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EOSDIS Core System Project

ECS Project Training Material
Volume 6: Production Planning and Processing

March 1999

Raytheon Systems Company
Upper Marlboro, Maryland

ECS Project Training Material
Volume 6: Production Planning and Processing

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Preface

This document is a contract deliverable with an approval code of 3. As such, it does not require formal Government approval. This document is delivered for information only, but is subject to approval as meeting contractual requirements.

Any questions should be addressed to:

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Abstract

This is Volume 6 of a series of lessons containing the training material for Release 4 of the Earth Observing System Data and Information System (EOSDIS) Core System (ECS). This lesson provides a detailed description of the process required for creating, modifying, and implementing production requests and production plans and monitoring the processing of data processing requests.

***Keywords**:* training, instructional design, course objective, production request, production plan, data processing request, production, planning, processing.

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Introduction

Identification

Training Material Volume 6 is part of Contract Data Requirements List (CDRL) Item 129, whose requirements are specified in Data Item Description (DID) 625/OP3 and is a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS), Contract (NAS5-6000).

Scope

Training Material Volume 6 describes the procedures by which the production team prepares production plans and monitors production processing. This lesson is designed to provide the operations staff with sufficient knowledge and information to satisfy all lesson objectives.

Purpose

The purpose of this Student Guide is to provide a detailed course of instruction that forms the basis for understanding production planning and processing. Lesson objectives are developed and will be used to guide the flow of instruction for this lesson. The lesson objectives will serve as the basis for verifying that all lesson topics are contained within this Student Guide and slide presentation material.

Status and Schedule

This lesson module provides detailed information about training for Release 4. Subsequent revisions will be submitted as needed.

Organization

This document is organized as follows:

Introduction:	The Introduction presents the document identification, scope, purpose, and organization.
Related Documentation:	Related Documentation identifies parent, applicable and information documents associated with this document.
Student Guide:	The Student Guide identifies the core elements of this lesson. All Lesson Objectives and associated topics are included.
Slide Presentation:	Slide Presentation is reserved for all slides used by the instructor during the presentation of this lesson.

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Related Documentation

Parent Document

The parent document is the document from which this ECS Training Material's scope and content are derived.

423-41-01	Goddard Space Flight Center, EOSDIS Core System (ECS) Statement of Work

Applicable Documents

The following documents are referenced within this ECS Training Material, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this document:

423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)
420-05-03	Goddard Space Flight Center, Earth Observing System (EOS) Performance Assurance Requirements for the EOSDIS Core System (ECS)

Information Documents

Information Documents Referenced

The following documents are referenced herein and amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

609-CD-003	Operations Tools Manual for the ECS Project
611-CD-004	Mission Operation Procedures for the ECS Project
535-TIP-CPT-001	Goddard Space Flight Center, Mission Operations and Data Systems Directorate (MO&DSD) Technical Information Program Networks Technical Training Facility, Contractor-Provided Training Specification

Information Documents Not Referenced

The following documents, although not referenced herein and/or not directly applicable, do amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Training Material.

220-TP-001	Operations Scenarios - ECS Release B.0 Impacts, Technical Paper for the ECS Project
305-CD-020	Release B SDPS/CSMS System Design Specification Overview for the ECS Project

305-CD-021	Release B SDPS Client Subsystem Design Specification for the ECS Project
305-CD-022	Release B SDPS Interoperability Subsystem Design Specification for the ECS Project
305-CD-023	Release B SDPS Data Management Subsystem Design Specification for the ECS Project
305-CD-024	Release B SDPS Data Server Subsystem Design Specification for the ECS Project
305-CD-025	Release B SDPS Ingest Subsystem Design Specification for the ECS Project
305-CD-026	Release B SDPS Planning Subsystem Design Specification for the ECS Project
305-CD-027	Release B SDPS Data Processing Subsystem Design Specification for the ECS Project
305-CD-028	Release B CSMS Communications Subsystem Design Specification for the ECS Project
305-CD-029	Release B CSMS System Management Subsystem Design Specification for the ECS Project
305-CD-030	Release B GSFC DAAC Design Specification for the ECS Project
305-CD-031	Release B Langley DAAC Design Specification for the ECS Project
305-CD-033	Release B EDC DAAC Design Specification for the ECS Project
305-CD-034	Release B ASF DAAC Design Specification for the ECS Project
305-CD-035	Release B NSIDC DAAC Design Specification for the ECS Project
305-CD-036	Release B JPL PO.DAAC Design Specification for the ECS Project
305-CD-037	Release B ORNL DAAC Design Specification for the ECS Project
305-CD-038	Release B System Monitoring and Coordination Center Design Specification for the ECS Project
305-CD-039	Release B Data Dictionary Subsystem Design Specification for the ECS Project
601-CD-001	Maintenance and Operations Management Plan for the ECS Project
604-CD-001	Operations Concept for the ECS Project: Part 1-- ECS Overview
604-CD-002	Operations Concept for the ECS Project: Part 2B -- ECS Release B
605-CD-002	Release B SDPS/CSMS Operations Scenarios for the ECS Project
607-CD-001	ECS Maintenance and Operations Position Descriptions

500-1002	Goddard Space Flight Center, Network and Mission Operations Support (NMOS) Certification Program, 1/90

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Production Planning and Processing Overview

Lesson Overview

This lesson will provide you with the complete process by which the production team prepares production plans and monitors production processing. The processes described in the lesson apply primarily to production planners and production monitors. The procedures involved in production planning and processing include such tasks as preparing production requests, preparing production plans and monitoring data processing.

Lesson Objectives

Overall Objective - The overall objective of the Production Planning and Processing lesson is for Maintenance and Operations (M&O) personnel to develop proficiency in the procedures that apply to production planning and production processing operations for the Earth Observing System (EOS) Data and Information System (EOSDIS) Core System (ECS).

Condition - The student will be given oral or written information and requirements for performing production planning and processing activities, access to the planning and production processing systems, a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform production planning and processing activities in accordance with the prescribed procedures without error.

Specific Objective 1 - The student will describe the general functions and processes included in the Planning Subsystem and the Data Processing Subsystem (in the context of ECS operations).

Condition - The student will be given written or oral questions concerning the general functions and processes included in the Planning and Data Processing Subsystems.

Standard - The student will state without error the general functions and processes included in the Planning and Data Processing Subsystems in accordance with the applicable procedure.

Specific Objective 2 - The student will perform the steps involved in launching the production request editor.

Condition - The student will be given a statement of the requirements for launching the production request editor, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in launching the production request editor in accordance with the applicable procedure.

Specific Objective 3 - The student will perform the steps involved in creating a new production request.

Condition - The student will be given a statement of the requirements for preparing a new production request, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in preparing a new production request in accordance with the applicable procedure.

Specific Objective 4 - The student will perform the steps involved in modifying a production request.

Condition - The student will be given a statement of the requirements for modifying a production request, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in modifying a production request in accordance with the applicable procedure.

Specific Objective 5 - The student will perform the steps involved in deleting a production request.

Condition - The student will be given a statement of the requirements for deleting a production request, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in deleting a production request in accordance with the applicable procedure.

Specific Objective 6 - The student will perform the steps involved in reviewing data processing requests.

Condition - The student will be given a statement of the requirements for reviewing data processing requests, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing data processing requests in accordance with the applicable procedure.

Specific Objective 7 - The student will perform the steps involved in deleting a data processing request.

Condition - The student will be given a statement of the requirements for deleting a data processing request, access to the planning system (through a workstation or X terminal), a copy

of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in deleting a data processing request in accordance with the applicable procedure.

Specific Objective 8 - The student will perform the steps involved in submitting or withdrawing a subscription using the subscription editor.

Condition - The student will be given a statement of the requirements for submitting or withdrawing a subscription using the subscription editor, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in submitting or withdrawing a subscription using the subscription editor in accordance with the applicable procedure.

Specific Objective 9 - The student will perform the steps involved in launching planning workbench-related GUIs.

Condition - The student will be given a statement of the requirements for launching planning workbench-related GUIs, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in launching planning workbench-related GUIs in accordance with the applicable procedure.

Specific Objective 10 - The student will perform the steps involved in defining a production strategy.

Condition - The student will be given a statement of the requirements for defining a production strategy, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in defining a production strategy in accordance with the applicable procedure.

Specific Objective 11 - The student will perform the steps involved in creating a new production plan.

Condition - The student will be given a statement of the requirements for preparing a new production plan, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in preparing a new production plan in accordance with the applicable procedure.

Specific Objective 12 - The student will perform the steps involved in reviewing a production plan timeline.

Condition - The student will be given a statement of the requirements for reviewing a production plan timeline, access to the planning system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing a production plan timeline in accordance with the applicable procedure.

Specific Objective 13 - The student will perform the steps involved in troubleshooting production planning problems.

Condition - The student will be given a statement of the requirements for troubleshooting production planning problems, access to the Data Processing Subsystem (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in troubleshooting production planning problems in accordance with the applicable procedure.

Specific Objective 14 - The student will perform the steps involved in launching production processing applications.

Condition - The student will be given a statement of the requirements for launching production processing applications, access to the Data Processing Subsystem (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in launching production processing applications in accordance with the applicable procedure.

Specific Objective 15 - The student will perform the steps involved in configuring AutoSys runtime options.

Condition - The student will be given a statement of the requirements for configuring AutoSys runtime options, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in configuring AutoSys runtime options in accordance with the applicable procedure.

Specific Objective 16 - The student will perform the steps involved in reviewing hardware status (including changing hardware status views) using AutoSys.

Condition - The student will be given a statement of the requirements for reviewing hardware status (including changing hardware status views) using AutoSys, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in reviewing hardware status (including changing hardware status views) using AutoSys in accordance with the applicable procedure.

Specific Objective 17 - The student will perform the steps involved in reviewing data processing request (DPR) dependencies.

Condition - The student will be given a statement of the requirements for reviewing DPR dependencies, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing DPR dependencies in accordance with the applicable procedure.

Specific Objective 18 - The student will perform the steps involved in reviewing the DPR production timeline.

Condition - The student will be given a statement of the requirements for reviewing the DPR production timeline, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing the DPR production timeline in accordance with the applicable procedure.

Specific Objective 19 - The student will perform the steps involved in reviewing and configuring AutoSys alarms.

Condition - The student will be given a statement of the requirements for reviewing and configuring AutoSys alarms, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project,* and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing and configuring AutoSys alarms in accordance with the applicable procedure.

Specific Objective 20 - The student will perform the steps involved in specifying job selection criteria and reviewing job activities using AutoSys.

Condition - The student will be given a statement of the requirements for specifying job selection criteria and reviewing job activities using AutoSys, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0*

Operations Tools Manual for the ECS Project, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in specifying job selection criteria and reviewing job activities using AutoSys in accordance with the applicable procedure.

Condition - The student will be given a statement of the requirements for modifying job priority using AutoSys, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in modifying job priority using AutoSys in accordance with the applicable procedure.

Specific Objective 22 - The student will perform the steps involved in modifying job status using AutoSys.

Condition - The student will be given a statement of the requirements for modifying job status using AutoSys, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in modifying job status using AutoSys in accordance with the applicable procedure.

Specific Objective 23 - The student will perform the steps involved in reviewing activity logs and job dependency logs.

Condition - The student will be given a statement of the requirements for reviewing activity logs and job dependency logs, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in reviewing activity logs and job dependency logs in accordance with the applicable procedure.

Specific Objective 24 - The student will perform the steps involved in defining and running monitors/browsers.

Condition - The student will be given a statement of the requirements for defining and running monitors/browsers, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in defining and running monitors/browsers in accordance with the applicable procedure.

Specific Objective 25 - The student will perform the steps involved in reviewing the database maintenance time.

Condition - The student will be given a statement of the requirements for reviewing the database maintenance time, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in reviewing the database maintenance time in accordance with the applicable procedure.

Specific Objective 26 - The student will perform the steps involved in troubleshooting processing problems.

Condition - The student will be given a statement of the requirements for troubleshooting processing problems, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in troubleshooting processing problems in accordance with the applicable procedure.

Specific Objective 27 - The student will perform the steps involved in launching the Quality Assurance (QA) Monitor GUI.

Condition - The student will be given a statement of the requirements for QA Monitor GUI, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in QA Monitor GUI in accordance with the applicable procedure.

Specific Objective 28 - The student will perform the steps involved in updating quality assurance (QA) metadata of a science product granule.

Condition - The student will be given a statement of the requirements for updating QA metadata, access to the data processing system (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project.*

Standard - The student will perform without error the steps involved in updating QA metadata in accordance with the applicable procedure.

Specific Objective 29 - The student will perform the steps involved in regenerating granules in response to a loss of files from the archive.

Condition - The student will be given a statement of the requirements for regenerating granules in response to a loss of files from the archive, access to the planning and data processing systems (through a workstation or X terminal), a copy of 609-CD-003-002, *Version 2.0 Operations Tools Manual for the ECS Project*, and a copy of 611-CD-004-003, *Mission Operation Procedures for the ECS Project*.

Standard - The student will perform without error the steps involved in regenerating granules in response to a loss of files from the archive in accordance with the applicable procedure.

Importance

This lesson applies to students who will be members of the ECS production team (especially production planners and production monitors). The lesson will provide them with the knowledge and skills needed when performing their assigned tasks. Those tasks include (among other things) preparing production requests, preparing production plans and monitoring DPR production. The lesson describes why and how the activities are performed. Consequently, the students will become aware of what tasks they will be performing on the job and how to accomplish those tasks.

Production Planning and Processing

ECS Context

ECS production planning and processing processes are accomplished at the Distributed Active Archive Centers (DAACs). The people involved in production planning and processing activities are Production Planners and Production Monitors.

- The Production Planner performs planning functions; especially, notifying the Planning Subsystem (PLS) of the science processing jobs that are to be processed and when they are to be processed.
- The Production Monitor keeps track of operations in the Data Processing Subsystem, especially the execution of science data processing jobs (creation of data products).

The ECS Context Diagram (Figure 1) shows the relationships among the Planning Subsystem, Data Processing Subsystem, Data Server Subsystem, and the other subsystems within the Science Data Processing component of ECS. It is apparent that the interfaces the Planning and Data Processing Subsystems have with each other and that each has with the Data Server Subsystem (which manages access to the data archive) are critically important. Of course the context diagram shows a generalized (high-level) view of ECS. The Planning Subsystem and Data Processing Subsystem Architecture diagrams (Figures 2 and 3 respectively) focus on the individual subsystems and their relationships with other subsystems.

The Planning Subsystem (Figure 2) provides a mechanism for accomplishing the following general functions:

- Defining DAAC production resources.
- Scheduling production resources for non-production-related activities.
- Defining data processing jobs to be performed at the DAAC.
- Generating efficient plans for scheduling defined data processing jobs.
- Coordinating production with the Data Server Subsystem and Data Processing Subsystem to achieve a highly automated production system.

The Data Processing Subsystem PRONG computer software configuration item (CSCI) shown in Figure 3 is involved in the following general functions:

- Managing the allocation of data processing jobs to the site's data processing resources.
- Managing, queuing, and executing data processing jobs to produce data products.
- Supporting preliminary processing of ancillary data sets.

Providing a Quality Assurance (QA) environment for checking the quality of data products.

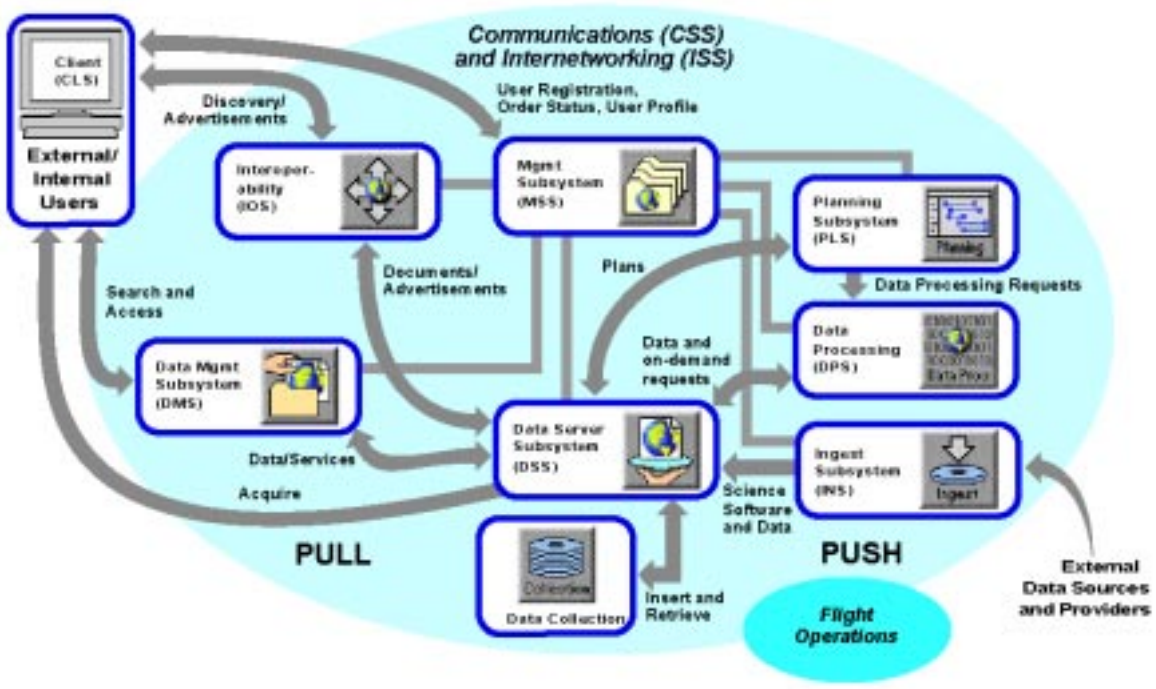

Figure 1. ECS Context Diagram

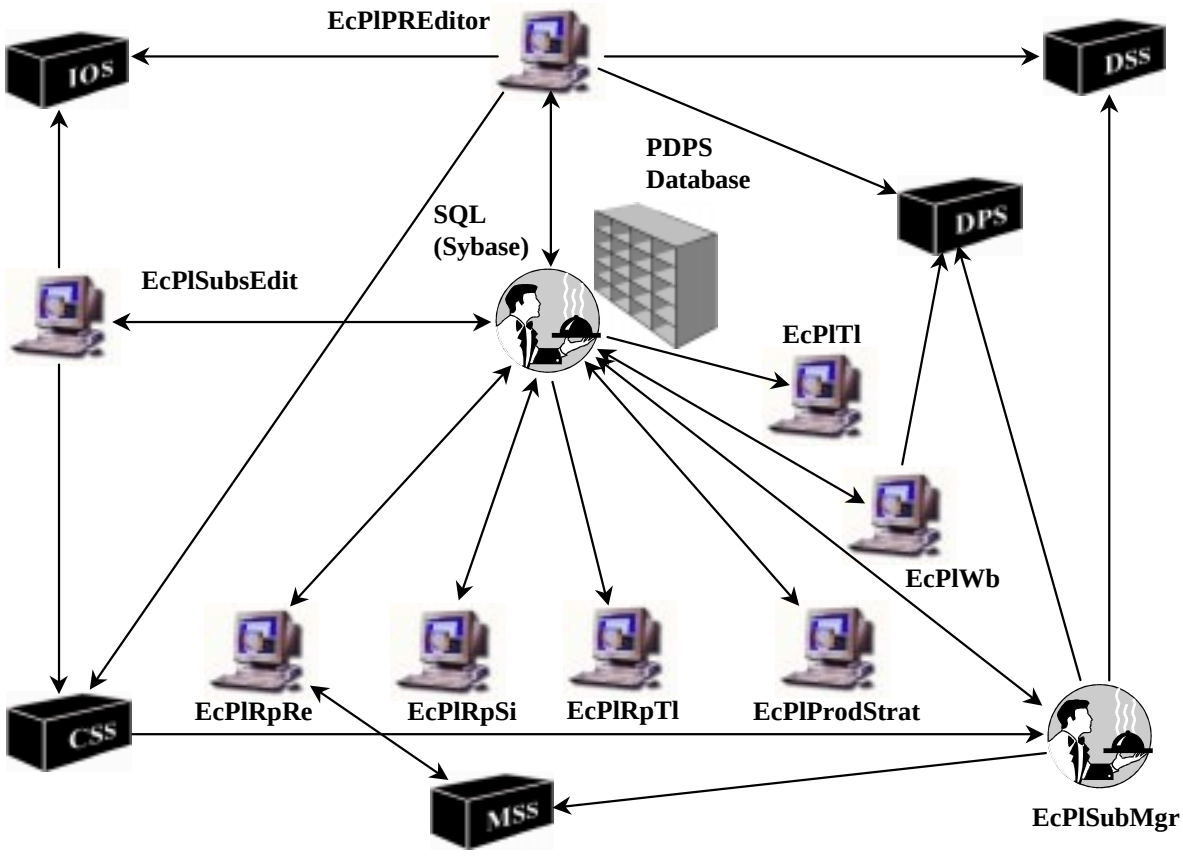

Figure 2. Planning Subsystem Architecture

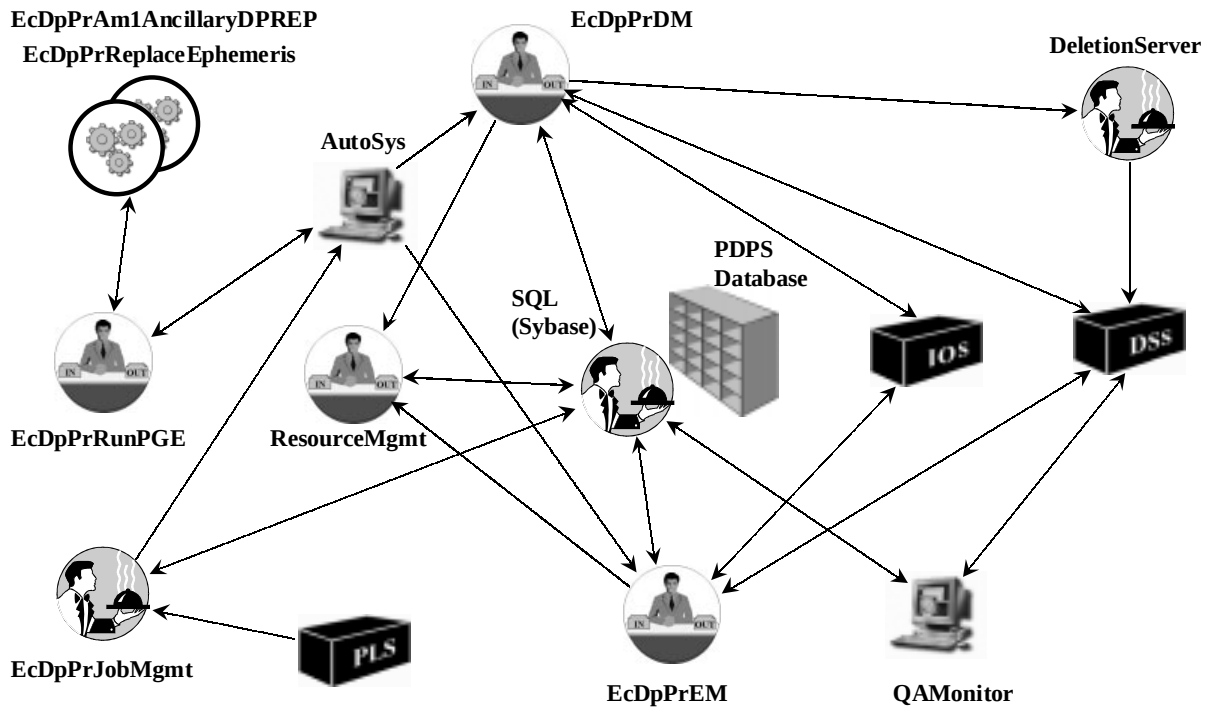

Figure 3. Data Processing Subsystem (PRONG CSCI) Architecture

Planning Subsystem

The Planning Subsystem (Figure 2) is the ECS Science Data Processing subsystem that the Production Planner uses when developing production plans. The Production Planner has access to the Planning Subsystem primarily through the Production Request Editor and the Planning Workbench. The Production Request Editor (PRE) is used for creating or modifying production requests (PRs); the Planning Workbench is used for scheduling PRs.

The Planning Subsystem is composed of just one computer software configuration item (CSCI); i.e., PLANG. The subsystem has the following major components as shown in Figure 2:

- Resource Planning Workbench.
  - — Resource Definition GUI (EcPlRpRe) - Graphical user interface (GUI) for defining/editing the resources at the site.
  - — Resource Planning GUI (EcPlRpSi) - GUI for creating/approving/committing resource reservations for non-production-related events and preparing a site resource schedule.
  - — Resource Planning Timeline GUI (EcPlRpTl) - Graphical interface for displaying the resource schedule.
- Production Request Editor (EcPlPREditor).

- GUI for submitting production requests that describe the data products to be produced; uses product generation executive (PGE) descriptions to generate the data processing requests (DPRs) necessary to fulfill the production requests.

- Production Planning Workbench.
  - Planning Workbench GUI (EcPlWb) - GUI for preparing and activating a site production schedule.
  - Production Strategies GUI (EcPlProdStrat) - GUI for defining production strategies (assign priorities for DPRs based on such characteristics as the type of production request, who is requesting processing, and the type of PGE to be run).
  - Production Planning Timeline (EcPlTl) - Graphical interface for displaying production schedules, including resource reservations.
- Subscription Manager (EcPlSubMgr).
  - Server that manages receipt of subscription notifications (e.g., availability of input data needed for DPRs).
- Subscription Editor (EcPlSubsEdit).
  - Character-based user interface that may be used to either submit or withdraw subscriptions for notification of system events (e.g., insertion of data into the archive).
  - Subscriptions may be submitted on behalf of a general user or on behalf of the Planning Subsystem.
- Sybase Structured Query Language (SQL) Server.
  - Commercial off-the-shelf (COTS) software application that handles insertion of data for planning and processing activities into the Planning and Data Processing Subsystems' (PDPS) shared database.

In addition to the preceding major components the Planning Subsystem includes the following components associated with both the resource planning applications and the production planning workbench:

- Message Handler (EcPlMsh).
  - GUI that displays various types of messages including warning messages and information messages.
- System Name Server (EcPlSns).
  - Handles interprocess communication.
- Resource Model (EcPlRpRm, EcPlRm).
  - Underlying resource data coordinators for the planning software.

The Message Handler, System Name Server, and Resource Model are associated with both the resource planning workbench and the production planning workbench applications:

Data Processing Subsystem

The Data Processing Subsystem is the ECS Science Data Processing subsystem that the Production Monitor uses when monitoring data processing. The Production Monitor has access to the Data Processing Subsystem primarily through AutoSys/AutoXpert and the Quality

Assurance Monitor (QA Monitor). AutoSys is used for monitoring the processing of DPRs. The QA Monitor is used primarily for updating QA metadata flags.

The Data Processing Subsystem is composed of the following three computer software configuration items (CSCIs):

- PRONG.
  - Provides the services required to manage and monitor the Science Data Processing environment, which executes Science Software items (PGEs) and produces data products.
- Algorithm Integration & Test Tools (AITTL).
  - Set of tools used for test and integration of new science software, new versions of science software, and user methods into the Science Data Processing operational environment.
- Science Data Processing (SDP) Toolkit.
  - Provides a set of software libraries, which are used to integrate Science Software into the ECS environment.

The PRONG CSCI is the focus of this section. PRONG (shown in Figure 3) has the following major components:

- AutoSys/AutoXpert.
  - COTS job scheduling software application used to accomplish the execution of jobs that support PGE execution in an automated fashion.
  - Provides the ability to create job boxes (a series of related jobs).
  - Manages job dependencies (the input of some processing jobs is the output of other jobs).
  - Provides graphical depictions of scheduled jobs, completed jobs, and jobs being processed.
  - Includes GUIs that allow human intervention in the AutoSys job stream.
  - Provides various mechanisms for monitoring and altering the job stream.
- Job Management (EcDpPrJobMgmt).
  - Controls the execution of the PGE and its support processes (i.e., Data Management, Execution Management, and PGE Management) that are executed from AutoSys.
  - Maintains a queue of jobs that are waiting for science data and upon receiving notification of data availability, initiates the execution.
- Resource Management.
  - Used for the allocation of resources (i.e., disk space, memory, and Central Processing Unit (CPU) resources) for executing PGEs.
  - After a PGE completes its execution, the CPU and memory that were allocated are made available for the execution of other PGEs.
  - Files on the production disk are removed on a need-only basis.
- Data Management (EcDpPrDM).
  - Manages the flow of science data to and from science processing resources.
  - Provides additional functions to manage the retention of data on science processing resources to support many PGE executions.

