	Esc key	press
17	ZZ (or :wq!)	enter text, press Enter
18	Repeat Steps 8 through 17 as necessary	
19	Monitor Ingest request processing	Use procedure in Section 16.2.5
20	Unload the tape drive	Use procedure in Section 16.3.3.5
21	Verify that the data have been inserted into the archive	Use procedure in Section 16.2.10
22	Notify the Archive Manager that "set delete" can be issued for the replaced data/metadata	contact Archive Manager
23	Ensure that the EDOS archive tape is returned to the EDOS LZPF	
24	cd <path>	enter text, press Enter
25	ls	enter text, press Enter
26	rm <file name 1> <file name 2> [... <file name n>]	enter text, press Enter
27	y	enter text, press Enter
28	Repeat Step 27 (as necessary)	

16.3.5 Perform Media Ingest Using UNIX Commands

Many ICDs between ECS and data providers state that tape media (especially 8mm tape) may be used as a backup method of ingest in case of emergency. If neither the **ECS Ingest** GUI nor the **INGEST Media Tape Reader** GUI has been set up for media ingest from a data provider that elects to supply some data on a hard medium, it is possible to ingest the data using UNIX commands.

A special case of media ingest using UNIX commands involves the ingest of EDOS L0 replacement data from DTF-2 tape. In that situation use the **Perform Ingest of Data from EDOS DTF-2 Archive Tapes** procedure (Section 16.3.4).

When performing media ingest using UNIX commands, the Ingest Technician uses UNIX commands to read the data from the tape, then ensures that any necessary delivery records (and signal files, if applicable) are available in the polling directory. The applicable ingest polling process picks up the delivery records (PDRs) in the polling directory and creates the appropriate ingest requests, which are sent to the Ingest Request Manager. The Ingest Request Manager packages each request into granules and sends them to the Granule Server, which requests the Science Data Server to insert the data into the archive and catalog the metadata.

If a data provider furnishes data on a hard medium for ingest with delivery record, the following three types of files should be present on the medium:

- Physical Media Product Delivery Record (PMPDR) or Product Delivery Record (PDR).
- Metadata file(s).
- Data file(s), typically in tar format.

If a data provider furnishes data on a hard medium for ingest without delivery record, only the data file(s) will be present on the medium.

Each medium should have a label and there should be a separate hardcopy document identifying the names of files contained on the medium and the order in which the files have been written.

Table 16.3-14 presents (in a condensed format) the steps required to perform media ingest using UNIX commands. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

NOTE: If the media ingest involves EDOS data, use the **Perform Ingest of Data from EDOS DTF-2 Archive Tapes** procedure (Section 16.3.4).

NOTE: Steps 1 through 5 describe the process for determining the type of polling and the polling directory(ies) for the type(s) of data to be ingested from the hard medium. If that information is already known, skip Steps 1 through 5 and proceed to Step 6.

- 1 Access a terminal window logged in to the applicable Ingest polling host (e.g., Ingest Server or APC Server) for the type(s) of data to be ingested.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Examples of Access/Process Coordinators (APC) Server host names include **e0acg11**, **g0acg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 In the terminal window (at the command line prompt) enter:


```
cd </usr/ecs/<MODE>/CUSTOM/cfg>
```

 - Change to the directory path where the configuration files for the various polling clients are located.

- 3 In the terminal window (at the command line prompt) enter:


```
ls -al
```

 - List the files in the directory.

- 4 In the terminal window (at the command line prompt) enter:


```
pg <file name>
```

 - **<file name>** represents the file name of the configuration file for the relevant polling client.
 - Although the official configuration parameters are likely to be in the registry database, the information in the configuration file in the `cfg` directory is probably accurate enough for the purposes of this procedure.
 - For example:


```
pg EcInPolling.IGSASA.CFG.rgy
```
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the configuration file.

- 5 Observe the contents of the configuration file to identify the type of polling and the polling directory(ies).
 - For example (extract of `EcInPolling.IGSASA.CFG`):


```
# Polling with delivery record parameters
PollingTimerInterval           = 120
CompareFileContentsFlag       = no
PollingDirectory             = /usr/ecs/OPS/CUSTOM/data/INS/pollIGSASA
HostName                     = x0icg01
```
 - Another example (extract of `EcInPolling.FDD.CFG`):


```
# Polling without delivery record parameters
PollingTimerInterval           = 120
```

CompareFileContentsFlag = no
PollingDirectoryCount = 2
PollingDirectory1 =
usr/ecs/OPS/CUSTOM/data/INS/pollAM1ATTF
DataType1 = AM1ATTF
HostName1 = x0icg01
IngestFileType1 = DATA
MaximumFileSize1 = 1000000
PollingDirectory2 =
/usr/ecs/OPS/CUSTOM/data/INS/pollAM1EPHF
DataType2 = AM1EPHF
HostName2 = x0icg01
IngestFileType2 = SCIENCE
MaximumFileSize2 = 100000000

- 6 Load the medium containing the data to be ingested in the appropriate drive.
 - Refer to the appropriate procedure; e.g., ...
 - **Perform DTF-2 Drive Loading** (Section 16.3.3.4).
 - **Manually Load an 8mm Tape Cartridge into a Tape Drive in an 8mm Tape Stacker** (Section 16.3.3.1)

- 7 Access a terminal window logged in to the host (e.g., Sun internal server host) with access to the applicable drive.
 - Examples of Distribution Server host (Sun internal server host) names include **e0acs06**, **g0acs06**, **l0acs06**, and **n0acs06**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 8 In the terminal window (at the command line prompt) enter:

cd <path>

 - **<path>** represents the directory path to the location where the data from the medium should be copied.
 - Using an empty directory would help identify the data copied from the medium.

- 9 In the terminal window (at the command line prompt) enter:

tar xvf <device>

 - **<device>** is the drive device name (e.g., **/dev/rmt/2n**) as it is known to the shell.
 - For example:

tar xvf /dev/rmt/2n
 - As files are read from the medium the file names, file sizes (in bytes), and number of blocks are listed on the screen.
 - For example:

x IGSFUI.PMPDR, 17393 bytes, 34 tape blocks

10 In the terminal window (at the command line prompt) enter:

scp2 <file name> <user@remotehost>:<path>/<file name>

- **<file name>** is the name of the file to be copied.
- **<user@remotehost>** identifies the current user ID and the host to which the file is to be copied.
- **<path>** is the full path to the directory (on the remote host) into which the file is to be copied.
- For example:

```
scp2 L7FUI196027200001240.MTA  
cmops@x0icg01:/mog_data/EDC/L7IGS/L7FUI196027200001240.MTA
```

- A wildcard (*) may be used if some of the files have common characteristics.
 - For example:

```
scp2 *.MTA cmops@x0icg01:/mog_data/EDC/L7IGS
```

- The following type of response should be displayed:

U.S. GOVERNMENT COMPUTER

If not authorized to access this system, disconnect now.

YOU SHOULD HAVE NO EXPECTATION OF PRIVACY

By continuing, you consent in your keystrokes and data content being monitored.

**Passphrase for key "/home/cmops/.ssh2/id_dsa_1024_a" with comment
"cmops@xdc ssh2":**

11 If the passphrase is known, at the **Passphrase (...):** prompt enter:

<passphrase>

- The following type of response should be displayed:
L7FUI196027200001240.MTA | 8.7kB | 8.7 kB/s | TOC: 00:00:01 | 100%
- If the passphrase is unknown, press **Return/Enter**, which should cause a **<user@remotehost>'s password:** prompt to appear (after the second or third try if not after the first one), then go to Step 12.
- If the passphrase is entered improperly, a **<user@remotehost>'s password:** prompt should appear (after the second or third try if not after the first one); go to Step 12.

12 If a prompt for **<user@remotehost>'s password:** appears, enter

<password>

- The following type of response should be displayed:

13 Repeat Steps 10 through 12 as necessary to transfer all relevant data/metadata files.

NOTE: If the data provider has furnished data on a hard medium for ingest without delivery record, skip Steps 14 through 21 and go to Step 22.

14 If the data provider has furnished data on a hard medium for ingest with delivery record, in the terminal window (at the command line prompt) enter:

cp <old PDR file name> <new PDR file name>

- **<old PDR file name>** represents the file name of an old PDR that is being used as a template for creating a PDR for the data files to be ingested.
- **<new PDR file name>** represents the file name of the new PDR that is being created for the data files to be ingested.
 - **<new PDR file name>** must end with a .PDR file name extension.

15 In the terminal window (at the command line prompt) enter:

vi <new PDR file name>

- The PDR template file is opened (displayed by the vi text editor).
- Although this procedure has been written for the **vi** editor, any UNIX editor can be used to create the PDR.

16 Using vi editor commands modify the PDR file to ensure that there are appropriate entries for **ORIGINATING_SYSTEM**, **NODE_NAME**, and **DIRECTORY_ID**.

- **ORIGINATING_SYSTEM** refers to the data provider (as Ingest expects it to be expressed).
- **NODE_NAME** identifies the **HostName** (as specified in the configuration file for the polling client).
- **DIRECTORY_ID** is the directory (on the host/node) in which the data and/or metadata files have been staged for ingest.
- Note that there is a **NODE_NAME** (host name) entry for each **FILE_GROUP** and a **DIRECTORY_ID** entry for each **FILE_SPEC** (as shown in the example that follows).

• For example (extract from an IGS PDR):

ORIGINATING_SYSTEM =IGSFUI;

TOTAL_FILE_COUNT =8;

AGGREGATE_LENGTH = 425607;

EXPIRATION_TIME = 2004-02-22T22:22:22Z;

```

OBJECT =FILE_GROUP;
    DATA_TYPE =L7IGS;
    NODE_NAME =x0icg01;
    OBJECT =FILE_SPEC;
        DIRECTORY_ID =/mog_data/EDC/L7IGS;
        FILE_ID =L7FUI196027200001240.MTA;
        FILE_TYPE =METADATA0;
        FILE_SIZE =55331;
    END_OBJECT =FILE_SPEC;
END_OBJECT =FILE_GROUP;
OBJECT =FILE_GROUP;
    DATA_TYPE =L7IGS;
    NODE_NAME =x0icg01;
    OBJECT =FILE_SPEC;
        DIRECTORY_ID =/mog_data/EDC/L7IGS;
        FILE_ID =L7FUI197028200001310.MTA;
        FILE_TYPE =METADATA0;
        FILE_SIZE =49392;
    END_OBJECT =FILE_SPEC;
END_OBJECT =FILE_GROUP;

```

- The following vi editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).
 - **a** (append text).
 - **i** (insert text).
 - **r** (replace single character).
 - **x** (delete a character).
 - **dw** (delete a word).
 - **dd** (delete a line).
 - **ndd** (delete *n* lines).
 - **u** (undo previous change).

- **Esc** (switch to command mode).

17 Press the **Esc** key.

18 In the terminal window (at the command line prompt) enter:

ZZ

- New PDR file is saved.
- UNIX prompt is displayed.

19 In the terminal window (at the command line prompt) enter:

scp2 <file name> <user@remotehost>:<path>/<file name>

- **<file name>** is the name of the file to be copied.
- **<user@remotehost>** identifies the current user ID and the host to which the file is to be copied.
- **<path>** is the full path to the directory (on the remote host) into which the file is to be copied.
- For example:

```
scp2 IGSFUL.PDR
cmops@x0icg01:/usr/ecs/OPS/CUSTOM/data/INS/pollIGSASA/IGSFUL.PDR
```

- The following type of response should be displayed:

U.S. GOVERNMENT COMPUTER

If not authorized to access this system, disconnect now.

YOU SHOULD HAVE NO EXPECTATION OF PRIVACY

By continuing, you consent in your keystrokes and data content being monitored.

Passphrase for key "/home/cmops/.ssh2/id_dsa_1024_a" with comment "cmops@xdc ssh2":

20 If the passphrase is known, at the **Passphrase (...):** prompt enter:

<passphrase>

- The following type of response should be displayed:

IGSFUL.PDR | 17.0kB | 17.0kB/s | TOC: 00:00:01 | 100%

- If the passphrase is unknown, press **Return/Enter**, which should cause a **<user@remotehost>'s password:** prompt to appear (after the second or third try if not after the first one), then go to Step 21.

- If the passphrase is entered improperly, a **<user@remotehost>'s password:** prompt should appear (after the second or third try if not after the first one); go to Step 21.
- 21** If a prompt for **<user@remotehost>'s password:** appears, enter **<password>**
- The following type of response should be displayed:
IGSFULPDR | 17.0kB | 17.0kB/s | TOC: 00:00:01 | 100%
- 22** To monitor Ingest request processing perform the **Monitor/Control Ingest Requests** procedure (Section 16.2.5) using an instance of the **ECS Ingest GUI**.
- 23** Unload the drive.
- Refer to the appropriate procedure; e.g., ...
 - **Perform DTF-2 Drive Unloading** (Section 16.3.3.5).
 - **Manually Unload an 8mm Tape Cartridge from a Stacker** (Section 16.3.3.2).
- 24** Verify that the data have been inserted into the archive as described in the **Verify the Archiving of Ingested Data** procedure (Section 16.2.10).
- 25** In the terminal window (at the command line prompt) enter:
cd <path>
- **<path>** represents the directory path to the location where the data from the hard medium were first copied.
- 26** In the terminal window (at the command line prompt) enter:
ls
- A listing of the files in the current directory is displayed.
- 27** In the terminal window (at the command line prompt) enter:
rm <file name 1> <file name 2> [... <file name n>]
- **<file name 1> <file name 2> [... <file name n>]** represent the names of the files to be removed from the directory.
 - A wildcard (*) may be used if some of the files have common characteristics.
 - For example:
rm *.MTA
 - A prompt is displayed requesting whether or not a particular file should be removed.
 - For example:
rm: remove L7FUI205024200001230.MTA (yes/no)?
- 28** In the terminal window (at the command line prompt) enter:

y

- The specified file is deleted and (if applicable) a prompt is displayed requesting whether or not another particular file should be removed.

29 Repeat Step 28 as necessary.

Table 16.3-14. Perform Media Ingest Using UNIX Commands - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server or APC Server host, as applicable)	Use procedure in Section 16.2.1
2	cd </usr/ecs/<MODE>/CUSTOM/cfg>	enter text, press Enter
3	ls -al	enter text, press Enter
4	pg <file name>	enter text, press Enter
5	Observe the contents of the configuration file [identify the type of polling and the polling directory(ies)]	read text
6	Load the tape containing the data to be ingested in the appropriate drive	Use procedure in Section 16.3.3.4 or Section 16.3.3.1 (as applicable)
7	UNIX window (Sun internal server host)	Use procedure in Section 16.2.1
8	cd <path>	enter text, press Enter
9	tar xvf <device>	enter text, press Enter
10	scp2 <file name> <user@remotehost>:<path>/<file name>	enter text, press Enter
11	<passphrase> (if applicable)	enter text, press Enter
12	<password> (if applicable)	enter text, press Enter
13	Repeat Steps 10 through 12 as necessary	
14	cp <old PDR file name> <new PDR file name> (if applicable)	enter text, press Enter
15	vi <new PDR file name> (if applicable)	enter text, press Enter

Table 16.3-14. Perform Media Ingest Using UNIX Commands - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
16	Use vi editor commands to modify the PDR (entries for ORIGINATING_SYSTEM , NODE_NAME , and DIRECTORY_ID) (if applicable)	enter text
17	Esc key (if applicable)	press
18	ZZ (or :wq!) (if applicable)	enter text, press Enter
19	scp2 <file name> <user@remotehost>:<path>/<file name> (if applicable)	enter text, press Enter
20	<passphrase> (if applicable)	enter text, press Enter
21	<password> (if applicable)	enter text, press Enter
22	Monitor Ingest request processing	Use procedure in Section 16.2.5
23	Unload the tape drive	Use procedure in Section 16.3.3.5 or Section 16.3.3.2 (as applicable)
24	Verify that the data have been inserted into the archive	Use procedure in Section 16.2.10
25	cd <path>	enter text, press Enter
26	ls	enter text, press Enter
27	rm <file name 1> <file name 2> [... <file name n>]	enter text, press Enter
28	y	enter text, press Enter
29	Repeat Step 28 (as necessary)	

16.4 Tuning Ingest Parameters

The values assigned to system parameters affect the functioning and performance of the system. When certain parameters are modified, the system operates differently. Changes to some other parameters may not appear to affect the system although there may in fact be subtle effects. In any case before system parameters are modified it is essential to understand what will happen to system functioning and performance.

Many system parameters may be subject to control by Configuration Management (CM). When making or requesting a change to system parameters, the CM process at the particular site must be followed (if applicable).

Values are assigned to Ingest parameters in the following databases:

- Configuration Registry database.
- Ingest database.

The Configuration Registry Server provides a single interface (via a Sybase server) for retrieving configuration attribute-value pairs for ECS servers from the Configuration Registry database. When ECS servers are started, they access the Configuration Registry Database to obtain needed configuration parameters.

The Database Administrator has access to a Configuration Registry GUI for viewing and editing configuration data in the database. Therefore, it is necessary to coordinate with the Database Administrator when changes to configuration parameters are needed. Also, as previously mentioned, changes to configuration-controlled parameters are subject to approval through the site CM process.

Default and adjusted values assigned to system parameters vary from site to site. For guidance concerning the assignment of values to parameters included in the Configuration Registry refer to document 910-TDA-022, *Custom Code Configuration Parameters for ECS*. The document is available at <http://cmdm.east.hitc.com/baseline/> under "Technical Documents."

The following parameters are examples of parameters in the Configuration Registry database whose values may be modified to enhance system functioning or performance:

- AppLogSize [parameter applies to all servers].
 - Maximum size of the application log (ALOG) file for a particular application.
 - Recommended size varies considerably depending the nature of the application for which the file is being written.
- AppLogLevel [parameter applies to all servers].
 - Level of detail provided in the ALOG file for a particular application.
 - Acceptable values are 0, 1, 2, or 3.
 - A setting of "0" provides the most data.
- DebugLevel [parameter applies to all servers].
 - Level of detail provided in the debug log file for a particular application.
 - Normally acceptable values are 0, 1, 2, or 3.
 - A setting of "0" turns off logging; a setting of "3" provides a significant amount of data.
 - STMGT offers "enhanced" debugging based on bitmaps: Level 7 (the 4 bit) provides detailed database debugging; Level 15 (the 8 bit) frequently dumps the in-memory request queue (in the Request Manager); Both Level 7 and Level 15 quickly create enormous log files.
- INGEST_CONNECTION_POOL_SIZE [EcInPolling, EcInGUI, EcInReqMgr, and EcInGran parameter].
 - Number of database connections. The number varies with the particular program connecting to the database.
 - Single-threaded programs (i.e., EcInGUI, EcInPolling) need one database connection only.
 - The number of database connections required for EcInGran depends on the maximum number of granules that can be processed at a time (as specified in the TotalGranuleThreshold column in the InGranuleServerInfo database table). For a maximum of five granules, two database connections are probably enough.