- PGE Management (EcDpPrRunPGE).
  - Controls and monitors the execution of PGE and the growth of the output products.
  - Measures the actual resources used by the PGE.
  - Reports to AutoSys if any abnormal/unexpected events occur, e.g., unexpected resource utilization.
- Execution Management (EcDpPrEM).
  - Initiates PGE execution (via AutoSys).
  - Supports the preparation activities prior to the execution of each PGE and activities subsequent to the execution of each PGE.
- Data Preprocessing (EcDpPrAm1AncilliaryDPREP and EcDpPrReplaceEphemeris)
  - Converts level zero (L0) attitude and ephemeris ancillary data into SDP Toolkit native binary format, using a statistical approach.
- Quality Assurance Monitor (QAMonitor).
  - Simple interface allowing DAAC operators to perform QA functions (especially updating QA metadata) on output data.
- Deletion Server.
  - Notifies Science Data Server to remove interim granules via the data management process once they are no longer needed.
  - Interim product is removed after the last PGE in the chain has used the interim product and a pre set time has expired after its last use.
- Sybase SQL Server.
  - COTS product that acts as an SQL server for the PDPS database.

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Production Requests

Science Software and Production Requests

Science software is one of the keys to production planning and processing:

- Performs the actual data processing to create desired products.
- Is developed at Science Computing Facilities (SCFs) external to ECS.
- Is embodied in Product Generation Executives (PGEs) when the software is integrated into the ECS production processing environment.
  - PGEs are science software code (e.g., executable programs or shell scripts) that contain the instructions for processing data to create the desired products.

The production request (PR) is another key to production planning and processing. The Production Planner defines ECS science data processing in terms of PRs.

- A PR is an order for data to be produced by the Data Processing Subsystem.
- A single PR may specify several jobs (using the same PGE) that are to be run over a period of time or a single job producing a single set of data.
- PRs may apply to the processing of new data (standard PRs or standing orders) or the reprocessing of existing data (reprocessing PRs).
- Each PR identifies a specific PGE for generating a particular type of product.
  - Some PGEs are dependent on others; i.e., some PGEs require input data that are the output of other PGEs.
  - The planning software will recognize and reject a PR when the PR specifies a PGE that requires data from another PGE that has not yet been specified in a PR.

The Planning Subsystem performs the following functions:

- Uses each PR to generate either one or a series of Data Processing Requests (DPRs).
  - Each DPR corresponds to one execution of a single PGE.
  - Each DPR contains the information that is needed by the SDP processing function, including PGE-related information.
- Checks the availability of the data required for the DPR, either from the data server (if the data have been previously ingested) or from internal predictions (if the data are expected to arrive in the future).
- Determines what data will be included in the DPR output so the system can make predictions concerning the availability of data for subsequent PGEs.

Figure 4 shows the relationships among the PGEs, PRs, and DPRs as they are accessed through the Production Request Editor GUI.

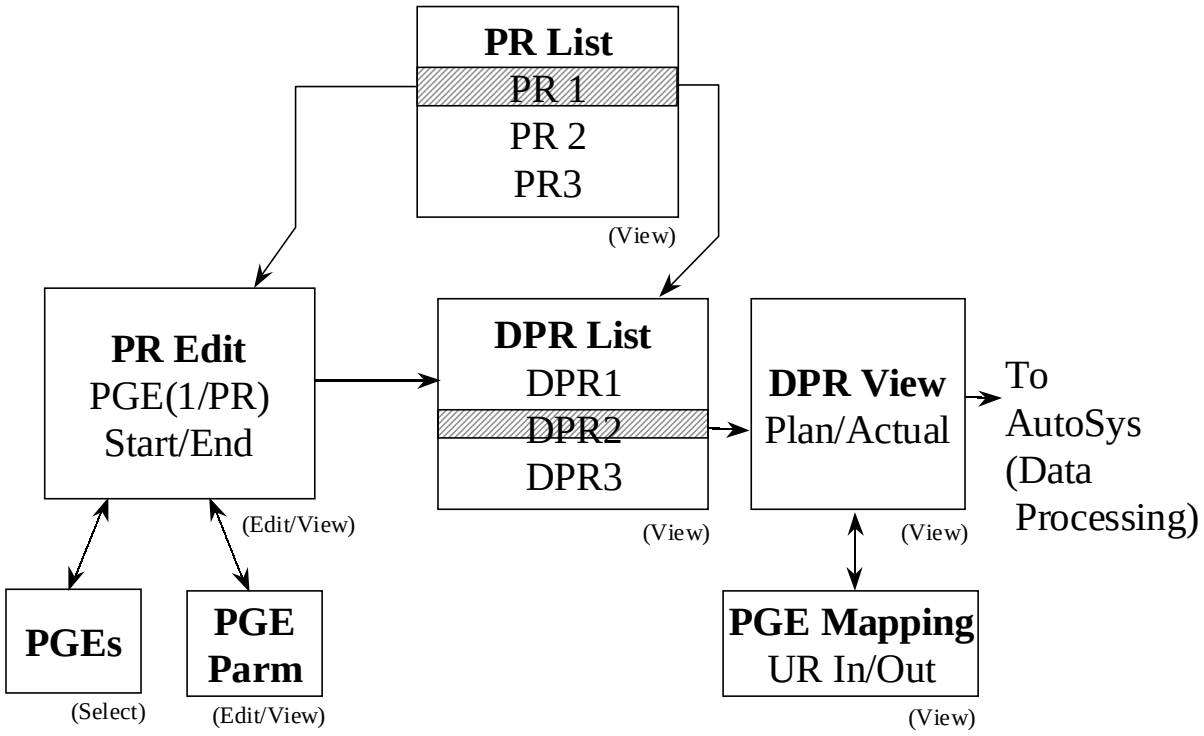

Figure 4. Production Request Editor Flow

Types of Processing

ECS either accommodates or will accommodate the following three general types of data processing:

- Routine Processing
- Reprocessing
- Ad-Hoc Reprocessing
- On-Demand Processing

Routine processing is pre-defined software production processing that is periodic and keyed to data arrival. For example, every day a Production Planner includes in the daily schedule a DPR for generating a particular Level 1A product from the most recent Level 0 data from the applicable satellite instrument.

Reprocessing typically involves using a new, improved PGE to process data that had previously been processed with an older version of the PGE. In such cases reprocessing would be a large-scale operation, especially if several years worth of data were to be reprocessed. Consequently, the Production Planner is likely to schedule reprocessing in manageable quantities so the processing resources can accommodate routine and on-demand processing in addition to the reprocessing.

In addition, ad-hoc reprocessing could be necessary at any time. For example, if a product fails a quality assurance (QA) check, the same PGE could be run again on the same data set in the hope of creating an acceptable product. Similarly, if processing of a PGE fails for some reason, it might be possible to rerun the PGE and hopefully achieve a successful outcome.

On-demand processing is ad-hoc processing initiated by either the Planning Subsystem or an end-user (as opposed to the Production Planner). For example, an ASTER researcher may need a particular Level 2 product that has not yet been generated and would submit an on-demand request to have the product generated from a Level 1B product stored in the archive.

In the future such on-demand processing requests (OPRs) will be entered from a Client Subsystem tool, passed through the Distributed Information Manager (Data Management Subsystem) and the Data Server to the Planning Subsystem. Currently there is a work-around to the automated process which requires the requester to contact DAAC personnel to make the request. So far ASTER researchers are the only identified external users of automated on-demand processing.

Another future feature is automated cross-DAAC planning. It is a process that will be undertaken when products produced at one DAAC require inputs being produced at another DAAC. The predicted production time of remote input products will be used in creating local production plans. The primary mechanism for cross-DAAC planning will be the use of Predicted Data Availability Schedules (PDAS), created when a plan is created. A DAAC's PDAS will be made available to remote DAACs via the Data Server.

Production Rules

Each PGE is subject to one or more production rules, which specify requirements for processing the PGE. Production rules determine the conditions under which a PGE may be run. The conditions include the types of parameters for which the Production Planner must supply values when creating a production request. For example, the Production Planner may have to enter a time range (or a range of spacecraft orbits) for the PGE's input data.

PGE developers provide ECS with documentation concerning the PGEs they develop. The information includes the production rules that apply to each PGE. An example of the documentation provided by PGE developers is the MODIS Science Data Processing Software Version 2.0 System Description Document (SDST-104).

When a PGE undergoes Science Software Integration and Test (SSI&T) at the DAAC, information concerning the production rule(s) applicable to the PGE is included in the PGE metadata Object Description Language (ODL) file. Information concerning the PGE's input and output granules is entered in ESDT metadata ODL files during SSI&T. Other ODL files may be required for implementing certain production rules. For example, a tile metadata ODL file is required for the implementation of tiling and an orbit model ODL file is needed for orbit-based processing.

- The ODL files are read by SSI&T software. The data describing the PGE is stored in the PDPS database.

- When the PGE is executed in the production environment, the information in the PDPS database is retrieved to schedule the PGE for execution.
- The information tells PDPS when the PGE should be scheduled, what data needs to be present to run the PGE, and what processing resources are needed.

Production rules contribute to a very flexible processing environment. However, the flexibility is achieved at the expense of adding to the complexity of the production planning and SSI&T processes (especially the latter).

The following statements are some simplified examples of the production rules that are scheduled to be made available in Release 4:

- **Basic Temporal** - Temporal (time) range of inputs matches the temporal range of outputs.
- **Advanced Temporal** - Temporal range of inputs is offset from the expected temporal range of inputs and outputs.
- **Alternate Inputs** - PGE is run with different inputs based on the availability or quality of various alternate input data sets.
- **Optional Inputs** - PGE is run with specified optional inputs if available; otherwise, PGE is run without them.
- **Tiling** - Input data is chosen on the basis of Instrument Team-defined tiles (geographic areas).
- **Intermittent Activation** - Every n^{th} DPR is activated; all other DPRs are skipped.
- **Metadata-Based Conditional Activation** - DPR is run only if metadata value(s) meet(s) certain criteria.
- **Metadata-Based Query** - Input granule selection is based on metadata value.
- **Data Day** - Input data selection is based on Data Day.
- **Orbital Processing** - Selection of input times is based on orbit information.
- **PGE Exit Conditions** - An error message is provided or PGE activation is prevented depending on the value of a PGE exit code.

Basic Temporal Production Rule

The most basic type of production rule specifies the time range for each input of the relevant Earth Science Data Type (ESDT) required by the PGE. For example, the run of a PGE which produces a five-minute MOD10_L2 [MODIS Level 2 Snow Cover (500m)] data granule requires as input the MOD02HKM [MODIS Level 1B Calibrated Radiances (500m)], MOD03 [MODIS Geolocation], and MOD35_L2 [MODIS Level 2 Cloud Mask and Spectral Test Results] granules that include the same specific five-minute time period as the MOD10_L2 granule to be produced.

For each PGE that uses the basic temporal rule, the SSI&T team enters the following types of temporal-rule information (in addition to other types of information) in the PGE metadata ODL file during the SSI&T process:

- **PGE Schedule Type** - Time (as opposed to “Orbit” or “Tile”).
- **Processing Boundary** - Time boundary on which the **PGE runs**. Valid values are as follows:
  - START_OF_HOUR.

  - START_OF_6HOUR.
  - START_OF_DAY.
  - START_OF_WEEK.
  - START_OF_ONE_THIRD_MONTH.
  - START_OF_MONTH.
  - START_OF_YEAR.
  - START_DATE.
  - START_OF_ORBIT.
- **Processing Period** - Interval **between PGE runs** (e.g., "DAYS=1"). Valid types are as follows:
  - SECS.
  - MINS.
  - HOURS.
  - DAYS.
  - WEEKS.
  - THIRDS.
  - MONTHS.
  - YEARS.
  - ORBITS.

For each input ESDT that comes from an external source (rather than being generated by PGEs at the DAAC) the SSI&T team enters following types of temporal-rule information (in addition to other types of information) in the ESDT metadata ODL file:

- **Processing Boundary** - Time boundary on which the **data are collected**.
- **Processing Period** - Interval of **data collection** (e.g., every hour, every two hours, every day).

A detailed example of the Basic Temporal Production Rule is shown in Figure 5 and is described as follows:

- Involves a PGE which creates a daily (24-hour) output data set that corresponds to a calendar day.
- Input data for the ESDT is ingested and archived every two hours.
- The following statements were included in the PGE metadata ODL file during SSI&T:
  - SCHEDULE_TYPE = "Time"
  - PROCESSING_BOUNDARY = "START_OF_DAY"
  - PROCESSING_PERIOD = "DAYS=1"
- During SSI&T the following statements were included in the ESDT metadata ODL file for the input ESDT:
  - PROCESSING_BOUNDARY = "START_OF_DAY"
  - PROCESSING_PERIOD = "HOURS=2"
- The Production Planner creates the following two PRs:
  - First (PR #1) for the time between 06/03/99 00:00 and 06/06/99 24:00.
  - Second (PR #2) for the time between 06/07/99 00:00 and 06/16/99 24:00.

- When the first PR is entered, the Planning Subsystem produces DPRs for each period of time covered by the PR.
  - Creates a DPR (DPR 1.1) to process the first period (06/03/99 00:00 through 06/03/99 24:00).
  - Continues producing DPRs (DPR 1.2 through DPR 1.4) until it reaches the end of the period that contains the end time of the PR.

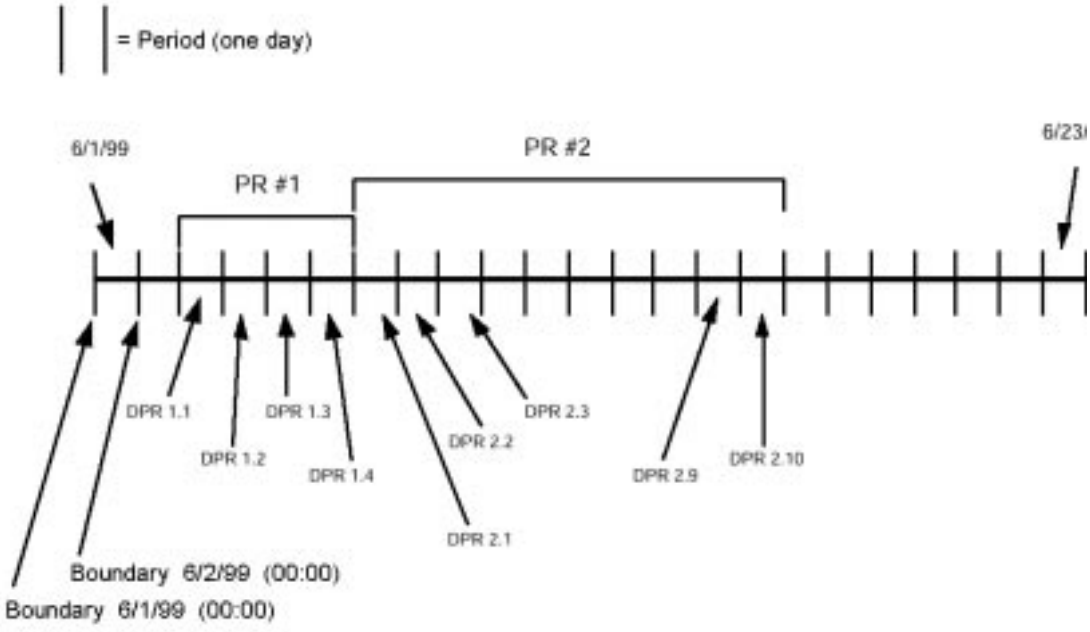

Figure 5. Example of DPR Creation Using the Basic Temporal Production Rule

- When PR #2 is entered, the same process takes place, producing DPR 2.1 through DPR 2.10.

Advanced Temporal Production Rule

The input data requested for a PGE may include granules that are outside the processing period for the PGE run. The Advanced Temporal Production Rule provides the capability for retrieving input data beyond the time limits of the processing period. Using the Advanced Temporal Production Rule, the input data date/time requirements may be offset from either the start or the end of the PGE processing period (or both) to acquire the necessary granules of a specified ESDT. If the offset's delta (variation from the processing period) is negative, the input date/time is moved backward in time. A positive delta moves the date/time forward in time. Different deltas may be applied to each input ESDT.

For each PGE that uses the Advanced Temporal Production Rule, the same types of information that are entered for the Basic Temporal Production Rule must be specified in the PGE metadata

ODL file during the SSI&T process. That information includes the PGE Schedule Type, Processing Boundary, and Processing Period. In addition, the following types of information must be included:

- **Begin Period Offset** - Number of seconds to add (+) or subtract (-) from the start collection time when requesting data.
- **End Period Offset** - Number of seconds to add or subtract from the end collection time when requesting data.

The following detailed example of the Advanced Temporal Production Rule is a modification of the Basic Temporal Production Rule shown in Figure 5 involving the addition of a two-hour (7200-second) offset at the beginning of the period.

- PGE creates a daily (24-hour) data set.
- Input data for the ESDT is ingested and archived every two hours.
- The following statements were included in the PGE metadata ODL file during SSI&T:
  - SCHEDULE_TYPE = “Time”
  - PROCESSING_BOUNDARY = “START_OF_DAY”
  - PROCESSING_PERIOD = “DAYS=1”
  - BEGIN_PERIOD_OFFSET = -7200
  - END_PERIOD_OFFSET = 0
- During SSI&T the following statements were included in the ESDT metadata ODL file for the input ESDT:
  - PROCESSING_BOUNDARY = “START_OF_DAY”
  - PROCESSING_PERIOD = “HOURS=2”
- The Production Planner creates the following two PRs:
  - First (PR #1) for the time between 06/03/99 00:00 and 06/06/99 24:00.
  - Second (PR #2) for the time between 06/07/99 00:00 and 06/16/99 24:00.
- When the first PR is entered, the Planning Subsystem produces DPRs for each period of time covered by the PR.
  - Creates a DPR (DPR 1.1) to process the first period (06/03/99 00:00 through 06/03/99 24:00); however, when PLS requests the input data for processing the PGE, it will include a request for data for 06/02/99 22:00 through 24:00 (the 7200 seconds preceding the beginning of the processing period).
  - Continues producing DPRs (DPR 1.2 through DPR 1.4) including an input data offset of two hours until it reaches the end of the period that contains the end time of the PR.
- When PR #2 is entered, the same process takes place, producing DPR 2.1 through DPR 2.10.

Alternate Inputs Production Rule

The Alternate Inputs Production Rule applies to the type of PGE that can use any one of several inputs for one of its input data sets. For example, a particular PGE might require model wind data as an input and would be capable of accepting wind data from a Data Assimilation Office (DAO) model, a National Centers for Environmental Prediction (NCEP) model or, as a last

resort, could use climatology. Variants of the rule allow alternates to be grouped so that more than one of the alternates may be needed (e.g., use any 2 of 3 ESDTs in the group).

During SSI&T a hierarchy of alternative input granules/files is specified in the PGE metadata ODL file. One input is considered the "primary" input. The others are identified as "alternate" inputs. Each input has an associated time-out period. If the input does not become available within the time-out period, processing will wait for the next alternate through its time-out period and so on. If the primary input or a higher-priority alternate becomes available during the waiting period for a lower-priority alternate, the PGE is activated with the available higher-priority input.

The SSI&T team enters the following information in the PGE metadata ODL file for each Data Type (PCF Entry) that is or has alternate inputs:

- **Input_Type** - Either "Primary" (first choice) or "Alternate" (all other choices).
- **Number Needed** - Number of the alternate data sets (from the group of alternatives) required by the PGE.
  - Typically one, but can be more.
- **Object** - Alternate_Input.
- **Category** - Name of list of alternates.
  - Same for every alternate in the list.
- **Order** - Number indicating the alternate's place in the hierarchy [i.e., 1 (first), 2 (second), etc.]
- **Timer** - Number of days/hours/seconds to wait for alternate (e.g., "HOURS=6").
- **WaitFor** - "Y" or "N" indicating whether the PGE should continue without waiting for this alternate.
  - Should be "N" for all but the last alternate in the list.
- **Temporal** - Indicates whether the alternate data type has a temporal component (i.e., "Y" or "N").
  - "N" indicates "use the most currently produced."
- **End Object** - Alternate_Input

An example of PGE metadata ODL file entries for Alternate Inputs is shown in Table 1. The Production Planner can make some modifications to the alternate input specifications (e.g., timer settings) when creating a production request using the Production Request Editor.

Table 1. Extract of PGE Metadata ODL File Template Showing Alternate Inputs (1 of 2)

```
>OBJECT = PCF_ENTRY
>   CLASS = 16
>   LOGICAL_ID = 1500
>   PCF_FILE_TYPE = 1
>   DATA_TYPE_NAME = "MOD10L2G"       [MODIS Level 2G Snow Cover]
>   DATA_TYPE_VERSION = "1"           [ESDT versioning in release B.0]
>   DATA_TYPE_REQUIREMENT = 1
>   SCIENCE_GROUP = ""
>   OBJECT = FILETYPE
>      CLASS = 1
>      FILETYPE_NAME = "Single File Granule"
>   END_OBJECT = FILETYPE
>   INPUT_TYPE = "Primary"
>   NUMBER_NEEDED = 1
>   OBJECT = ALTERNATE_INPUT
>      CLASS = 1
>      CATEGORY = "Snow Ice"             [User defined]
>      ORDER = 1                         [This data type is sought first]
>      RUNTIME_PARM_ID = 1509            [Run-time parameter holds LID of alternate]
>      TIMER = "HOURS=6"
>      WAITFOR = "N"                     [Force time-out on wait]
>      TEMPORAL = "N"                    [Use most currently produced]
>   END_OBJECT = ALTERNATE_INPUT
>END_OBJECT = PCF_ENTRY
>
>OBJECT = PCF_ENTRY
>   CLASS = 17
>   LOGICAL_ID = 1501
>   PCF_FILE_TYPE = 1
>   DATA_TYPE_NAME = "MOD10A1"        [MODIS Level 3 Daily Gridded Snow Cover data set]
>   DATA_TYPE_VERSION = "1"
>   DATA_TYPE_REQUIREMENT = 1
>   SCIENCE_GROUP = ""
>   OBJECT = FILETYPE
>      CLASS = 2
>      FILETYPE_NAME = "Single File Granule"
>   END_OBJECT = FILETYPE
>   INPUT_TYPE = "Alternate"
>   OBJECT = ALTERNATE_INPUT
>      CLASS = 2
```

Table 1. Extract of PGE Metadata ODL File Template Showing Alternate Inputs (2 of 2)

```
>     CATEGORY = "Snow Ice"                [User defined]
>     ORDER = 2                            [This data type is sought last]
>     RUNTIME_PARM_ID = 1509               [Run-time parameter holds LID of alternate]
>     TIMER = "HOURS=6"                    [Wait 6 additional hours]
>     WAITFOR = "N"
>     TEMPORAL = "N"
>   END_OBJECT = ALTERNATE_INPUT
>END_OBJECT = PCF_ENTRY
>
>OBJECT = PCF_ENTRY
>   CLASS = 18
>   LOGICAL_ID = 1502
>   PCF_FILE_TYPE = 1
>   DATA_TYPE_NAME = "MIANTASC"      [MISR Terrestrial Atmosphere and Surface Climatology]
>   DATA_TYPE_VERSION = "1"
>   DATA_TYPE_REQUIREMENT = 1
>   SCIENCE_GROUP = ""
>   OBJECT = FILETYPE
>     CLASS = 3
>     FILETYPE_NAME = "Single File Granule"
>   END_OBJECT = FILETYPE
>   INPUT_TYPE = "Alternate"
>   OBJECT = ALTERNATE_INPUT
>     CLASS = 3
>     CATEGORY = "Snow Ice"              [User defined]
>     ORDER = 3                          [This data type is sought last]
>     RUNTIME_PARM_ID = 1509             [Run-time parameter holds LID of alternate]
>     TIMER = ""                         [Don't wait for this one]
>     WAITFOR = "Y"                      [Start anyway]
>     TEMPORAL = "N"
>   END_OBJECT = ALTERNATE_INPUT
>END_OBJECT = PCF_ENTRY
```

The example of the Alternate Inputs Production Rule listed in Table 1 is illustrated in Figure 6 and can be described as follows:

- The PGE has one *required* input data set and a second data set, which can be *any one of three* alternates.

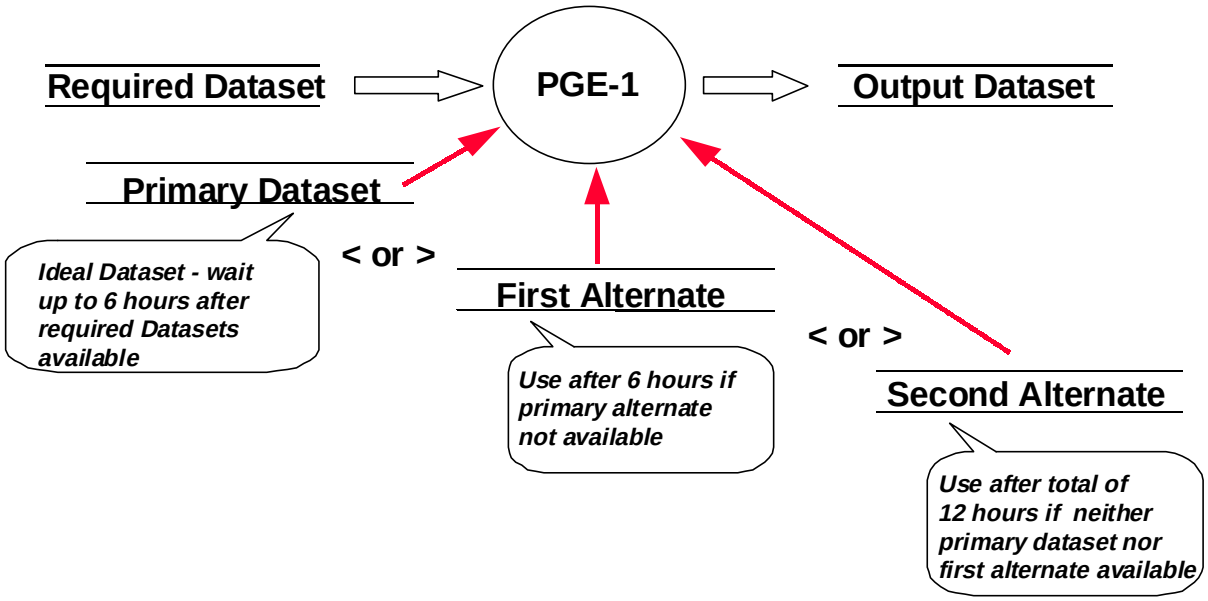

Figure 6. Example of Alternate Inputs Production Rule

- Of the three alternates, the first ("primary dataset") is the preferred data set and the last choice is the least desirable.
- Unless the Production Planner designates different choices for Primary Dataset (first choice), First Alternate and/or Secondary Alternate or resets the timer for each when creating a production request, the PGE will use inputs as follows:
  - Primary Dataset (first choice) timer is set for six hours.
  - Primary Alternate timer is set for six hours.
  - Secondary Alternate timer is set at null value.
- After the production plan that includes a DPR for the PGE has been activated and the *required* input becomes available, an attempt is made to acquire the primary data set.
  - If the first choice is unavailable, the Planning Subsystem holds the DPR and starts the first timer (six hours).
  - If the first choice becomes available within the six-hour period, the DPR is started as soon as possible.
- If the first timer expires and the primary data set is still unavailable, an attempt is made to use the first alternate.
  - If the first alternate is unavailable, the second timer (six hours) is started.
  - If either the primary data set or the first alternate becomes available at any time during the second six-hour period, the DPR is started as soon as possible using whichever data set became available first.
  - If the second timer expires (a total of twelve hours after the required input became available), an attempt is made to use the second alternate.

- Most PGEs are expected to have a last alternate that is always available (e.g., climatology).
  - If the last alternate is not available, the DPR is held indefinitely waiting for one of the alternates to become available.

Optional Inputs Production Rule

The Optional Inputs Production Rule (Figure 7) applies to the type of PGE that can be run either with or without optional input(s) in addition to the required input(s). The PGE would not be activated until the expiration of the time-out period(s) for the optional input(s). If there are multiple optional inputs, the time-out periods count down at the same time. The PGE would be activated under either of the following conditions:

- Activated with the optional input(s) upon the availability of optional input(s) during the time-out period(s).
- Activated without the optional input(s) at the expiration of the time-out period(s) for the optional input(s).

For example, a particular MISR PGE might use TASC (Terrestrial Atmosphere and Surface Climatology) data as a required input and would use either MOD10A1 (MODIS Level 3 Daily Gridded Snow Cover) data or MOD10L2G (MODIS Level 2G Snow Cover) data if either were available within a two-hour period of time. The PGE would run with just TASC data if *neither* set of optional data became available within the specified two-hour time-out period.

The SSI&T team would enter the following information in the PGE metadata ODL file for each Data Type (PCF Entry) that is an Optional Input:

- **Input_Type** - Optional.
- **Object** - Optional_Input.
- **Category** - Name of the list of optional inputs.
- **Order** - Number indicating the option's place in the hierarchy (i.e., first, second, etc.).
- **Timer** - Number of days/hours/seconds to wait for the optional input (e.g., "HOURS=2").
- **Temporal** - Indicates whether or not the optional data type has a temporal component (i.e., "Y" or "N").

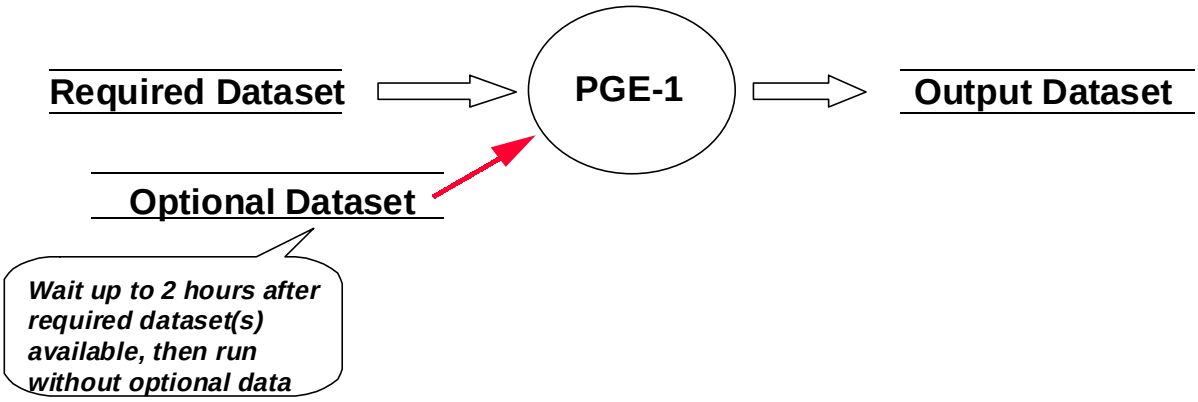

Figure 7. Example of Optional Inputs Production Rule

- **End Object** - Optional_Input.

Tiling Production Rule

The Tiling Production Rule is applied to a type of PGE that is set up to run for a series of pre-defined areas (tiles) on the earth's surface. Among the requirements for implementing the Tiling Production Rule, is the necessity for the PGE developers to create tile definition files to describe all of the tiles. The Production Planner specifies the relevant Tile ID (which becomes a run-time parameter) when creating a production request. The Planning Subsystem uses the definitions to query the Data Server for input data granules relevant to the tile specified in the production request.

For each PGE that uses the Tiling Production Rule, the following types of information must be included in the PGE metadata ODL file during the SSI&T process:

- **PGE Schedule Type** - Tile.
- **Tile Scheme** - Name of the tile scheme defined in the tile metadata ODL file.

The following types of information must be included in the tile metadata ODL file:

- **Tile Scheme** - Name of the tile scheme.
- Entries for every tile, including data in the following categories:
  - **Tile ID** - Unique identifier used to refer to the tile.
  - **Tile Description** - Description of the tile.
  - **Coordinates** - Coordinates of the four (or more) corners of the tile.

An example of how the Tiling Production Rule is implemented is shown in Figure 8.

- A tile definition file is part of the package delivered with the PGE for SSI&T.

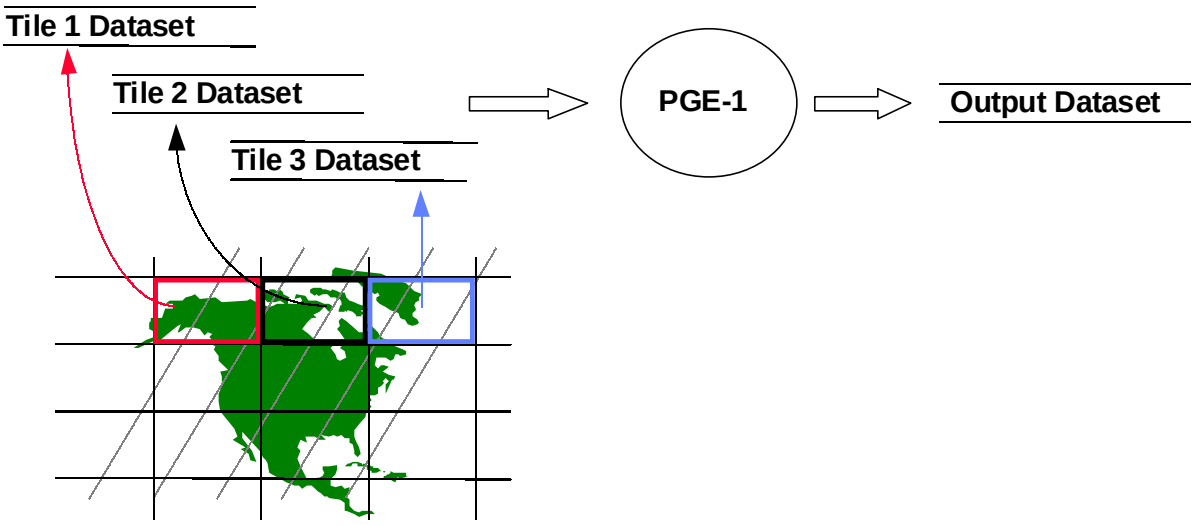

Figure 8. Example of Tiling

- During normal operations the Production Planner creates a PR to run the PGE on a particular tile. (The Production Planner specifies the Tile ID when creating the PR.)
  - A DPR is generated for the tile.
  - The Planning Subsystem (PLS) uses the tile definitions to query the Data Server Subsystem (DSS) to identify all input data granules covering the specified tile (i.e., Tile 2 in Figure 8).
  - It is likely that many of the input granules will have data outside as well as inside each tile.
  - The universal references (URs) for the input granules and the specific tile definition are passed to the Data Processing Subsystem (DPS) as part of each DPR.
  - As each DPR runs, the DPS acquires the inputs from the DSS, the PGE runs, and using only the data in the tile, creates an output data granule for its tile.

Intermittent Activation Production Rule

The conditions for executing most PGEs are well defined. The most common activation condition is the availability of all input data sets. Similarly, the frequency of execution is usually well defined (e.g., run once for every granule or run monthly averages once a month). However, some PGEs have additional or different constraints on when they are run.

A PGE can be set up to run on every n^{th} instance of input data. For example, a QA PGE that is run on a daily product may need to be run only every fifth day to provide a spot check. Note that this does **not** refer to the common case of running a weekly averaging PGE only once each week, which would be handled by the Basic Temporal rule and the time ranges specified for the input and output ESDTs. Rather, this is a special case where a PGE **can** be run every day (or hour,

week, etc.), but for some reason (such as a QA check) it is desired to run the PGE only every n^{th} day.

To implement the Intermittent Activation Production Rule the Production Planner supplies the following information (via the Production Request Editor) when creating a production request:

- **Number to Skip** - Number of DPRs to be skipped (not executed).
- **Number to Keep** - After skipping the specified number of DPRs, how many are to be kept.
  - The number to keep is usually one but could be any number.
- **Skip First** (button on the Production Request Editor) - Selected to skip the first DPR.
  - Not selected if the first DPR is to be run.

The Planning Subsystem uses the preceding information to establish a pattern of execution. The pattern is effective for the single PR in which the "number to skip" and the "number to keep" are specified; it is not maintained between PRs.

The following example of the Intermittent Activation Production Rule is shown in Figure 9:

- The Production Planner prepares a production request for a 14-day period, generating 14 DPRs.
- The Production Planner made the following selections on the Production Request Editor:
  - Entered "4" in the **Number to Skip** field.
  - Entered "1" in the **Number to Keep** field.
  - Did **not** select the **Skip First** button.
- Consequently, the following results will be obtained:
  - First DPR will run.
  - Four DPRs (second through fifth) will be skipped.
  - Sixth DPR will run.
  - Four DPRs (seventh through tenth) will be skipped.
  - Eleventh DPR will run.
  - Remaining three DPRs (twelfth through fourteenth) will be skipped.

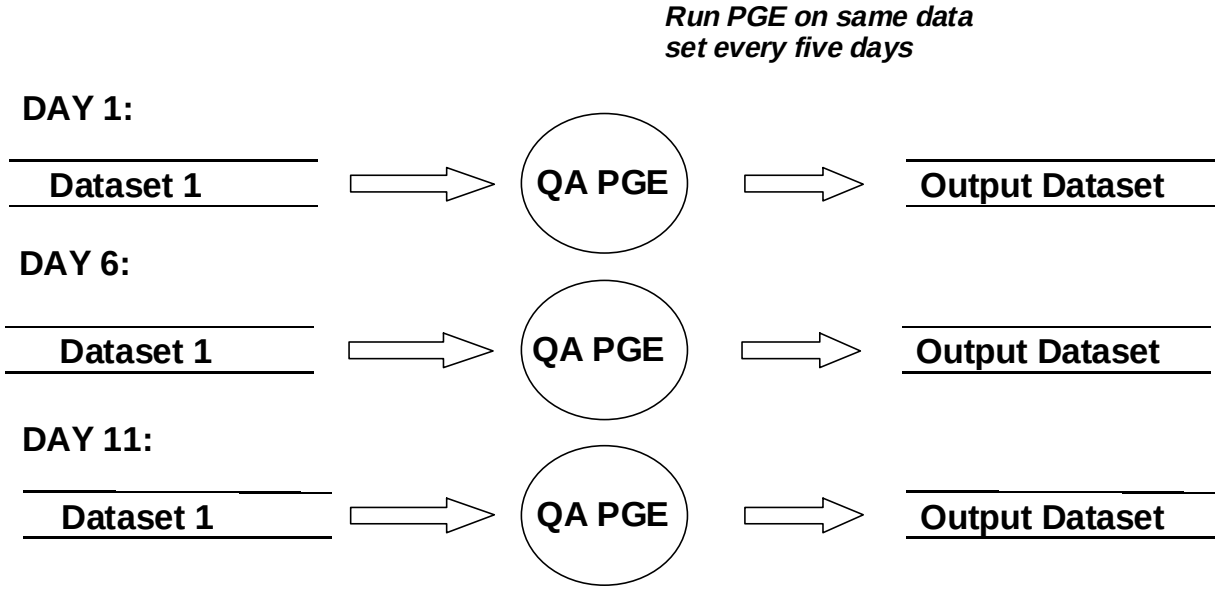

Figure 9. Example of the Intermittent Activation Production Rule

Metadata-Based Conditional Activation Production Rule

In some cases it is appropriate to base the determination of whether a given DPR should be run on a check of the inventory attributes and product-specific attributes (PSAs) of one or more of its input data sets. For example, a PGE could be set up so that a Quality Assurance (QA) flag must be set to an acceptable level/state within the metadata of an input data set or the PGE should not be run.

For each PGE that uses metadata-based conditional activation, the following types of information must be included in the PGE metadata ODL file during the SSI&T process:

- **Object** - Metadata_Checks.
- **Parm_Name** - Name of the metadata parameter (e.g., AutomaticQualityFlag) to be checked.
- **Operator** - Logical operator (i.e., ==, !=, <, <=, >, >=) on the parameter value.
- **Value** - Value to be checked against (e.g., "passed").

Checks and queries may be specified for more than one ESDT input and on more than one inventory attribute and PSA. Multiple default values for metadata checks and queries are implemented as a logical "AND" capability. (There is currently no "OR" capability.) Although default values for metadata checks are entered initially during SSI&T, the Production Planner can modify the values using the Production Request Editor when a production request is entered.

During SSI&T the following types of information must be included in the ESDT metadata ODL file for each input with a metadata check:

- **Object** - Metadata_Definition.
- **Parm_Name** - Name of the metadata parameter (e.g., AutomaticQualityFlag) to be checked.
- **Container Name** - Name of the container or group that includes the parameter value.
- **Type** - Type of parameter (e.g., integer, float, string).

The following example of metadata-based conditional activation is illustrated in Figure 10:

- The following statements were included in the PGE metadata ODL file during SSI&T:
  - OBJECT = METADATA_CHECKS
  - CLASS = 1
  - PARM_NAME = "AutomaticQualityFlag"
  - OPERATOR = "=="
  - VALUE = "passed"
  - END_OBJECT = METADATA_CHECKS

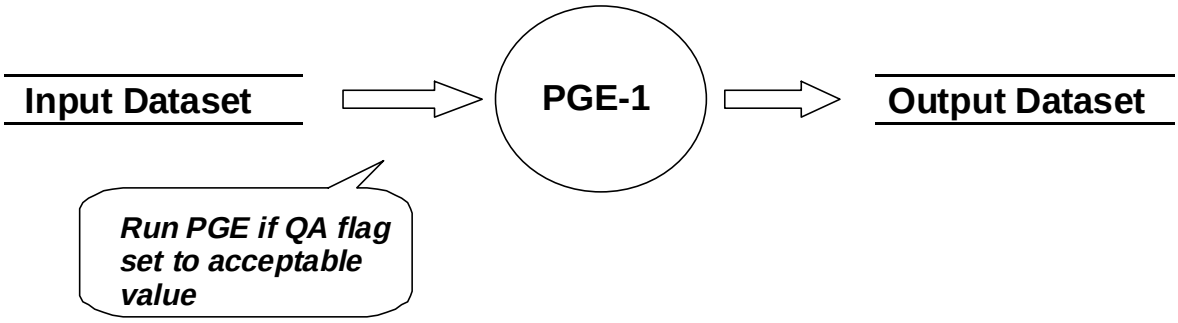

Figure 10. Metadata-Based Conditional Activation

- The Production Planner creates a production request for a PGE that uses one input data set.
- The input needs to have its metadata checked prior to activation of the DPR.
- In order for the DPR to be activated the input must meet the following condition:
  - AutomaticQualityFlag = passed.
- As previously stated, if it were decided that the AutomaticQualityFlag should be set to some other value, the value used for comparison could be changed when the production request was entered.

Metadata-Based Query Production Rule

Metadata values can be used to refine the list of inputs acquired for the run of a PGE. For example, a PGE could be set up so that only inputs with metadata set to “day” (rather than “night”) can be used. Note that metadata-based *query* is concerned with the selection of appropriate input data for a run of the PGE while metadata-based *activation* focuses on whether

or not the PGE should be run. In addition, metadata-based query can be used in conjunction with metadata-based activation.

Both of the metadata-based rules have an optional parameter called Database_Query, which causes the query to be performed on a value retrieved from the PDPS database rather than on the value for the inventory attribute or PSA. However, by default the inventory attribute or PSA is used.

For each PGE that uses metadata-based query, the following types of information must be included in the PGE metadata ODL file during the SSI&T process:

- **Object** - Metadata_Query.
- **Parm_Name** - Name of the metadata parameter (e.g., AutomaticQualityFlag) to be queried.
- **Operator** - Logical operator (e.g., ==) on the parameter value.
- **Value** - Value for comparison with the parameter value returned from the database query.
- **Database Query** - Value to be obtained from the PDPS database. Valid values are as follows:
  - ORBIT NUMBER.
  - PATH NUMBER.
  - TILE ID.
  - START DATA DAY.
  - END DATA DAY.
  - [none].

The same types of information that are provided in a metadata-check ESDT metadata ODL file must be included in the ESDT metadata ODL file for each input subject to a metadata query.

The following example of metadata-based conditional activation is illustrated in Figure 11:

- The following statements were included in the PGE metadata ODL file during SSI&T:
  - OBJECT = METADATA_QUERY
  - CLASS = 1
  - PARM_NAME = "SensorShortName"
  - OPERATOR = "=="
  - VALUE = "DF"
  - DATABASE_QUERY = ""
  - END_OBJECT = METADATA_QUERY

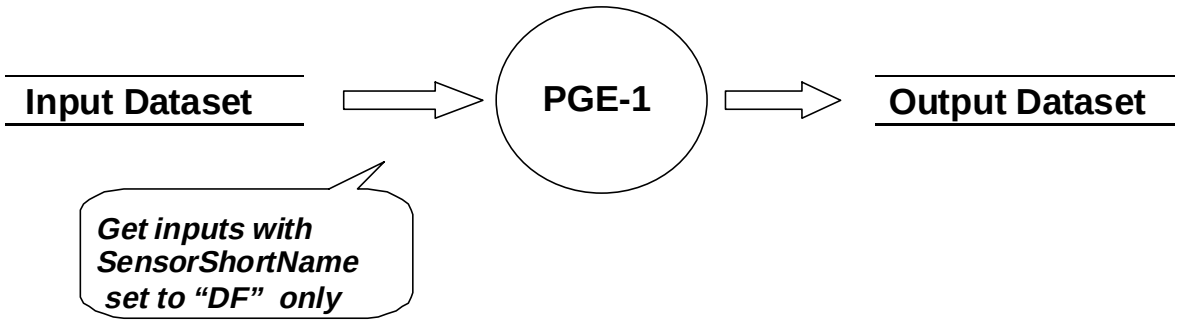

Figure 11. Metadata-Based Query

- The Production Planner creates a production request for the PGE.
- Each input needs to have its metadata queried to determine whether it can be used in processing.
  - In order for an input to be used, SensorShortName must be set to DF.

Data Day Production Rule

The Data Day Production Rule (Figure 12) involves a type of metadata-based query. The metadata parameter to be queried is Data Day, which is internally tracked within ECS and is defined by the dynamic run-time parameters known to the PDPS database as "start dataday" and "end dataday." When a Production Planner creates a production request that invokes the Data Day Production Rule, the current "start dataday" and "end dataday" parameters are passed to the PGE as run-time parameters, which are then used in a metadata-based query to identify granules that meet the search criterion (Data Day). Activation of the PGE is based either on the availability of all granules for the Data Day or alternatively on the minimum number of granules specified when the PGE was registered during the SSI&T process. The timing of the query would be predetermined so the execution would proceed if the "number of granules" condition were met.

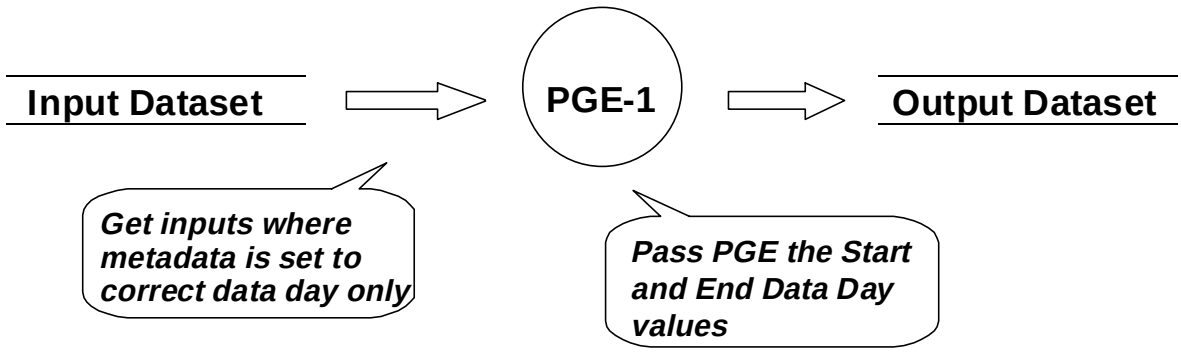

Figure 12. Data Day Production

The following production rule information is entered in the PGE metadata ODL file at PGE registration during the SSI&T process:

- **PGE Schedule Type** - Time.
- A process control file (PCF) entry is created for run-time parameters specifying Start Data Day and End Data Day.
- A metadata query object is created for inputs that are to be requested by Data Day as shown in the following example:
  - OBJECT = METADATA_QUERY
  - PARM_NAME = “StartDataDay”
  - OPERATOR = “>=“
  - VALUE = “0”
  - DATABASE_QUERY = “START DATA DAY”
  - END OBJECT = METADATA_QUERY
  - OBJECT = METADATA_QUERY
  - PARM_NAME = “EndDataDay”
  - OPERATOR = “<=“
  - VALUE = “0”
  - DATABASE_QUERY = “END DATA DAY”
  - END OBJECT = METADATA_QUERY

In addition the PGE metadata ODL file needs a process control file (PCF) entry for the run-time parameters that will specify Start Data Day and End Data Day values. The following parameter allows PDPS to populate the run-time parameters with the Start Data Day or End Data Day:

- PGE_PARAMETER_DYNAMIC_VALUE = “START DATA DAY” [or “END DATA DAY” as applicable]

The following information needs to be filled out in the ESDT metadata file for each input acquired by Data Day:

- **Object** - Metadata_Definition
- **Parm_Name** - Name of Data Day parameter
- **Container_Name** - AdditionalAttributes [because Data Day is in a product-specific attribute (PSA)]
- **Type** - string
- **End Object** - Metadata_Definition

For example, the MODIS Ocean PGEs, which require the Data Day Production Rule, will make use of the dynamic run-time parameters known to the PDPS database as “start dataday” and “end dataday.”

- PDPS incorporates an algorithm provided by the MODIS Oceans Group for determining each Ocean Data Day, and tracks the Data Days for production.
- Delta offset times on both sides of the processing period are specified using the Advanced Temporal Production Rule when the PGEs are registered.
- For each run of the Ocean PGEs, PDPS stages the correct amount of data on either side of the Greenwich Mean Time (GMT) day for both day and night mode

executions, using the "start dataday" and "end dataday" as limits for a Metadata Query on the Data Day product-specific attribute (PSA) in the Ocean L3 products.

- Both daily and multiple-day Ocean PGEs require the Data Day Production Rule.
- At run time PDPS returns the values of the "start dataday" and "end dataday" in the run-time parameters defined with associated logical IDs in the instantiated PCF.
- For daily PGEs the "start dataday" and "end dataday" will be equivalent.

Orbital Processing Production Rule

During SSI&T PGE processing can be set up to be activated on the basis of spacecraft orbit (rather than a temporal range) as shown in Figure 13. The orbit numbers and corresponding temporal ranges are maintained in an internal table. The temporal range of the input and output data is determined by look-up table. The PGE is not activated unless all granules for an orbit are available. The internal orbit number table is updated frequently (approximately every ten days).

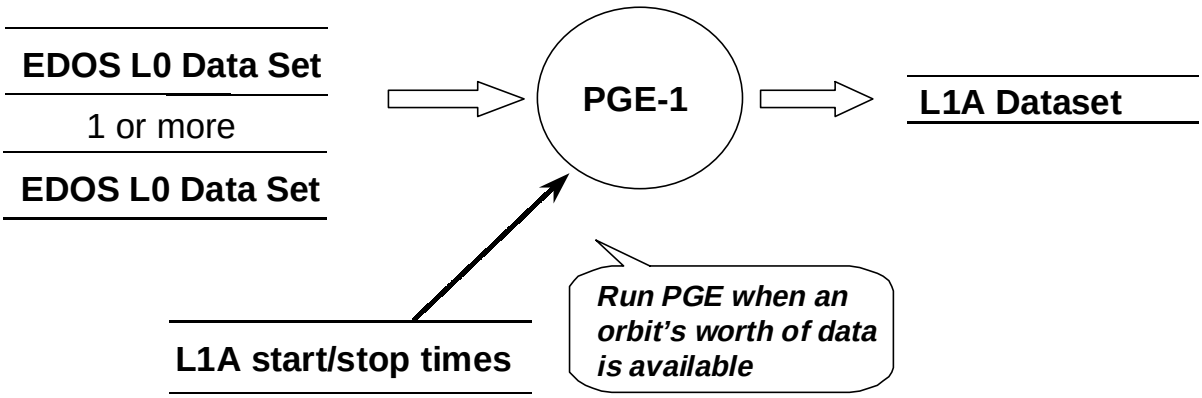

Figure 13. Orbital Processing

The Production Planner specifies the orbit number range when creating each production request for an orbit-based PGE.

The following information is included in the PGE metadata ODL file:

- **Schedule_Type** - Orbit.
- **Processing_Boundary** - Start_Of_Orbit.
- **Processing_Period** - Number of orbits ["Orbits=X" (where X is an integer value)].

In addition to the PGE metadata ODL file and applicable ESDT metadata ODL file(s), the following files are necessary for the implementation of orbital processing:

- Orbit Model ODL file.
- Path Model ODL file (if path mapping is desired).

The following information is provided in the orbit model ODL file:

- **Platform** - Platform of spacecraft.

- **Orbit_Start** - Start time of orbit.
- **Orbit_Number** - Number of orbit.
- **Path_Number** - Number of the path (0-233) that matches the specified orbit number.

PGE Exit Conditions

The use of PGE exit conditions in managing production is somewhat different from the preceding types of production rules because it occurs after a PGE has run. However, the exit condition of one PGE may determine whether a subsequent PGE will be activated.

The key to implementing the use of PGE exit conditions in production is the PGE exit code. A PGE that runs to successful completion returns an exit code of 0 (zero). Any other exit code indicates some kind of error condition. PGE developers may specify exit messages for exit codes 203 - 222; all others are system-defined.

The following two cases describe the use of exit codes in production:

- Exit Condition Definition.
  - Specifies messages for various PGE exit codes.
- Exit Condition-Based Activation.
  - Determines whether or not to activate a PGE based on the value of an exit code.

Two related PGEs, PGE#2 and PGE#4, are used to illustrate the preceding cases. PGE#2 provides an example of exit code definition. PGE#4 is an example of exit condition-based activation.

The PGE metadata ODL file for PGE#2 specifies messages for the PGE exit codes shown in Table 2.

Table 2. Exit Messages Specified in PGE#2

EXIT_CODE	EXIT_MESSAGE
203	CCD Focal Plane Temperature Warning on AN Camera
204	CCD Focal Plane Temperature Warning on DF Camera
221	Camera Head Temperature Warning
222	Optics Temperature Warning

The PGE metadata ODL file for PGE#4 specifies the following exit condition dependency:

- The activation of PGE#4 depends on PGE#2 having an exit code that does not equal 203.

If PGE#2 exits with code of 203, PGE#4 will be prevented from running.

Production Planning Considerations

During normal operations it is expected that the Production Planner will not have to add PRs to the PDPS database very frequently. The frequency of this activity is, to some extent, determined by the SCF responsible for the science software.

- The PR is a template request to generate a particular data product and results in a production run of the associated SCF-provided PGE.
  - PR specifies a range (temporal, orbit, or tile) over which the data products are to be produced or the PGEs are to be scheduled.
    - PR might request that the data product be produced for only a single day's data.
    - PR might request that data products be produced for every opportunity of input data for several months, resulting in several hundred jobs being planned and run as the input data become available.
  - Early in a mission the SCF may prefer to request processing for a short time period only (e.g., a week or less).
    - At that time the SCF is gaining an understanding of the on-orbit behavior of the instrument, the resulting data, and the interaction of the science processing software with real data.
    - SCF reviews the quality of the products and notifies the Production Planner of the need for any changes to the PR (e.g., discontinue the PR, change time ranges, or modify input parameters).
  - When the SCF has developed a good understanding of the instrument's behavior, the team may be comfortable requesting processing for months at a time.
  - DAAC operations may have operational reasons for wanting to issue processing requests for a more limited time period.
- The Production Planner has to balance the various considerations when determining whether or not to create or update a PR.

Planning decisions are made on the basis of locally defined planning strategies for supporting the SCFs' data processing needs. The production planning tools are intended to be flexible enough in their design to support the particular planning and scheduling cycles of the operations organization at each DAAC.