- For the EcInReqMgr there should be at least two database connections. During end-to-end (ETE) testing at the LP DAAC, EcInReqMgr actually needed only three database connections.
- SAVEONEXIT [EcInReqMgr, EcInGran, and EcInGUI parameter].
 - Set to “true” for debug purposes only. (Set to "false" normally.) When “true,” staging disks do not get cleaned up and the Staging Disk Server needs to be warm-started. For Granule Server, when the SAVEONEXIT parameter is “true,” the local preprocessing disk does not get cleaned up.
- SDSRV_RETRY_INTERVAL [EcInGran parameter].
 - Amount of time in seconds (e.g., 60) that Granule Server waits before retrying a remote procedure call (RPC) to Science Data Server when the previous attempt returned a retryable error.
- SDSRV_RETRY_ATTEMPTS [EcInGran parameter].
 - Number of times (e.g., 60) the Granule Server tries to make an RPC to Science Data Server when a retryable error is returned. If it is set to one (1), then no retries are done.
- SocketLimit [EcInEmailGWServer, EcInReqMgr, EcInGran parameter].
 - Number of connections (e.g., 200) to a server through the Hubble Space Telescope (HST) sockets middleware.
 - Too low a number misses connections.
 - Too high a number may adversely affect the memory of the server's host.
- PollingTimerInterval [EcInPolling parameter].
 - Amount of time in seconds (e.g., 120) between polling instances. The parameter is specified individually for each applicable data provider. The value varies depending on the rate at which each data provider sends data to EcInPolling.
 - Applies to both categories of polling (i.e., with delivery record and without delivery record).
- CompareFileContentsFlag [EcInPolling parameter].
 - Value is either "yes" or "no". (Usually set to "no".)
 - It should be set to "yes" for any data provider that reuses the same file names for its PDRs (in the case of polling with delivery record) or for its data files (in the case of polling without delivery record) so that EcInPolling checks whether file contents have changed.
 - If set to "yes," EcInPolling processing takes longer.
- PollingDirectoryCount [EcInPolling parameter].
 - Number of directories to be polled by EcInPolling. There must be a corresponding number of PollingDirectory, DataType, HostName, IngestFileType, and MaximumFileSize parameters.
 - Affects polling without delivery record only.
- PollingDirectory or PollingDirectoryX [EcInPolling parameter].
 - Path of the directory (e.g., /usr/ecs/TS2/CUSTOM/icl/x0icg01/data/pollEDOS) in which EcInPolling looks for new PDRs (polling with delivery record) or new data files (polling without delivery record).

- Used for setting the directory ID parameter in the PDRs that EcInPolling generates.
- There can be multiple instances of the parameter for polling without delivery record. For example, if the PollingDirectoryCount is "2," there should be a PollingDirectory1 and a PollingDirectory2.
- **HostName or HostNameX [EcInPolling parameter].**
 - Host (e.g., x0icg01) where the associated polling directory resides.
 - Used for setting the node name parameter in the PDRs that EcInPolling generates.
 - There can be multiple instances of the parameter for polling without delivery record. For example, if the PollingDirectoryCount is "2," there should be a HostName1 and a HostName2 (although both may have exactly the same value).
- **DataTypeX [EcInPolling parameter].**
 - Identifies the data type (e.g., AM1ATTF) associated with the corresponding polling directory.
 - Used for setting the data type parameter in the PDRs that EcInPolling generates.
 - There can be multiple instances of the parameter. For example, if the PollingDirectoryCount is "2," there should be a DataType1 and a DataType2 and they should have different values.
 - Affects polling without delivery record only.
 - The data type set must be a valid data type (in the Ingest database) or ingest will fail.
- **IngestFileTypeX [EcInPolling parameter].**
 - Identifies the file type (e.g., SCIENCE or DATA) associated with the corresponding polling directory.
 - Used for setting the file type parameter in the PDRs that EcInPolling generates.
 - There can be multiple instances of the parameter. For example, if the PollingDirectoryCount is "2," there should be an IngestFileType1 and an IngestFileType2 (although both may have exactly the same value).
 - Affects polling without delivery record only.
 - The file type set must be a valid file type for the associated data type (in the Ingest database) or ingest will fail.
- **MaximumFileSizeX [EcInPolling parameter].**
 - Specifies the maximum file size in bytes (e.g., 1000000) allowed in the corresponding polling directory.
 - Used for setting the file size parameter in the PDRs that EcInPolling generates.
 - There can be multiple instances of the parameter. For example, if the PollingDirectoryCount is "2," there should be a MaximumFileSize1 and a MaximumFileSize2. (Both may have exactly the same value.)
 - Affects polling without delivery record only.
 - If the file size is too small, the staging disk created for ftping the files will not be big enough.

NOTE: When the value assigned to a parameter has been changed and saved in the Configuration Registry, the modified value does not take effect until the affected

server has been restarted. For example, if the debug level for the Request Manager log has been changed from “2” to “3” in the Configuration Registry, the modification does not affect the recording of data in the log until after a warm restart of the Request Manager (at which time the server would read the parameters in the Configuration Registry).

Some of the more important tunable parameters in the Ingest Database are described in the sections that follow. There is information concerning additional tunable parameters in the "Tunable Parameters in Databases - Descriptions" section of 910-TDA-022, *Custom Code Configuration Parameters for ECS*. The document is available at <http://cmdm.east.hitc.com/baseline/> under “Technical Documents.”

Limits on the Number of Queued Requests and Ingest Volume

There is no way to set the number of queued requests. Limits on Ingest volume are managed through the following database parameters:

- TotalGranuleThreshold in the InGranuleServerInfo table.
- VolumeThreshold in the InGranuleServerInfo table.
- MaximumTotalRequests in the InSystemParameters table.
- MaximumTotalVolume in the InSystemParameters table.

The Request Manager receives requests, breaks them into granules, and queues all the granules. The granule queue is maintained in the Ingest database (InGranuleQueue table) so the queue state of each granule and the Granule Server processing it can be determined should the Request Manager have to be restarted in response to a failure.

If the appropriate Granule Server is not processing the maximum number of granules that it can process at a time (TotalGranuleThreshold), one or more granule(s) is (are) removed from the queue and sent to the Granule Server. The same action occurs if the appropriate Granule Server is not processing the maximum data volume that the Granule Server can process at a time (VolumeThreshold). So the Request Manager uses the TotalGranuleThreshold and VolumeThreshold parameters to control when it sends granules to each Granule Server.

Entries in the InGranuleServerInfo database table must be set manually via interactive structured query language (isql) commands. [Refer to the **Modify System Parameters in the Ingest Database Using ISQL** procedure (Section 16.4.3).] If the TotalGranuleThreshold parameter is changed, the Request Manager and the appropriate Granule Server need to be restarted in order for them to see the change. If the VolumeThreshold parameter is changed, the Request Manager needs to be restarted. It is better to avoid changing either parameter while the Granule Server is in the middle of processing granules.

There is a maximum number of requests and maximum volume that can be processed by Ingest at one time (in contrast to the Granule Server limits mentioned in preceding paragraphs). The corresponding parameters are specified in the MaximumTotalRequests and MaximumTotalVolume columns in the InSystemParameters database table. When a request from one of the clients (e.g., GUI or Polling) would cause one of the parameters to exceed its maximum value, the request fails and is not sent to Request Manager.

Either parameter can be modified using the Ingest GUI **Operator Tools: Modify System Parameters** tab. Refer to the **Modify System Parameters on the Ingest GUI** procedure (Section 16.4.2) for details concerning the steps involved in changing system parameters using the GUI.

Limits on the Number of Requests and Data Volume from a Data Provider

For each data provider there is a maximum number of requests and a maximum data volume. The parameters are specified in the MaximumRequests and VolumeThreshold columns in the InExternalDataProviderInfo database table. When a request from one of the clients (e.g., GUI or Polling) would cause one of the parameters to exceed its maximum value, the request fails and is not sent to Request Manager.

Either parameter can be modified using the Ingest GUI **Operator Tools: Modify External Data Provider/User Information** tab. The value assigned to MaximumRequests may not exceed the value assigned to the MaximumTotalRequests parameter in the InSystemParameters table. The value assigned to VolumeThreshold may not exceed the value assigned to the MaximumTotalVolume parameter in the InSystemParameters table. Refer to the **Modify External Data Provider Information** procedure (Section 16.4.1) for details concerning the steps involved in using the GUI to change parameters related to external data providers.

Other Key Parameters for Ingest

In the InSystemParameters database table there is a parameter called MonitorTimeForCompletedRequest. The parameter specifies the number of minutes after the request has been completed that a request remains in the database tables (i.e., InRequestProcessHeader and InRequestProcessData) that allow it to be displayed on the Ingest Monitor/Control GUI window. After the specified time has elapsed the request information is moved to the database summary tables (i.e., InRequestSummaryHeader and InRequestSummaryData) and can be viewed using the Ingest GUI History Log window.

MonitorTimeForCompletedRequest can be modified using the Ingest GUI **Operator Tools: Modify System Parameters** tab. However, no change to the parameter has any effect until the Ingest Request Manager has been restarted. Refer to the **Modify System Parameters on the Ingest GUI** procedure (Section 16.4.2) for details concerning the steps involved in changing system parameters using the GUI.

In the InSystemParameters table there is a ScreenUpdateInterval parameter. It specifies the number of seconds after which the GUI refreshes. The parameter can be modified using the Ingest GUI **Operator Tools: Modify System Parameters** tab. Refer to the **Modify System Parameters on the Ingest GUI** procedure (Section 16.4.2) for details concerning the steps involved in changing system parameters using the GUI.

In the InSystemParameters table, there are the following two communication-related parameters:

- CommunicationRetryCount.
- CommunicationRetryInterval.

The CommunicationRetryCount specifies a number of times that a user retries a communication. The CommunicationRetryInterval is the time interval in seconds between user communication retries. The default values installed with the database are typically set at five for both parameters.

Either parameter can be modified using the Ingest GUI **Operator Tools: Modify System Parameters** tab. Refer to the **Modify System Parameters on the Ingest GUI** procedure (Section 16.4.2) for details concerning the steps involved in changing system parameters using the GUI.

Number of Granule Servers at a DAAC

Each granule server can process multiple Earth Science Data Types (ESDTs), but each ESDT can be assigned to one granule server only. For example, at the LP DAAC two granule servers are configured, one to process Landsat-7 data, the other for processing ASTER data.

In order for a particular ESDT to be processed by a particular granule server the GranuleServerURKey entry for the data type in the InDataTypeTemplate table must be set to the integer representing the appropriate granule server. GranuleServerURKey is the granule server ID that is mapped to a specific granule server name (GranuleServerUR). GranuleServerURKey is the primary key in the InValGranuleServerUR table. The GranuleServerURKey column contains the possible values that can be used in the InGranuleServerInfo and InDataTypeTemplate tables. So each granule server requires an individual row in the InValGranuleServerUR table with values for GranuleServerURKey (e.g., 1, 2, 3) and GranuleServerUR (e.g., EcInGran, EcInGran0, EcInGran1). In addition each granule server requires an individual row in the InGranuleServerInfo table with values for GranuleServerURKey, TotalGranuleThreshold, and VolumeThreshold.

To prevent changing the mapping between GranuleServerURKey and GranuleServerUR values no changes are allowed to the values in the GranuleServerURKey column in either the InValGranuleServerUR or the InGranuleServerInfo table. However, entries can be added to both tables. If a new GranuleServerURKey entry is added to the InValGranuleServerUR table, in order for things to work correctly, a new entry for the GranuleServerURKey needs to be added to the InGranuleServerInfo table and a new granule server needs to be configured in order for the new table entry to be used. Also, if additions are made to the InGranuleServerInfo table, the Request Manager needs to be restarted in order for it to see the changes.

Manual modifications to the InGranuleServerInfo database table, InValGranuleServerUR table, or InDataTypeTemplate table must be made via isql commands. Refer to the **Modify System Parameters in the Ingest Database Using ISQL** procedure (Section 16.4.3).

Table 16.4-1, below, provides an Activity Checklist for tuning ingest parameters in the Ingest database.

Table 16.4-1. Tuning Ingest Parameters in the Ingest Database - Activity Checklist

Order	Role	Task	Section	Complete?
1	Ingest Technician	Modify External Data Provider Information	(P) 16.4.1	
2	Ingest Technician	Modify System Parameters on the Ingest GUI	(P) 16.4.2	
3	Ingest Technician	Modify System Parameters in the Ingest Database Using ISQL	(P) 16.4.3	

16.4.1 Modify External Data Provider Information

The **Operator Tools** tab on the **ECS Ingest GUI** has a **Modify External Data Provider/User Information** subtab that the Ingest Technician uses for modifying data provider thresholds. For example, the external data provider volume threshold and request threshold define the size and number of concurrent requests that are allowed from a data provider. If the either threshold is exceeded, the system notifies the Ingest Technician that the data provider is taking up a significant portion of the ingest processing capacity. Although these thresholds are normally left high so that requests are processed without restriction, there may be a time when it is desirable to lower the thresholds (e.g., to accommodate another data provider's requests). The Ingest Technician might at the same time reduce the priority with which the data provider's requests are to be processed. For example, the Ingest GUI could be used to modify the EDOS precedence in the ingest processing stream as follows:

- Reduce the volume threshold from 20,000 megabytes to 15,000 megabytes.
- Reduce the request threshold from 100 to 75.
- Change the priority from normal to low.

Table 16.4-2 presents (in a condensed format) the steps required to modify external data provider information. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** If it is not already being displayed, launch the **ECS Ingest GUI** (refer to Section 16.2.2).
 - The **ECS Ingest GUI** is displayed.
- 2** **Single-click** on the **ECS Ingest GUI Operator Tools** tab.
 - The **Operator Tool** screen is displayed.
- 3** **Single-click** on the **Modify External Data Provider/User Information** tab.
 - The **Modify External Data Provider/User Information** screen is displayed.

- 4** **Single-click** and **hold** on the option button to the right of the **Data Provider** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
- An alternative method of designating the data provider is to enter (in the **Data Provider** field):
<data provider>
 - If the information concerning the selected data provider is to be modified on the basis of....
 - **FTP Username**, perform Step 5.
 - **FTP Password**, perform Steps 6 and 7.
 - **Email Address**, perform Step 8.
 - **HTML Password** [not used].
 - **CDS Entry Name**, perform Step 9.
 - **Server Destination UUID**, perform Step 10.
 - **Volume Threshold**, perform Step 11.
 - **Request Threshold**, perform Step 12.
 - **Priority Level**, perform Step 13.
 - **Notify Parameters (ftp node, ftp directory, ftp username, or ftp password)**, perform Steps 14 through 20 as appropriate.
 - Any or all of the preceding criteria may be modified.
- 5** To modify the data provider's ftp user name enter (in the **FTP Username** field):
<ftp user name>
- The **Tab** key may be pressed to move the cursor from field to field.
- 6** To modify the data provider's ftp password enter (in the **FTP Password** field):
<ftp password>
- 7** To verify the data provider's new ftp password **single-click** on the **OK** button adjacent to the **FTP Password** field.
- 8** To modify the data provider's e-mail address enter (in the **Email Address** field):
<e-mail address>
- 9** To modify the data provider's CDS entry name enter (in the **CDS Entry Name** field):
<CDS entry name>
- 10** To modify the data provider's server destination enter (in the **Server Destination UUID** field):
<server destination UUID>

CAUTION

The thresholds are retrieved from the Ingest database when the Ingest Request Manager comes up. However, the threshold checks are done two different ways - sometimes in memory and sometimes by a database stored procedure. The database stored procedure uses the values in the database. If the Granule Server thresholds are changed in the database while Ingest is running there will be a mismatch between the values in memory and the values in the database. This could cause an Ingest failure.

- 11 To modify the data provider's volume threshold enter (in the **Volume Threshold - New:** field):
<volume threshold>
 - The *current* value for the volume threshold is printed on the corresponding line for reference purposes.
- 12 To modify the data provider's request threshold enter (in the **Request Threshold - New:** field):
<request threshold>
 - The *current* value for the request threshold is printed on the corresponding line for reference purposes.
- 13 To modify the data provider's priority level **single-click** and **hold** on the option button to the right of the **Priority Level** field, **move** the mouse cursor to the desired selection (highlighting it), then **release** the mouse button.
 - Options are: EXPRESS, VHIGH, HIGH, NORMAL, LOW.
 - An alternative method of changing the priority level is to enter (in the **Priority Level** field):
<priority>
 - The *current* value for priority is printed on the corresponding line for reference purposes.
- 14 To update any of the data provider's "notify parameters" first **single-click** on the **Update Notify Parameters** button.
 - The **Notify Parameters** window is displayed.
 - The **Notify Parameters** window provides the Ingest Technician with a means of changing the parameters (e.g., username or password) that the Ingest Subsystem needs in order to effectively notify a data provider of ingest activities.

- 15 To modify the data provider’s “notify ftp node” enter (in the **Notify Ftp Node** field):
<notify ftp node>
- 16 To modify the data provider’s “notify ftp directory” enter (in the **Notify Ftp Directory** field):
<notify ftp directory>
- 17 To modify the data provider’s “notify ftp username” enter (in the **Notify Ftp Username** field):
<notify ftp user name>
- 18 To modify the data provider’s “notify ftp password” enter (in the **Notify Ftp Password** field):
<notify ftp password>
- 19 To verify the data provider’s new “notify ftp password” **single-click** on the **OK** button adjacent to the **Notify FTP Password** field.
- 20 If the “Notify Parameters” window is being displayed, **single-click** on the appropriate button from the following selections:
 - **OK** – to save the “Notify Parameters” and dismiss the **Notify Parameters** window.
 - The **Notify Parameters** window is dismissed.
 - **Cancel** – to dismiss the **Notify Parameters** window without saving any changes to the “Notify Parameters.”
 - The **Notify Parameters** window is dismissed.
- 21 To save changes to data provider information **single-click** on the **OK** button at the bottom of the **Operator Tools: Modify External Data Provider/User Information** tab.
 - The changes are invoked.

Table 16.4-2. Modify External Data Provider Information - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Operator Tools tab (ECS Ingest GUI)	single-click
3	Modify External Data Provider/User Information tab	single-click
4	<data provider> (Data Provider field option button)	single-click

**Table 16.4-2. Modify External Data Provider Information - Quick-Step Procedures
(2 of 2)**

Step	What to Enter or Select	Action to Take
5	<ftp user name> (FTP Username field) (if applicable)	enter text
6	<ftp password> (FTP Password field) (if applicable)	enter text
7	OK button (adjacent to the FTP Password field) (if applicable)	single-click
8	<e-mail address> (Email Address field) (if applicable)	enter text
9	<CDS entry name> (CDS Entry Name field) (if applicable)	enter text
10	<server destination UUID> (Server Destination UUID field) (if applicable)	enter text
11	<volume threshold> (Volume Threshold - New: field) (if applicable)	enter text
12	<request threshold> (Request Threshold - New: field) (if applicable)	enter text
13	<priority> (button adjacent to the Priority Level field) (if applicable)	single-click
14	Update Notify Parameters button (if applicable)	single-click
15	<notify ftp node> (Notify Ftp Node field) (if applicable)	enter text
16	<notify ftp directory> (Notify Ftp Directory field) (if applicable)	enter text
17	<notify ftp user name> (Notify Ftp Username field) (if applicable)	enter text
18	<notify ftp password> (Notify Ftp Password field) (if applicable)	enter text
19	OK button (adjacent to the Notify FTP Password field) (if applicable)	single-click
20	OK button (Notify Parameters window) (if applicable)	single-click
21	OK button (Operator Tools: Modify External Data Provider/User Information tab) (if applicable)	single-click

16.4.2 Modify System Parameters on the Ingest GUI

The **Operator Tools** tab on the **ECS Ingest** GUI has a **Modify System Parameters** subtab that the Ingest Technician uses for modifying data provider thresholds. The **Modify System Parameters** subtab has the following uses:

- Change the thresholds at which the system notifies the Ingest Technician of the demands on system capacity being made by ingest processing.
- Set certain other system operating and display parameters.