Before planning production the Production Planner must coordinate with the Resource Planner to resolve all resource allocation issues. The Resource Planner notifies the Production Planner of the resources available for use in processing. Furthermore, the Production Planner may well have direct access to the Resource Plan.

The Production Planner prepares monthly and weekly production plans. In addition, the Production Planner develops a daily production schedule from the most current weekly plan. However, the first step in the planning process is creating production requests using the Production Request Editor.

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Launching the Production Request Editor

Launching the Production Request Editor

The following software applications are associated with the Production Request Editor:

- Production Request Editor.
- Subscription Editor.
- Subscription Manager.

It is expected that eventually the ECS desktop will be configured to allow access to those Production Planning and Processing applications that have user interfaces. The icon for the Production Request Editor is shown in Figure 14. In the interim, access to the Production Planning and Processing tools must be gained through the use of UNIX commands.

Figure 14. Production Request Editor GUI Icon

In any case, launching Production Request Editor applications starts with the assumption that the applicable servers are running and the Production Planner has logged in to the ECS system.

Launching Production Request Editor Applications Using UNIX Commands

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.

- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Planning/Management Workstation by typing **/tools/bin/ssh *hostname*** (e.g., **e0pls03**, **g0pls01**, **l0pls02**, or **n0pls02**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 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.

8 Type **cd /usr/ecs/*MODE*/CUSTOM/utilities** then press **Return/Enter**.

- Change directory to the directory containing the production planning startup scripts (e.g., EcPlPRE_IFStart).
- The ***MODE*** will most likely be one of the following operating modes:
  - OPS (for normal operation).
  - TS1 (for Science Software Integration and Test (SSI&T)).
  - TS2 (new version checkout).
- Note that the separate subdirectories under /usr/ecs apply to (describe) different operating modes.

9 Type **EcPlPRE_IFStart *MODE*** then press **Return/Enter** to launch the **Production Request Editor** GUI.

- The **Production Request Editor** graphical user interface (GUI) introductory window (Figure 15) is displayed.

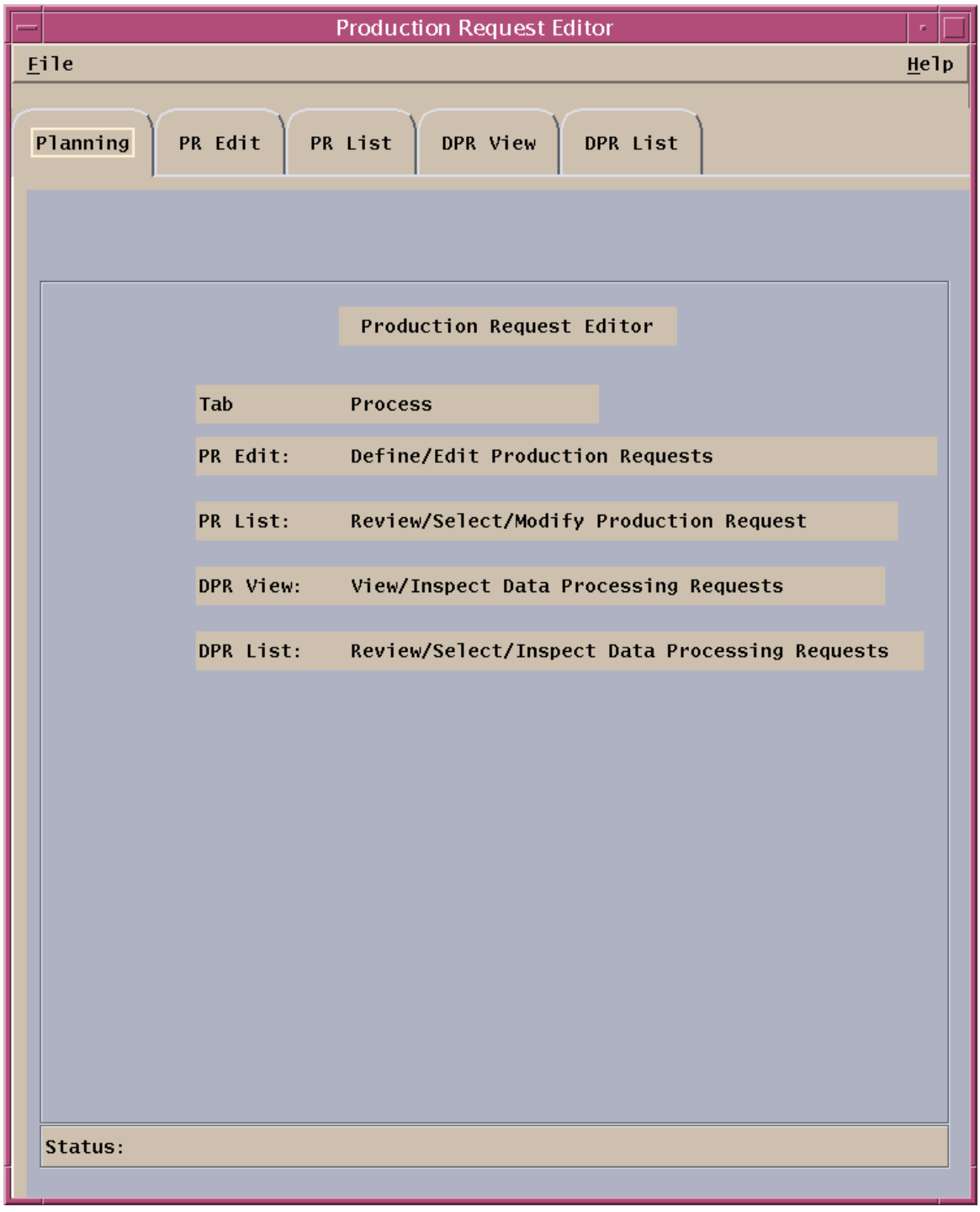

Figure 15. Production Request Editor Introductory GUI

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Creating/Updating/Deleting a Production Request

Creating a New Production Request

The new Production Request process begins when the Production Planner starts the Production Request Editor graphical user interface (GUI) from a UNIX prompt. The Production Planner enters the Request Definition, PGE parameters, duration, production rule related information, and comments for the new Production Request.

Before creating the new PR the Production Planner must be prepared to provide the following information:

- Name of the PR.
- Priority of the PR.
- PGE to be used in processing the PR.
- Start Date.
- Start Time.
- End Date.
- End Time.
- Production rules that affect the PGE and applicable values to be entered (if any).
- Comments (if applicable).

The procedure for creating a new production request starts with the assumption that all applicable servers and the **Production Request Editor** GUI are currently running and the **Production Request Editor** Introductory GUI (Figure 15) is being displayed.

Creating a New Production Request

1 Select the Production Request Editor by clicking (single click) on the **PR Edit** tab.
- The **PR Edit** GUI page (Figure 16) is displayed.

2 Click and hold the **PR Type** option button to display a menu of types of production requests, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
- The following production request types are listed:
  - **Routine**.
  - **On-Demand** [not currently available for selection].

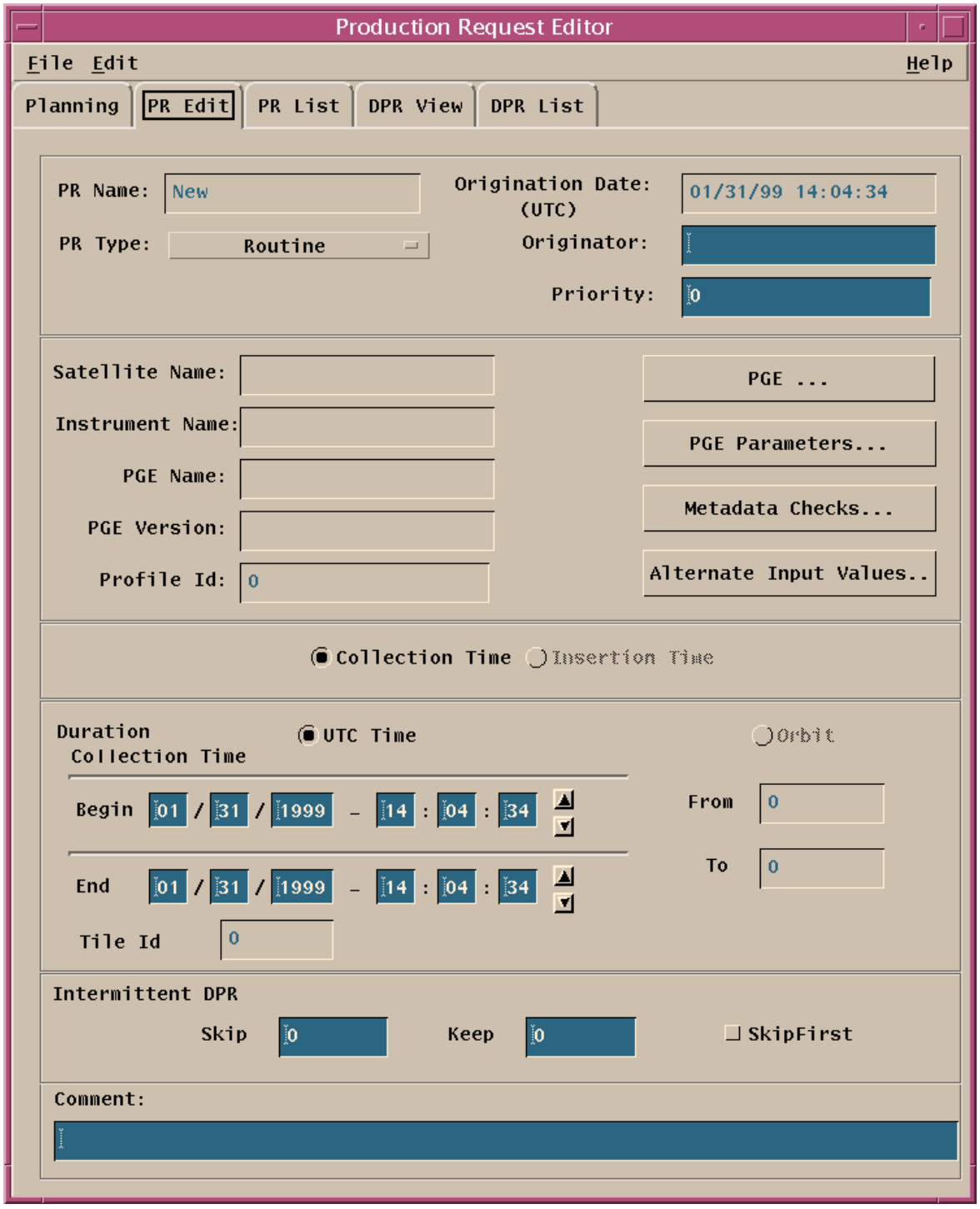

Figure 16. PR Edit GUI

- **Reprocessing.**
- **Ad-hoc Reprocessing**.

NOTE:• The **PR Name** and **Origination Date** fields will be filled automatically when the Production Request is saved at the end of the procedure. (You do not need to fill in these fields.)

3• Type the identification of the person creating the production request in the **Originator** field.

- Either UserID or actual name of a person may be used, depending on DAAC policy (if applicable).

4 Type the priority for the PR in the **Priority** field.

- Remember that the job **Priority** field specifies the priority of the job with 1 (one) as the highest priority and 99 the lowest priority.

5 Click on the **PGE...** button.

- The **PGE Selection** GUI (Figure 17) is displayed.

6 Select the desired PGE from the list by clicking on the appropriate row in the table.

- The PGE list is scrollable. (If there are items on the list in addition to those currently visible in the window, the additional items can be viewed by clicking on the arrows associated with the scrollbars.)

7• Click on the **OK** button.

- The **PR Edit** GUI page (Figure 16) is displayed.
- The following fields are automatically filled in:
  - **Satellite Name.**
  - **Instrument Name.**
  - **PGE Name.**
  - **PGE Version.**
  - **Profile ID.**

8• Click on the **PGE Parameters…** button.

- The **PGE Parameter Mappings** GUI page (Figure 18) is displayed.
- The **PGE Parameter Mappings** GUI has a table that lists the following information:
  - **Parameter Name.**
  - **Logical Id.**
  - **Default Value.**

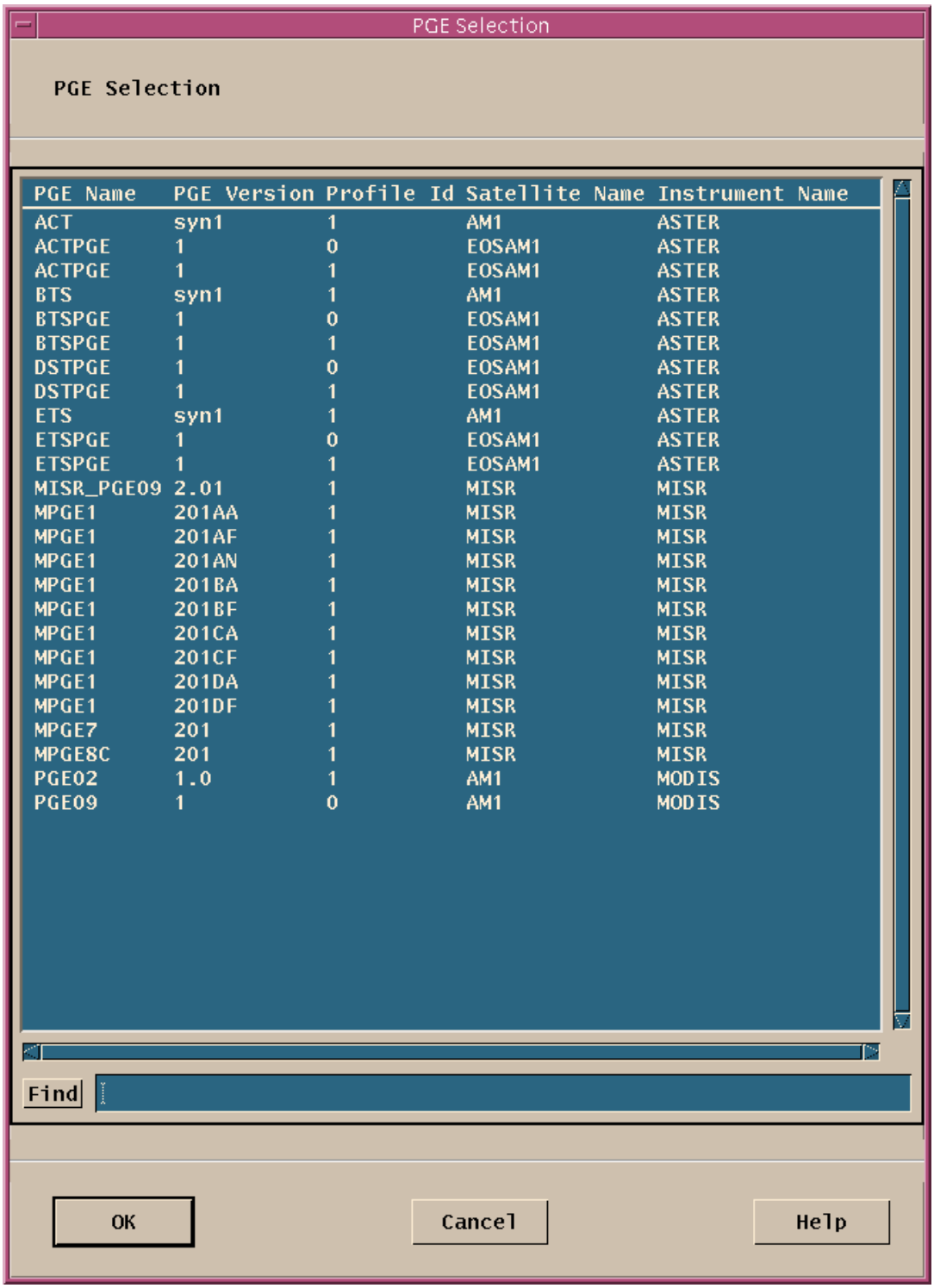

Figure 17. PGE Selection GUI

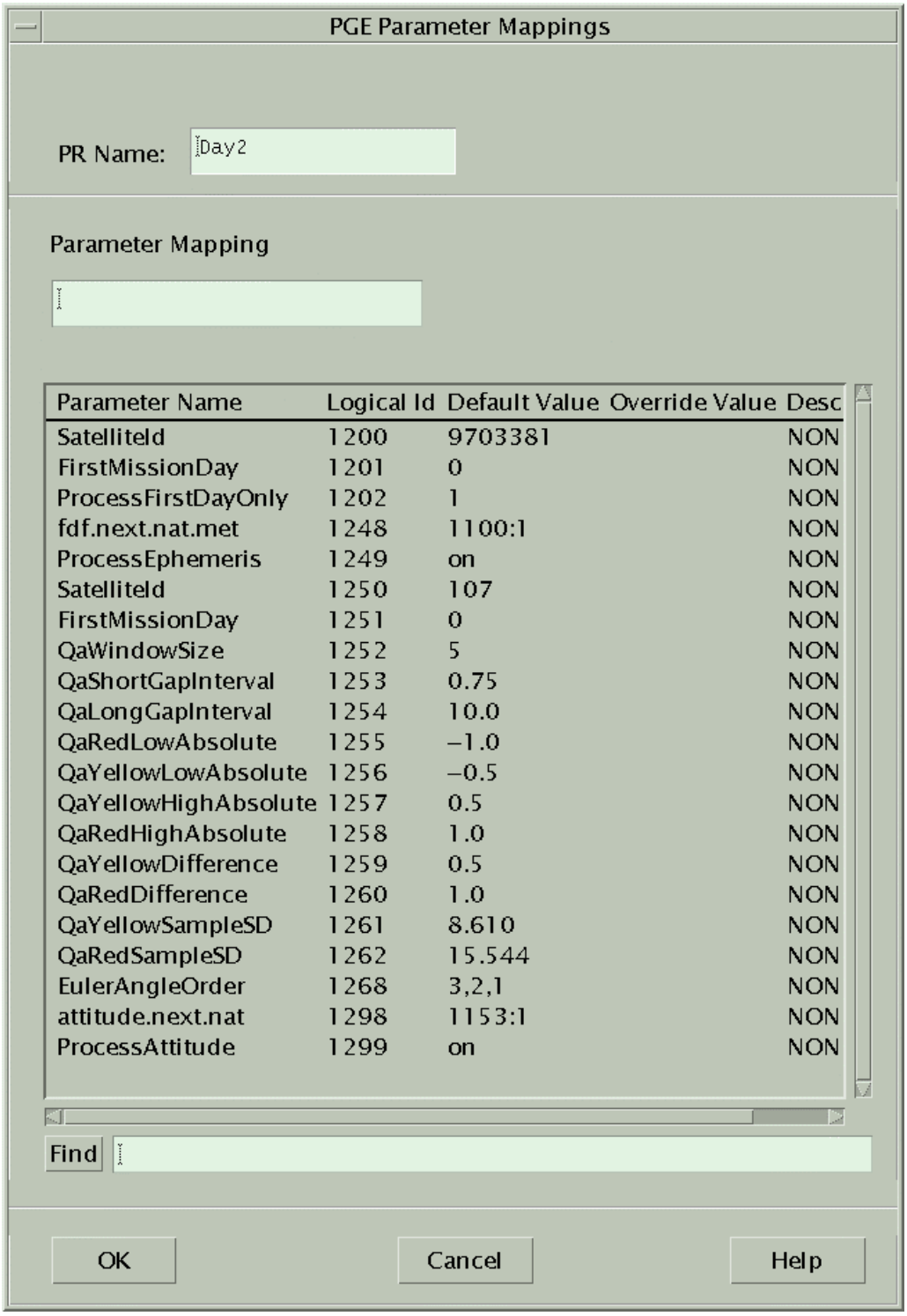

Figure 18. PGE Parameter Mappings GUI

  - **Override Value.**
  - **Description.**
- The PGE parameters (if any) listed in the table are the parameters relevant to the particular PGE. (Different PGEs may have different parameters.) The parameters and their default values are defined during the Science Software Integration and Test (SSI&T) process. They are included with the PGE information stored in the PDPS database. The Production Request Editor retrieves the parameter information from the database.

9 If any PGE parameter(s) should be changed, first select (highlight) a parameter to be changed by clicking on the corresponding row in the list of parameters.

- The parameter row is highlighted.
- If you do not change the parameters, the values in the Default column will be used.
- The SCF will provide notification if PGE parameters other than the default values should be used.
- The PGE parameter mappings list is scrollable.

10 If any PGE parameter needs to be changed, type the desired value in the **Parameter Mapping** field then press the **Return/Enter** key on the keyboard.

- The value in the **Override Value** column is updated.
- If any other parameter is to be changed, highlight it and type the desired value in the **Parameter Mapping** field then press the **Return/Enter** key.

11 Click on the **OK** button at the bottom left of the **PGE Selection** window to approve the changes and dismiss the window.

- The **Production Request - PR Edit** GUI (Figure 16) is displayed.

12 If the PGE is subject to a metadata-based production rule and the value(s) to be checked need(s) to be changed, click on the **Metadata Checks…** button.

- If the **Metadata Checks…** button has been selected, perform Steps 13 through 17 as applicable; otherwise go to Step 18.
- The **MetadataChecks** GUI page (Figure 19) is displayed.
- The **MetadataChecks** GUI has an **InputDataType** window that lists input data types.
- In addition, the **MetadataChecks** GUI has a metadata checks (**MetaDataField-Operator-Value-Type**) window in which there is a table that lists the following information concerning each metadata check:
  - **MetaDataField.**

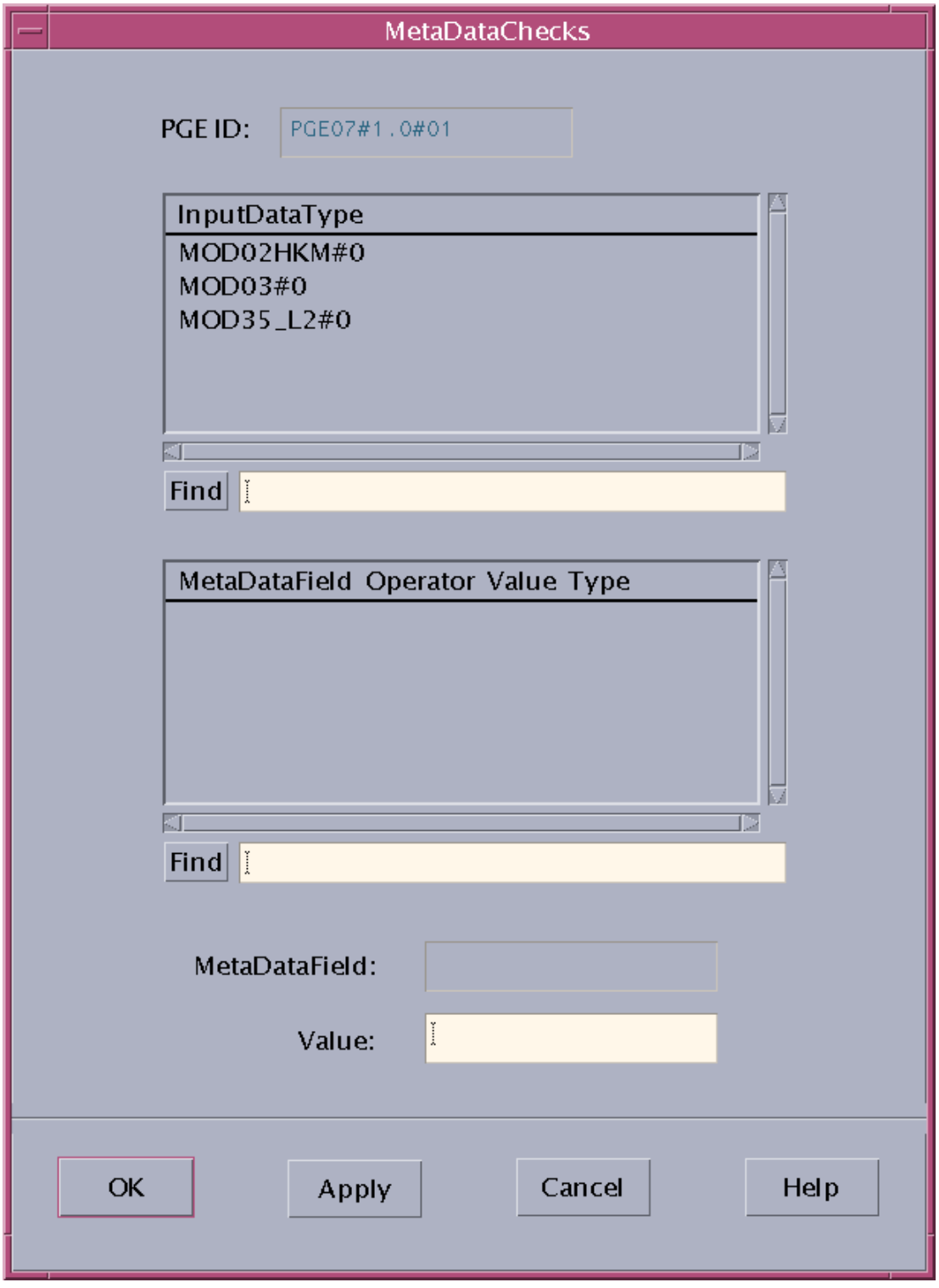

Figure 19. MetadataChecks GUI

  - **Operator.**
  - **Value.**
  - **Type.**
- Initial values for metadata checks are entered during SSI&T; however, it is possible to modify the values using the **MetadataChecks** GUI when creating a production request.

13 If it is necessary to change any value(s) for metadata checks, first select (highlight) an input data type with a value to be changed by clicking on the corresponding row in the **InputDataType** window.

- The input data type row is highlighted.
- The metadata check information for the highlighted input data type is displayed in the **MetaDataField-Operator-Value-Type** window.

14 Select (highlight) a metadata field with a comparison value to be changed by clicking on the corresponding row in the **MetaDataField-Operator-Value-Type** window.

- The metadata field row is highlighted in the **MetaDataField-Operator-Value-Type** window.
- The identity of the metadata field is displayed in the **MetaDataField** window.

15 Type the new value for the metadata check in the **Value** field.

16 Click on the appropriate button from the following selections:

- **OK** - to approve the new value and dismiss the **MetadataChecks** GUI.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
  - Go to Step 18.
- **Apply** - to approve the new value without dismissing the **MetadataChecks** GUI.
  - Go to Step 17.
- **Cancel** - to return to the **Production Request** - **PR Edit** GUI without saving the new value.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
  - Go to Step 18.

17 If any additional value(s) to be checked need to be changed, repeat Steps 13 through 16 as necessary.

18 If the PGE is subject to the Alternate Inputs Production Rule and the timer settings or the order of alternate inputs need to be changed, click on the **Alternate Input Values…** button.

- If the **Alternate Input Values…** button has been selected, perform Steps 19 through 24 as applicable; otherwise go to Step 25.
- The **AlternateInputValues** GUI page (Figure 20) is displayed.
- The **AlternateInputValues** GUI has an **AlternateListName** window that lists the applicable alternate inputs.
- In addition, the **AlternateInputValues** GUI has an alternate input (**Order-DataType-LogicalID-Timer**) window in which there is a table that lists the following information concerning each alternate input:
  - **Order.**
  - **DataType.**
  - **LogicalID.**

– **Timer.**

- The initial set-up for alternate inputs is entered during SSI&T; however, it is possible to modify the set-up using the **AlternateInputValues** GUI when creating a production request.

19 If it is necessary to change timer settings or the order of alternate inputs, first select (highlight) an alternate input to be changed by clicking on the corresponding row in the **AlternateListName** window.

- The alternate input row is highlighted.
- Information concerning the highlighted alternate input is displayed in the **Order-DataType-LogicalID-Timer** window.

20 Select (highlight) an alternate input with timer settings or the order of alternate inputs to be changed by clicking on the corresponding row in the **Order-DataType-LogicalID-Timer** window.

- The alternate input row is highlighted in the **Order-DataType-LogicalID-Timer** window.
- The data type of the alternate input is displayed in the **DataType** field.

21 If it is necessary to change the order of alternate inputs, click on the up/down arrow buttons adjacent to the **Order-DataType-LogicalID-Timer** window as necessary until the highlighted alternate input has the proper order listed in the **Order** column of the window.