Normally, the thresholds are left high so that processing proceeds without restriction and without excessive notification of its operation. If more frequent or sensitive indications are desired, however (e.g., during troubleshooting), it can be helpful to lower the thresholds. For example, it may be desirable to reduce the system volume threshold from 25,749 megabytes to 15,000 megabytes, and reduce the system request threshold from 1000 to 500.

The following two system parameters affect communications between external data providers and ECS:

- **Communication retry count**
 - The number of successive times the system tries to establish ingest communications with a data provider before registering a communications failure and moving on to the next ingest request.
 - If there is trouble with communication (or if troubleshooting is being performed), it may be useful to increase the communication retry count until the trouble is resolved.
- **Communication retry interval**
 - The time between successive attempts to establish communication.
 - It may be desirable to reduce the time interval for the same reasons as increasing the communication retry count.

An example of how the Ingest Technician might adjust system parameters when a communication problem is suspected involves increasing the communication retry count from five (5) to nine (9), and reducing the communication retry interval from five (5) minutes to three (3) minutes.

The following two system parameters may be used to set the behavior of the system according to operator preference:

- **Monitor time**
 - The amount of time that information about a completed ingest transaction remains available on the Monitor/Control screen after its completion.
 - During a time when the system is operating normally and ingest activity is heavy, it may be better to set a relatively short interval so excess items are removed from the monitoring display fairly quickly.
 - If information is needed about items that have been removed from the Monitor/Control screen, it can be obtained using the History Log.
- **Screen Update Time**
 - The amount of time between automatic data updates on the Monitor/Control screen.
 - Screen updates require system processing, and this interval is normally left set at no less than five (5) seconds.

- During troubleshooting, it may be useful to obtain more frequent updates by reducing the time interval.

Table 16.4-3 presents (in a condensed format) the steps required to modify system parameters on the **ECS Ingest** GUI. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** If it is not already being displayed, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2** **Single-click** on the **ECS Ingest GUI Operator Tools** tab.
 - The **Operator Tools** screen is displayed.
- 3** **Single-click** on the **Modify System Parameters** tab.
 - The **Modify System Parameters** screen is displayed.
 - If the system parameters to be modified involve....
 - **Volume Threshold**, perform Step 4.
 - **Request Threshold**, perform Step 5.
 - **Communication Retry Count**, perform Step 6.
 - **Communication Retry Interval**, perform Step 7.
 - **Monitor Time**, perform Step 8.
 - **Screen Update Time**, perform Step 9.

CAUTION

The thresholds are retrieved from the Ingest database when the Ingest Request Manager comes up. However, the threshold checks are done two different ways - sometimes in memory and sometimes by a database stored procedure. The database stored procedure uses the values in the database. If the Granule Server thresholds are changed in the database while Ingest is running there will be a mismatch between the values in memory and the values in the database. This could cause an Ingest failure.

- 4** To modify the system volume threshold enter (in the **Volume Threshold - New:** field):
<volume threshold>
 - The *current* value for the volume threshold is printed on the corresponding line for reference purposes.

- 5 To modify the system request threshold enter (in the **Request Threshold - New:** field):
<request threshold>
 - The *current* value for the request threshold is printed on the corresponding line for reference purposes.

- 6 To modify the system communication retry count enter (in the **Communication Retry Count - New:** field):
<communication retry count>
 - The *current* value for the communication retry count is printed on the corresponding line for reference purposes.

- 7 To modify the system communication retry interval enter (in the **Communication Retry Interval - New:** field):
<communication retry interval>
 - The *current* value for the communication retry interval is printed on the corresponding line for reference purposes.

- 8 To modify the system monitor time enter (in the **Monitor Time - New:** field):
<monitor time>
 - The *current* value for the monitor time is printed on the corresponding line for reference purposes.

- 9 To modify the system screen update time enter (in the **Screen Update Time - New:** field):
<screen update time>
 - The *current* value for the screen update time is printed on the corresponding line for reference purposes.

- 10 **Single-click** on the **OK** button at the bottom of the **Operator Tools: Modify System Parameters** tab to save the changes to system parameters.
 - The changes are invoked.

Table 16.4-3. Modify System Parameters on the Ingest GUI - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Operator Tools tab (ECS Ingest GUI)	single-click
3	Modify System Parameters tab	single-click

Table 16.4-3. Modify System Parameters on the Ingest GUI - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
4	<volume threshold> (Volume Threshold - New: field) (if applicable)	enter text
5	<request threshold> (Request Threshold - New: field) (if applicable)	enter text
6	<communication retry count> (Communication Retry Count - New: field) (if applicable)	enter text
7	<communication retry interval> (Communication Retry Interval - New: field) (if applicable)	enter text
8	<monitor time> (Monitor Time field) (if applicable)	enter text
9	<screen update time> (Screen Update Time field) (if applicable)	enter text
10	OK button (Operator Tools: Modify System Parameters tab) (if applicable)	Single-click

16.4.3 Modify System Parameters in the Ingest Database Using ISQL

As previously mentioned the effects on system functioning and performance must be considered before modifying system parameters. Depending on circumstances at a particular site it may be necessary to request that the Database Administrator modify parameters in the Ingest database. The procedure that follows is provided to assist Ingest Technicians who have to make the database modifications themselves.

Table 16.4-4 presents (in a condensed format) the steps required to modify system parameters in the ingest database using isql. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:


```
isql -U <user ID> -S <database server>
```

 - <user ID> is the database user's identification; e.g., **ingest_role**.
 - <database server> is the database server; e.g., **x0icg01_srvr**.

- 3 At the **Password:** prompt enter:
<database password>
- **<database password>** is the password for logging in to the database using the specified **<user ID>**.
 - A **1>** prompt is displayed, indicating that a connection has been made with the database.
- 4 At the **1>** prompt enter:
use <database name>
- The **<database name>** is likely to be one of the following names:
 - **Ingest** [OPS mode].
 - **Ingest_TS1** [TS1 mode].
 - **Ingest_TS2** [TS2 mode].
 - A **2>** prompt is displayed.
- 5 At the **2>** prompt enter:
go
- 6 At the **1>** prompt enter:
select * from <table name>
- Alternatively, enter:
select <column name> from <table name>
 - For example:
1> select TotalGranuleThreshold from InGranuleServerInfo
 - Another alternative:
select <column name1>,<column name2>[,<column name3>,...] from <table name>
 - For example:
1> select GranuleServerURKey,TotalGranuleThreshold,VolumeThreshold from InGranuleServerInfo
- 7 At the **2>** prompt enter:
go
- Table contents are displayed.
 - If ***** was specified, all entries in the table are displayed.
 - If specific column names were entered, the data associated with those columns only are displayed.

- For example, the contents of the **InGranuleServerInfo** table would be displayed if the following isql command were entered:

1> select * from InGranuleServerInfo

- The listing would include data in the following columns:
 - **GranuleServerURKey.**
 - TotalGranuleThreshold.
 - VolumeThreshold.

8 At the **1>** prompt enter:

update <table name> set <column name 1>=<value 1> where <column name 2>=<value 2>

- For example:

1> update InGranuleServerInfo set TotalGranuleThreshold=10 where GranuleServerURKey=3

9 At the **2>** prompt enter:

go

10 To start verification of the update at the **1>** prompt enter:

select * from <table name>

- Alternatively, one of the options described in Step 6 can be entered.

11 At the **2>** prompt enter:

go

- Table contents are displayed.
- Specified value should have been updated.

12 To exit from **isql** at the **1>** prompt enter:

quit

- The connection with the database is discontinued.

Table 16.4-4. Modify System Parameters in the Ingest Database Using ISQL - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	<code>isql -U <user ID> -S <database server></code>	enter text, press Enter
3	<code><database password></code>	enter text, press Enter
4	<code>use <database name></code>	enter text, press Enter
5	<code>go</code>	enter text, press Enter
6	<code>update <table name> set <column name 1>=<value 1> where <column name 2>=<value 2></code>	enter text, press Enter
7	<code>go</code>	enter text, press Enter
8	<code>update <table name> set <column name 1>=<value 1> where <column name 2>=<value 2></code>	enter text, press Enter
9	<code>go</code>	enter text, press Enter
10	<code>select * from <table name></code>	enter text, press Enter
11	<code>go</code>	enter text, press Enter
12	<code>quit</code>	enter text, press Enter

16.5 Troubleshooting Ingest Failures

Troubleshooting is a process of identifying the source of problems on the basis of observed trouble symptoms. One common source of problems involves the reliance on messages or data from other subsystems. Like many other operational areas in ECS, Ingest has interfaces with many other subsystems. Consequently, problems with ingest can be traced to either the Ingest Subsystem or one of many other ECS subsystems, including (but not necessarily limited to) those in the following list:

- Data Server Subsystem (DSS).
- Communications Subsystem (CSS).
- System Management Subsystem (MSS).

However, unlike many other operational areas in ECS, Ingest has interfaces with external data providers. Consequently, some Ingest problems can be traced to mistakes in the delivery records furnished by the data providers or errors in transmission of the data.

Table 16.5-1, below, provides an Activity Checklist for troubleshooting ingest failures.

Table 16.5-1. Troubleshooting Ingest Failures - Activity Checklist

Order	Role	Task	Section	Complete?
1	Ingest Technician	Troubleshoot a Data Ingest Failure	(P) 16.5.1	
2	Ingest Technician	Check Connections to Hosts	(P) 16.5.1.1	
3	Ingest Technician	Check Log Files	(P) 16.5.1.2	
4	Ingest Technician	Recover from a Data Ingest Failure	(P) 16.5.2	
5	Ingest Technician	Check Ingest Notification Files (Polling with Delivery Record)	(P) 16.5.2.1	
6	Ingest Technician	Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)	(P) 16.5.2.2	
7	Ingest Technician	Regenerate Failed PDRs	(P) 16.5.2.3	
8	Ingest Technician	Remove (Delete) Generated PDRs	(P) 16.5.2.4	
9	Ingest Technician	Check/Edit a PDR	(P) 16.5.2.5	
10	Ingest Technician	Check PAN Contents	(P) 16.5.2.6	
11	Ingest Technician	Check for Memory Problems	(P) 16.5.2.7	
12	Ingest Technician	Check the Polling Directory	(P) 16.5.2.8	
13	Ingest Technician	Check PAN Accessibility	(P) 16.5.2.9	
14	Ingest Technician	Recover from Exceeding the Volume Threshold	(P) 16.5.2.10	
15	Ingest Technician	Recover from Exceeding the Maximum Number of Concurrent Requests	(P) 16.5.2.11	
16	Ingest Technician	Recover from Insufficient Disk Space	(P) 16.5.2.12	
17	Ingest Technician	Recover from Exceeding the Expiration Date/Time Period	(P) 16.5.2.13	
18	Ingest Technician	Recover from File Transfer (ftp) Error	(P) 16.5.2.14	
19	Ingest Technician	Recover from Processing Errors	(P) 16.5.2.15	
20	Ingest Technician	Recover from Failure to Store Data	(P) 16.5.3	
21	Ingest Technician	Checking the Request Manager Server Debug Log	(P) 16.5.3.1	

Fault Recovery

Each request that crosses a client/server boundary is assigned a system-unique identifier referred to as an RPC ID. (RPC refers to Remote Procedure Call, the mechanism by which requests are submitted from client to server.) The RPC ID facilitates the automatic fault recovery events that occur whenever there is a client or server failure.

- As a request propagates through the system, each associated client/server exchange is assigned a unique RPC ID.
 - The RPC ID for each interaction is derived from the previous RPC ID received by the client for the request. Consequently, all RPC IDs associated with a given

request have a common portion that relates the various client/server calls to one another.

- Given the previous RPC ID, clients consistently reproduce the same RPC ID that was submitted to the server on the subsequent event.
- The concept of reproducible RPC IDs is central to the ECS fault recovery capability.
 - When requests are retried from client to server, they are always submitted with the same RPC ID that was used in the original submission of the request, even if either the client or server has crashed between retries.
- The RPC ID is also central to the check-pointing aspect of fault recovery.
 - As requests arrive at fault recovery-enabled servers, they are recorded in a persistent store (typically a database), tagged with the RPC ID, which identifies the request.
 - As the request is serviced, check-pointing state information may be updated in the persistent store, up to and including the completion status of the request.
 - This allows the servers to resume servicing from the last check-pointed state, particularly upon resubmission from a client.

Ingest components check-point the following types of information:

- **EcInGran** - Granule and granule state information.
- **EcInReqMgr** - Request state information.
- **EcInPolling** - Request information.
- **EcInEmailGWServer** - None.
- **EcInGUI** - Media Ingest request information.

Fault Handling

Failure events are classified according to the following three severity levels:

- Fatal error.
 - Returned when a request cannot be serviced, even with operator intervention.
 - For example, if a request is made to distribute data via ftp to a non-existent host, the request is failed with a fatal error.
- Retry error.
 - Potentially recoverable error.
 - Normally, a retry error would be returned to the client only when the server cannot recover from the error automatically.
 - A retry error may require operator assistance during recovery. For example, a tape left in a tape drive might have to be removed manually.
- Warning.
 - Provided when operations can proceed without interruption, but an unexpected circumstance was detected.
 - For example, if a client requests removal of a file but the file does not exist, there is no error per se; however, a warning is generated to caution the client that the file to be removed did not exist in the first place.

Transient errors (such as network errors) are always retry errors.

- In general, clients and servers that experience transient retry errors first attempt to recover by retrying the operation automatically.
- One special case of this is “rebinding,” which refers to the process by which a client automatically attempts to re-establish communication with a server in the event communication is disrupted.
 - The disruption may be caused by transient network failure, or by the server crashing or being brought down.
 - In any case, the client automatically attempts to reconnect to the server for a configurable period of time on a client-by-client basis.

ECS processes encountering an error or receiving an error from a server request can either pass the error back to a higher-level client or present it to the operator for operator intervention. The specific fault handling policies for Ingest client processes are shown in Table 16.5-2.

Table 16.5-2. Ingest Fault Handling Policies

Client Process	Fault Handling Policy
EcInGran	<p>Retry errors: An error in sending a media ingest request to the Ingest Request Manager is reported to the operator and the operator can retry. Other retry errors result in the request failing.</p> <p>Fatal errors: The granule is failed. Granule failures are displayed on the Ingest GUI.</p>
EcInReqMgr	<p>Retry errors: Errors connecting to EcInGran are retried forever. Retry errors involving staging disks are retried a configurable number of times, then the request is failed.</p> <p>Fatal errors: Errors are failed immediately.</p>
EcInGUI	<p>Retry errors: Any error results in the request failing.</p> <p>Fatal errors: Any error results in the request failing.</p>
EcInPolling	<p>Retry errors: Errors are retried forever, with a delay between retries.</p> <p>Fatal errors: Errors are failed immediately, and are displayed on the Ingest GUI.</p>
EcInEmailGWServer	<p>Retry errors: N/A</p> <p>Fatal errors: E-mail that cannot be processed is moved to a failed directory, but no operator notification is provided.</p>

Client Crash and Restart

When a client of an Ingest server crashes, the server (i.e., EcInGran or EcInReqMgr) continues to service the requests that were in process at the time of the client’s crash.

When a client restarts in the ECS system, it sends a restart notification to each server with which it interacts.

- Clients notify servers that they have come up either “cold” or “warm.”

- Generally, the notification temperature sent to the server matches the temperature at which the client process is restarted.
- However, EcInGUI is an exception:
 - When EcInGUI restarts, it always informs EcDsStRequestManagerServer that it has performed a warm restart.
- When an Ingest client (e.g., EcInGran, EcInReqMgr, or EcInGUI) sends restart notification to the EcDsStRequestManagerServer, the latter calls a stored procedure to clean up the old request and staging disk created by the client, based on whether it was a cold or warm start.
 - The Storage Management Servers are not directly notified when a restart has occurred.
 - The Storage Management Servers respond to the event according to the fact that a previous request has been marked as failed and any staging disk resources they have allocated have been released.

The default server behavior in response to startup notification from a client is as follows:

- Warm Notification.
 - Outstanding requests for the restarted clients remain available in the persistent store.
 - The outstanding requests may be resubmitted by the client, and are serviced to completion upon resubmission.
 - Associated resources are left allocated until the requests are completed.
- Cold Notification.
 - All outstanding requests for the restarted client are cancelled.
 - If the client resubmits any cancelled request using the same RPC ID (e.g., by pressing the Retry button from an operator GUI), it is failed with a fatal error due to the client cold startup notification.
 - Any resources associated with the cancelled requests are released and reclaimed by the system.

Server Crash and Restart

When a server crashes, clients cannot continue to submit requests for processing.

- Synchronous requests in progress result in a Distributed Computing Environment (DCE) exception being thrown back to the client process, which enters a rebinding failure recovery mode (as previously mentioned).
- Attempts to submit requests while the server is down result in the client blocking until a communication timeout has been reached.
- Although DCE has been replaced by socket-based library calls (i.e., CCS Middleware), the DCE exception code is handled by the CCS Middleware.

When a server restarts, it may perform various resynchronization activities in order to recover from an unexpected termination.

- In the event of a server cold start or cold restart, the server typically cancels all outstanding requests and reclaims all associated resources.

- In general, existing request queues are retained for warm restarts and cleared for cold starts or cold restarts.
- **EcInGran**-specific activities upon start/restart:
 - **Warm Restart:** The EcInGran server automatically restarts submitted requests from the beginning. If a file has been transferred (e.g., via ftp), it does not redo the transfer of that file.
 - **Cold Start:** All granule requests are cancelled. Existing request queues are cleared.
 - **Cold Restart:** All granule requests are cancelled. Existing request queues are retained.
- **EcInReqMgr**-specific activities upon start/restart:
 - **Warm Restart:** EcInReqMgr resynchronizes requests in progress with EcInGran, and resumes processing from the last check-pointed state.
 - **Cold Start:** All active requests are moved to the summary tables. Existing request queues are cleared.
 - **Cold Restart:** Each granule is resubmitted to the EcInGran, where it is failed. EcInReqMgr then resubmits the request to EcInGran, where it is processed as a new request. Existing request queues are retained.
- **EcInPolling**-specific activities upon start/restart:
 - **Warm Restart:** EcInPolling resubmits requests that were in progress at the time of fault. Continues polling for remaining requests in the polling directory.
 - **Cold Start or Cold Restart:** EcInPolling cleans up files and terminates any requests that had not yet been sent to EcInReqMgr. Requests remaining in the polling directory are sent as new requests.