- If necessary, repeat Steps 20 and 21 to change the order of additional alternate inputs.

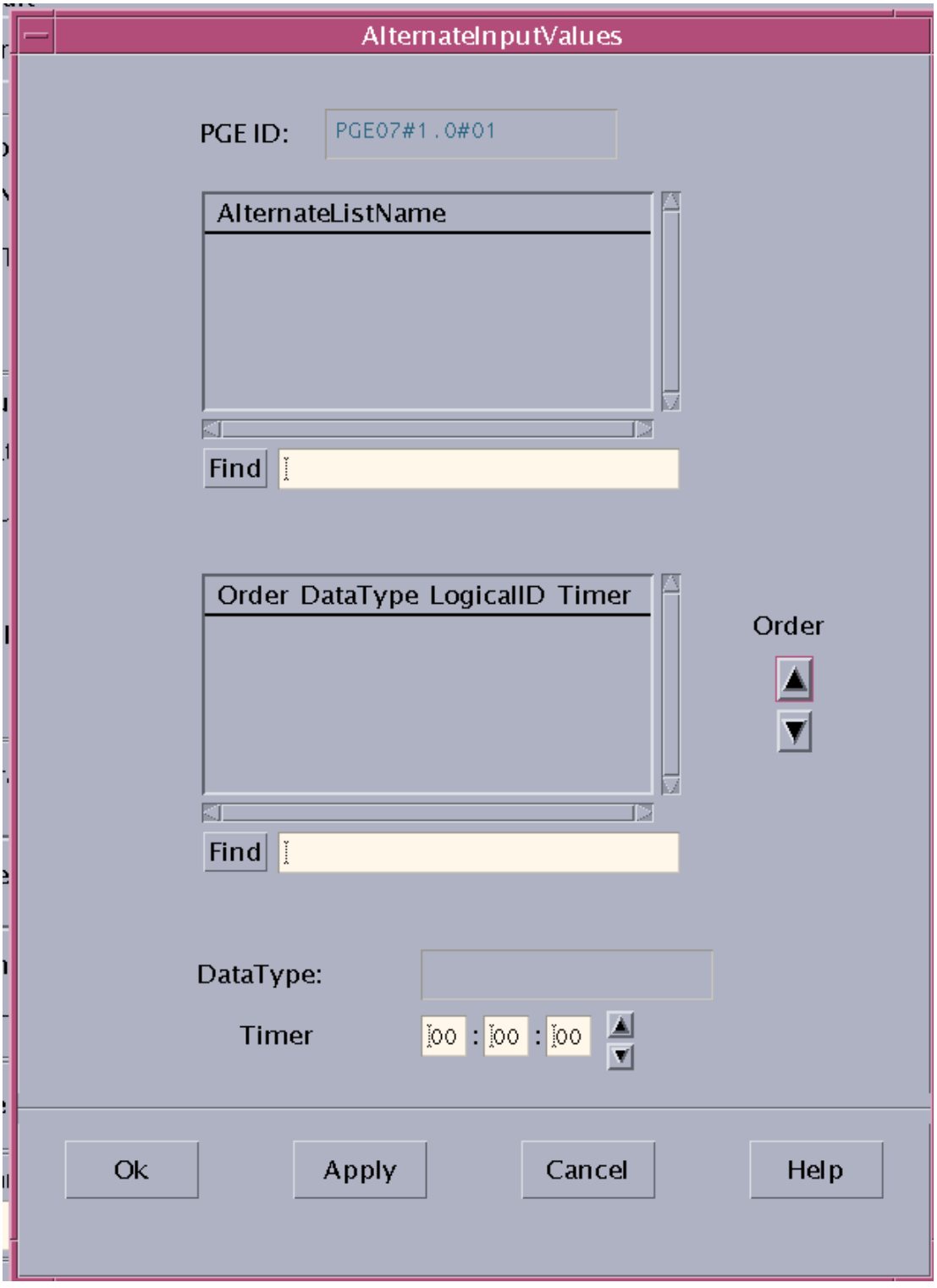

Figure 20. AlternateInputValues GUI

22 If the timer setting for an alternate input is to be modified, verify that the alternate input with the timer setting to be changed has been highlighted then type the new timer setting in the **Timer** fields.

- Another method of changing timer settings (other than typing the numbers) is to click in each of the timer fields in turn and click on the up/down buttons adjacent to the **Timer** fields until the correct time is indicated.

23 Click on the appropriate button from the following selections:

- **OK -** to approve the new alternate input setting(s) and dismiss the **AlternateInputValues** GUI.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
  - Go to Step 25.
- **Apply** - to approve the new alternate input setting(s) without dismissing the **AlternateInputValues** GUI.
  - Go to Step 24.
- **Cancel** - to return to the **Production Request** - **PR Edit** GUI without saving the new alternate input setting(s).
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
  - Go to Step 25.

24 If any additional alternate input setting(s) need to be changed, repeat Steps 19 through 22 as necessary.

25 Click on either the **Collection Time** or **Insertion Time** button (as applicable) if data are to be processed on the basis of time (rather than orbit or tile).

- Normally the **Collection Time** (time when the data were collected by the instrument on the satellite) is used for specifying what data are to be processed.
- The **Insertion Time** option is available primarily for ASTER processing to allow the generation of DPRs for all data contained on an ASTER tape received from the ASTER Ground Data System (GDS).

26 Click either on the **UTC Time** (Coordinated Universal Time) button, on the **Orbit** button, or in the **Tile Id** field depending on whether data to be processed is specified by time, orbit or tile.

- If **UTC Time** is selected, perform Steps 27 and 28.
- If **Tile Id** is selected go to Step 29.
- If **Orbit** is selected go to Step 30.

27 Type the desired data start date and time (in ***MM/DD/YYYY hh:mm:ss*** format) in the **Begin** fields.

- As data are typed in each field the cursor automatically advances to the next field.
- Another method of entering date and time (other than typing the numbers) is to click in each of the date/time fields in turn and click on the up/down buttons adjacent to the date/time fields until the correct date/time is indicated.

28 Type the desired data end date and time (in ***MM/DD/YYYY hh:mm:ss*** format) in the **End** fields.

- Go to Step 32.

29 If the Tiling Production Rule applies, type the tile identification in the **Tile Id** field.

- Go to Step 32.

30 If the Orbital Processing Production Rule applies, type the number of the first orbit of data to be processed in the **From** field.

31 If the Orbital Processing Production Rule applies, type the number of the last orbit of data to be processed in the **To** field.

32 If the Intermittent Activation Production Rule applies, type the number of DPRs to skip in the **Skip** field.

- If the Intermittent Activation Production Rule applies, perform Steps 33 and 34.
- If the Intermittent Activation Production Rule does not apply, go to Step 35.

33 Type the number of DPRs to keep in the **Keep** field.

34 If the first DPR is to be skipped, click on the **SkipFirst** button.

35 Type any relevant comments in the **Comments** field.

36 Select **Save As** from the **File** pull-down menu (**File → Save As**).

- The **File Selection** window (Figure 21) is displayed.

37 Type a file name for the production request in the **Selection** field.

38 Click on the **OK** button to save the production request.

- The production request is saved and the corresponding DPR(s) is/are generated.
- The **PR Name** and **Origination Date** fields are automatically updated.

39 Select **File → New** to clear the entries on the **Production Request Editor** GUI.

- Return to Step 2 to create another new PR.

40 To exit from the **Production Request Editor** GUI select **File → Exit** from the pull-down menu.

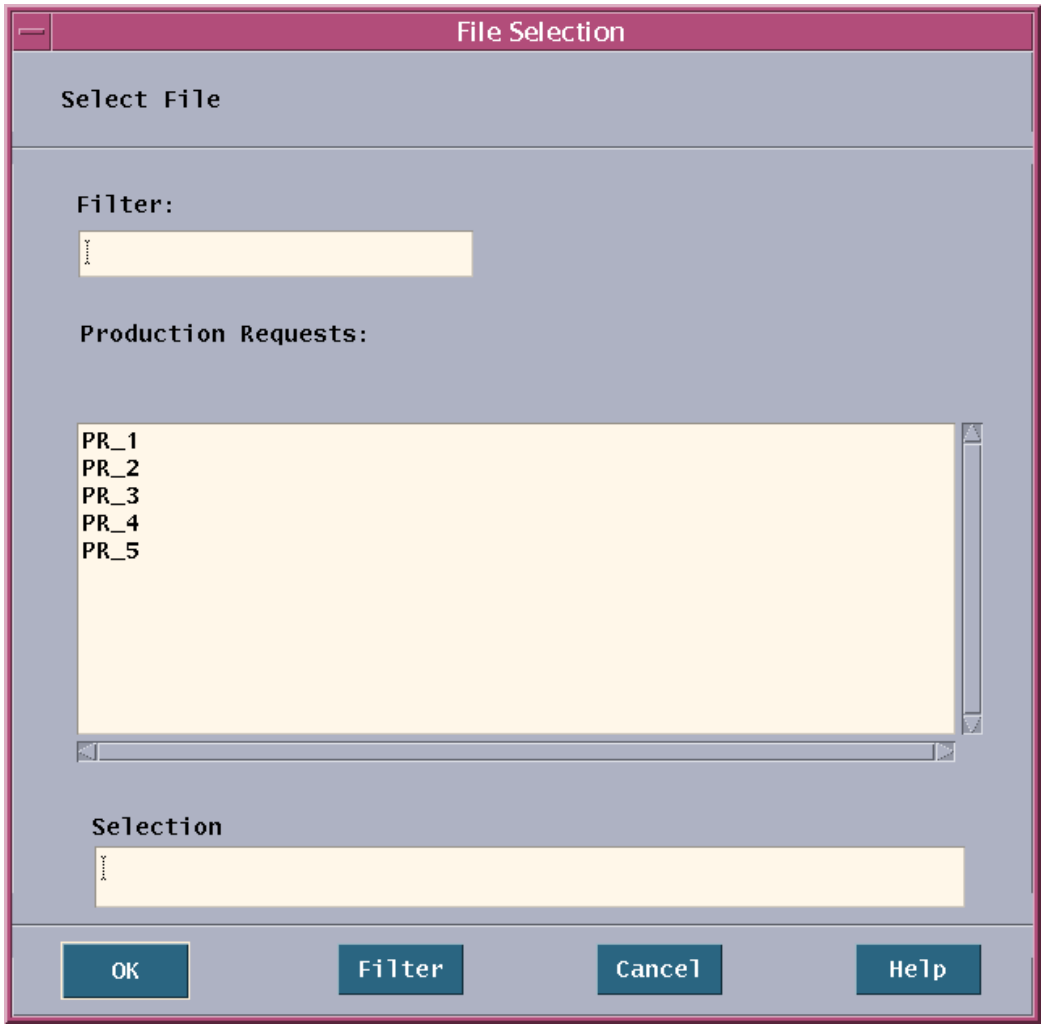

Figure 21. Production Request Editor File Selection Window

It is also possible to create a new PR by editing or modifying an existing PR and renaming it. This is particularly quick and useful if there are only minor differences between the existing PR and the new one.

Editing or Modifying a Production Request

This section explains how to edit or modify a Production Request.

Before you make any changes to a PR, you must know what needs to be changed. You can change any of the following attributes of the PR (depending on the production rules that apply to the PGE):

- Name of the PR (creates a new PR).

- PR type.
- Priority of the PR.
- PGE to be used in processing the PR.
- PGE (run-time) parameters to be used.
- Metadata check values.
- Alternate input order and/or timer setting.
- Start Date.
- Start Time.
- End Date.
- End Time.
- Orbit.
- Tile ID.
- Intermittent DPRs to keep/skip.
- Comments if applicable.

To edit/modify a new Production Request, execute the procedure steps that follow. Perform only those steps of the procedure that are applicable to the changes you want to make. You do not have to go through all of the fields in the PR to successfully modify it. However, you must save the modified PR (Steps 38 - 40) to make the changes effective.

The procedure for editing/modifying a production request starts with the assumption that all applicable servers and the **Production Request Editor** GUI are currently running and the **Production Request Editor** Introductory GUI (Figure 15) is being displayed.

Editing/Modifying a Production Request

1 Select the Production Request Editor by clicking (single click) on the **PR Edit** tab.
- The **PR Edit** GUI page (Figure 16) is displayed.

2 Select **File → Open** from the pull-down menu to display a list of Production Requests from which to select the PR to be edited/modified.
- The **File Selection** window (Figure 21) is displayed.

3 Select (highlight) the PR to be edited/modified by clicking on the corresponding PR name in the list of PRs.
- The selected PR is displayed in the **Selection** field.

4 Click on the **OK** button.

5 If the type of production request shown on the **PR Type** option button is not the desired type, click and hold the PR Type option button to display a menu of types of production requests, move the mouse cursor to the desired selection (highlighting it), then release the mouse button.
- The following production request types are available:
  - **Routine.**
  - **On-Demand** [not currently available for selection].
  - **Reprocessing.**
  - **Ad-hoc Reprocessing.**

NOTE: The **PR Name** and **Origination Date** fields will be filled automatically when the Production Request is saved at the end of the procedure. (You do not need to fill in these fields.)

6 If the identification of the person editing/modifying the production request is not already displayed in the **Originator** field, type it there.

- Either UserID or actual name of a person may be used, depending on DAAC policy (if applicable).

7 If the PR's priority is to be changed, type the new priority in the **Priority** field.

- Remember that the job **Priority** field specifies the priority of the job with 1 (one) as the highest priority and 99 the lowest priority.

8 If the PGE is to be changed, click on the **PGE...** button.

- The **PGE Selection** GUI (Figure 17) is displayed.
- Perform Steps 9 and 10 to designate the new PGE.

9 Select the desired PGE by clicking on the appropriate row in the table.

10 Click on the **OK** button.

- The **Production Request** - **PR Edit** GUI page (Figure 16) is displayed.
- The following fields are automatically filled:
  - **Satellite Name.**
  - **Instrument Name.**
  - **PGE Name.**
  - **PGE Version.**
  - **Profile ID.**

11 If any PGE parameter(s) should be changed, click on the **PGE Parameters...** button.

- The **PGE Parameter Mappings** GUI (Figure 18) is displayed.
- The SCF will provide notification if PGE parameters other than the default values should be used.
- Perform Steps 12 through 14 to designate the new PGE parameter(s).

12 Select (highlight) a parameter to be changed by clicking on the corresponding row in the list of parameters.

- The parameter row is highlighted.
- If you do not change the parameters, the values in the **Default** column will be used.

13 Type the desired value in the **Parameter Mapping** field then press the **Return/Enter** key on the keyboard.

- The value in the **Override Value** column is updated.
- If any other parameter is to be changed, highlight it and type the desired value in the **Parameter Mapping** field then press the **Return/Enter** key.

14 Click on the **OK** button at the bottom left of the **PGE Selection** window to approve the changes and dismiss the window.

- The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.

15 If any metadata check value needs to be changed, click on the **Metadata Checks…** button.

- The **MetadataChecks** GUI page (Figure 19) is displayed.
- Perform Steps 16 through 20 to change the metadata check value(s).

16 Select (highlight) an input data type with a value to be changed by clicking on the corresponding row in the **InputDataType** window.

- The input data type row is highlighted.
- The metadata check information for the highlighted input data type is displayed in the **MetaDataField-Operator-Value-Type** window.

17 Select (highlight) a metadata field with a comparison value to be changed by clicking on the corresponding row in the **MetaDataField-Operator-Value-Type** window.

- The metadata field row is highlighted in the **MetaDataField-Operator-Value-Type** window.
- The identity of the metadata field is displayed in the **MetaDataField** window.

18 Type the new value for the metadata check in the **Value** field.

19 Click on the appropriate button from the following selections:

- **OK** - to approve the new value and dismiss the **MetadataChecks** GUI.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
- **Apply** - to approve the new value without dismissing the **MetadataChecks** GUI.
- **Cancel** - to return to the **Production Request** - **PR Edit** GUI without saving the new value.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.

20 Repeat Steps 18 through 19 as necessary to change any additional value(s) to be checked.

21 If any alternate input timer settings or the order of alternate inputs should be changed, click on the **Alternate Input Values…** button.

- The **AlternateInputValues** GUI page (Figure 20) is displayed.
- Perform Steps 22 through 27 as applicable to change alternate input timer settings or the order of alternate inputs.

22 Select (highlight) an alternate input to be changed by clicking on the corresponding row in the **AlternateListName** window.

- The alternate input row is highlighted.
- Information concerning the highlighted alternate input is displayed in the **Order-DataType-LogicalID-Timer** window.

23 Select (highlight) an alternate input with timer settings or the order of alternate inputs to be changed by clicking on the corresponding row in the **Order-DataType-LogicalID-Timer** window.

- The alternate input row is highlighted in the **Order-DataType-LogicalID-Timer** window.
- The data type of the alternate input is displayed in the **DataType** field.

24 To change the order of alternate inputs click on the up/down arrow buttons adjacent to the **Order-DataType-LogicalID-Timer** window as necessary until the highlighted alternate input has the proper order listed in the **Order** column of the window.

- Repeat Steps 23 and 24 as necessary to change the order of additional alternate inputs.

25 To modify the timer setting for an alternate input verify that the alternate input with the timer setting to be changed has been highlighted then type the new timer setting in the **Timer** fields.

26 Click on the appropriate button from the following selections:

- **OK** - to approve the new alternate input setting(s) and dismiss the **AlternateInputValues** GUI.
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.
- **Apply** - to approve the new alternate input setting(s) without dismissing the **AlternateInputValues** GUI.
- **Cancel** - to return to the **Production Request** - **PR Edit** GUI without saving the new alternate input setting(s).
  - The **Production Request** - **PR Edit** GUI (Figure 16) is displayed.

27 Repeat Steps 22 through 26 as necessary to change any additional alternate input setting(s).

28 If **UTC Time** is to be changed, first click on either the **Collection Time** or **Insertion Time** button (as applicable).

- Normally the **Collection Time** (time when the data were collected by the instrument on the satellite) is used for specifying what data are to be processed.
- The **Insertion Time** option is available primarily for ASTER processing to allow the generation of DPRs for all data contained on an ASTER tape received from the ASTER Ground Data System (GDS).

29 If **UTC Time** is to be changed, type the desired data start date and time (in ***MM/DD/YYYY hh:mm:ss*** format) in the **Begin** fields.

30 If **UTC Time** is to be changed, type the desired data end date and time (in ***MM/DD/YYYY hh:mm:ss*** format) in the **End** fields.

31 If the Tile ID is to be changed, type the tile identification in the **Tile Id** field.

32 If the start of the Orbit range is to be changed, type the number of the first orbit of data to be processed in the **[Orbit] From** field.

33 If the end of the Orbit range is to be changed, type the number of the last orbit of data to be processed in the **[Orbit] To** field.

34 If the number of DPRs to be skipped is to be changed, type the number of DPRs to skip in the **Skip** field.

35 If the number of DPRs to be kept is to be changed, type the number of DPRs to keep in the **Keep** field.

36 If the state of the **SkipFirst** button is to be changed, click on the **SkipFirst** button.

37 Type any relevant comments in the **Comments** field.

38 Select **Save As** from the **File** pull-down menu (**File → Save As**).

- The **File Selection** window (Figure 21) is displayed.

39 Type a file name for the production request in the **Selection** field.

40 Click on the **OK** button to save the production request.

- The Production Request is saved and the corresponding DPR(s) is/are generated.
- The **PR Name** and **Origination Date** fields are automatically updated.

41 Select **File → New** to clear the entries on the **Production Request Editor** GUI.

- Return to Step 1 to modify another new PR.

42 Select **File → Exit** to quit the **Production Request Editor** GUI.

Deleting a Production Request

To delete a Production Request, execute the procedural steps that follow. The procedure starts with the assumption that all applicable servers are currently running and the **Production Request Editor** Introductory GUI (Figure 15) is being displayed.

Deleting a Production Request

1 Select the list of Production Requests by clicking on the **PR List** tab.
- The **PR List** GUI page (Figure 22) is displayed.
- A list of Production Requests is displayed.

2 Click on the Production Request to be deleted.
- The Production Request to be deleted is highlighted.

3 Select **Edit→Delete**.
- A dialog box is displayed requesting confirmation of the decision to delete the Production Request.

4 Select **OK** to delete the Production Request.
- A confirmation notice is displayed after completion of deletion.

5 Select **File → Exit** to quit the **Production Request Editor** GUI.

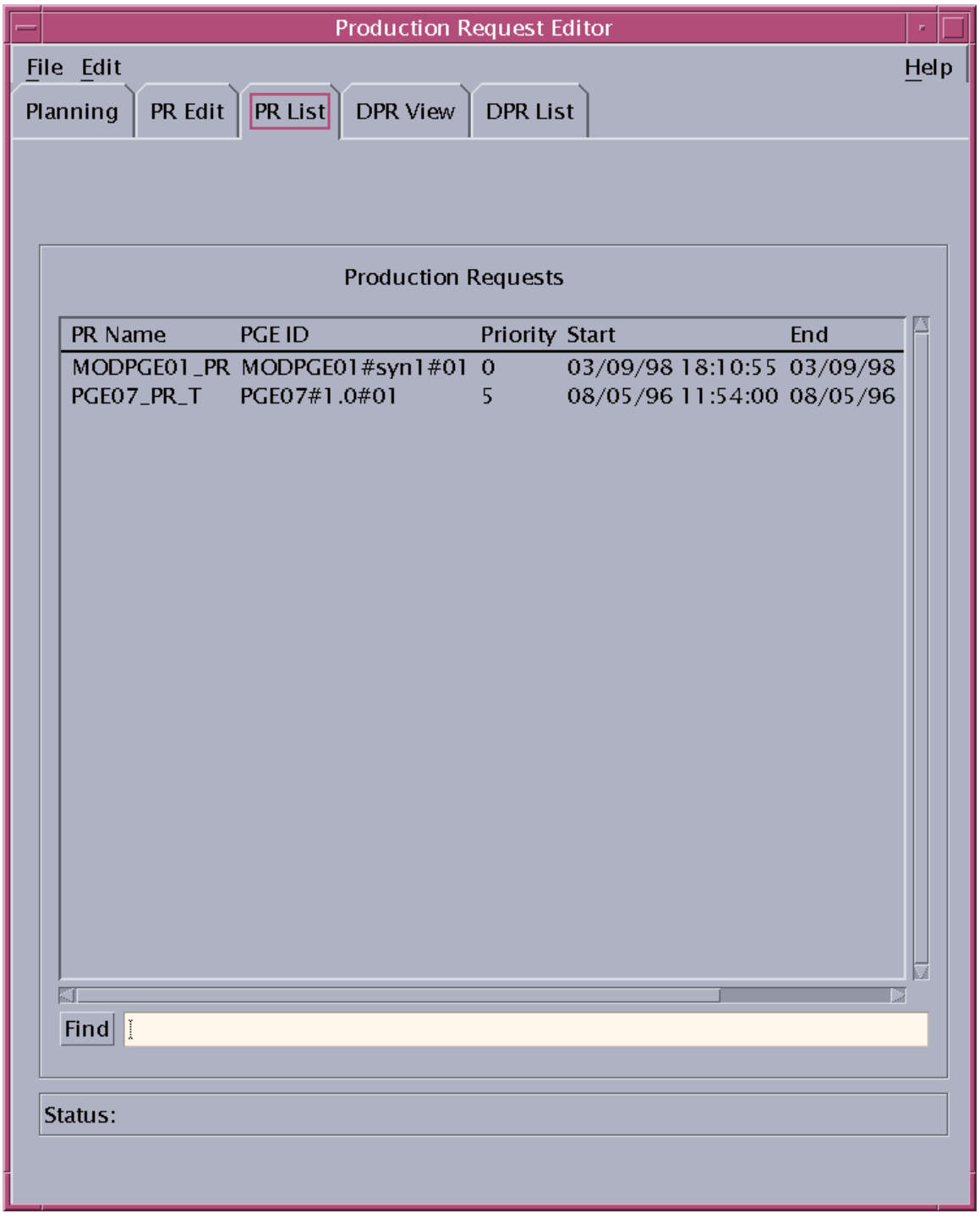

Figure 22. PR List GUI

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Reviewing/Deleting Data Processing Requests

Data Processing Requests

Data Processing Requests (DPRs) are generated automatically by the Planning Subsystem.

- DPR is generated automatically from…
  - — a PR (which specifies a PGE).
  - — information on the PGE acquired during the Science Software Integration and Test (SSI&T) process.
- DPRs are complex, reflecting the complexity of the PGEs.
- DPRs contain information that is used by the Data Processing Subsystem and the AutoSys production scheduling software.

The Production Planner can review DPRs.

- DPRs may provide useful information.
- DPR fields cannot be edited by Operations personnel.
  - — Modifications to DPR information would have undesirable side-effects.

Displaying DPR Information

The Production Request Editor can display DPR information in two ways:

- DPR List.
- Data concerning an individual DPR.

The following characteristics pertain to the DPR List:

- The DPR list is filtered, so that only DPRs associated with a particular PR are displayed.
- Each line of the DPR List display represents a DPR, i.e., a job that will be run when all data and resource needs have been satisfied.
- For each DPR the list includes the DPR identification, relevant PGE, name of the corresponding PR, data start date and time, etc.

The Production Planner can select a particular DPR and obtain data on that DPR, including the following characteristics:

- PGE parameters
  - displayed in the same format as the **PGE Parameter Mappings** GUI (Figure 18) used in creating a PR.
- PGE File Mappings (UR File Mappings)
  - displays the input and output files for a particular DPR on the **UR File Mappings** GUI (Figure 23)
  - GUI displays one line of information for each file that may be used by or be produced by the PGE, including the following data:
    - Logical ID - The identification (ID) or tag used within the PGE to access the file.
    - Granule ID - The reference used to identify the granule uniquely.
    - Start/Stop Time - The start and stop date and time for the data contained in this file.
    - Availability - Data and time when the data file is expected to be accessible for use in processing.
    - UR (Universal Reference) - The uniform reference for each object associated with Science Data Processing (SDP) that allows each SDP service to understand and support the object.

The procedure for reviewing data processing requests starts with the assumption that all applicable servers and the **Production Request Editor** GUI are currently running and the **Production Request Editor** Introductory GUI (Figure 15) is being displayed.

Reviewing Data Processing Requests

1 Select the **Data Processing Request List** by clicking on the **DPR List** tab.

- The **DPR List** GUI page (Figure 24) is displayed.
- The table shown on the GUI provides the following information on the DPRs:
  - **DPR Id** - identification (name) of the DPR.
  - **PGE Id** - identification of the PGE specified in the DPR.
  - **PR Name** - name of the PR that led to the creation of the DPR.
  - **Data Start Time** - DPR's start date and time.
  - **Data Stop Time** - DPR's stop date and time.