16.5.1 Troubleshoot a Data Ingest Failure

- 1 If it is not possible to log in to the Operations Workstation or any other host, ask the Operations Controller/System Administrator to verify that the host is “up.”
 - Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, and **n0acs03**.
- 2 If the GUI (e.g., the **ECS Ingest** GUI or the **Storage Management Control** GUI) is not displayed when the start-up script has been invoked properly, ensure that the DISPLAY variable was set properly.
 - For detailed instructions refer to the applicable procedure.
 - **Log in to ECS Hosts** (Section 16.2.1).
 - **Launch the ECS Ingest GUI** (Section 16.2.2).
 - **Launch the Storage Management Control GUI** (Section 16.2.3).

- 3 If an error message associated with the **ECS Ingest** GUI is received, refer to Table 16.5-3, Ingest Operator GUI User Messages.
 - The table is adapted from the corresponding table in 609-EMD-001, *Release 7 Operations Tools Manual for the EMD Project*.
- 4 If an error message associated with the **Regenerate Failed PDR Tool** is received, refer to Table 16.5-4. Regenerate Failed PDR Tool User Messages.
 - The table is adapted from the corresponding table in 609-EMD-001, *Release 7 Operations Tools Manual for the EMD Project*.
- 5 If a message is received indicating a data ingest failure, ensure that it is possible to connect to the necessary hosts and servers.
 - For detailed instructions refer to the **Check Connections to Hosts** procedure (Section 16.5.1.1).
- 6 If a message is received indicating a data ingest failure and if hosts/servers are all “up,” refer to the **Recover from a Data Ingest Failure** procedure (Section 16.5.2).
- 7 If some other type of problem is encountered, check the log files for error messages.
 - Examples of log files include EcInReqMgr.ALOG, EcInPolling.ALOG, EcInGran.ALOG, EcInGUI.ALOG.
 - Log files are located in the /usr/ecs/<MODE>/CUSTOM/logs directory.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 16.5.1.2).
- 8 If the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

NOTE: When troubleshooting Ingest problems, ensure that the correct mount/host is being checked. Many types of ingest use “icl” (Ingest Client) staging areas but others may not. Hard media ingest (e.g., from 8mm tape) may involve staging in a “dip” (Distribution and Ingest Peripherals) area. Polling ingest for data from EDOS usually entails the use of the polling directory as the staging area. Some data are staged directly to working storage (“wks”) in the Data Server Subsystem.

Table 16.5-3. Ingest Operator GUI User Messages (1 of 10)

Message Text	Impact	Cause and Corrective Action
Can not obtain Data Delivery Record file.	Without the data delivery record file, media ingest cannot be processed.	<ol style="list-style-type: none"> 1. If the data delivery record (e.g., sdpf31a.PDR) is embedded in the medium (recorded on the tape), from any Ingest or Data Server Subsystem host enter: cd /usr/ecs/<MODE>/CUSTOM/icl/<host>/data/StagingArea/disks 2. Enter: ls -al 3. Ensure that a staging disk has been created to receive the file. 4. If the data delivery record is on a network, check the applicable directory to see if the delivery record is there. 5. If the data delivery record is on a network and the delivery record is in the applicable directory, consult with the Network Administrator to determine whether there is network problem.
Can not obtain data type for selected RequestID.	Unable to display granule level information.	Notify the Database Administrator of the database problem that needs to be corrected.
Can not obtain new request id from database.	Without this information, media ingest cannot be processed.	Notify the Database Administrator of the database problem that needs to be corrected.
Can not obtain selected data provider information.	"Modify External Data Provider/User Information" screen cannot be refreshed with the updated information.	Notify the Database Administrator of the database problem that needs to be corrected.

Table 16.5-3. Ingest Operator GUI User Messages (2 of 10)

Message Text	Impact	Cause and Corrective Action
Can not read the request information file.	Unable to display request/granule text view information in the text browser.	<ol style="list-style-type: none"> 1. Access a terminal window logged in to the Operations Workstation (e.g., e0acs03, g0acs02, l0acs01, or n0acs03). 2. Enter: cd /usr/ecs/<MODE>/CUSTOM/temp/INS 3. Enter: ls -al <ul style="list-style-type: none"> • A listing of files, including their permissions is displayed as shown in the following example: -rw-rw--w- 1 ashelton users 110 Apr 2 11:21 GraphicalViewInfoFile982 -rw-rw--w- 1 ashelton users 112 Mar 25 15:51 HistSummaryFile10535 -rw-rw--w- 1 cmops cmops 220 Mar 26 11:47 RequestLevelInfoFile11000 4. Review the file permissions to determine whether the GUI has permission to read the file to which it is trying to gain access. <ul style="list-style-type: none"> • In the preceding example “read” access to the RequestLevelInfoFile is restricted to members of the cmops group but virtually any user has “read” access to the other files. 5. Whether or not the GUI has “read” permission for the file, notify the System Administrator of the problem and/or submit a trouble ticket.
Can not retrieve data based on search criteria.	Unable to display History Log information.	Notify the Database Administrator of the database problem that needs to be corrected.
Can not update selected data provider information.	Cannot update InExternalDataProviderInfo table for the specified data provider.	Notify the Database Administrator of the database problem that needs to be corrected.
Can not update the system threshold information.	Cannot update InSystemParameters table with new values.	Notify the Database Administrator of the database problem that needs to be corrected.
Data Delivery Record filename needs to be specified.	Without this information, media ingest cannot be submitted.	<ol style="list-style-type: none"> 1. In the Data Delivery Record File Name field enter: <data delivery record file name> 2. Single-click on the OK button at the bottom of the GUI.
Data Delivery Record location needs to be specified.	Without this information, media ingest cannot be submitted.	<ol style="list-style-type: none"> 1. Single-click on the appropriate radio button in the Data Delivery Record File Location box. <ul style="list-style-type: none"> • On Network button if the PDR file is located on the network. • Embedded in Media button if the PDR file is recorded on the tape. 2. Single-click on the OK button at the bottom of the GUI.

Table 16.5-3. Ingest Operator GUI User Messages (3 of 10)

Message Text	Impact	Cause and Corrective Action
Data not found for search criteria.	Unable to display History Log information.	Select/enter other search criteria. [For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]
Data not found for search criteria.	Unable to display the Monitor/Control screen request text view information for the search criteria.	Notify the Database Administrator of the database problem that needs to be corrected.
Data Provider ID needs to be provided.	Without this information, media ingest cannot be submitted.	<ol style="list-style-type: none"> 1. To enter the data provider (e.g., SDPF) single-click and hold on the option button to the right of the Data Provider field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button. 2. Single-click on the OK button at the bottom of the GUI.
Data Provider is not authorized for ingest.	Unable to perform Media Ingest for the data provider.	Resolve the issue with the data provider.
Deallocate device failure.	Media ingest cannot be processed.	Notify the System Administrator of the problem and/or submit a trouble ticket.
Destination MUST be host/path (e.g. kodiak/tmp).	Cannot perform file transfer.	<ol style="list-style-type: none"> 1. In the Transfer Destination field enter: <host name>/<path> <ul style="list-style-type: none"> • For example, g0drg01/usr/ecs/OPS/CUSTOM/data 2. Single-click on the OK button at the bottom of the Operator Tools: File Transfer tab to execute the file transfer.
Destination MUST be provided.	Cannot perform file transfer.	<ol style="list-style-type: none"> 1. In the Transfer Destination field enter: <host name>/<path> <ul style="list-style-type: none"> • For example, g0drg01/usr/ecs/OPS/CUSTOM/data 2. Single-click on the OK button at the bottom of the Operator Tools: File Transfer tab to execute the file transfer.
Detail Level needs to be set.	Unable to display History Log information.	<ol style="list-style-type: none"> 1. Single-click on either the Detailed Report button or the Summary Report button (as appropriate). 2. If the Summary Report button was selected in the preceding step, single-click on either the Request level button or the Granule level button (as appropriate). 3. Single-click on the Display button.

Table 16.5-3. Ingest Operator GUI User Messages (4 of 10)

Message Text	Impact	Cause and Corrective Action
Dismount media failure.	Media ingest cannot be processed.	Notify the System Administrator of the problem and/or submit a trouble ticket.
FTP failed.	File failed the ftp file transfer.	Notify the Network Administrator of the problem.
Invalid input value.	Unable to display History Log information.	Enter a valid input value. [For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]
Invalid Old Password.	Unable to perform password confirmation.	Enter the correct old password. [For detailed instructions refer to the Modify External Data Provider Information procedure (Section 16.4.1).]
Invalid Start Time.	Unable to display the History Log information.	Enter a valid start time. [For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]
Invalid Stop Time.	Unable to display the History Log information.	Enter a valid stop time. [For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]
Invalid time interval.	Unable to display the History Log information (e.g., the specified stop time may precede the specified start time).	Enter correct start and stop times. [For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]
Media Ingest Request completed.	N/A	For information only. No action is necessary.
Media Type needs to be set.	Without this information, media ingest cannot be submitted.	1. To enter the type of medium (e.g., DTF Tape) single-click and hold on the option button to the right of the Media Type field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button. 2. Single-click on the OK button at the bottom of the GUI.
New password does not match what was originally typed.	Unable to perform password confirmation.	Re-enter the correct new password. [For detailed instructions refer to the Modify External Data Provider Information procedure (Section 16.4.1).]
No data matching search criteria.	Unable to display the request text view information for the search criteria.	Notify the Database Administrator of the database problem that needs to be corrected.

Table 16.5-3. Ingest Operator GUI User Messages (5 of 10)

Message Text	Impact	Cause and Corrective Action
Printer name is not specified.	Unable to print the currently displayed information.	Enter a valid printer name.
Priority Level needs to be set.	Unable to change the priority for the selected request.	<ol style="list-style-type: none"> 1. Single-click and hold the option button to the right of the Priority button to display a menu of priorities, move the mouse cursor to the desired selection (highlighting it), then release the mouse button. 2. To implement the priority change single-click on the OK button at the bottom of the GUI.
Request Control Status: Success.	N/A	For information only. No action is necessary.
Request Threshold exceeds the system request threshold.	Cannot update InExternalDataProviderInfo table for the specified data provider.	<ol style="list-style-type: none"> 1. Single-click on the Modify System Parameters tab. 2. Observe the current value for the system request threshold. 3. Single-click on the Modify External Data Provider/User Information tab. 4. Single-click and hold on the option button to the right of the Data Provider field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button. 5. In the New: field corresponding to Request Threshold, enter <request threshold> <ul style="list-style-type: none"> •Value entered for the new request threshold must be less than the system request threshold specified on the Modify System Parameters tab 6. Single-click on the OK button at the bottom of the Operator Tools: Modify External Data Provider/User Information tab to save the changes to data provider information.
RequestID selected is not a valid integer.	Unable to display granule level information.	Notify the Database Administrator of the database problem that needs to be corrected.

Table 16.5-3. Ingest Operator GUI User Messages (6 of 10)

Message Text	Impact	Cause and Corrective Action
Select new file and push the file selection OK button.	Cannot perform file transfer.	<ol style="list-style-type: none"> 1. In the Files field single-click on the file to be transferred. 2. Single-click on the OK button in the Transfer Origin box. 3. Verify that the file to be transferred (including the correct path to the file) is displayed in the Selection field. 4. Verify that the host name/path to which the file is to be transferred is entered in the Transfer Destination field. 5. Single-click on the OK button at the bottom of the Operator Tools: File Transfer tab to execute the file transfer.
SMC History File Build Failed.	Unable to build SMC history file.	Notify the Database Administrator of the database problem that needs to be corrected.
Stacker ID needs to be specified.	Without this information, media ingest cannot be submitted.	Not Currently Applicable.
Stacker Slot ID needs to be specified.	Without this information, media ingest cannot be submitted.	Not Currently Applicable.
Unable to allocate a media device.	Without the allocation of the media device, media ingest cannot be processed.	Notify the System Administrator of the problem and/or submit a trouble ticket.
Unable to copy data files to staging disk.	Without the data files, media ingest cannot be processed.	<ol style="list-style-type: none"> 1. From any Ingest or Data Server Subsystem host enter: cd /usr/ecs/<MODE>/CUSTOM/drp/<host>/data/staging/disks 2. Enter: ls -al 3. Ensure that a staging disk has been created to receive the file. 4. Enter: df -k . 5. Verify that there is adequate disk space to receive data files 6. If there is not enough disk space, notify the System Administrator of the problem and/or submit a trouble ticket.

Table 16.5-3. Ingest Operator GUI User Messages (7 of 10)

Message Text	Impact	Cause and Corrective Action
Unable to obtain data provider list.	"Modify External Data Provider/User Information" screen cannot be used to update InExternalDataProviderInfo table.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to obtain data provider list.	Unable to build the list for Data Provider combo box on History Log screen.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to obtain data type list.	Unable to build the list for Data Type combo box on History Log screen.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to obtain final request status list.	Unable to build the list for Final Request Status combo box on History Log screen.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to obtain the data provider list.	Unable to build the list for Data Provider combo box on Monitor/Control screen.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to obtain the system information.	"Modify System Parameters" screen cannot be used to update the InSystemParameters table.	Notify the Database Administrator of the database problem that needs to be corrected.
Unable to process request control.	Unable to perform the selected request control.	<ol style="list-style-type: none"> 1. Log in to the Ingest Server host using secure shell. <ul style="list-style-type: none"> • Examples of Ingest Server host names include e0icg11, g0icg01, l0acg02, and n0acg01. 2. If it is not possible to log in to the Ingest Server host, ask the Operations Controller/System Administrator to verify that the host is "up." 3. Enter: ps -ef grep EclnReqMgr 4. If the server has gone down, notify the Operations Controller/System Administrator to have server brought back up. 5. If both the host and server are "up," refer to the Recover from a Data Ingest Failure procedure (Section 16.5.2).

Table 16.5-3. Ingest Operator GUI User Messages (8 of 10)

Message Text	Impact	Cause and Corrective Action
Unable to process the request.	Media ingest cannot be processed.	<ol style="list-style-type: none"> 1. Log in to the Ingest Server host using secure shell. <ul style="list-style-type: none"> • Examples of Ingest Server host names include e0icg11, g0icg01, l0acg02, and n0acg01. 2. If it is not possible to log in to the Ingest Server host, ask the Operations Controller/System Administrator to verify that the host is "up." 3. Enter: ps -ef grep EclnReqMgr 4. If the server has gone down, notify the Operations Controller/System Administrator to have server brought back up. 5. If both the host and server are "up," refer to the Recover from a Data Ingest Failure procedure (Section 16.5.2).
Unable to read the history log.	Unable to display History Log information.	<ol style="list-style-type: none"> 1. Access a terminal window logged in to the Operations Workstation. <ul style="list-style-type: none"> • Examples of Operations Workstation host names include e0acs03, g0acs02, l0acs01, and n0acs03. 2. Enter: cd /usr/ecs/<MODE>/CUSTOM/temp/INS 3. Enter: ls -al <ul style="list-style-type: none"> • A listing of files, including their permissions is displayed as shown in the following example: <pre>-rw-rw--w- 1 ashelton users 306 Mar 31 13:43 HistDataTypeFile1428 -rw-rw--w- 1 cmops cmops 110 Apr 2 11:21 HistRequestFile12989 -rw-rw--w- 1 ashelton users 112 Mar 25 15:51 HistSummaryFile10535 -rw-rw--w- 1 ashelton users 220 Mar 26 11:47 RequestLevelInfoFile11000</pre> 4. Review the file permissions to determine whether the GUI has permission to read the file to which it is trying to gain access. <ul style="list-style-type: none"> • In the preceding example "read" access to the HistRequestFile is restricted to members of the cmops group but virtually any user has "read" access to the other files. 5. Whether or not the GUI has "read" permission for the file, notify the System Administrator of the problem and/or submit a trouble ticket.

Table 16.5-3. Ingest Operator GUI User Messages (9 of 10)

Message Text	Impact	Cause and Corrective Action
Unable to request mount media service.	Without the mount, media ingest cannot be processed.	<ol style="list-style-type: none"> 1. Check the 8mm drives to determine whether the drives are loaded (if there are tapes in the drives). 2. If the 8mm drives are loaded, wait until one of the drives completes the current activity and unloads. 3. When one of the 8mm drives becomes unloaded, retry the media ingest. <p>[For detailed instructions refer to the Unload and Load Stackers and Perform Media Ingest from 8mm Tape Using the ECS Ingest GUI Media Interface procedures (Sections 16.3.1.1 and 16.3.1).]</p> <ol style="list-style-type: none"> 4. If there is no tape in either 8mm drive or if neither drive unloads, notify the System Administrator of the problem and/or submit a trouble ticket.
Update is not allowed without password confirmation.	Unable to perform password update.	<p>Single-click on the password confirmation OK button to perform password confirmation prior to password update.</p> <p>[For detailed instructions refer to the Modify External Data Provider Information procedure (Section 16.4.1).]</p>
Value entered is not a valid integer.	Unable to display History Log information.	<p>Enter a valid integer value.</p> <p>[For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]</p>
Value entered is not a valid integer.	Unable to monitor/control the specified request ID.	<p>Enter a valid integer request ID.</p> <p>[For detailed instructions refer to the View the Ingest History Log procedure (Section 16.2.8).]</p>
Volume ID is empty.	Without this information, media ingest cannot be submitted.	<ol style="list-style-type: none"> 1. Enter: <media ID> (Media ID field). 2. Single-click on the OK button at the bottom of the GUI. <p>[For detailed instructions refer to the Perform Media Ingest from 8mm Tape Using the ECS Ingest GUI Media Interface procedure (Section 16.3.1) or the Perform Media Ingest from DTF-2 Tape Using the ECS Ingest GUI Media Interface procedure (Section 16.3.2).]</p>

Table 16.5-3. Ingest Operator GUI User Messages (10 of 10)

Message Text	Impact	Cause and Corrective Action
Volume Threshold exceeds the system volume threshold.	Cannot update InExternalDataProviderInfo table for the specified data provider.	<ol style="list-style-type: none"> 1. Single-click on the Modify System Parameters tab. 2. Observe the current value for the system volume threshold. 3. Single-click on the Modify External Data Provider/User Information tab. 4. Single-click and hold on the option button to the right of the Data Provider field, move the mouse cursor to the desired selection (highlighting it), then release the mouse button. 5. Enter: <Volume Threshold> (Volume Threshold - New: field) <ul style="list-style-type: none"> • Ensure that the value entered for the new volume threshold is less than the system volume threshold specified on the Modify System Parameters tab. 6. Single-click on the OK button at the bottom of the Operator Tools: Modify External Data Provider/User Information tab to save the changes to data provider information.

Table 16.5-4. Regenerate Failed PDR Tool User Messages (1 of 3)

Message Text	Impact	Cause and Corrective Action
Error occurred when trying to delete the new PDR file.	The generated PDR file did not get deleted from its creation directory.	If the generated PDR file is still in the directory where the Regenerate Failed PDR Tool created it, delete the PDR file. [For detailed instructions refer to the procedure for Remove (Delete) Generated PDRs (Section 16.5.2.4).]
InDAN::GetDataTypes returned an error for granule.	The PDR for this and subsequent granules cannot be generated.	<ol style="list-style-type: none"> 1. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2)] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
InDAN::GetFileInfo returned an error for granule.	This and subsequent granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the PDR(s) to ensure that file information is set correctly. [For detailed instructions refer to the Check/Edit a PDR procedure (Section 16.5.2.5).] 2. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2).] 3. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).