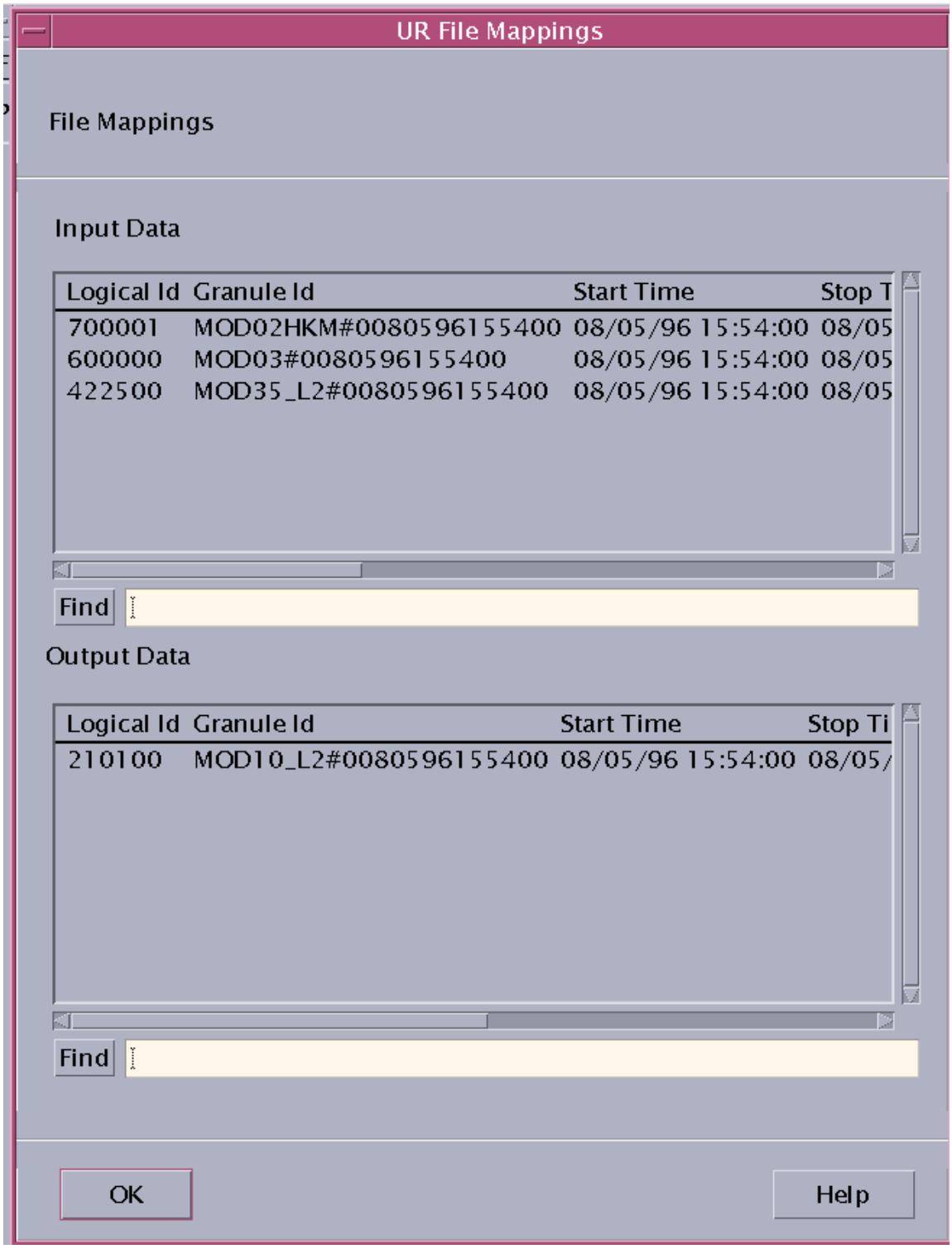

Figure 23. UR File Mappings GUI

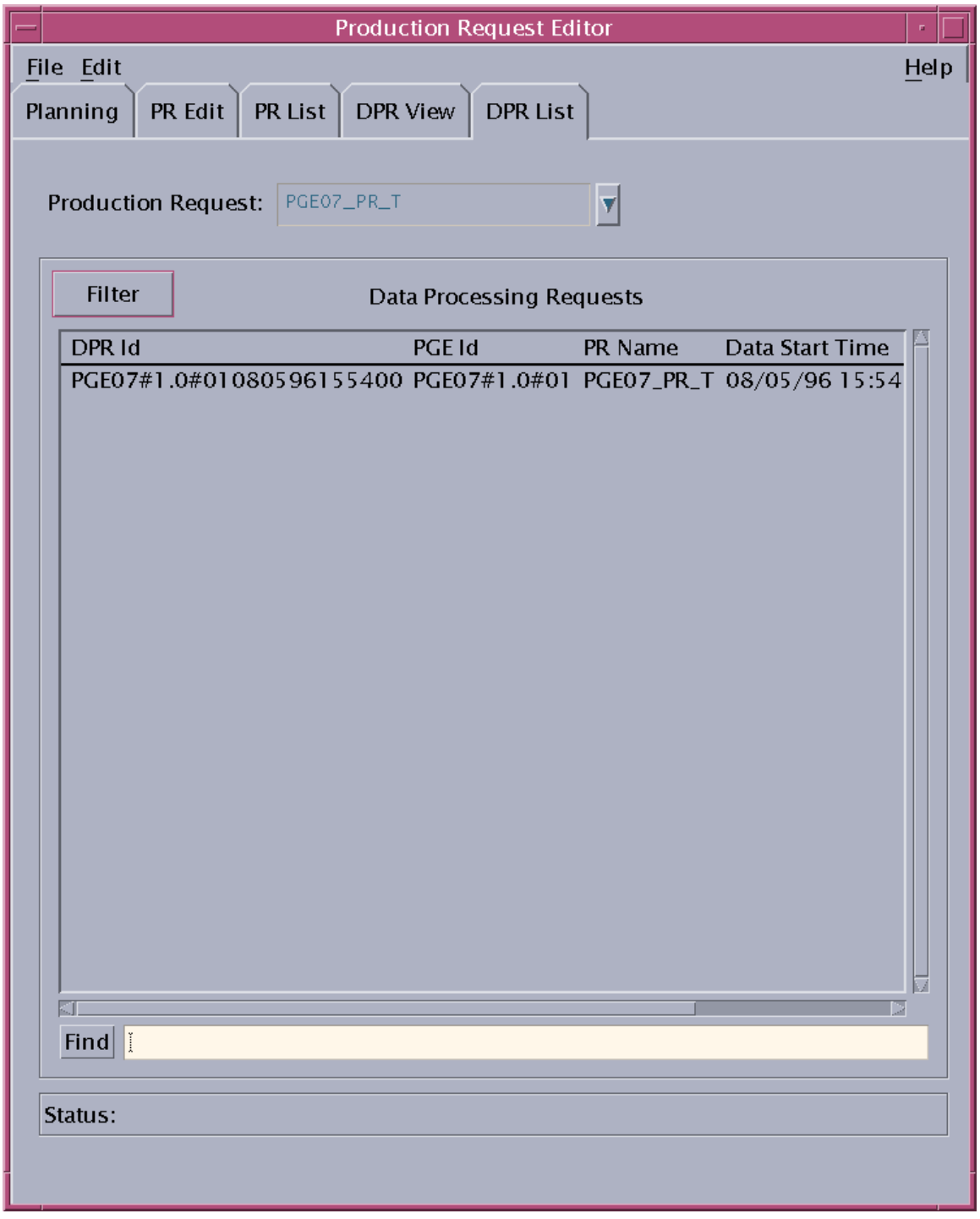

Figure 24. DPR List GUI

2 To list the DPRs associated with a particular Production Request, first click on the option button associated with the **Production Request** field.

- An option menu of Production Requests is displayed.

3 Highlight the desired PR in the option menu then click on the **Filter** button.

- The DPRs for the specified PR only are shown in the **DPR List**.
- An alternative method of filtering PRs is to type the name of the PR in the **Production Request** field then click on the **Filter** button.

4 Identify a DPR to be reviewed from those shown in the list of Data Processing Requests, then click on the **DPR View** tab.

- The **DPR View** GUI (Figure 25) is displayed.

5 Select **File → Open** from the pull-down menu.

- The **DPR File Selection** window (Figure 26) is displayed.
- The Data Processing Requests associated with the selected PR are listed.

6 Select (highlight) the DPR to be reviewed by clicking on the corresponding DPR name in the list of DPRs.

7 Click on the **OK** button.

- The **DPR View** GUI shows the following information concerning the selected DPR:
  - **DPR Name**.
  - **PR Name**.
  - **Origination Date**
  - **Originator**
  - **PGE Id**.
  - **Data Start Time**.
  - **Data Stop Time**.
  - **Predicted Start Date**.
  - **Predicted Start Time**.
  - **Actual Start Date**.
  - **Actual Start Time**.
  - **Priority**.
  - **Status**.

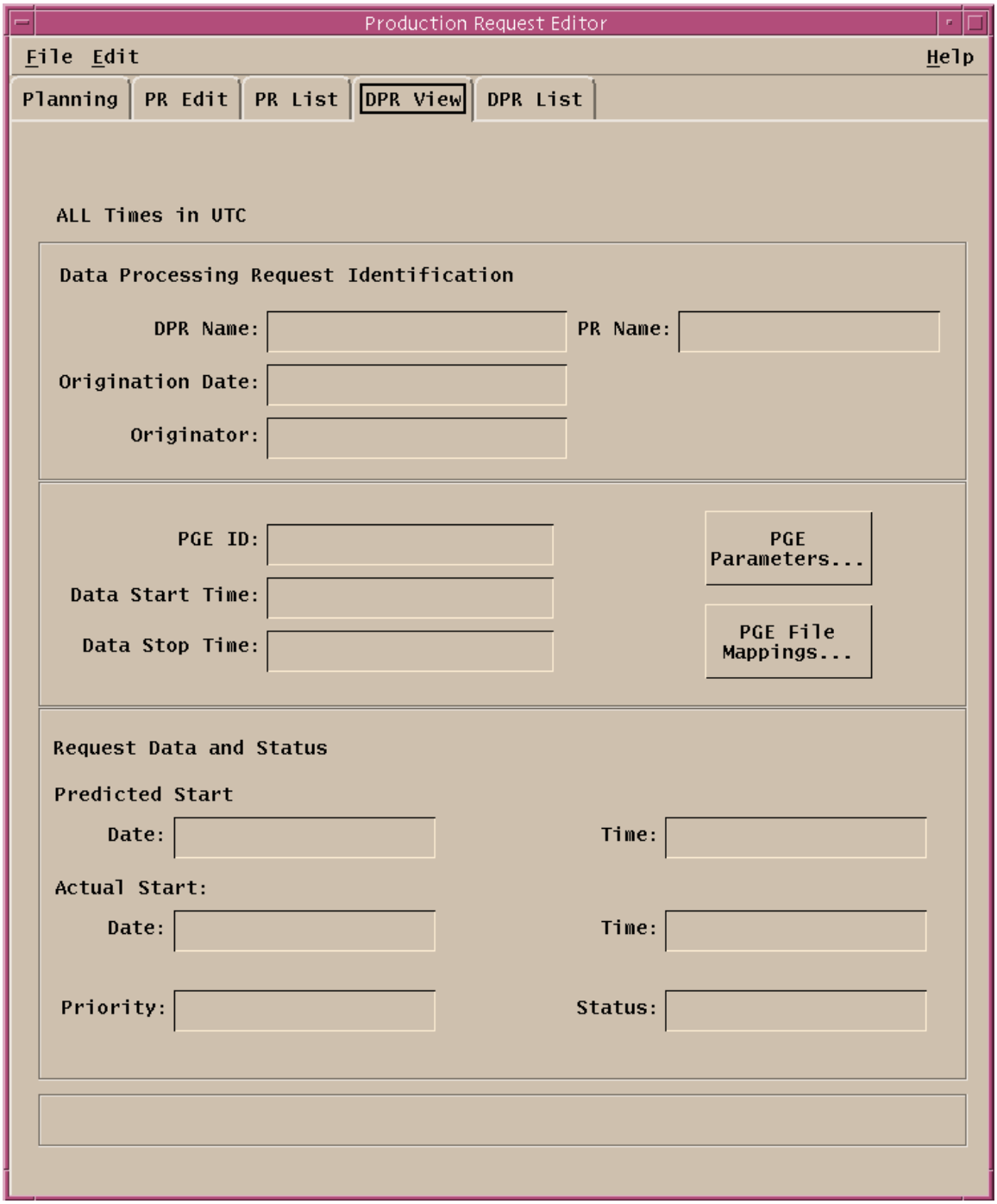

Figure 25. DPR View GUI•

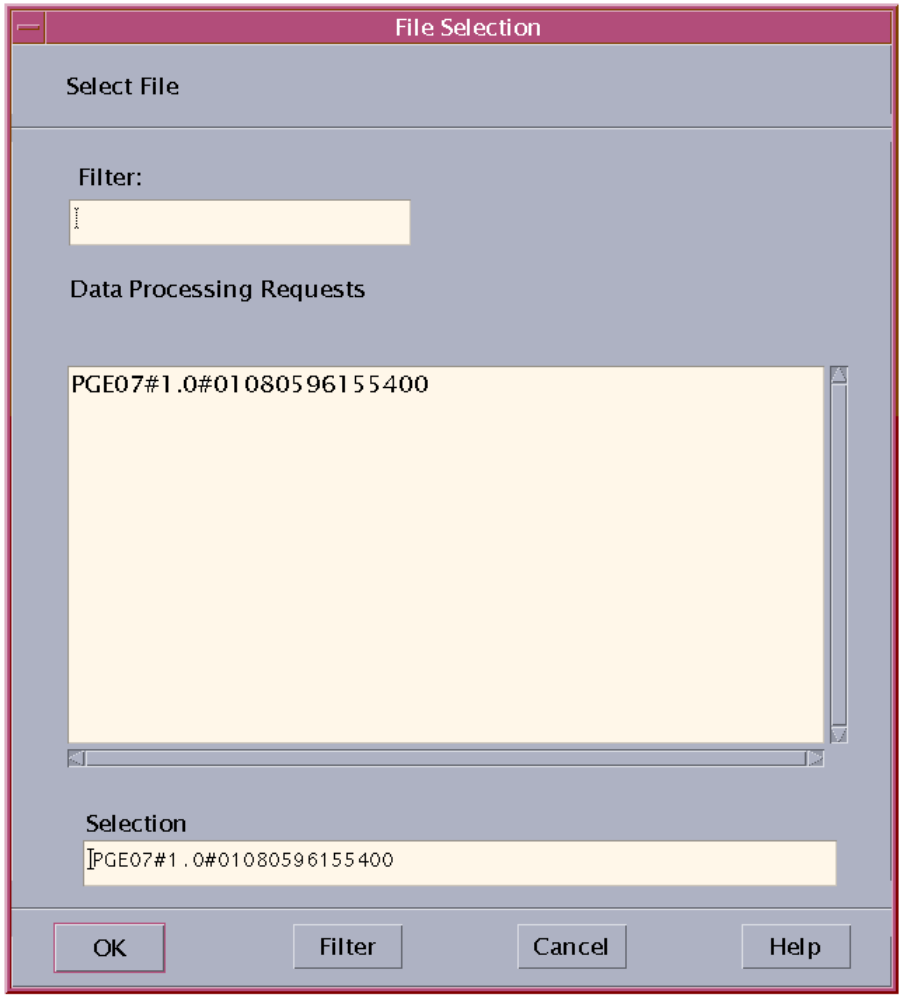

Figure 26. DPR File Selection Window

8 To obtain information concerning the PGE parameters (of the PGE associated with the DPR), click on the **PGE Parameters...** button.

- The **PGE Parameters** GUI (same format as Figure 18 except there is no **Parameter Mapping** field) is displayed.

9 When finished reviewing the PGE parameters, click on the **OK** button to return to the **DPR View** GUI.

- The **DPR View** GUI (Figure 25) is displayed.

10 Click on the **PGE File Mappings...** button.

- The **UR File Mappings** GUI (Figure 23) is displayed.
- The **UR File Mappings** GUI displays one line of information for each file that may be used by or be produced by the PGE associated with the selected DPR:
  - **Logical Id**.

- **Granule Id**
- **Start Time** (date and time).
- **Stop Time** (date and time).
- **Availability** (date and time).
- **UR** (universal reference).

- The PGE's input data and output data are displayed in separate areas.

11 When finished reviewing the **UR File Mappings**, click on the **OK** button to return to the **DPR View** GUI.

- The **DPR View** GUI is displayed.

12 Review the **Data Start Time** and **Data Stop Time**.

13 Review the **Request Data and Status** area of the GUI.

- The **DPR View** GUI displays the following information concerning the selected DPR:
  - **Predicted Start Date** and **Time**.
  - **Actual Start Date** and **Time**.
  - **Priority**.
  - **Status**.
- **Predicted Start Date/Time** and **Actual Start Date/Time** are displayed only if the Production Request has been scheduled.

14 When finished reviewing information concerning the DPR, repeat Steps 1 through 13 to review additional DPRs.

15 Select **File → Exit** to quit the **Production Request Editor** GUI.

Deleting a Data Processing Request

To delete a DPR, execute the procedure steps that follow. The procedure starts with the assumption that all applicable servers are currently running and the **Production Request Editor** Introductory GUI (Figure 15) is being displayed.

Deleting a Data Processing Request

1 Select the DPR List by clicking on the **DPR List** tab.
- The **DPR List** GUI page (Figure 24) is displayed.

2 Click on the **Production Request** option button.
- A list of Processing Requests is displayed.

3 Click on the Production Request with which the DPR to be deleted is associated.
- The Production Request is displayed in the **Production Request** field.

4 Click on the **Filter** button.
- A list of the DPRs associated with the selected Production Request is displayed.

5 Click on the DPR to be deleted.
- The DPR to be deleted is highlighted.

6 Select **Edit→Delete**.
- A dialog box is displayed requesting confirmation of the decision to delete the DPR.

7 Select **OK** to delete the DPR.
- A confirmation notice is displayed after completion of deletion.

8 Select **File → Exit** to quit the **Production Request Editor** GUI.

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Submitting or Withdrawing a Subscription

Submitting or Withdrawing a Subscription Using the Subscription Editor

The Subscription Editor is a character-based user interface that may be used to either submit or withdraw subscriptions for notification of data arrival (i.e., insertion of data into the archive) or other subscribable system events.

- Subscriptions may be submitted on behalf of a general user or on behalf of the Planning Subsystem (i.e., the PLS Subscription Manager).
- An advantage of the character-based Subscription Editor over the Subscription GUI is the ability to submit subscriptions without being a registered user of ECS.

Submitting or withdrawing a subscription using the Subscription Editor starts with the assumption that the applicable servers are running and the Production Planner has logged in to the ECS system.

Submitting or Withdrawing a Subscription Using the Subscription Editor

NOTE: Commands in Steps 1 through 8 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.
- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 Open another UNIX (terminal) window.

3 Start the log-in to the Planning/Management Workstation by typing **/tools/bin/ssh *hostname*** (e.g., **e0pls03**, **g0pls01**, **l0pls02**, or **n0pls02**) 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 4.
- If you have not previously set up a secure shell passphrase; go to Step 5.

4 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.
- Go to Step 6.

5 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

6 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.

7 Type **cd /usr/ecs/*MODE*/CUSTOM/utilities** then press **Return/Enter**.

- Change directory to the directory containing the production planning startup scripts (e.g., EcPlSubsEditStart).

8 Type **EcPlSubsEditStart *MODE ApplicationID*** then press **Return/Enter** to launch the Subscription Editor.

- The following message is displayed:
  - **This program may be used to submit subscriptions for notification of data arrivals, on behalf of a general user, or on behalf of the PDPS production system (i.e. the PLS Subscription Manager)**
    Would you like to view the complete list of ESDTs known to PDPS? (y/n):

9 Type either **y** or **n** (as appropriate) then press **Return/Enter**.

- Either lower-case or upper-case letters may be typed.
- If **y** was typed, a message similar to the following message is displayed:
  - **AP#0 Subscription Flag: 1**
    DAP#0 Subscription Flag: 1
    FAILPGE#0 Subscription Flag: 1
    MOD00#0 Subscription Flag: 0
    MOD01#0 Subscription Flag: 0
    MOD021KM#0 Subscription Flag: 0
    MOD02LUT#0 Subscription Flag: 0
    MOD03#0 Subscription Flag: 0
    MOD03LUT#0 Subscription Flag: 0
    MOD29#0 Subscription Flag: 1
    PGEEXE#0 Subscription Flag: 1
    PH#0 Subscription Flag: 1
    SSAPC#0 Subscription Flag: 1
    Is recipient PLS Subscription Manager (Y/N):
- If **n** was typed, the following message is displayed:
  - **Is recipient PLS Subscription Manager (Y/N):**

10 Type either **y** or **n** (as appropriate) then press **Return/Enter**.

- If **y** was typed, the following message is displayed:
  - **Enter ESDT data type name (as appears in the PDPS database):**
- If **y** was typed, skip Steps 11 and 12, and go to Step 13.
- If **n** was typed, the following message is displayed:
  - **Enter user id:**

11 In response to the "Enter user id" message type the appropriate ***UserID*** then press **Return/Enter**.

- The following message is displayed:
  - **Enter email address (for subscription notification):**

12 In response to the "Enter email address…" message type the appropriate ***e-mail address*** then press **Return/Enter**.

- The following message is displayed:
  - **Enter ESDT data type name (as appears in the PDPS database):**

13 Type the ESDT data type name (e.g., FAILPGE#0) then press **Return/Enter**.

- The following message is displayed:
  - **Override the provider [SYSTEM] defined for this ESDT (Y/N)**

14 Type either **Y** or **N** (as appropriate) then press **Return/Enter**.

- The following message is displayed:
  - **Submit(S)/Withdraw(W) :**

15 Type either **S** or **W** (as appropriate) then press **Return/Enter**.

- If **S** was typed, the following message is displayed:
  - **Specify the Internal Service Name**
    Enter 'd' for default Insert Event service
- If **W** was typed, the following message is displayed:
  - **Specify the Internal Service Name**

16 Type either ***internal service name*** or **d** (as appropriate) then press **Return/Enter**.

- A message similar to the following message is displayed:
  - **Client Path: /.:/subsys/ecs/TS2/EcIoAdServer**
    client: server binding is 03b894b0-c7e6-11d1-a691-
    9b9d7b23aa77@ncacn_ip_tcp:155.
    157.123.35[58765]
    Client Path: /.:/subsys/ecs/TS2/EcIoAdServer
    client: server binding is 03b894b0-c7e6-11d1-a691-
    9b9d7b23aa77@ncacn_ip_tcp:155.
    157.123.35[58764]
    Client Path: /.:/subsys/ecs/TS2/EcSbSubServer

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Launching Planning Workbench-Related GUIs

The following software applications are associated with the Planning Workbench:

- Subscription Manager.
- System Name Server.
- Message Handler.
- Resource Model.
- Planning Workbench.
- Production Timeline.
- Production Strategies.

Eventually the ECS desktop will be configured to allow access to GUIs related to the Planning Workbench using the icon shown in Figure 27. In the interim, access to the Planning Workbench GUIs must be gained through the use of UNIX commands.

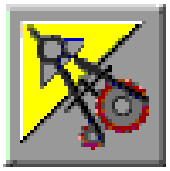

Figure 27. Planning Workbench Icon

In any case, launching Planning Workbench-related GUIs starts with the assumption that the applicable servers are running and the Production Planner has logged in to the ECS system.

Launching Planning Workbench-Related GUIs

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost** ***hostname*** then press the **Return/Enter** key on the keyboard.

- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Planning/Management Workstation by typing **/tools/bin/ssh *hostname*** (e.g., **e0pls03**, **g0pls01**, **l0pls02**, or **n0pls02**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 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.

8 Type **cd /usr/ecs/*MODE*/CUSTOM/utilities** then press **Return/Enter**.

- Change directory to the directory containing the production planning startup scripts (e.g., EcPlPRE_IFStart).
- 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.

9 Type **EcPlAllStart *MODE ApplicationID*** then press **Return/Enter** to launch the Message Handler, System Name Server, Resource Model, **Planning Workbench** GUI, and **Production Planning Timeline** GUI.

- The **Message Handler** GUI (Figure 28) is displayed.
- Eventually, the **Planning Workbench** GUI (Figure 29) is displayed. Then the **Production Planning Timeline** GUI (Figure 30) is displayed.
  - The **Production Planning Timeline** GUI usually occupies the entire screen when it is initially displayed.

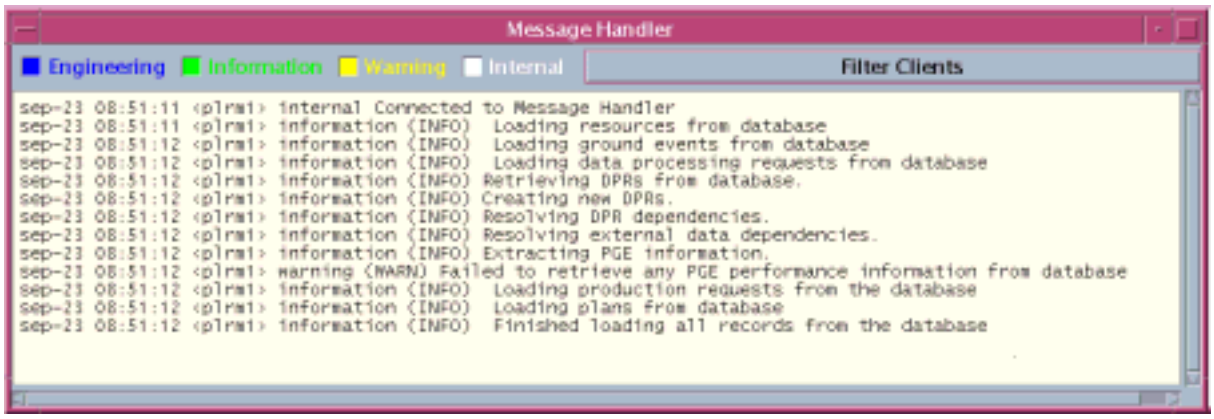

Figure 28. Message Handler GUI

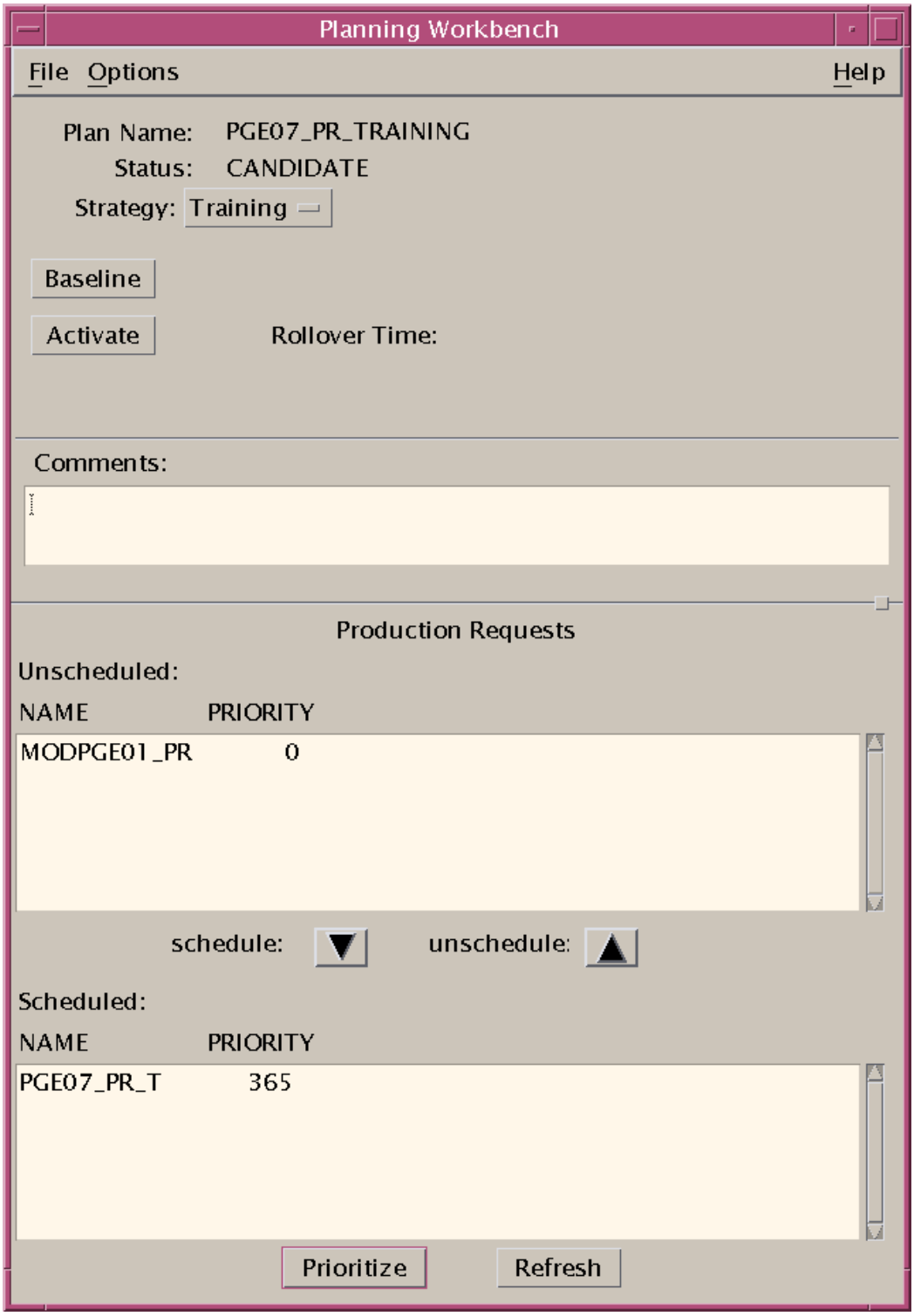

Figure 29. Planning Workbench GUI

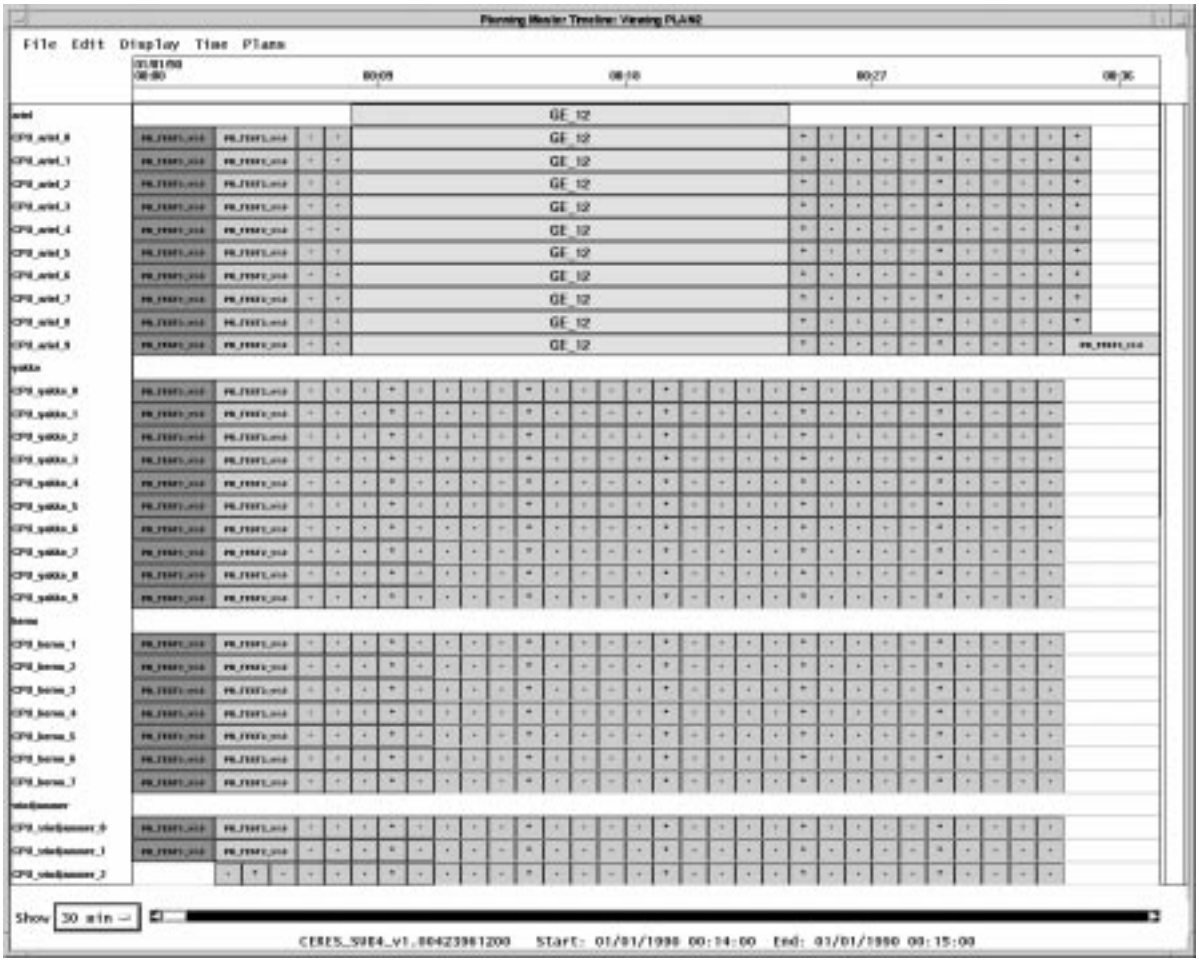

Figure 30. Production Planning Timeline GUI

- The **Message Handler** GUI displays messages of the following types:
  - Engineering.
  - Information.
  - Warning.
  - Internal.
- The **System Name Server** (SNS) handles interprocess communication.
- The **Resource Model** is an underlying resource data coordinator for the planning software.
- The ***ApplicationID*** is any number from 1 to 5. It identifies the message service in use so messages can be directed to the proper message handler GUI. Consequently, it is a good idea to use the same ApplicationID (also called MSGSRV_ID) consistently during a planning session.

10 Either click on the "minimize" icon in the upper right corner of the **Production Planning Timeline** GUI or adjust the window size and the view of the timeline as necessary using the mouse.

- Grab a corner of the timeline window with the cursor and resize the window as desired.

11 Open another UNIX window (if desired).

- It may be desirable to open the new UNIX window on another desktop if available.

12 Perform Steps 3 through 11 in the new UNIX window (if applicable).

13 Type **EcPlProdStratStart** ***MODE ApplicationID*** then press **Return/Enter** to launch the **Production Strategies** GUI.

- The **Production Strategies** GUI (Figure 31) is displayed.
- It is possible to start the **Production Strategies** GUI without first starting the Planning Workbench applications by skipping Steps 9 through 12.

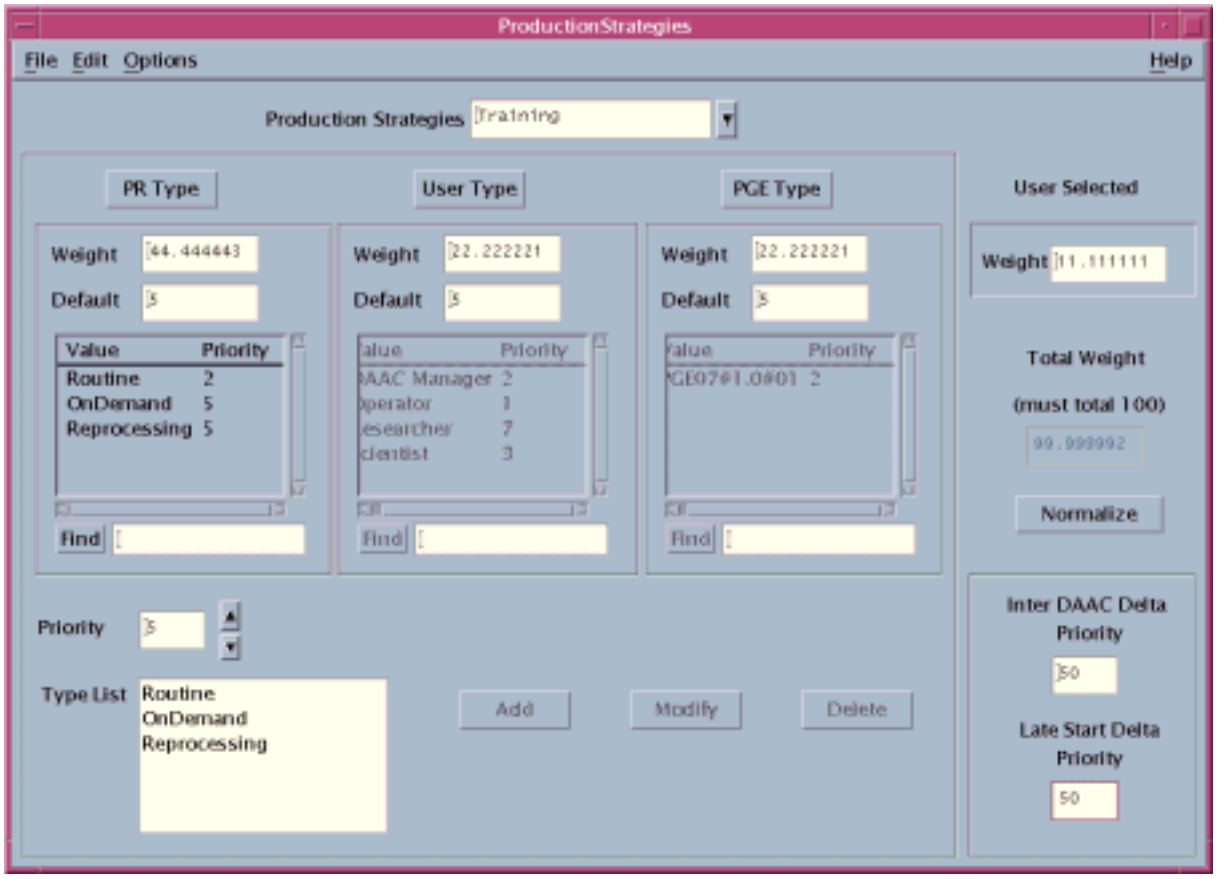

Figure 31. Production Strategies GUI

Creating a New Production Plan

Production Plan

The Production Planner uses the Planning Workbench when creating a plan for production data processing at the DAAC. The Planning Workbench provides the means by which the Production Planner selects specific PRs whose DPRs are to be run. The planning tool provides a forecast of the start and completion times of the jobs based upon historical experience in running these PGEs. Through the planning tool, when the generated plan is "activated," the information included in the plan is transferred to the Data Processing Subsystem and loaded into the Platinum AutoSys tool where production processing is managed. Figure 32 shows the general flow of production requests/data processing requests from the Production Request Editor through the Planning Workbench to the AutoSys production management tool.

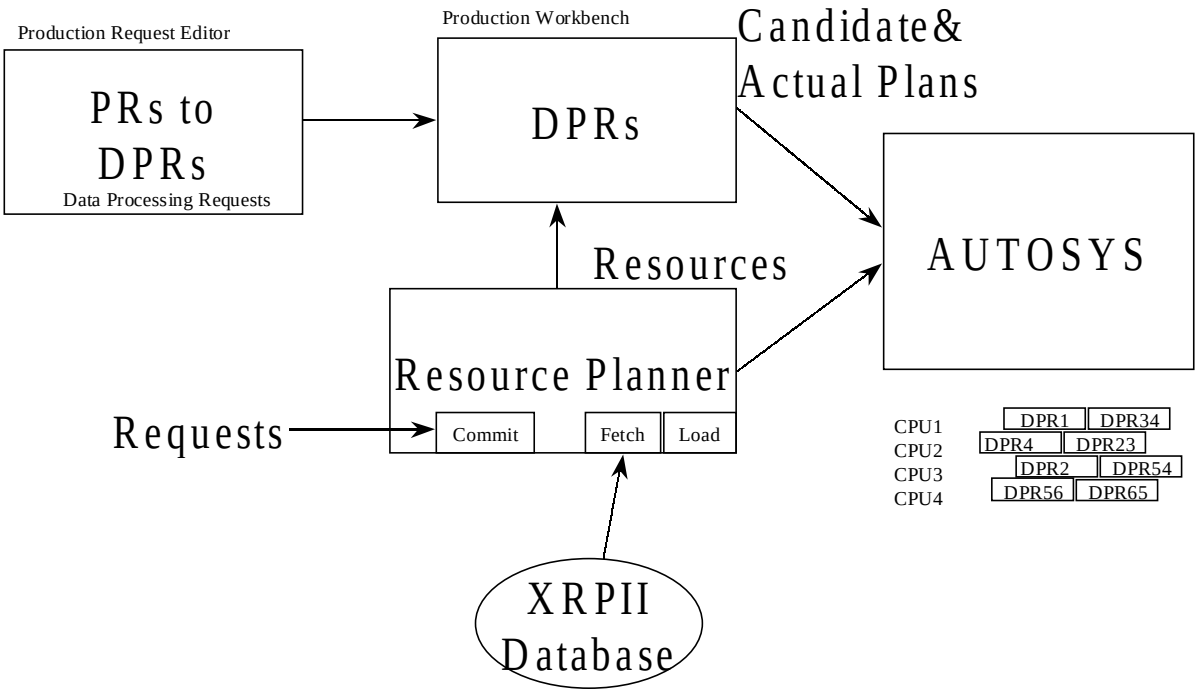

Figure 32. Planning Workbench Flow

The planning process involves the Production Planner preparing monthly and weekly production plans as well as a daily production schedule from the most current weekly plan. Although production planning varies from DAAC to DAAC, the following guidelines are generally applicable:

- Monthly plans
  - — developed for the coming month and one or two months in advance.
  - — produced, reviewed, updated, published and distributed approximately two weeks before the beginning of the month.
  - — plan for the coming month is used to establish a baseline against which production targets can be measured.
- Weekly plans
  - — produced, reviewed, updated, published and distributed approximately five days before the beginning of the coming week.
  - — used to produce a baseline for comparison of planned vs. actual production results.
- Daily plan or schedule
  - — produced each day for the next processing day.
  - — developed from the current weekly plan, adjusted to reflect the actual processing accomplished and the actual resources available at the time the daily schedule is generated.

During normal processing, when reasonably accurate predictions of the processing time for the PGEs are available, the processing schedule should result in a reasonably accurate prediction of when data products will be generated. However, during abnormal situations (e.g., equipment failure), what is actually accomplished could depart significantly from the plan. In such situations, the Production Planner may choose to develop new plans to reflect current events. This process is known as "replanning."

Production Strategy

A Production Strategy is a high-level plan that the Production Planner prepares to notify the Planning Workbench of the rules for priorities and preferences in the processing of DPRs. Production Strategies work on two levels. First, the Production Planner can update lists of DPR attributes so that each value an attribute can have is tied to a particular priority. For example, the DPR attribute "PR Type" has three values that may have their default priority of 2 changed as follows (on a scale of 1 to 10):

- Routine 6
- On-Demand 10
- Reprocessing 4

Next, the operator can change the weight that each attribute's priority is given. For example, weights (from 1 to 100) might be assigned to the DPR attributes as follows:

- PR Type 45
- User Type 15
- PGE Type 20

A weight is also given to the priority specified when the user (Production Planner) created the Production Request as shown in the following example:

- User Selected 20

The total weights assigned to PR Type, User Type, PGE Type and User Selected must equal 100. Using this data the Planning Workbench calculates a priority for each DPR in a Production Plan. Figure 33 provides an illustration of how priority is calculated for a DPR.

Finally, there are deltas that can be added to the calculated priority based on two types of conditions. Specifically, a Production Planner may choose to increase the priority of all jobs that produce data needed by other DAACs (the Inter-DAAC Delta) or that have been waiting in the Production Queue for more than a day (the Late Start Delta).

Defining a Production Strategy

The Production Planner uses the Production Strategies GUI to develop Production Strategies. The procedure that follows describes how to define or modify a Production Strategy.

The procedure for defining a production strategy starts with the assumption that all applicable servers are currently running and the **Production Strategies** GUI (Figure 31) is being displayed.

Defining a Production Strategy

1 If defining a new production strategy, select **File → New** from the pull-down menu.
- The fields of the **Production Strategies** GUI (Figure 31) are reset.

2 If modifying an existing production strategy, first click on the option button associated with the **Production Strategies** field, then highlight (in the option menu) the name of the production strategy to be modified.
- Data pertaining to the selected production strategy are displayed in the applicable fields of the **Production Strategies** GUI (Figure 31).
- Alternatively, it is possible to select **File → Open** from the pull-down menu, select the desired production strategy from the list on the **Open** window, and click on the **Ok** button to open the production strategy.

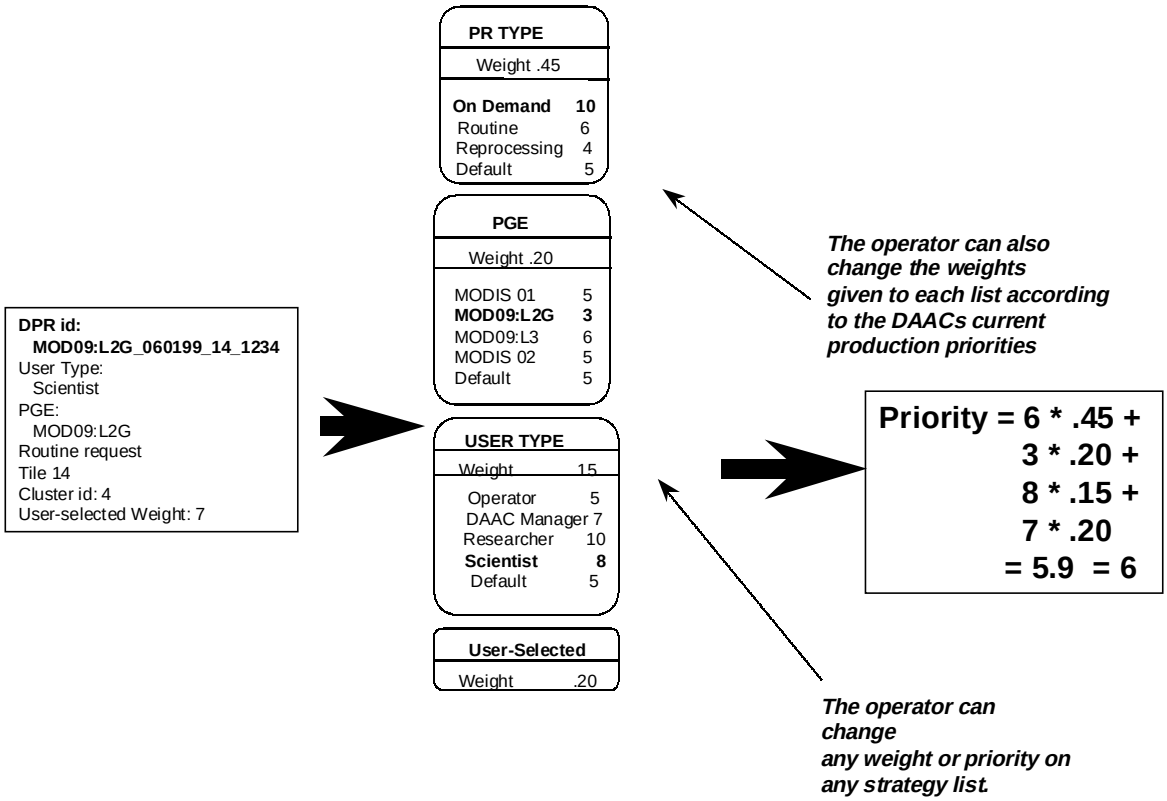

Figure 33. Example of Calculating Priority for a DPR

3 If changing the default priority for PR Type, click in the **Default** field below the **PR Type** button and type the desired default value.
- The range for the default is from 1 to 10.

4 If changing the default priority for User Type, click in the **Default** field below the **User Type** button and type the desired default value.

5 If changing the default priority for PGE Type, click in the **Default** field below the **PGE Type** button and type the desired default value.

6 If defining or modifying a priority for a type of production request, first click on the **PR Type** button.
- The different types of production requests are displayed in the **Type List** field at the bottom left of the GUI.

7 If defining a priority for a type of production request **not** currently listed in the **PR Type Value-Priority** list, click on that PR type in the **Type List** field.
- The PR type is highlighted.
- It is possible to highlight multiple PR types (by clicking on each one in turn) if they are all going to be assigned the same priority.

8 If redefining or deleting a priority for a type of production request **already** listed in the **PR Type Value-Priority** list, click on that PR type in the **Value-Priority** list.

- The PR type is highlighted.
- It is possible to highlight multiple PR types (by clicking on each one in turn while holding down either the **Shift** key or the **Ctrl** key) if the same action is going to be taken with respect to all of them.

9 If defining or modifying (not deleting) a priority, click on the up/down arrow buttons to the right of the **Priority** field until the desired priority value is displayed in the **Priority** field.

- An alternative method of entering the priority is to type the desired priority value in the **Priority** field.
- The acceptable range for the priority is from 1 to 10.

10 Click on the appropriate button from the following selections:

- **Add** - to approve a priority for an additional PR type and display the selected PR type and priority in the **PR Type Value-Priority** list at the left center of the GUI.
- **Modify** - to approve a revised priority for the selected PR type and display the PR type and modified priority in the **PR Type Value-Priority** list.
- **Delete** - to delete the priority for the selected PR type and remove the PR type and priority from the **PR Type Value-Priority** list.

11 Repeat Steps 6 through 10 as necessary until all PR Type priorities (as shown in the **PR Type Value-Priority** field) are correct.

12 If defining or modifying a priority for a type of user, first click on the **User Type** button.

- The different types of users are displayed in the **Type List** field at the bottom left of the GUI.

13 If defining a priority for a type of user **not** currently listed in the **User Type Value-Priority** list, click on that user type in the **Type List** field.

- The user type is highlighted.
- It is possible to highlight multiple user types (by clicking on each one in turn).

14 If redefining or deleting a priority for a user type **already** listed in the **User Type Value-Priority** list, click on that user type in the **Value-Priority** list.

- The user type is highlighted.
- It is possible to highlight multiple user types (by clicking on each one in turn while holding down either the **Shift** key or the **Ctrl** key).

15 If defining or modifying (not deleting) a priority, click on the up/down arrow buttons to the right of the **Priority** field until the desired priority value is displayed in the **Priority** field.

- An alternative method of entering the priority is to type the desired priority value in the **Priority** field.
- The acceptable range for the priority is from 1 to 10.

16 Click on the appropriate button from the following selections:

- **Add** - to approve a priority for an additional user type and display the selected user type and priority in the **User Type Value-Priority** list near the center of the GUI.
- **Modify** - to approve a revised priority for the selected user type and display the user type and modified priority in the **User Type Value-Priority** list.
- **Delete** - to delete the priority for the selected user type and remove the user type and priority from the **User Type Value-Priority** list.

17 Repeat Steps 12 through 16 as necessary until all user type priorities (as shown in the **User Type Value-Priority** field) are correct.

18 If defining a priority for a type of PGE, first click on the **PGE Type** button.

- The different types of PGEs are displayed in the **Type List** field at the bottom left of the GUI.

19 If defining a priority for a type of PGE **not** currently listed in the **PGE Type Value-Priority** list, click on that PGE type in the **Type List** field.

- The PGE type is highlighted.
- It is possible to highlight multiple PGE types (by clicking on each one in turn).

20 If redefining or deleting a priority for a PGE type **already** listed in the **PGE Type Value-Priority** list, click on that PGE type in the **Value-Priority** list.

- The PGE type is highlighted.
- It is possible to highlight multiple PGE types (by clicking on each one in turn while holding down either the **Shift** key or the **Ctrl** key).

21 If defining or modifying (not deleting) a priority, click on the up/down arrow buttons to the right of the **Priority** field until the desired priority value is displayed in the **Priority** field.

- An alternative method of entering the priority is to type the desired priority value in the **Priority** field.
- The acceptable range for the priority is from 1 to 10.

22 Click on the appropriate button from the following selections:

- **Add** - to approve a priority for an additional PGE type and display the selected PGE type and priority in the **PGE Type Value-Priority** list near the center of the GUI.
- **Modify** - to approve a revised priority for the selected PGE type and display the PGE type and modified priority in the **PGE Type Value-Priority** list.
- **Delete** - to delete the priority for the selected PGE type and remove the PGE type and priority from the **PGE Type Value-Priority** list.

23 Repeat Steps 18 through 22 as necessary until all PGE type priorities (as shown in the **PGE Type Value-Priority** field) are correct.

24 Click in the **Weight** field below the **PR Type** button and type the desired weight.

- The acceptable range for weights is from 1 to 100.
- The **Total Weight** field displays updated totals of all weighting factors as they are entered.
- When entering weights for the PR Type, User Type, PGE Type, and User Selected factors, relative values can be typed in without regard to whether the values in the four categories add up to 100. The **Normalize** button provides a means of eventually ensuring that the total of all four categories equals 100.
- The assigned weight in each category is multiplied by the priority for each type. To maintain a high priority (low number, such as one), assign a low weight; to ensure a low priority, assign a relatively high weight.

25 Click in the **Weight** field below the **User Type** button and type the desired weight.

26 Click in the **Weight** field below the **PGE Type** button and type the desired weight.

27 Click in the **User Selected Weight** field and type the desired weight.

- The priority to which the user-selected weight is applied is the priority assigned using the Production Request Editor when a production request is created.

28 Click on the **Normalize** button.

- The Planning Subsystem adjusts all weighting factors to produce a total weight of 100 (as displayed in the **Total Weight** field).

29 If it is necessary to change the priority of all jobs that produce data needed by other DAACs, click in the **Inter DAAC Delta Priority** field and type the desired value.

- The range for Inter-DAAC Delta Priority is from 1 to 100.
- The lower the number, the higher the priority (1 is a high priority, 100 is a low priority).

30 If it is necessary to change the priority of jobs that have been waiting in the Production Queue for more than a day, click in the **Late Start Delta Priority** field and type the desired value.

- The range for the Late Start Delta Priority is from 1 to 100.

31 Select **File → Save As** from the pull-down menu.

- A **Save As** window similar to the **File Selection** windows in Figures 21 and 26 is displayed.

32 Type the desired file name for the new production strategy in the **Save As** field.

33 Click on the **Ok** button to accept the file name in the **Save As** field.

- The **Save As** window is dismissed.
- The production strategy is saved with the specified file name.

34 To exit from the **Production Strategies** GUI select **File → Exit** from the pull-down menu.

Creating a New Production Plan

The Production Planner creates a production plan by selecting PRs from two lists of PRs, i.e., the list of available "Unscheduled" PRs and the list of "Scheduled" PRs. Using arrow buttons, the Production Planner moves the PRs between lists until the "Scheduled" list contains the desired set of PRs that define the new plan.

Before creating a new production plan the Production Planner must be prepared to provide the following information:

- Name of the plan.
- PRs to be included in the new production plan.
- Comments (if any).

The Production Planner uses the Planning Workbench GUI to prepare Production Plans. The procedure that follows describes how to create a new Production Plan. The procedure starts with the assumption that all applicable servers are currently running and the **Planning Workbench** GUI (Figure 29) is being displayed.

1 If applicable, click on the option button associated with the **Strategy** field, then highlight the desired production strategy in the option menu.

2 Move PRs between the **Unscheduled** and **Scheduled** lists as necessary by selecting (highlighting) the PR to be moved by clicking on the PR in the list from which it is to be moved then clicking on the up or down arrow button (as applicable) to move the PR to the other list.

- Highlighted PR disappears from one list and appears on the other.
- The **Unscheduled** and **Scheduled** PR lists are scrollable.
- In the **Scheduled** list, items with the prefix "GE_" are resource reservations (also called "ground events").
  - Ground events are resource reservations for non-production-related purposes, including such activities as testing, preventive maintenance, or system upgrades.
  - Ground events are scheduled through the resource planning process.

3 If the priority of any PR in the **Scheduled** list needs to be changed, perform Steps 4 through 8; otherwise go to Step 9.

4 Click on the PR entry in the **Scheduled** list to highlight it.

5 Click on the **Prioritize** button.

- The **Priority popup** window (Figure 34) is displayed.

6 Type the new priority in the **Production Request(s) priority:** field.

7 Click on the **OK** button.

8 Repeat Steps 4 through 7 for any additional PR(s) needing a change of priority.

9 Type any relevant comments (up to 255 characters) in the **Comments** field.

10 Select **File → Save As** from the pull-down menu.

- The **Save Plan** window (Figure 35) is displayed.

11 Type the desired file name for the new production strategy in the **Plan Names** field.

12 Click on the **OK** button to accept the file name in the **Plan Names** field.

- The **Save Plan** window is dismissed.
- The production plan is saved with the specified file name.
- The **Planning Workbench** GUI (Figure 29) is displayed.
- The **Plan Name** is displayed.