Table 16.5-4. Regenerate Failed PDR Tool User Messages (2 of 3)

Message Text	Impact	Cause and Corrective Action
InDAN::GetGranuleVolume returned an error for granule.	This and subsequent granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the PDR(s) to ensure that volumes are set correctly. [For detailed instructions refer to the Check/Edit a PDR procedure (Section 16.5.2.5).] 2. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2).] 3. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
InDAN::GetXAREntry returned an error for granule.	This and subsequent granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
Number of files is not the same in the PDR and PAN.	The granule PDRs cannot be generated.	Enter a PDR and its corresponding PAN file. [For detailed instructions refer to Steps 5 and 6 in the Regenerate Failed PDRs procedure (Section 16.5.2.3).]
PAN file is not a long PAN.	The granule PDRs cannot be generated.	Enter a PAN file name that is a long PAN. [For detailed instructions refer to Step 6 in the Regenerate Failed PDRs procedure (Section 16.5.2.3).]
PAN file is not formatted correctly.	The rest of the granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the PAN to ensure that the format is correct. [For detailed instructions refer to the Check PAN Contents procedure (Section 16.5.2.6).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
The creation of the new PDR file failed.	This and subsequent granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
Unable to allocate memory for DataTypeList.	The rest of the granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the host for memory problems. <ul style="list-style-type: none"> • Examples of Ingest Server host names include e0icg11, g0icg01, l0acg02, and n0acg01. [For detailed instructions refer to the Check for Memory Problems procedure (Section 16.5.2.7).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
Unable to allocate memory for DataTypeList.FileList.	This and subsequent granules cannot have their PDRs generated.	<ol style="list-style-type: none"> 1. Check the host for memory problems. <ul style="list-style-type: none"> • Examples of Ingest Server host names include e0icg11, g0icg01, l0acg02, and n0acg01. [For detailed instructions refer to the Check for Memory Problems procedure (Section 16.5.2.7).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).

Table 16.5-4. Regenerate Failed PDR Tool User Messages (3 of 3)

Unable to copy the new PDR file into the Polling directory.	The generated PDR file did not get copied to the polling directory.	<ol style="list-style-type: none"> 1. Repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3), paying particular attention to accurate typing of the polling directory path. 2. If the Regenerate Failed PDR Tool repeats the same error message, check for the accessibility of the relevant polling directory on the host. [For detailed instructions refer to the Check the Polling Directory procedure (Section 16.5.2.8).]
Unable to create all of the PDRs for the failed granules.	Not all of the failed granules had PDRs generated.	<ol style="list-style-type: none"> 1. Observe previous error messages to determine which granule had a problem. 2. Check the log file for error messages. [For detailed instructions refer to the Check Log Files procedure (Section 16.5.1.2).] 3. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).
Unable to open the PAN file.	The granule PDRs cannot be generated.	<ol style="list-style-type: none"> 1. Repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3), paying particular attention to accurate typing of the PAN file name and path. 2. If the Regenerate Failed PDR Tool repeats the same error message, check for the accessibility of the relevant PAN on the host. [For detailed instructions refer to the Check PAN Accessibility procedure (Section 16.5.2.9).]
Unable to parse the PDR file.	The PDR file cannot be used to generate granule PDRs.	<ol style="list-style-type: none"> 1. Check the PDR(s) to determine why the Regenerate Failed PDR Tool cannot parse the PDR file. [For detailed instructions refer to the Check/Edit a PDR procedure (Section 16.5.2.5).] 2. When the problem has been corrected, repeat the Regenerate Failed PDRs procedure (Section 16.5.2.3).

16.5.1.1 Check Connections to Hosts

The procedure to **Check Connections to Hosts/Servers** is a part of the **Troubleshoot a Data Ingest Failure** procedure (Section 16.5.1). Table 16.5-5 presents (in a condensed format) the steps required to check connections to hosts. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

1. Access a terminal window logged in to the Operations Workstation host.
 - Examples of Operations Workstation host names include **e0acs03**, **g0acs02**, **l0acs01**, and **n0acs03**.
 - Most other ECS hosts are acceptable for checking connections.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:
cd /usr/ecs/<MODE>/CUSTOM/utilities
 - Change directory to the directory containing the utility scripts.

- 3 At the command line prompt enter:
EcCsIdPingServers <MODE>
 - The following type of response is displayed (only a few representative lines are shown):

```

/usr/ecs/TS2/CUSTOM/bin/CSS/Sweeper -nsh x0icg01 -nsp 18202
FoSwSweeper application started...
We made a connection with EntryId =x0acs06:38709:23057 ---
EcSrTransportSubServer
We made a connection with EntryId =x0acs06:38712:23057 ---
EcSrTransportSubEventServer
We made a connection with EntryId =x0acs06:33379:17033 --- DsShQuitIDL
[...]
```

- 4 Observe the results displayed on the screen to determine whether connections can be made with the necessary hosts and servers.
 - The necessary hosts and servers are listed in Table 16.5-6, Hosts, Servers, Clients and Other Software Relevant to Ingest.

- 5 If pinging the servers (Step 3) indicated a problem with any connection, ping the servers again (at the command line prompt enter: **EcCsIdPingServers <MODE>**).

- 6 Observe the results displayed on the screen to determine whether connections can be made with the necessary hosts and servers.

- 7 If it is not possible to connect to any needed host(s)/server(s), notify the Operations Controller/System Administrator to check the hosts/servers and bring them back up if necessary.

- 8 Return to the procedure that recommended checking connections to hosts.

Table 16.5-5. Check Connections to Hosts - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Operations Workstation)	single-click or use procedure in Section 16.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/utilities	enter text, press Enter
3	EcCsIdPingServers <MODE>	enter text, press Enter
4	EcCsIdPingServers <MODE> [again]	enter text, press Enter

Table 16.5-5. Check Connections to Hosts - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
5	Identify hosts and servers with which connections cannot be made	read text
6	Notify the Operations Controller/System Administrator to bring hosts/servers back up (if applicable)	contact Operations Controller
7	Return to the procedure that recommended checking connections to hosts	

Table 16.5-6. Hosts, Servers, Clients and Other Software Relevant to Ingest (1 of 2)

HOST	SERVER/CLIENT/OTHER SOFTWARE
Ingest Server (e.g., x0icg01)	Name Server (EcCslDNameServer) Registry Server (EcCsRegistry) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer) Ingest Granule Server (EclnGran) Automated Polling Ingest Client Interface (EclnPolling) Ingest Request Manager (EclnReqMgr)
Operations Workstation (e.g., x0acs01)	ECS Ingest GUI (EclnGUI) Storage Management Control GUI (EcDsStmgtGui)
Access/Process Coordinators (APC) Server (e.g., x0acg01)	Archive Server (EcDsStArchiveServer) Cache Manager Server (EcDsStCacheManagerServer) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer) Pull Monitor Server (EcDsStPullMonitorServer) Automated Polling Ingest Client Interface (EclnPolling)
FSMS Server (e.g., x0drg01)	HDF EOS Server (EcDsHdfEosServer) Archive Server (EcDsStArchiveServer) Cache Manager Server (EcDsStCacheManagerServer) FTP Server (EcDsStFtpServer) Staging Disk Server (EcDsStStagingDiskServer)
Sun external server (e.g., x0ins01)	Ingest E-Mail Parser (EclnEmailGWServer)

**Table 16.5-6. Hosts, Servers, Clients and Other Software Relevant to Ingest
(2 of 2)**

HOST	SERVER/CLIENT/OTHER SOFTWARE
Sun internal server (e.g., x0acs06)	Science Data Server (EcDsScienceDataServer) Data Dictionary (EcDmDictServer) Subscription Server (EcSbSubServer) Event Server (EcSbEventServer) Distribution Server (EcDsDistributionServer) 8mm Server (EcDsSt8MMServer) DTF-2 Server (EcDsStDTFServer) Staging Disk Server (EcDsStStagingDiskServer) Storage Management Request Manager (EcDsStRequestManagerServer) INGEST Media Tape Reader GUI (EcInTapeReaderGUI)

16.5.1.2 Check Log Files

The procedure to **Check Log Files** is a part of the **Troubleshoot a Data Ingest Failure** procedure (Section 16.5.1). Checking log files can provide indications of the following types of problems (among others):

- Communication problems.
- Database problems.
- Lack of disk space.

Table 16.5-7 presents (in a condensed format) the steps required to check log files. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the appropriate host.
 - Operations Workstation (e.g., e0acs03, g0acs02, l0acs01, or n0acs03) has the following ingest ALOG files (among others):
 - EcInGUI.ALOG.
 - EcDsDdistGui.ALOG.
 - EcDsStmgtGui.ALOG.
 - EcDsSdSrvGui.ALOG.
 - Ingest Server (e.g., e0icg11, g0icg01, l0acg02, or n0acg01) host has the following ingest log files (among others):
 - EcInReqMgr.ALOG.
 - EcInPolling.ALOG.
 - EcInGran.ALOG.
 - EcInRegenFailedPDR.log.

- Ingest Server (e.g., **e0icg11**, **g0icg01**, **l0acg02**, or **n0acg01**) host has the following storage management ALOG files (among others):
 - EcDsStFtpServerICL1.ALOG.
 - EcDsStStagingDiskServerICL1.ALOG.
- FSMS Server (e.g., **e0drg11**, **g0drg01**, **l0drg01**, or **n0drg01**) has the following storage management log files (among others):
 - EcDsStArchiveServerDRP1.ALOG
 - EcDsStCacheManagerServerDRP1.ALOG.
 - EcDsStCacheManagerServerDebug.log
 - EcDsStFtpServerDRP1.ALOG.
 - EcDsStStagingDiskServerDRP1.ALOG.
 - EcDsStStagingDiskServerDebug.log
 - EcDsHdfEosServer.ALOG.
- Sun external server (e.g., **e0ins01**, **g0ins01**, **l0ins01**, or **n0ins01**) host has the following ALOG files (among others):
 - EcInEmailGWServer.ALOG.
- Sun internal server (e.g., **e0acs06**, **g0acs06**, **l0acs06**, or **n0acs06**) has the following log files (among others):
 - EcDsGranuleDelete.ALOG.
 - EcDsScienceDataServer.ALOG.
 - EcDsScienceDataServerClient.ALOG.
 - EcDsSdSrvGui.ALOG.
 - EcSbSubServer.ALOG file.
 - EcSbSubServerDebug.log
 - EcInTapeReaderGUI.8mm.log.
 - EcInTapeReaderGUI.DTF1.log
 - EcDsDistributionServer.ALOG.
 - EcDsSt8MMServerNONE.ALOG.
 - EcDsStRequestManagerServer.ALOG
 - EcDsStRequestManagerServerDebug.log
 - EcDsStStagingDiskServerDIP1.ALOG.
- APC Server (e.g., **e0acg11**, **g0acg01**, **l0acg02**, or **n0acg01**) has the following storage management log files (among others):
 - EcDsStArchiveServerACM1.ALOG.
 - EcDsStCacheManagerServerACM1.ALOG.
 - EcDsStFtpServerNONE.ALOG.
 - EcDsStStagingDiskServerACM1.ALOG.
- In addition to the ALOG files mentioned most of the preceding hosts have corresponding debug log files.

2 At the command line prompt enter:

cd /usr/ecs/<MODE>/CUSTOM/logs

- <MODE> is current mode of operation.
 - TS1 - Science Software Integration and Test (SSI&T)
 - TS2 - New Version Checkout
 - OPS - Normal Operations
- “logs” is the directory containing log files (e.g., EcInGUI.ALOG, EcInReqMgr.ALOG, EcInPolling.ALOG, EcInRegenFailedPDR.log, or EcInEmailGWServer.ALOG).

3 At the command line prompt enter:

pg <file name>

- <file name> refers to the log file to be reviewed (e.g., EcInReqMgr.ALOG, EcInPolling.ALOG, EcInGran.ALOG, or EcInGUI.ALOG).
- The first page of the log file is displayed.
- Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **more**, **vi**, **view**) can be used to review the log file.

4 Review the log file to identify problems that have occurred.

- The log file for the called server may contain an error message indicating a problem at start-up. If the debug log is being checked, it should indicate a typical start sequence, including the following types of entries:
 - Get parameters from registry.
 - Load resource catalogs (log entries indicate the loading, or that the loading did not complete).
 - Identify pre-cache errors associated with database connectivity.
 - Get server configuration parameters from the database.
 - Spawn receptionist thread and register server in the database.
 - Spawn service threads.
 - Process Restart Notification for server restart ("Ready to accept requests").
 - Check queue for requests ("Waiting for an event" means there is nothing else in the queue.).
- The log file for the server from which the call originated may indicate a problem completing a connection. The log should indicate successful awakening of a remote host and should indicate completion of a connection to the called server.
- To exit from **pg** at the **:** prompt enter:
 - q**
 - The command line prompt is displayed.

- 5 Respond to problems as follows:
- Communication problems.
 - Notify the Operations Controller/System Administrator of suspected communication problems.
 - Database problems.
 - Verify that relevant database servers are running.
 - Check for lack of (or corruption of) data in the database using either a database browser or interactive structured query language (isql) commands.
 - Notify the Database Administrator of suspected database problems.
 - Lack of disk space.
 - Remove unnecessary files.
 - Notify the Operations Controller/System Administrator of recurring disk space problems.

Table 16.5-7. Check Log Files - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window	Use procedure in Section 16.2.1
2	<code>cd /usr/ecs/<MODE>/CUSTOM/logs</code>	enter text, press Enter
3	<code>pg <file name></code>	enter text, press Enter
4	Identify problems indicated in the log file	read text
5	Respond to problems as necessary	

16.5.2 Recover from a Data Ingest Failure

The polling interfaces normally do not require intervention by the Ingest Technician. However, when an ingest fault (error) occurs, there may be a requirement for action to recover from the error. Recovery actions may be made necessary by invalid PDR contents or other file errors that result in data ingest failure.

When a fault (error) occurs, the following actions occur:

- The processing of the ingest request stops.
- A message is sent to the Ingest Technician and the data provider with a brief description of the problem.

The Ingest Technician may use the Ingest GUI Monitor/Control screen, the Ingest History Log (refer to the section on Ingest Status Monitoring) and/or the following log files (in the /usr/ecs/<MODE>/CUSTOM/logs directory on the ingest host machine) to review the failure event:

- EcInReqMgr.ALOG (ingest request manager log).
- EcInPolling.ALOG (automated polling ingest log).
- EcInGran.ALOG (granule server log).

- EcInGUI.ALOG (Ingest GUI log).
- EcInEmailGWServer.ALOG (Ingest E-Mail Parser log).

This section contains some examples of faults that are likely to occur, describes the notifications provided, and proposes operator actions in response to each fault situation. The specific recovery actions may vary due to operator preference or local DAAC policy.

Table 16.5-8 presents (in a condensed format) the steps required to recover from a data ingest failure. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If the **ECS Ingest** GUI is not already being displayed and an operator alert or a report from a data provider (by telephone or e-mail) has been received, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2 **Single-click** on the **ECS Ingest** GUI **Monitor/Control** tab.
 - The **Monitor/Control** screen is displayed.
- 3 Use the **Monitor/Control** screen scroll bars as necessary to identify the faulty ingest request.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).
 - When there is a data ingest failure, the system provides the following three responses:
 - Logs the error.
 - Alerts the Ingest Technician.
 - Returns a PDRD (PDR error) or PAN (retrieval problem) to the data provider indicating the nature of the failure.
 - Note that ECS does not send PDRDs to EDOS.
- 4 If a PDRD or PAN is available, review the appropriate file.
 - For detailed instructions refer to the procedure **Check Ingest Notification Files** procedure (Section 16.5.2.1).
- 5 If additional information is needed, open and read the appropriate log file in the **/usr/ecs/<MODE>/CUSTOM/logs** directory on the ingest host machine.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 16.5.1.2).
- 6 Perform the appropriate recovery procedure depending on the nature of the problem:
 - **Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)** (Section 16.5.2.2).
 - **Recover from Exceeding the Volume Threshold** (Section 16.5.2.10).

- **Recover from Exceeding the Maximum Number of Concurrent Requests** (Section 16.5.2.11).
- **Recover from Insufficient Disk Space** (Section 16.5.2.12).
- **Recover from Exceeding the Expiration Date/Time Period** (Section 16.5.2.13).
- **Recover from File Transfer (ftp) Error** (Section 16.5.2.14).
- **Recover from Processing Errors** (Section 16.5.2.15).
- **Recover from Failure to Store Data** (Section 16.5.3).

Table 16.5-8. Recover from a Data Ingest Failure - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Monitor/Control tab	single-click
3	Identify the faulty ingest request	Use procedure in Section 16.2.5
4	Review PDRD or PAN (as applicable)	Use procedure in Section 16.5.2.1
5	Check applicable log files if necessary	Use procedure in Section 16.5.1.2
6	Perform the appropriate recovery procedure depending on the nature of the problem	Use applicable procedure(s) in Sections 16.5.2.2 through 16.5.2.16

16.5.2.1 Check Ingest Notification Files (Polling with Delivery Record)

Transfer errors, PDR information discrepancies, and other file problems (if any) are captured and logged in the PAN that ECS sends to the data provider when ingest has terminated. Most data providers accept two formats for PANs; i.e., short and long. The following dispositions of data transfers are typical of both short and long PANs:

- Successful.
- Network Failure.
- Unable to Establish FTP/KFTP Connection.
- All File Groups/Files Not Found.
- FTP/KFTP Failure.
- Post-Transfer File Size Check Failure.
- FTP/KFTP Command Failure.
- Duplicate File Name in Granule.
- Metadata Preprocessing Error.
- Resource Allocation Failure.
- ECS Internal Error.
- Data Base Access Error.
- Incorrect Number of Metadata Files.
- Incorrect Number of Science Files.
- Incorrect Number of Files.
- Data Conversion Failure.

- Request Cancelled.
- Invalid or Missing File Type.
- File I/O Error.
- Data Archive Error.
- Linkage File Preprocessing Error.
- Referenced Granule Not Found.
- Referenced Granule Duplicated.

PDS/EDS Acceptance Notifications to EDOS have a single format that uses the following integers to indicate the disposition of the data transfer:

- 0 [Successful].
- 4 [File Not Found].
- 8 [File Unreadable].
- 9 [Invalid PDS/EDS Construction Record Data].
- 10 [Invalid PDS/EDS Delivery Record Data].

The short form of the PAN is sent to a data provider to acknowledge that all files have been successfully transferred, or to report errors that are not specific to individual files but which have precluded processing of any and all files (e.g., ftp failure). If all files in a request do not have the same disposition, the long form of the PAN is employed. For each file in a file group, if an error is encountered, ECS halts processing and reports the error that it just encountered for that file. The remaining conditions in the file are not validated. ECS processing continues with the next file in the file group. If there are no more files to process in the file group, ECS processing continues with the next file group in the PDR.

If one or more of the pointers in a linkage file cannot be resolved, the ingest fails and the PAN is sent with either the disposition message “Referenced Granule Not Found” or “Referenced Granule Duplicated.”

Exchange of data on hard media is used for data transfer back-up in emergencies. It is supported by ECS and some data providers.

The data provider must correct files with errors (as identified in the PAN) and resubmit the complete file group under a new PDR. The revised PDR should not include the file groups that were successfully transferred/archived.

If a PAN from ECS indicates that a PDR has errors, ECS will have processed only the file groups without errors. For PDR file groups with errors, the data provider must correct the files/file information accordingly and retransmit the corrected file groups under a new PDR.

In the event that a PDR is invalid, ECS automatically returns a PDRD (via either e-mail or ftp) to the data provider unless no PDRDs are specified in the ICD between ECS and the data provider. (ECS does not provide PDRDs to EDOS for example.) If an error is detected in the PDR, processing is terminated and none of the specified files are transferred to the ECS server for processing until a corrected PDR is received and successfully processed. If the PDR is valid,

ECS schedules pulling the files specified in the PDR using an ftp “get” command, and in such a case no PDRD is sent.

If the entire PDR is determined to be invalid, as reflected in a corresponding PDRD, none of the file groups listed in the PDR are processed and none of the files are transferred by ECS. The PDR must be corrected and resubmitted.

If a PDR contains multiple file groups for which one or more file groups contain errors, the file groups with errors are not processed. However, the file groups without errors are processed by ECS. After the ingest/archive process, ECS automatically returns a PAN via to the data provider indicating success/failure, including detected errors.

There are two formats for PDRDs; i.e., short and long. The short form is used when the first error encountered in each file group within the PDR is the same or the first error found applies to each group. The long form is used when one or more file groups in the PDR have invalid parameters. (Some file groups may be error-free.) For each file group, if an error is encountered when the PDR is processed, ECS halts processing and reports the error that it just encountered for that file group. None of the remaining conditions in that file group are validated. ECS processing then continues with the next file group in the PDR.

The dispositions in the Long PDRD are reported for all file groups in the order listed in the PDR. In the event that a PDRD is returned to the data provider, none of the files are transferred to the ECS for processing, and the data provider must correct the errors and resubmit the entire PDR for processing.

The following dispositions can be specified in short PDRDs:

- ECS Internal Error.
- Database Failures.
- Invalid PVL Statement.
- Missing or Invalid Originating_System Parameter.
- Data Provider Request Threshold Exceeded.
- Data Provider Volume Threshold Exceeded.
- System Request Threshold Exceeded.
- System Volume Threshold Exceeded.

The following dispositions can be specified in long PDRDs:

- Successful.
- Invalid Data Type.
- Invalid Directory.
- Invalid File Size.
- Invalid File ID,
- Invalid Node Name.
- Invalid File Type.

Table 16.5-9 presents (in a condensed format) the steps required to check ingest notification files. If you are already familiar with the procedures, you may prefer to use the quick-step table.

If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:
cd <PATH>
 - Change directory to the directory containing the ingest notification files.
 - For example:
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/remote/EDOS/Response

- 3 At the command line prompt enter:
ls -al
 - A listing of files in the directory is displayed.

- 4 At the command line prompt enter:
pg <file name>
 - **<file name>** refers to the ingest notification file to be reviewed.
 - Examples include GDA1.972858114.PAN, MODAPS_GSFC.20001200000000.PDRD, MODAPS_GSFC.20001200000000.PAN).
 - The first page of the ingest notification file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.

- 5 Review the ingest notification file to identify problems that have occurred.
 - Final states ("dispositions") of data transfers (as specified in various types of ingest notification files) are described in the preceding sections of this procedure.
 - To exit from **pg** at the **:** prompt enter:
q
 - The command line prompt is displayed.

Table 16.5-9. Check Ingest Notification Files - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <PATH>	enter text, press Enter
3	ls -al	enter text, press Enter
4	pg <file name>	enter text, press Enter
5	Review the ingest notification file to identify problems	read text

16.5.2.2 Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)

The procedure to **Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)** is performed as part of the **Recover from a Data Ingest Failure** procedure (Section 16.5.2).

Table 16.5-10 presents (in a condensed format) the steps required to recover from a faulty PDR or other file problems (polling with delivery record). If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If the PDR/EDR fails and if appropriate, perform the procedure for regenerate the failed PDR/EDR.
 - For example, if a "long PAN" message file was generated, it would be appropriate to regenerate the failed delivery record.
 - If the relevant ICD or Operations Agreement specifies) that the data provider will provide a corrected PDR, in case of a failed delivery record, skip this step and go to Step 2.
 - For detailed instructions refer to the **Regenerate Failed PDRs** procedure (Section 16.5.2.3).

- 2 If the PDR/EDR fails and the relevant ICD and/or Operations Agreement specify(ies) that the data provider will provide a corrected PDR, contact (by telephone or e-mail) the data provider to discuss the following issues:
 - Report the ingest failure.
 - Discuss what has been discovered from reviewing the failure event data.
 - Determine whether the data provider will re-initiate the data ingest request with a new PDR or will provide the data via another medium (e.g., DTF tape).

- 3 If there is an ECS Ingest process abort during file transfer, take action to recover from the resultant file transfer protocol (ftp) error.

- An ECS system failure during file transfer that suspended file transfer would constitute an ECS Ingest process abort.
 - During the course of data exchange via ftp, any of the following error conditions may arise:
 - Failure to establish TCP/IP connection.
 - Erroneous ftp command.
 - File not found (listed in PDR/EDR, but not found on disk).
 - File not readable due to permissions.
 - For detailed instructions refer to the **Recover from File Transfer Protocol (ftp) Error** procedure (Section 16.5.2.14).
- 4** If EDOS is the data provider and for any reason the File Transfer Disposition in the PAN indicates that an error occurred, send a Problem Report to EDOS to report the problem.
- Information concerning the Problem Report to be sent to EDOS is specified in the Operations Agreement with EDOS.
- 5** If the data ingest request is to be re-initiated, monitor the subsequent ingest.
- For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-10. Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record) - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Regenerate the failed PDR/EDR (if applicable)	Use procedure in Section 16.5.2.3
2	If the PDR/EDR fails and the relevant ICD and/or Operations Agreement specify(ies) that the data provider will provide a corrected PDR, contact the data provider	contact data provider
3	Recover from the file transfer (ftp) error (if applicable)	Use procedure in Section 16.5.2.14
4	Send a Problem Report to EDOS (if applicable)	Use procedure in Operations Agreement with EDOS
5	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.2.3 Regenerate Failed PDRs

The procedure to **Regenerate Failed PDRs** is performed as part of the **Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)** procedure (Section 16.5.2.2). The **Regenerate Failed PDR Tool** provides the Ingest Technician with a means of regenerating failed PDRs.

The **Regenerate Failed PDR Tool** can be used whenever a PDR fails and results in a "long PAN" message file. The long PAN means that the request had more than one granule and not all granules had the same error. The purpose of the tool is to provide a means for the ECS operations staff to generate a PDR for each failed granule in a PDR and copy the generated PDRs to an Ingest polling directory, where Ingest polling would detect them and initiate ingest of the relevant granule(s). Consequently, the operations staff would not have to either manually edit the original PDR file or submit all failed granules to Ingest polling (which would create duplicate granules in the archive).

Table 16.5-11 presents (in a condensed format) the steps required to regenerate failed PDRs. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:
cd /usr/ecs/<MODE>/CUSTOM/utilities
 - Change directory to the directory containing the Ingest utility scripts.

- 3 At the command line prompt enter:
EcInRegenFailedPDRStart <MODE>
 - The following message and prompt are displayed:
 1. **Generate PDRs**
 2. **Quit**>>

NOTE: If the Regenerate Failed PDR Tool displays an error message while the procedure is being performed, refer to Table 4, Regenerate Failed PDR Tool User Messages (adapted from the corresponding table in 609-EMD-001, *Release 7 Operations Tools Manual for the EMD Project*). The table describes appropriate responses to the error messages.

4 At the program prompt enter:

1

- The following message and prompt are displayed:

Please enter PDR filename with path

>>

5 At the program prompt enter:

<path>/<PDR file name>

- For example:

>> **/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS/pdrs/
P0420004AAAAAAAAAAAAAAAAA99040150000.PDR**

– The path varies from site to site.

- The following message and prompt are displayed:

Please enter PAN filename with path

>>

6 At the program prompt enter:

<path>/<PAN file name>

- For example:

>> **/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/remote/EDOS/Response
P0420004AAAAAAAAAAAAAAAAA99040150000.PAN**

– The path varies from site to site.

- The following message and prompt are displayed:

**Please enter the path of the Polling directory into which the PDRs should be
copied**

>>

7 At the program prompt enter:

<path>

- For example:

>> **/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS**

– The path varies from site to site.

- The PDR file is created in the specified directory.

- The following message and prompt are displayed:
**The new PDR file <PDR file name> was created successfully.
Please inspect this PDR file and correct any errors found.
Do you want this PDR to be moved to the Polling directory (y/n)?
>>**

8 At the program prompt enter:

y

- The PDR file is moved to the specified polling directory.
- The following message and prompt are displayed:

1. Generate PDRs

2. Quit

>>

- If **n** were typed at the prompt, the Regenerate Failed PDR Tool would display a message inquiring as to whether the PDR file should be deleted.

9 To exit from the Regenerate Failed PDR Tool at the program prompt enter:

2

- A UNIX shell prompt is displayed.

Table 16.5-11. Regenerate Failed PDRs - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	<code>cd /usr/ecs/<MODE>/CUSTOM/utilities</code>	enter text, press Enter
3	<code>EclnRegenFailedPDRStart <MODE></code>	enter text, press Enter
4	1	enter text, press Enter
5	<code><path>/<PDR file name></code>	enter text, press Enter
6	<code><path>/<PAN file name></code>	enter text, press Enter
7	<code><path></code>	enter text, press Enter
8	y	enter text, press Enter
9	2	enter text, press Enter

16.5.2.4 Remove (Delete) Generated PDRs

The procedure for removing (deleting) generated PDRs is performed in response to the following error message from the **Regenerate Failed PDR Tool**:

- Error occurred when trying to delete the new PDR file.

The **Regenerate Failed PDR Tool** normally deletes the PDR files it generates to allow the ingest of individual granules. If the **Regenerate Failed PDR Tool** is unable to delete a generated PDR file when it is no longer needed, the PDR file must be removed manually.

Table 16.5-12 presents (in a condensed format) the steps required to remove (delete) generated PDRs. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 2 At the command line prompt enter:
cd <path>
 - Change directory to the directory where the **Regenerate Failed PDR Tool** created the PDR file(s).
 - For example:
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS
- 3 At the command line prompt enter:
ls
 - A listing of the files in the directory is displayed.
- 4 Observe the files listed to determine whether the generated PDR file(s) is (are) still in the creation directory.
- 5 If the generated PDR file(s) is (are) still in the creation directory, at the command line prompt enter:
rm <file name>
 - Request deletion of the generated PDR file(s).
- 6 If a **rm: remove <file name> (yes/no)?** message is displayed, at the command line prompt enter:
y
 - The generated PDR file(s) is (are) deleted.

Table 16.5-12. Remove (Delete) Generated PDRs - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <path>	enter text, press Enter
3	ls	enter text, press Enter
4	Observe the files listed to determine whether the generated PDR file(s) is (are) still in the creation directory	read text
5	rm <file name> (if applicable)	enter text, press Enter
6	y (If applicable)	enter text, press Enter

16.5.2.5 Check/Edit a PDR

The procedure for checking/editing a PDR is performed in response to one of the following error messages from the **Regenerate Failed PDR Tool**:

- InDAN::GetGranuleVolume returned an error for granule.
- InDAN::GetFileInfo returned an error for granule.
- Unable to parse the PDR file.

Table 16.5-13 presents (in a condensed format) the steps required to check/edit a PDR. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 2 At the command line prompt enter:

cd <path>

 - Change to the directory where the original PDR is located.
 - For example:


```
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS/pdrs
```
- 3 At the command line prompt enter:

ls

 - A listing of the files in the directory is displayed.

- 4 At the command line prompt enter:
vi <file name>
 - The contents of the PDR are displayed.
 - Although this procedure has been written for the **vi** command, any UNIX editor can be used to edit the file.

- 5 Observe the contents of the PDR to determine whether the format and information are correct.
 - If the error message was **InDAN::GetFileInfo returned an error for granule**, check whether the file information is set correctly.
 - If the error message was **InDAN::GetGranuleVolume returned an error for granule**, check whether the volumes are set correctly.
 - If the error message was **Unable to parse the PDR file** check to see why the program cannot parse the file.

- 6 If the contents of the PDR are not correct, edit the PDR file using **vi** editor (or other UNIX editor) commands.
 - The following vi editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).
 - **a** (append text).
 - **i** (insert text).
 - **x** (delete a character).
 - **u** (undo previous change).
 - **Esc** (switch to command mode).
 - Refer to the applicable PAN (if necessary) to determine what information in the PDR needs to be modified.

- 7 If the vi editor is being used to edit the PDR file, press the **Esc** key.

- 8 If the vi editor is being used to edit the PDR file, at the **vi** editor prompt enter:
ZZ or **:wq!**
 - Revised PDR file is saved.

Table 16.5-13. Check/Edit a PDR - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <path>	enter text, press Enter
3	ls	enter text, press Enter
4	vi <file name>	enter text, press Enter
5	Observe the contents of the PDR to determine whether the format and information are correct	read text
6	Use vi editor commands to modify the PDR as necessary	enter text
7	Esc key	press
8	ZZ (or :wq!)	enter text, press Enter

16.5.2.6 Check PAN Contents

The procedure for checking PAN contents is performed in response to the following error message from the **Regenerate Failed PDR Tool**:

- PAN file is not formatted correctly.

Table 16.5-14 presents (in a condensed format) the steps required to check PAN contents. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 2 At the command line prompt enter:

cd <path>

 - Change to the directory where the PAN is located.
 - For example:


```
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/remote/EDOS/Response
```
- 3 At the command line prompt enter:

ls

 - A listing of the files in the directory is displayed.

- 4 At the command line prompt enter:
vi <file name>
 - The contents of the PAN are displayed.
 - Although this procedure has been written for the **vi** command, any UNIX editor can be used to edit the file.
- 5 Observe the contents of the PAN to determine what aspect of the format is incorrect.
- 6 If the PAN format is incorrect, edit the PAN file using **vi** editor (or other UNIX editor) commands.
 - The following **vi** editor commands are useful:
 - **h** (move cursor left).
 - **j** (move cursor down).
 - **k** (move cursor up).
 - **l** (move cursor right).
 - **a** (append text).
 - **i** (insert text).
 - **x** (delete a character).
 - **u** (undo previous change).
 - **Esc** (switch to command mode).
- 7 If the **vi** editor is being used to edit the PAN file, press the **Esc** key.
- 8 If the **vi** editor is being used to edit the PAN file, at the **vi** editor prompt enter:
ZZ or **:wq!**
 - Revised PAN file is saved.

Table 16.5-14. Check PAN Contents - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <path>	enter text, press Enter
3	ls	enter text, press Enter
4	vi <file name>	enter text, press Enter
5	Observe the contents of the PAN to determine what aspect of the format is incorrect	read text
6	Use vi editor commands to modify the PAN	enter text
7	Esc key	press
8	ZZ (or :wq!)	enter text, press Enter

16.5.2.7 Check for Memory Problems

The procedure for checking for memory problems is performed in response to either of the following error messages from the **Regenerate Failed PDR Tool**:

- Unable to allocate memory for DataTypeList.
- Unable to allocate memory for DataTypeList.FileList.

Table 16.5-15 presents (in a condensed format) the steps required to check for memory problems. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 2 At the command line prompt enter:
vmstat 5
 - The **vmstat** UNIX command reports certain statistics concerning process, virtual memory, disk, trap, and CPU activity.
 - If an interval (e.g., **5**) is specified, **vmstat** summarizes activity over the specified number of seconds, repeating forever.
 - For example:
x0icg01{allmode}142: vmstat 5

procs	memory	page	disk	faults	cpu														
r	b	w	swap	free	re	mf	pi	po	fr	de	sr	s0	s1	in	sy	cs	us	sy	id
0	0	0	14744	1976	0	42	7	1	2	0	0	1	0	129	1442	86	21	3	76
0	0	0	668784	8424	0	0	0	4	4	0	0	1	0	122	220	69	0	0	100
0	0	0	668760	8496	0	411	0	22	22	0	0	3	0	132	864	178	4	4	92
0	0	0	668784	8520	0	242	0	1	1	0	0	0	0	124	394	93	1	3	96
0	0	0	668784	8520	0	0	0	0	0	0	0	12	0	165	97	71	0	1	99
0	0	0	668784	8504	0	0	1	1	1	0	0	0	0	121	109	76	0	0	100
0	0	0	668784	8496	0	0	1	0	0	0	0	0	0	119	82	69	0	0	100
0	0	0	668784	8488	0	0	0	3	3	0	0	0	0	121	81	69	0	0	100
0	0	0	668784	8544	0	0	3	9	9	0	0	2	0	124	113	76	0	0	100
 - The **memory** fields in the report indicate the usage of virtual and real memory.
 - The **swap** field shows the amount of swap space currently available (in Kilobytes).
 - The **free** field shows the size of the free list (in Kilobytes).

- 3 Report the symptoms and the results of the memory status check to the System Administrator and/or submit a trouble ticket.

Table 16.5-15. Check for Memory Problems - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	vmstat 5	enter text, press Enter
3	Report the symptoms and the results of the memory status check to the System Administrator and/or submit a trouble ticket	contact System Administrator

16.5.2.8 Check the Polling Directory

The procedure for checking the polling directory is performed in response to the following error message from the **Regenerate Failed PDR Tool**:

- Unable to copy the new PDR file into the Polling directory.

Table 16.5-16 presents (in a condensed format) the steps required to check the polling directory. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the command line prompt enter:

cd <path>

 - The **<path>** represents the path to the polling directory.
 - For example:


```
/usr/ecs/OPS/CUSTOM/icl/x0icg03/data/pollEDOS
```

 - The path varies from site to site.

- 3 If a **No such file or directory** message is displayed and the directory should be accessible to the current host machine, report the problem to the System Administrator and/or submit a trouble ticket.
 - Go to the **Regenerate Failed PDRs** procedure (Section 16.5.2.3) after the problem has been fixed.

4 If a **No such file or directory** message is displayed and the directory is not expected to be accessible to the current host machine, at the command line prompt enter:

<PDR path>

- The **<PDR path>** represents the path to the directory where the PDR is located.
- For example:

/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/pollEDOS

- Note that the path in the example in Step 2 includes **x0icg03** whereas the path in the current example specifies **x0icg01**.

5 At the command line prompt enter:

ftp <host name>

- The **<host name>** represents a host that allows access to the desired polling directory; e.g., **x0icg03.daac.ecs.nasa.gov**.
- The following type of response is displayed:

Connected to x0icg03.daac.ecs.nasa.gov.

220-NOTICE: unknown@echuser.east.hitc.com,

220-*****

220-

**220-THIS U.S. GOVERNMENT COMPUTING SYSTEM IS FOR
AUTHORIZED USERS**

**220-ONLY. ANYONE USING IT IS SUBJECT TO MONITORING AND
RECORDING**

**220-OF ALL KEYSTROKES WITHOUT FURTHER NOTICE. THIS
RECORD MAY BE**

220-PROVIDED AS EVIDENCE TO LAW ENFORCEMENT OFFICIALS.

220-

220-*****

220 x0icg03 FTP server (UNIX(r) System V Release 4.0) ready.

Name (x0icg03.daac.ecs.nasa.gov:allmode):

6 At the **Name:** prompt enter:

<user ID>

7 At the **Password:** prompt enter:

<password>

- The following type of response is displayed:

230 User allmode logged in.

ftp>

8 At the **ftp>** prompt enter:

cd <path>

- The **<path>** represents the path to the polling directory.
- For example:

/usr/ecs/OPS/CUSTOM/icl/x0icg03/data/pollEDOS

- The directory is changed to the directory that will receive the PDR.

9 At the **ftp>** prompt enter:

put <PDR file name>

- For example:

ftp> put P0420004AAAAAAAAAAAAAAAAA99040150000.PDR

- The following type of response is displayed to indicate a successful file transfer:

200 PORT command successful.

150 Opening ASCII mode data connection for '

P0420004AAAAAAAAAAAAAAAAA99040150000.PDR '.

226 Transfer complete.

local: P0420004AAAAAAAAAAAAAAAAA99040150000.PDR remote:

P0420004AAAAAAAAAAAAAAAAA99040150000.PDR

3691 bytes sent in 0.065 seconds (55 Kbytes/s)

10 At the **ftp>** prompt enter:

quit

- The ftp program is dismissed.

11 Monitor the subsequent ingest (specified in the PDR).

- For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-16. Check the Polling Directory - Quick-Step Procedures (1 of 2)

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <path> (to polling directory)	enter text, press Enter
3	Report the problem to the System Administrator and/or submit a trouble ticket (if applicable)	contact System Administrator
4	<PDR path> (if applicable)	enter text, press Enter
5	ftp <host name> (if applicable)	enter text, press Enter
6	<user ID> (if applicable)	enter text, press Enter
7	<password> (if applicable)	enter text, press Enter
8	cd <path> (polling directory) (if applicable)	enter text, press Enter
9	put <PDR file name> (if applicable)	enter text, press Enter

Table 16.5-16. Check the Polling Directory - Quick-Step Procedures (2 of 2)

Step	What to Enter or Select	Action to Take
10	quit (if applicable)	enter text, press Enter
11	Monitor the subsequent ingest (if applicable)	Use procedure in Section 16.2.5

16.5.2.9 Check PAN Accessibility

The procedure for checking PAN accessibility is performed in response to the following error message from the **Regenerate Failed PDR Tool**:

- Unable to open the PAN file.

Table 16.5-17 presents (in a condensed format) the steps required to check PAN accessibility. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Ingest Server host.
 - Examples of Ingest Server host names include **e0icg11**, **g0icg01**, **l0acg02**, and **n0acg01**.
 - Log-in is described in the **Log in to ECS Hosts** procedure (Section 16.2.1).
- 2 At the command line prompt enter:
cd <path>
 - Change to the directory where the PAN is located.
 - For example:
/usr/ecs/OPS/CUSTOM/icl/x0icg01/data/remote/EDOS/Response
 - The path varies from site to site.
- 3 If a **No such file or directory** message is displayed and the directory should be accessible to the current host machine, report the problem to the System Administrator and/or submit a trouble ticket.
 - Go to the **Regenerate Failed PDRs** procedure (Section 16.5.2.3) after the problem has been fixed.
- 4 At the command line prompt enter:
ls
 - A listing of the files in the directory is displayed.
 - The relevant PAN should be included in the list.

- 5 If the relevant PAN is included in the directory listing, go to the **Regenerate Failed PDRs** procedure (Section 16.5.2.3).
 - Pay particular attention to accurate typing of the PAN file name and path.
- 6 If the relevant PAN is not included in the directory listing, go to the **Recover from a Faulty PDR or Other File Problems (Polling with Delivery Record)** procedure (Section 16.5.2.2).

Table 16.5-17. Check PAN Accessibility - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Ingest Server)	Use procedure in Section 16.2.1
2	cd <path> (PAN location)	enter text, press Enter
3	Report the problem to the System Administrator and/or submit a trouble ticket (if applicable)	contact System Administrator
4	ls (if applicable)	enter text, press Enter
5	Regenerate failed PDR (if the relevant PAN is included in the directory listing)	Use procedure in Section 16.5.2.3
6	Recover from the faulty PDR (if the relevant PAN is not included in the directory listing)	Use procedure in Section 16.5.2.2

16.5.2.10 Recover from Exceeding the Volume Threshold

CAUTION

The thresholds are retrieved from the Ingest database when the Ingest Request Manager comes up. However, the threshold checks are done two different ways - sometimes in memory and sometimes by a database stored procedure. The database stored procedure uses the values in the database. If the Granule Server thresholds are changed in the database while Ingest is running there will be a mismatch between the values in memory and the values in the database. This could cause an Ingest failure.

One reason data ingest may fail is for exceeding the specified system volume threshold. In such cases the system sends a PAN to the data provider indicating that the system is full and an attempt should be retried again later.

The procedure to **Recover from Exceeding the Volume Threshold** is performed as part of the **Recover from a Data Ingest Failure** procedure (Section 16.5.2). The **ECS Ingest GUI** provides the Ingest Technician with a means of recovering from exceeding the volume threshold.

Table 16.5-18 presents (in a condensed format) the steps required to recover from exceeding the volume threshold. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** If the **ECS Ingest** GUI is not already being displayed and it is decided to increase the system volume threshold, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2** **Single-click** on the **Operator Tools** tab.
 - The **Operator Tools** screen is displayed.
- 3** **Single-click** on the **Modify System Parameters** tab.
 - The **Modify System Parameters** screen is displayed.
- 4** To modify the volume threshold enter (in the **Volume Threshold - New:** field):
<volume threshold>
 - The *current* value for the volume threshold is printed on the corresponding line for reference purposes.
- 5** **Single-click** on the **OK** button at the bottom of the **Operator Tools: Modify System Parameters** tab to save the changes to system parameters.
 - The changes are invoked.
- 6** **Single-click** on the **Monitor/Control** tab.
 - The **Monitor/Control** screen is displayed.
- 7** **Single-click** on the **All Requests** button.
 - Alternatively, either a particular **Data Provider** or **Request ID** may be specified as described in the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).
- 8** **Single-click** on the **Text View** button.
- 9** If the data ingest request is to be re-initiated, monitor the subsequent ingest.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-18. Recover from Exceeding the Volume Threshold - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Operator Tools tab	single-click
3	Modify System Parameters tab	single-click
4	<volume threshold> (Volume Threshold - New: field)	enter text
5	OK button (Operator Tools: Modify System Parameters tab) (if applicable)	single-click
6	Monitor/Control tab	single-click
7	All Requests button	single-click
8	Text View button	single-click
9	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.2.11 Recover from Exceeding the Maximum Number of Concurrent Requests

If the specified system request threshold has been exceeded, the system sends a PAN to the data provider indicating that the system is full and an attempt should be retried again later.

The procedure to **Recover from Exceeding the Maximum Number of Concurrent Requests** is performed as part of the **Recover from a Data Ingest Failure** procedure (Section 16.5.2). The **ECS Ingest** GUI provides the Ingest Technician with a means of recovering from exceeding the maximum number of concurrent requests.

Table 16.5-19 presents (in a condensed format) the steps required to recover from exceeding the maximum number of concurrent requests. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If the **ECS Ingest** GUI is not already being displayed and it is decided to increase the system request threshold, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2 **Single-click** on the **Operator Tools** tab.
 - The **Operator Tools** screen is displayed.
- 3 **Single-click** on the **Modify System Parameters** tab.
 - The **Modify System Parameters** screen is displayed.

- 4 To modify the volume threshold enter (in the **Request Threshold - New:** field):
<request threshold>
 - The *current* value for the request threshold is printed on the corresponding line for reference purposes.
- 5 **Single-click** on the **OK** button at the bottom of the **Operator Tools: Modify System Parameters** tab to save the changes to system parameters.
 - The changes are invoked.
- 6 **Single-click** on the **Monitor/Control** tab.
 - The **Monitor/Control** screen is displayed.
- 7 **Single-click** on the **All Requests** button.
 - Alternatively, either a particular **Data Provider** or **Request ID** may be specified as described in the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).
- 8 **Single-click** on the **Text View** button.
- 9 If the data ingest request is to be re-initiated, monitor the subsequent ingest.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-19. Recover from Exceeding the Maximum Number of Concurrent Requests - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Operator Tools tab	single-click
3	Modify System Parameters tab	single-click
4	<request threshold> (Request Threshold - New: field)	enter text
5	OK button (Operator Tools: Modify System Parameters tab) (if applicable)	single-click
6	Monitor/Control tab	single-click
7	All Requests button	single-click
8	Text View button	single-click
9	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.2.12 Recover from Insufficient Disk Space

After the receipt of the PDR, a disk space allocation is requested from the Data Server, and a time-out timer for the disk allocation is set. In the event that the Data Server has insufficient disk space, the time-out timer will expire. The Ingest Subsystem notifies the operator that the ingest request is waiting for Data Server disk allocation. Upon receipt of the alert, the Ingest Technician must decide whether to wait for disk space to be allocated automatically or to cancel the request.

16.5.2.13 Recover from Exceeding the Expiration Date/Time Period

If data are unavailable but the time period during which that data were to have been made available has expired, the error is logged in the event log, and a PAN is sent to the data provider indicating expiration date/time exceeded. The Ingest Technician receives an alert on his/her screen, then contacts the data provider to resolve the problem.

Table 16.5-20 presents (in a condensed format) the steps required to recover from exceeding the expiration date/time period. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Contact (by telephone or e-mail) the data provider to discuss the following issues:
 - Report the ingest failure.
 - Discuss what has been discovered from reviewing the failure event data.
 - Determine whether the data provider will re-initiate the data ingest request.
- 2 If the data ingest request is to be re-initiated, monitor the subsequent ingest.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-20. Recover from Exceeding the Expiration Date/Time Period - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Contact the data provider	contact data provider
2	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.2.14 Recover from File Transfer Protocol (ftp) Error

During the course of data exchange via ftp, any of the following error conditions may arise:

- Failure to establish TCP/IP connection.
- Erroneous ftp command.

- File not found (listed in PDR, but not found on disk).
- File not readable due to permissions.

Should a problem develop during an ftp file transfer due to any of the above error conditions, an operator-tunable number of attempts are made to pull the data. In the event that problems cannot be resolved within this operator-tunable number of attempts, ECS and the data provider's operations personnel have the option to coordinate data delivery via another medium (e.g., DTF tape) if specified in the relevant ICD or Operations Agreement.

After numerous unsuccessful data transfer retries, an error is logged into the event log, the Ingest Technician is notified and a PAN is sent to the data provider indicating ftp failure. The Ingest Technician reviews all current ingest requests using the **Monitor/Control (All Requests)** screen of the **ECS Ingest** GUI to determine whether other communication-related failures have occurred and may consult with the data provider(s) to resolve the problem.

Table 16.5-21 presents (in a condensed format) the steps required to recover from file transfer protocol (ftp) error. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 If it is not already being displayed, launch the **ECS Ingest** GUI (refer to Section 16.2.2).
 - The **ECS Ingest** GUI is displayed.
- 2 **Single-click** on the **Monitor/Control** tab.
 - The **Monitor/Control** screen is displayed.
- 3 Review all current ingest requests using the **ECS Ingest GUI Monitor/Control (All Requests)** screen to determine whether there are other failures that may be communication-related.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).
- 4 If there are other failures that may be communication-related, contact the DAAC Resource Manager to determine whether the ftp error is indeed communication-related and how to respond to the problem.
- 5 If it is decided either to increase the communication retry count or to re-initiate the ingest request, **single-click** on the Ingest GUI **Operator Tools** tab.
 - The **Operator Tools** screen is displayed.
- 6 **Single-click** on the **Modify System Parameters** tab.
 - The **Modify System Parameters** screen is displayed.
- 7 Review the current value for **Communication Retry Count**.

- 8 If it is decided to increase the communication retry count, go to the **Modify System Parameters on the Ingest GUI** procedure (Section 16.4.2).
- 9 Contact (by telephone or e-mail) the data provider to discuss the following issues:
 - Report the ingest failure.
 - Discuss what has been discovered from reviewing the failure event data.
 - Determine whether the data provider will re-initiate the data ingest request.
- 10 If the data ingest request is to be re-initiated, monitor the subsequent ingest.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-21. Recover from File Transfer Protocol (ftp) Error - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Launch the ECS Ingest GUI (if necessary)	Use procedure in Section 16.2.2
2	Monitor/Control tab	single-click
3	Review all current ingest requests to identify any other failures that may be communication-related	Use procedure in Section 16.2.5
4	If there are other failures that may be communication-related, contact DAAC Resource Manager	contact DAAC Resource Manager
5	Operator Tools tab (if applicable)	single-click
6	Modify System Parameters tab (if applicable)	single-click
7	Review the current value for Communication Retry Count	read text
8	Modify the communication retry count (if applicable)	Use procedure in Section 16.4.2
9	Contact the data provider (if applicable)	contact data provider
10	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.2.15 Recover from Processing Errors

Ingest processing errors may require Ingest Technician intervention. The following problems are examples of processing errors.

- **Missing Required Metadata.**
- **Unknown Data Type.**
- **Template Out of Synchronization (Sync).**
- **Unavailable File Type.**
- **Metadata Validation Error.**
- **Missing Optional Data Files.**

Table 16.5-22 presents (in a condensed format) the steps required to recover from processing errors. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** If the processing error involves missing required metadata or an unknown data type, contact (by telephone or e-mail) the data provider to request the data provider to make the necessary corrections and re-initiate ingest.
- 2** If the processing error involves an out-of-sync template or an unavailable file type, submit a trouble ticket in accordance with the trouble ticketing procedures.
- 3** If the processing error involves an out-of-sync template or an unavailable file type, contact (by telephone or e-mail) the data provider to request the data provider to re-initiate ingest when the problem has been fixed.
- 4** If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions indicate to continue inserting the data, contact (by telephone or e-mail) the data provider to provide notification that the data have been flagged as bad.
 - If the processing template instructions indicate to continue inserting the data, the following events occur:
 - The error is logged in the event log,
 - The data are flagged as bad.
 - A preprocessing failure alert for each data granule appears on the Ingest Technician's screen.
 - A Metadata Problem Report is generated.
- 5** If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions require the rejection of the data, contact (by telephone or e-mail) the data provider to request the data provider to make the necessary corrections and re-initiate ingest.
 - If the template instructions require the rejection of the data, the normal notices and alerts are sent, including a PAN to the external data provider indicating the preprocessing failure.
- 6** If the data ingest request is to be re-initiated, monitor the subsequent ingest.
 - For detailed instructions refer to the **Monitor/Control Ingest Requests** procedure (Section 16.2.5).

Table 16.5-22. Recover from Processing Errors - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	If the processing error involves missing required metadata or an unknown data type, contact the data provider	contact data provider
2	If the processing error involves an out-of-sync template or an unavailable file type, submit a trouble ticket	Use procedure in Chapter 8
3	If the processing error involves an out-of-sync template or an unavailable file type, contact the data provider	contact data provider
4	If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions indicate to continue inserting the data, contact the data provider	contact data provider
5	If the processing error involves a metadata validation error or missing optional data files and if the processing template instructions require the rejection of the data, contact the data provider	contact data provider
6	If the data ingest request is to be re-initiated, monitor the subsequent ingest	Use procedure in Section 16.2.5

16.5.3 Recover from Failure to Store Data

Successful data storage and retrieval functions are the heart of ECS. Successful ingest of data depends on Storage Management (STMGT) inserting the product into the archive and Science Data Server (SDSRV) inserting the associated metadata into the inventory. Staging disks and cache managers for the Archive server and the FTP server are also involved in this process. To check the functioning of these elements, it is necessary that the ESDTs for the data to be inserted have been installed and are available, and that subscriptions have been registered.

Troubleshooting failures to store data (as well as other failures) often requires the review of server or application log files. The general procedure for checking log files is described in Section 16.5.1.2. A procedure for reviewing the debug log file for the Storage Management Request Manager server is provided in Section 16.5.3.1.

Table 16.5-23 presents (in a condensed format) the steps required to recover from a failure to store data. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1** Check the Storage Management Request Manager Server debug log file for error messages concerning the failure to store data.
 - For detailed instructions on checking the Request Manager Server debug log refer to the **Check the Request Manager Server Debug Log** procedure (Section 16.5.3.1).

- 2** If necessary, check the Science Data Server debug log file for error messages concerning the failure to store data.
 - Examine the section of the log with entries near the time of the problem, looking for error messages that indicate communication failure.
 - If the log file entries indicate a communication problem, note the server(s) with which there is impairment or disruption of communication.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 16.5.1.2).

- 3** If necessary, check the Archive Server debug log file for error messages concerning the failure to store data.
 - Examine the section of the log with entries near the time of the problem, looking for error messages that indicate communication failure.
 - If the log file entries indicate a communication problem, note the server(s) with which there is impairment or disruption of communication.
 - For detailed instructions refer to the **Check Log Files** procedure (Section 16.5.1.2).

- 4** If Step 2 and/or Step 3 resulted in detection of a problem in the interaction of SDSRV and/or Archive Server with other servers, at the host(s) for those servers, check the server debug log(s) for error messages concerning the failure to store data.
 - The following logs may be involved:
 - EcDsStStagingDiskServerDebug.log (on the FSMS Server host).
 - EcDsStCacheManagerServerDebug.log (on the FSMS Server host).
 - EcDsStRequestManagerServerDebug.log (e.g., on the Sun internal server host).
 - EcSbSubServerDebug.log (e.g., on the Sun internal server host).
 - For detailed instructions refer to the **Check Log Files** procedure (Section 16.5.1.2).

- 5** If the problem cannot be identified and fixed without help within a reasonable period of time, call the help desk and submit a trouble ticket in accordance with site Problem Management policy.

Table 16.5-23. Recover from Failure to Store Data - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	Check the Storage Management Request Manager Server debug log file for error messages concerning the failure to store data	Use procedure in Section 16.5.3.1
2	Check the Archive Server debug log file for error messages concerning the failure to store data (if necessary)	Use procedure in Section 16.5.1.2
3	Check the Archive Server debug log file for error messages concerning the failure to store data (if necessary)	Use procedure in Section 16.5.1.2
4	Check other server debug log(s) for error messages concerning the failure to store data (if necessary)	Use procedure in Section 16.5.1.2
5	Call the help desk and submit a trouble ticket (if applicable)	Use procedure in Chapter 8

16.5.3.1 Check the Request Manager Server Debug Log

The procedure to **Check the Request Manager Server Debug Log** is a part of the **Recover from Failure to Store Data** procedure (Section 16.5.3). It is performed in response to an insert failure.

The Request Manager server processes requests from external clients (processes outside of Storage Management). Requests between Storage Management servers are passed directly from one server to another.

- Requests that require one of the Storage Management servers to perform processing are checkpointed [except requests that can be serviced solely through Structured Query Language (SQL)].
 - Checkpointing involves recording the request's state (e.g., "checkpointed," "failed," "completed") in the database to assist in error recovery.
- Requests that can be serviced solely through SQL are considered "trivial" requests.
 - Trivial requests are not checkpointed.
 - Examples include attaching to a staging disk, getting capacity, and getting block size.
 - Trivial requests submitted from outside Storage Management are serviced by the Request Manager server.
 - Trivial requests originating within Storage Management are passed directly from the client to the database server.

The Request Manager server (like other Storage Management servers) can manage several concurrent activities. This is accomplished through the use of threads. There are several different kinds of threads:

- Manager thread.
 - One per Storage Management server.
 - Responsible for dequeuing requests and assigning them to service threads.
 - Checks for cancelled requests.
- Service thread.
 - Multiple threads per Storage Management server.
 - Responsible for the actual servicing of requests.
 - Logs all progress including all changes of request state.
 - Notifies submitter when request has been completed.
- Receptionist thread.
 - One per Storage Management server.
 - Registers the server as "up" in the database.
 - Sits on a socket, waiting for connections from other Storage Management servers.
 - Unregisters the server at shutdown.
- Inbound RPC thread.
 - Spawned by a request from a Storage Management client.
 - Hands off the request to the manager thread and waits for completion of the request.
- Housekeeper thread.
 - Watches for completed requests that haven't previously been seen and processed.

Information concerning Request Manager server processing of requests (identified by thread) is recorded in the Request Manager server debug log (assuming some level of debug log recording is specified in the Registry database).

Trivial requests typically involve the following types of activities:

- Inbound RPC thread appears with a request.
- Manager thread dequeues the request and assigns it to a service thread.
- Service thread recognizes the thread as "trivial."
 - A "No checkpointing required -- going straight to responded" message is recorded in the Request Manager server debug log.
- Service thread executes the database transaction for results.
 - When the request is completed, a "Done servicing" message is recorded in the Request Manager server debug log.
 - If the request fails, an "Unable to service" message is recorded in the Request Manager server debug log.
- Service thread hands the results to the inbound RPC thread.
 - A "Notifying the client" message is recorded in the Request Manager server debug log.
- Inbound RPC thread silently returns to the client with the results.

Non-trivial requests are forwarded to the appropriate Storage Management server (e.g., EcDsStFtpServer, EcDsStStagingDiskServer, or EcDsStArchiveServer) for processing.

- Some of the same types of entries are made in the Request Manager server debug log for non-trivial requests as for trivial requests. For example:
 - "Waking up service thread" (Request Manager is preparing to process the request).
 - "Done servicing" (request processing has been completed).
 - "Unable to service" (the request has failed).
- Although some trivial requests include "token" statements, tokens are characteristic of non-trivial requests.
- A token includes request information that varies with the type of operation to be performed.
- For example, a token for an ftp request might include the following types of data:
 - Stored procedure (e.g., DsStFRInsert) [other types of stored procedures include DsStSDRInsert and DsStGRMapLogicalArchiveId].
 - RPC ID (e.g., RPCId=1821_535_1109-1124464729_171062001_x0acs06.xdc.ecs.nasa.gov:SBSVSDSV1DSDD1DSDD4:).
 - Username.
 - Encrypted password.
 - Host.
 - Source path.
 - Destination path.
 - External request ID.
 - Server name (e.g., EcDsStFtpServerNONE) [other types of operations might involve the EcDsStStagingDiskServerDRP1 for example].
 - Type of operation (e.g., FtpPush) [other types of operations include ArRetrieve, SDAllocateDisk, SDLinkFile].
 - Submitter (e.g., DSDD) [other types of operations might involve SDSV].
 - Priority.
- The server to which the request was sent is identified by name (ServerName).
- Transaction ID is embedded in the RPC ID (the portion before the first colon in the RPC ID).

A "transaction" may involve multiple operations on a host or several hosts. Consequently, multiple threads may be used on each relevant host.

Table 16.5-24 presents (in a condensed format) the steps required to check the Request Manager Server debug log. If you are already familiar with the procedures, you may prefer to use the quick-step table. If you are new to the system, or have not performed this task recently, you should use the detailed procedures that follow.

- 1 Access a terminal window logged in to the Distribution Server host.
 - Examples of Distribution Server host (Sun internal server host) names include **e0acs06**, **g0qcs06**, **l0acs06**, and **n0acs06**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 16.2.1).

- 2 At the UNIX command line prompt enter:
- ```
cd /usr/ecs/<MODE>/CUSTOM/logs
```
- <MODE> is current mode of operation.
  - "logs" is the directory containing Request Manager Server debug log files (e.g., EcDsStRequestManagerServerDebug.log).
- 3 At the command line prompt enter:
- ```
pg <file name>
```
- <file name> refers to the appropriate Request Manager debug log file.
 - For example:

```
pg EcDsStRequestManagerServerDebug.log
```
 - The content of the first page of the specified file is displayed.
 - Although this procedure has been written for the **pg** command, any UNIX editor or visualizing command (e.g., **vi**, **view**, **more**) can be used to review the log file.
- 4 At the **:** prompt enter:
- ```
/<date> <time>
```
- <date> <time> refers to the approximate date and time of the problem.
    - For example:  

```
06/18/01 12:17:31
```
  - The file is searched for the specified text.
    - If the specified text is in the log file, the following type of response is displayed.  

```
...skipping forward
06/18/01 12:17:31: Thread ID : 105 : DsShTSSStorage: creating the
MutexVec for this thread
[...]
```
    - If the specified text is not in the log file, the following type of response is displayed.  

```
Pattern not found:
```
    - If the specified text is not in the log file, verify that the proper file was opened (Step 3) and that the date and time were entered correctly (Step 4).
- 5 At the **:** prompt enter:
- ```
/Unable to service
```
- **pg** searches the file for the specified text.
 - If the specified text is in the log file, the following type of response is displayed.

...skipping forward

2:IngestRQ409GR1 Unable to service | Thread 52

[...]

- If the specified text is not in the log file, the following type of response is displayed.

Pattern not found:

- If the specified text is in the file, go to Step 7.
- If the specified text is not in the file, go to Step 6.

6 Examine the contents of the log file to determine which thread is associated with the problem being investigated.

- The following **pg** commands (at the **:** prompt) are useful:
 - **n** then **Return/Enter** (go to Page *n*).
 - **Return/Enter** or **+1** then **Return/Enter** (go down to the next page).
 - **-1** then **Return/Enter** (go back to the preceding page).
 - **+n** then **Return/Enter** (go down *n* number of pages).
 - **-n** then **Return/Enter** (go back *n* number of pages).
 - **+nl** then **Return/Enter** (go down *n* number of lines).
 - **-nl** then **Return/Enter** (go back *n* number of lines).
 - **\$** then **Return/Enter** [go to the last page (end of file)].
 - **q** then **Return/Enter** (exit from **pg**).

7 At the **:** prompt enter:

<search text>

- To search back toward the beginning of the file enter:
^Waking up service thread <number>^
- To search back toward the end of the file enter:
/Waking up service thread <number>
- For example:
^Waking up service thread 52^
 - The file is searched back toward the beginning of the file for the specified text.
- If the specified text is in the log file, the following type of response is displayed.

...skipping backward

06/18/01 12:17:31: Thread ID : 102 : Waking up service thread 52 | Thread 102

[...]

- If the specified text is not in the log file, the following type of response is displayed.

Pattern not found:

- The entries "Waking up service thread <number>" and "Unable to service | Thread <number>" bracket the thread servicing in which an error occurred.

NOTE: Thread IDs are reused frequently. There are likely to be many processes with the same thread ID in any particular log file. It is important to follow the correct instance of the thread.

NOTE: It is likely that the Request Manager would try again to process a failed request. Subsequent request processing may use the same thread ID or a different thread ID. However, it would involve the same transaction ID.

- A "No checkpointing required -- going straight to responded" entry associated with the thread ID indicates that the request is "trivial."

8 At the : prompt enter:

/SEARCHING

- The file is searched for the specified text.
 - If the specified text is in the log file, the following type of response is displayed.

...skipping forward

06/18/01 12:17:31: Thread ID : 52 : SEARCHING FOR: 30148 (Found) |

Thread 52

06/18/01 12:17:31: Thread ID : 52 : SEARCHING FOR: 30148 (Found) |

Thread 52

**06/18/01 12:17:31: Thread ID : 52 : DsStStoredProcedures::Execute -
ERROR: Could not execute stored procedure | Thread 52**

**06/18/01 12:17:31: Thread ID : 52 : Error encountered in stored procedure
| Thread 52**

**06/18/01 12:17:31: Thread ID : 52 : DBIF:Execute: Ultimate SQL:
ROLLBACK TRANSACTION OUTER_7077776 | Thread 52**

06/18/01 12:17:32: Thread ID : 52 : 1_4501810_1217-

**1124633447_169062001_x0icg01.xdc.ecs.nasa.gov:IPOBIPOB1INRM1IGS
A15:IngestRQ409GR1 Done servicing | Thread 52**

06/18/01 12:17:32: Thread ID : 52 : 1_4501810_1217-

**1124633447_169062001_x0icg01.xdc.ecs.nasa.gov:IPOBIPOB1INRM1IGS
A15:IngestRQ409GR1 Unable to service | Thread 52**

06/18/01 12:17:32: Thread ID : 52 : 1_4501810_1217-

**1124633447_169062001_x0icg01.xdc.ecs.nasa.gov:IPOBIPOB1INRM1IGS
A15:IngestRQ409GR1 Marked as unassigned | Thread 52**

06/18/01 12:17:32: Thread ID : 52 : 1_4501810_1217-

**1124633447_169062001_x0icg01.xdc.ecs.nasa.gov:IPOBIPOB1INRM1IGS
A15:IngestRQ409GR1 Notifying the client | Thread 52**

06/18/01 12:17:32: Thread ID : 52 : Waiting for work | Thread 52

06/18/01 12:17:32: Thread ID : 52 : Waking up manager thread | Thread

52
[...]

- In the example the expression **SEARCHING** is associated with Thread ID 52.
- The context of the **SEARCHING** statement indicates the type and source of the problem; in this case there appears to be a problem executing a stored procedure.
- If the specified text is not in the log file, the following type of response is displayed.

Pattern not found:

9 If the expression **SEARCHING** is not associated with the specified thread in the lines displayed, repeat Step 8.

10 If necessary, at the **:** prompt enter:

-21

- **pg** simulates scrolling the screen backward two lines (or any other number of lines that is typed at the prompt).
 - The file is redisplayed to include the two lines that preceded the page previously displayed.
 - For example:

...skipping backward

06/18/01 12:17:31: Thread ID : 52 : DBIF:Execute: Ultimate SQL: exec DsStSDAttachDisk

"/usr/ecs/TS2/CUSTOM/pdps/x0spg01/data/DpPrRm/x0spg01_disk", "SDSV", 0 | Thread 52

06/18/01 12:17:31: Thread ID : 52 : SEARCHING FOR: 30148 (Found) | Thread 52

06/18/01 12:17:31: Thread ID : 52 : SEARCHING FOR: 30148 (Found) | Thread 52

06/18/01 12:17:31: Thread ID : 52 : DsStStoredProcedures::Execute - ERROR: Could not execute stored procedure | Thread 52

06/18/01 12:17:31: Thread ID : 52 : Error encountered in stored procedure | Thread 52

[...]

- The additional lines preceding "SEARCHING FOR" in the example indicate that the stored procedure in which the error was encountered is DsStSDAttachDisk.

11 To quit the **pg** application at the **:** prompt enter:

q

- **pg** exits from the Request Manager server debug log file.

12 If the request is a trivial request, go to Step 22.

- 13 If the request is a non-trivial request, open a separate UNIX window.
- The results of related operations on the server involved in performing copy or ftp functions for the transaction are going to be checked in a separate UNIX window.
- 14 Access a terminal window logged in to the appropriate server host for the server involved in performing copy or ftp functions for the transaction.
- Examples of appropriate server host names include **e0drg11**, **g0drg01**, **l0drg01**, and **n0drg01**.
 - For detailed instructions refer to the **Log in to ECS Hosts** procedure (Section 16.2.1).

15 At the shell prompt enter:

```
grep '<Transaction ID>' <file name> | grep 'LogProgress'
```

- For example:


```
grep 'af610628-' EcDsStArchiveServerDebug.log | grep 'LogProgress'
```
- **<file name>** refers to the name of the log file for the process involved in performing copy or ftp functions for the transaction.
- **<Transaction ID>** refers to the Transaction ID associated with the applicable request.
- In this example af610628-1dd1-11b2-a047-af3a589fd88e is the relevant Transaction ID.
 - However, usually it is not necessary to use the entire Transaction ID in the command; a representative sample (e.g., af610628- from the example) should be sufficient.
 - References to other Transaction IDs and entries that do not contain the string "LogProgress" are filtered out so references to the specified Transaction ID that contain the string "LogProgress" are the only log entries displayed. The string "LogProgress" is a filter for references to stored procedure DsStGRLogProgress.
 - Progress is logged for copy and ftp input/output at each block.
 - The following type of response is displayed:

```
06/26/01 12:46:00: Thread ID : 65674 : myTransactionList[1]: exec
DsStGRLogProgress "af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 0, 1, "files" | Thread 65674
06/26/01 12:46:00: Thread ID : 65674 : DBIF:Execute: Ultimate SQL: exec
DsStGRLogProgress "af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 0, 1, "files" | Thread 65674
```

```

06/26/01 12:46:43: Thread ID : 65674 : : 06/26/01 12:46:43: read ID :
2:46:43: myTransactionmyTransactionList[1]: exec DsStGRLogProgress
"af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 60, 60, "MB"List[1]: exec
DsStGRLogProgress "af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 60, 60, "MB"65714read 65674 : 74
06/26/01 12:46:43: Thread ID : 65674 : DBIF:Execute: Ultimate SQL: exec
DsStGRLogProgress "af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 60, 60, "MB"0DBIF:Execute: Ultimate
SQL: exec DsStGRLogProgress "af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy14
182000TS2SC:MOD03.001:55732", 60, 60, "MB"06/26/01 12:46:43: 6/26/01
12:46:43: | Thread : 65714read 65674 : 74

```

- If no progress is indicated, go to Step 22.

16 **Single-click** in the UNIX window for the Distribution Server host (Sun internal server host).

17 In the UNIX window for the Distribution Server host (Sun internal server host) at the command line prompt enter:

```
/usr/ecs/<MODE>/CUSTOM/logs
```

- Change to the logs directory in the appropriate mode.

18 At the command line prompt enter:

```
grep '<Transaction ID>' <file name> | grep 'Done servicing'
```

- <file name> refers to the appropriate Request Manager debug log.
- For example:

```
grep 'af610628-' EcDsStRequestManagerServerDebug.log | grep 'Done
servicing'
```

- If the operation has been completed, the following type of response is displayed:

```

06/26/01 12:46:00: Thread ID : 52 : af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy141820
00TS2SC:MOD03.001:55732 Done servicing | Thread 52
06/26/01 12:46:44: Thread ID : 52 : af610628-1dd1-11b2-a047-
af3a589fd88e:PDPSSDSV1DSDD1DSDD10DSDD1DSDD1:MoPGE02#sy141820
00TS2SC:MOD03.001:55732 Done servicing | Thread 52

```

06/26/01 12:46:45: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD2DSDD1DSDD3:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:47: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD2DSDD1DSDD3:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:47: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD2DSDD1DSDD7:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:50: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD2DSDD1DSDD7:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:51: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD4:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:56: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD4:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:56: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD8:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

06/26/01 12:46:59: Thread ID : 52 : af610628-1dd1-11b2-a047-af3a589fd88e:PDPSSDSV1DSDD1DSDD8:MoPGE02#sy14182000TS2SC:MOD03.001:55732 Done servicing | Thread 52

- The statement "Done servicing" shows that the operation has been completed; however, it provides no indication as to whether the operation succeeded or failed.
- If "Done servicing" is followed by "Unable to service," (as described in Step 19) the operation failed.
- If the operation has not been completed, no file entries are displayed (the UNIX prompt is displayed).
 - It may just be slow to complete.
- If the operation has been completed, go to Step 19.
- If the operation has not been completed, go to Step 20.

19 At the shell prompt enter:

grep '<Transaction ID>' <file name> | grep 'Unable to service'

- <file name> refers to the appropriate Request Manager debug log.
- For example:

grep '2a7d4168-' EcDsStRequestManagerServerDebug.log | grep 'Unable to service'

- If the request has failed, the following type of response is displayed:
06/26/01 12:56:22: Thread ID : 52 : 2a7d4168-1dd2-11b2-8c52-99d0f708dce5:PDPSSDSV1:MoPGE02#sy14182000TS2MOD02OBC Unable to service | Thread 52
06/26/01 12:56:22: Thread ID : 52 : 2a7d4168-1dd2-11b2-8c52-99d0f708dce5:PDPSSDSV4:MoPGE02#sy14182000TS2MOD02OBC Unable to service | Thread 52
 - If the operation has failed, return to Step 7.
- If the operation has not failed, no file entries are displayed (the UNIX prompt is displayed).

20 At the shell prompt enter:

tail -f <file name> | grep '<Transaction ID>'

- **<file name>** refers to the appropriate Request Manager debug log.
- **<Transaction ID>** refers to the Transaction ID associated with the applicable request.
- For example:
tail -f EcDsStRequestManagerServerDebug.log | grep 'af610628-'
 - If new entries are being posted to the log, the operation has not finished yet.
 - If the same entries continue to be repeated over and over, there could be a problem with the server.
 - Notify the Operations Controller/System Administrator of suspected server problems.
 - If it is necessary to exit from a tailed log, enter:
^c [Ctrl c]

21 If the operation has not finished yet, monitor the tailed log for awhile.

- If the operation does not seem to finish (i.e., if entries continue to be made to the tailed log) after a reasonable period of time (e.g., 30 minutes), notify the Operations Controller/System Administrator of the problem.
- If it is necessary to exit from a tailed log, enter:
^c [Ctrl c]

22 If problems were detected in the Request Manager server debug log and/or the log file for the process involved in performing copy or ftp functions for the transaction, notify the Operations Controller/System Administrator of the problem.

23 Return to the **Recover from Failure to Store Data** procedure (Section 16.5.3).

Table 16.5-24. Check the Request Manager Server Debug Log - Quick-Step Procedures

Step	What to Enter or Select	Action to Take
1	UNIX window (Sun internal server)	single-click or use procedure in Section 16.2.1
2	cd /usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
3	pg <file name> (Request Manager debug log)	enter text, press Enter
4	/<date> <time>	enter text, press Enter
5	/Unable to service	enter text, press Enter
6	Determine which thread is associated with the problem being investigated	read text
7	<search text> (Waking up service thread <number>)	enter text, press Enter
8	/SEARCHING	enter text, press Enter
9	Repeat the preceding step (if necessary)	
10	-2I (if necessary)	enter text, press Enter
11	q (when necessary)	enter text, press Enter
12	UNIX window (appropriate server host)	single-click or use procedure in Section 16.2.1
13	grep '<Transaction ID>' <file name> grep 'LogProgress'	enter text, press Enter
14	UNIX window (Sun internal server)	single-click
15	/usr/ecs/<MODE>/CUSTOM/logs	enter text, press Enter
16	grep '<Transaction ID>' <file name> grep 'Done servicing'	enter text, press Enter
17	grep '<Transaction ID>' <file name> grep 'Unable to service'	enter text, press Enter
18	tail -f <file name> grep '<Transaction ID>'	enter text, press Enter
19	Monitor the tailed log for awhile (if applicable)	read text
20	If problems were detected in the log files, notify the Operations Controller/System Administrator of the problem	contact Operations Controller
21	Return to the Recover from Failure to Store Data procedure	Use procedure in Section 16.5.3

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