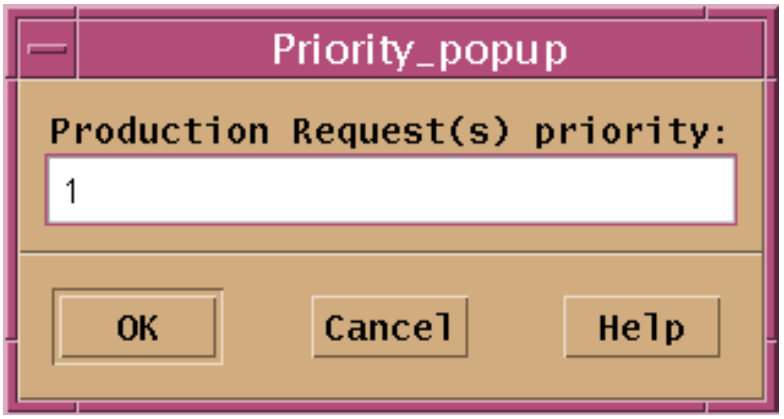

Figure 34. Planning Workbench Priority Popup Window

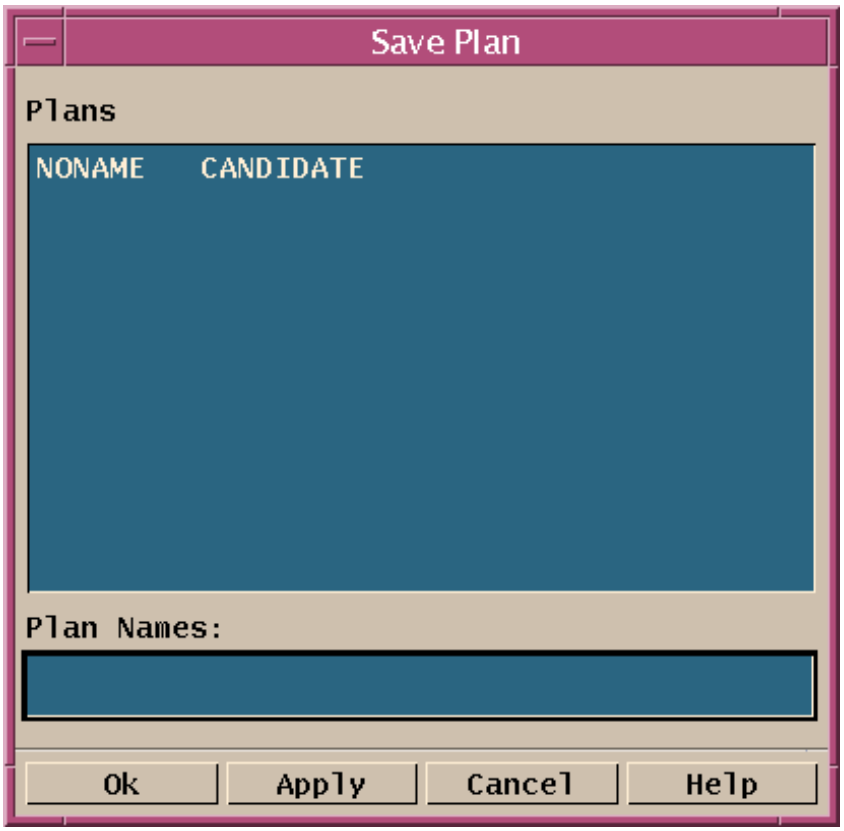

Figure 35. Planning Workbench Save Plan Window

- The **Status** displayed is **Candidate**.

NOTE: The Planning Workbench core dumps when a plan is activated with past ground events.

13 If the new plan is to be activated immediately, click on the **Activate** button.

- The new plan is activated.
- The time of plan activation is displayed next to **Rollover Time:** on the **Planning Workbench** GUI.

14 If the production plan is to be used as a baseline plan, perform Steps 15 through 18; otherwise, go to Step 19.

15 Click on the **Baseline** button.

16 Select **File → Save As** from the pull-down menu.

- The **Save Plan** window (Figure 35) is displayed.

17 Type the desired file name for the new production strategy in the **Plan Names** field.

18 Click on the **OK** button to accept the file name in the **Plan Names** field.

- The **Save Plan** window is dismissed.
- The production plan is saved with the specified file name.
- The **Planning Workbench** GUI (Figure 29) is displayed.
- The **Plan Name** is displayed.
- The **Status** displayed is **Baseline**.

19 Repeat Steps 1 through 18 to perform additional production planning activities.

20 To quit the **Planning Workbench** GUI when production planning is complete select **File → Exit**.

21 After quitting the **Planning Workbench** GUI click in the UNIX window used to start the **Planning Workbench** GUI.

- The Message Handler, System Name Server, and Resource Model should be shut down to eliminate unneeded processes and allow other operators to gain access to the Planning Workbench if necessary.

22 Type **EcPlSlayAll** ***MODE ApplicationID*** then press **Return/Enter** to shut down the Planning Timeline, Message Handler, System Name Server, and Resource Model (and the Planning Workbench if it has not already been shut down).

- The **Message Handler** GUI (Figure 28) disappears.

23 Type **ps -ef | grep *MODE*** then press **Return/Enter** to obtain a list of active processes in the specified mode.

- A list of active processes in the specified mode is displayed.
- If an error message is received when **ps -ef | grep *MODE*** is entered, type **ps -auxwww | grep *MODE*** then press **Return/Enter**.

24 Examine the list of processes running in the specified mode to determine whether the Message Handler, System Name Server, and Resource Model processes have actually been shut down.

- None of the following processes should be active:
  - EcPlWb
  - EcPlTl
  - EcPlMsh
  - EcPlSns
  - EcPlRm

25 If any of the specified processes [especially the Message Handler, System Name Server, and/or Resource Model process(es)] is/are still active, type **kill -15 *process_id1 [process_id2] [process_id3] […]*** to terminate the active process(es).

26 Repeat Steps 23 through 25 as necessary.

Reviewing a Plan Timeline

It is possible to display a graphic, timeline-oriented depiction of a production plan, as shown in Figure 30. The timeline application becomes available when the Production Planning Workbench is initiated. The display shows a set of processing equipment, arranged along the left side of the GUI, and some period of time as indicated across the top edge of the GUI.

The execution of DPRs on the processing equipment over a period of time is represented by several DPR bars across the GUI for that equipment. In addition, there may be bars that represent resource reservations for non-production-related purposes, which are also called "ground events." They are scheduled through the resource planning process. Ground events include such activities as testing, preventive maintenance, or system upgrades.

- A bar represents a time period during which a DPR is to be processed or a resource reservation has been planned.
- Each bar bears the name of a DPR or a resource reservation. Given the selection of a light enough color for the bar and a time span that allows a long enough bar, the name of the DPR or resource reservation can be seen on the bar.
  - Placing the cursor on a bar causes the name of the DPR (or resource reservation), its description, and its start and end dates/times to appear near the bottom of the timeline GUI.
  - Resource reservations are identified by the prefix "GE_".

The procedure for reviewing a production plan timeline starts with the assumption that all applicable production planning servers are running and the **Production Planning Timeline** GUI (Figure 30) is being displayed.

1 Adjust the **Production Planning Timeline** window size and the view of the timeline as necessary using the mouse.

- Grab a corner of the timeline window with the cursor and resize the window as desired.
- Scroll up or down through the full list of equipment.
- Scroll left or right to go backward or forward in time.

2 If a different plan is to be viewed (other than the one currently being displayed), select **File → Open Plan** from the pull-down menu.

- The **Open Plan** window (Figure 36) is displayed.
- The available plans are listed.

3 Select (highlight) the plan to be reviewed by clicking on the corresponding plan name in the list of plans.

4 Click on the **OK** button.

- The selected plan is displayed on the **Production Planning Timeline**.

5 If a different time scale (start and end dates and times) is desired, perform Steps 6 through 8; otherwise, go to Step 9.

6 Select **Time → Change Plan Window** from the pull-down menu:

- The **plan window edit** window (Figure 37) is displayed.

7 Type date and time for the desired start and end times (in ***DD MMM YYYY hh:mm:ss*** format) in the **Plan Win Start** and **Plan Win End** fields of the **plan window edit** window.

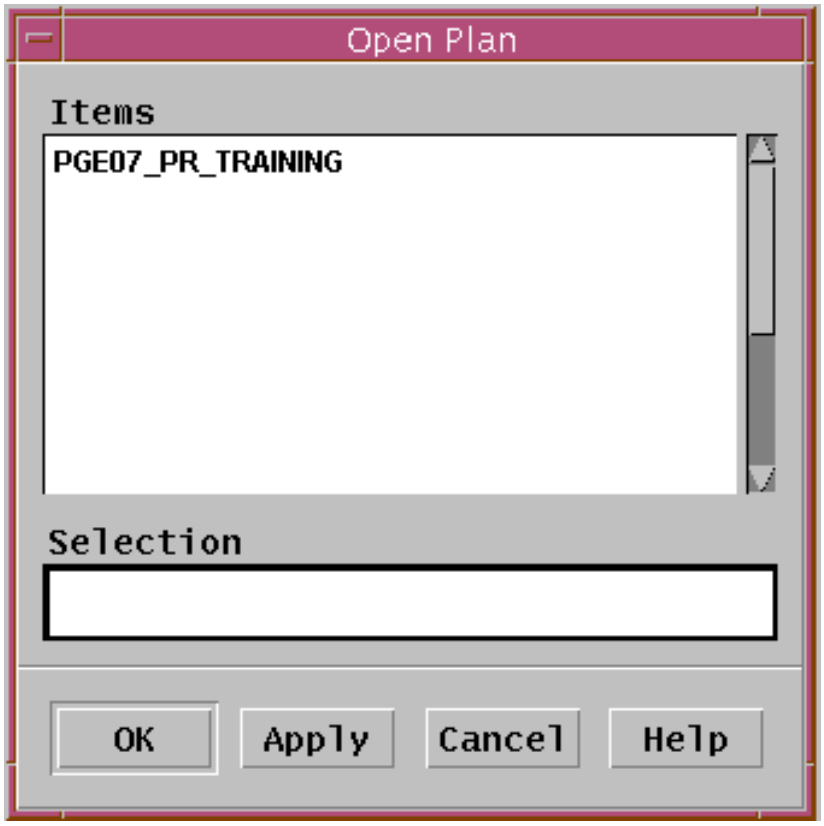

Figure 36. Open Plan Window

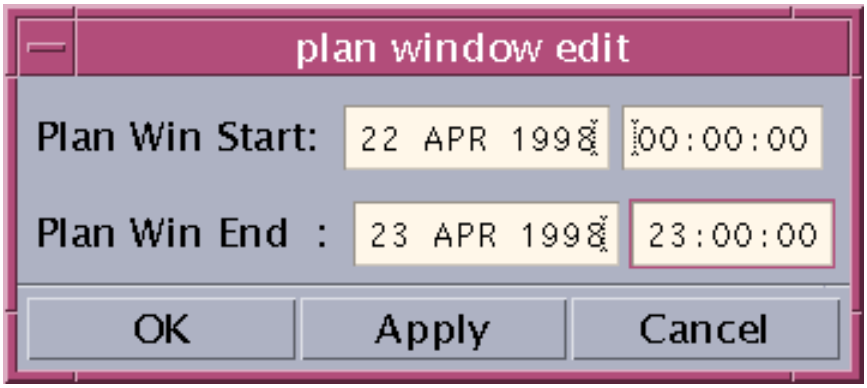

Figure 37. Plan Window Edit Window

8 When the appropriate date and time have been entered, click on the appropriate button from the following selections:

- **OK** - to accept the changes and dismiss the **plan window edit** window.
- **Apply** - to accept the changes without dismissing the **plan window edit** window.
- **Cancel** - to cancel the changes and dismiss the **plan window edit** window.

9 If a different time span is desired, click and hold on the **Show** option button and select (highlight then release the mouse button) the desired time span from the option menu that is displayed:

- **5 min**
- **10 min**
- **30 min**
- **45 min**
- **1 hr**
- **2 hr**
- **4 hr**
- **6 hr**
- **12 hr**
- **24 hr**
- **168 hr**
- **other**

10 If no resources are displayed on the GUI or if different resources should be displayed, perform Steps 11 through 15; otherwise, go to Step 16.

11 Select **Display** → **Change resources** from the pull-down menu:

- The **Resource edit** window (Figure 38) is displayed.

12 If adding resource(s) from the **Available Resources** list to the **Viewed Resources** list, select (highlight) the resource(s) to be added, then click on the **Add** button to move the resource(s) to the **Viewed Resources** list.

- Highlighted resource(s) appear(s) on the **Viewed Resources** list.

13 If deleting resource(s) from the **Viewed Resources** list, select (highlight) the resource(s) to be removed, then click on the **Del** button to remove the resource(s) from the **Viewed Resources** list.

- Highlighted resource(s) disappear(s) from the **Viewed Resources** list.

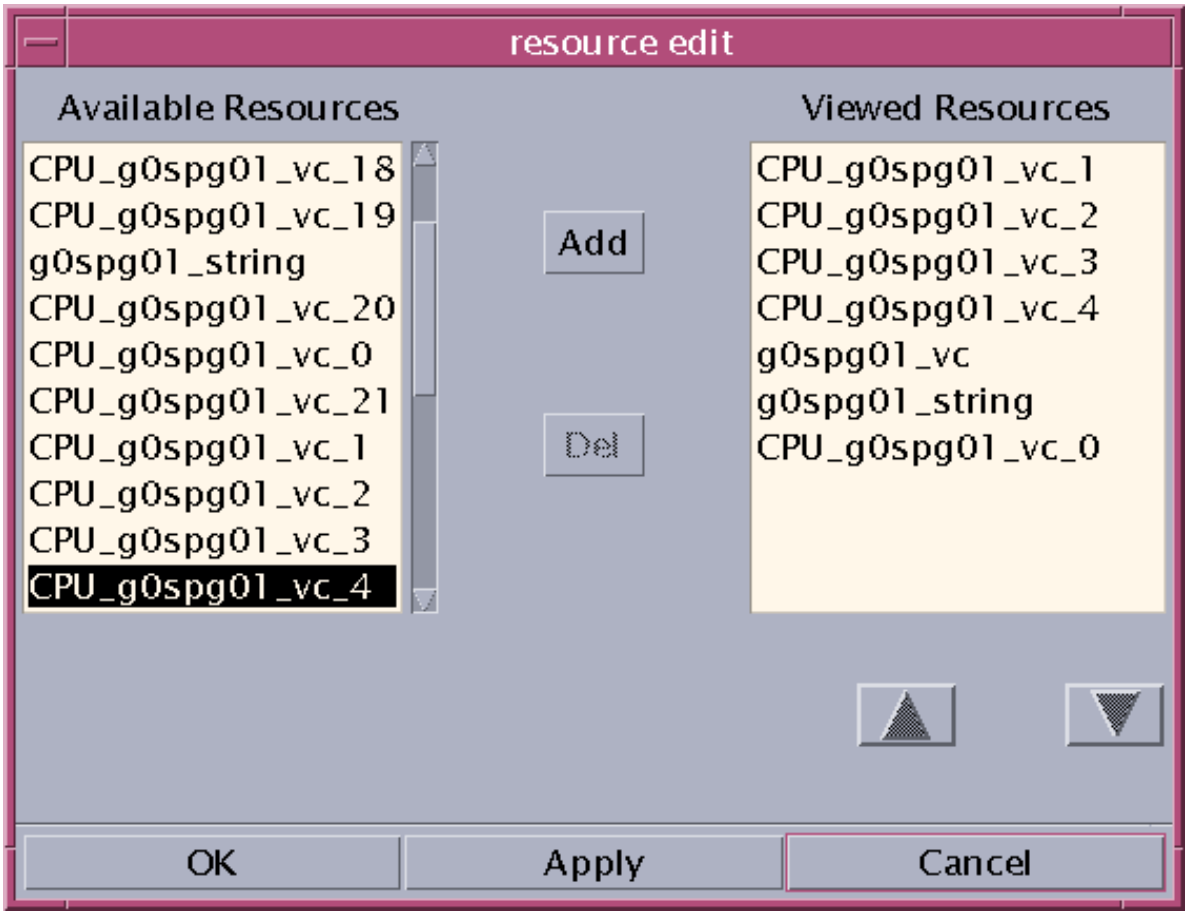

Figure 38. Resource Edit Window

14 If changing the order in which resources are listed in the **Viewed Resources** list, select (highlight) the resource to be moved, then click on the up or down arrow as necessary to reposition the selected resource.

- Highlighted resource changes position in the **Viewed Resources** list.

15 When the **Viewed Resources** list contains the desired set of resources, click on the appropriate button from the following selections:

- **OK** - to accept the changes and dismiss the **Resource edit** window.
- **Apply** - to accept the changes without dismissing the **Resource edit** window.
- **Cancel** - to cancel the changes and dismiss the **Resource edit** window.

16 If different color coding of the timeline is desired, perform Steps 17 through 21; otherwise, go to Step 22.

17 Select **Display** → **Change colors** from the pull-down menu:

- The **Color Selections** window (Figure 39) is displayed.

18 Click on the name of one of the DPRs or resource reservations to be recolored.

- The DPR or resource reservation is highlighted.

19 Click on the desired color (in the color palette) to be applied to the highlighted DPR or resource reservation.

20 Repeat Steps 18 and 19 as necessary.

21 When the appropriate color changes have been made, click on the appropriate button from the following selections:

- **OK** - to accept the changes and dismiss the **Color Selections** window.
- **Apply** - to accept the changes without dismissing the **Color Selections** window.
- **Cancel** - to cancel the changes and dismiss the **Color Selections** window.

22 Observe the production scheduling information displayed on the **Production Planning Timeline** GUI.

23 Repeat the previous steps as necessary.

24 If it becomes necessary to exit from the timeline GUI, select **Close** from the window manager pull-down menu (upper left-hand corner of the GUI).

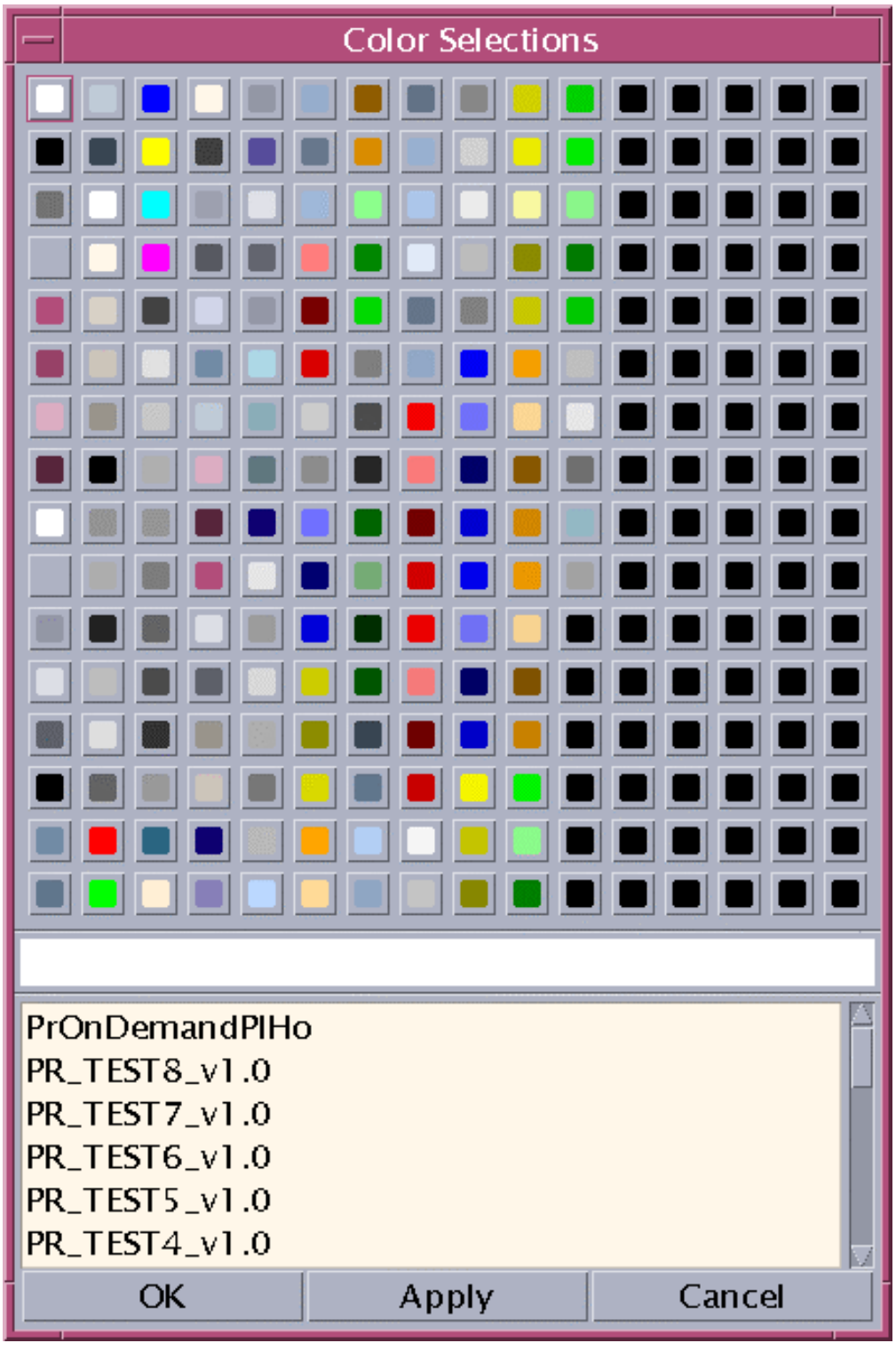

Figure 39. Color Selections Window

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Troubleshooting Production Planning Problems

Trouble Symptoms

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, Planning has interfaces with many other subsystems. Consequently, problems with processing can be traced to either the Planning Subsystem or one of many other ECS subsystems, including (but not necessarily limited to) those in the following list:

- Data Processing Subsystem (DPS).
- Data Server Subsystem (DSS).
- Interoperability Subsystem (IOS).
- Communications Subsystem (CSS).

Table 3 describes actions to be taken in response to some common Planning problems. If the problem cannot be identified and fixed without help within a reasonable period of time, the appropriate response is to call the help desk or submit a trouble ticket in accordance with site Problem Management policy.

Table 3. Troubleshooting Production Planning Problems (1 of 2)

Symptom	Response
Unable to log in to the Planning Subsystem host (e.g., g0pls01).	Check with the Operations Controller/System Administrator to ensure that the host is “up."
GUI not displayed when the start-up script has been properly invoked.	1. Ensure that the DISPLAY variable was set properly. 2. Ensure that the xhost command was given on the initial login host. [For detailed instructions refer to the applicable procedure, either **Launching the Production Request Editor** or **Launching Planning Workbench-Related GUIs** (previous sections of this lesson).]
Error message indicating that SNS (System Name Server) and/or Resource Model is/are in use using the selected Application ID.	1. Use another Application ID if working in a different mode from the person using the selected Application ID. 2. If working in the same mode as the other user, coordinate use of Planning applications with the other user and/or the System Administrator. [For detailed instructions refer to the procedure for **Launching Planning Workbench-Related GUIs** (previous section of this lesson).]

Table 3. Troubleshooting Production Planning Problems (2 of 2)

Symptom	Response
Other problems.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 4) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," check the log files (e.g., EcPlPREditor.ALOG, EcPlWb.ALOG, EcPlTl.ALOG) in the /usr/ecs/*MODE*/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).]

Table 4. Hosts, Servers, Clients and Other Software Relevant to Production Planning

HOST	SERVER/CLIENT/OTHER SOFTWARE
Planning/Management Workstation	Production Request Editor (EcPlPREditor) Planning Workbench GUI (EcPlWb) Production Strategies GUI (EcPlProdStrat) Production Planning Timeline (EcPlTl) Subscription Editor (EcPlSubsEdit) Message Handler (EcPlMsh) System Name Server (EcPlSns) Resource Model (EcPlRm)
Queuing Server (e.g., x0sps04)	Subscription Manager (EcDpPlSubMgr) Job Management Server (EcDpPrJobMgmt)
SDSRV Server (e.g., x0acs03)	Science Data Server (EcDsScienceDataServer)
Interface Server 01 (e.g., x0ins02)	Advertising Server (EcIoAdServer)
Interface Server 02 (e.g., x0ins01)	Subscription Server (EcSbSubServer)

Checking Log Files

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

- DCE problems.
- Database problems.
- Lack of disk space.

The procedure for checking log files starts with the assumption that the operator has logged in to the ECS system and the Planning Subsystem host.

Checking Log Files

1 Access a terminal window logged in to the appropriate host.

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

- Change directory to the directory containing the production planning log files (e.g., EcPlPREditor.ALOG, EcPlWb.ALOG, EcPlTl.ALOG).

3 Type **pg *filename*** then press **Return/Enter**.

- ***filename*** refers to the production planning log file to be reviewed (e.g., EcPlPREditor.ALOG, EcPlPREditor_IF.ALOG, EcPlProdStrat.ALOG, EcPlWb.ALOG, EcPlTl.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., **tail**, **more**, **vi**) can be used to review the log file.

4 Review the log file to identify problems that have occurred.

5 Respond to problems as follows:

- DCE problems.
  - Notify the Operations Controller/System Administrator of suspected DCE 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 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.

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Launching Production Processing Applications

Launching Production Processing Applications

The following software applications are associated with Production Processing (excluding Science Software Integration and Test (SSI&T) and Science Data Processing Toolkit applications):

- Subscription Manager.
- Job Management.
- Data Management.
- Execution Management.
- PGE Management.
- Deletion Server.
- AutoSys/AutoXpert.
- QA Monitor.

Access to the Production Processing tools must be gained through the use of UNIX commands.

Launching Production Processing applications starts with the assumption that the applicable servers are running and the Production Monitor has logged in to the ECS system.

Launching Production Processing Applications

NOTE: Commands in Steps 1 through 11 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.

- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Queuing Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0sps04**, **g0sps06**, **l0sps03**, or **n0sps08**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 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.

8 Type **cd /*path*** then press **Return/Enter**.

- 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.g0sps06).
- The particular path to be typed may vary from site to site.

9 Type **source *AUTOSYSINSTANCE*.autosys.csh.*hostname*** then press **Return/Enter**.

- An ***AUTOSYSINSTANCE*** (also called an AUTOSERV instance) is installed as part of the Data Processing Subsystem and is identified by three capital letters.
  - For example, an AutoSys instance at the GSFC DAAC might be identified as **FMR**.
- It is possible to have multiple AutoSys instances installed at a DAAC.

10 Type **cd /usr/ecs/*MODE*/CUSTOM/utilities** then press **Return/Enter**.

- Change directory to the directory containing the AutoSys start script (e.g., EcDpPrAutosysStart).
- 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.

11 Type **EcDpPrAutosysStart *MODE AUTOSYSINSTANCE*** then press **Return/Enter**.

- The **AutoSys GUI Control Panel** (Figure 40) is displayed.

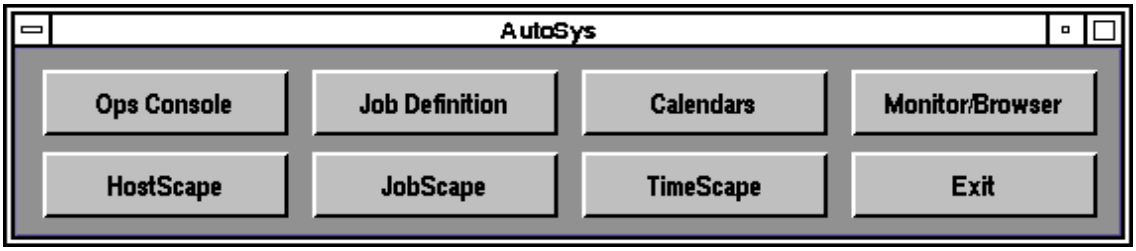

Figure 40. AutoSys GUI Control Panel

Configuring AutoSys Screens/Displays

AutoSys/AutoXpert Production Scheduling Tool

The Planning and Data Processing Subsystems provide a batch processing environment to support the generation of data products. They manage, queue and execute Data Processing Requests (DPR) on the processing resources at a DAAC. The DPRs are submitted from the Planning Subsystem. The Planning and Data Processing Subsystems provide the operational interfaces needed to monitor the execution of science software PGEs specified in the DPRs.

The AutoSys/AutoXpert software is a production scheduling tool intended to support the operational activities surrounding production processing. It assists with the following activities (among others):

- job monitoring.
- job scheduling.
- fault notification.
- job restart.
- determining the effects of failure of a DPR.
- determining the cause and actions to be taken due to the failure of a DPR.

AutoSys recognizes the following three categories of jobs:

- Box jobs.
- Command jobs.
- File-watcher jobs.

A box job is a collection of other jobs. It performs no processing action other than providing an organizational structure for a group of jobs that should be run within the same time period. Box jobs can be nested; i.e., box jobs can be included in other box jobs. Box jobs are particularly useful for organizing, managing, and administering large numbers of jobs, which are interrelated or have complex logic flows.

Box jobs are subject to the following rules:

- If no other starting conditions are specified at the job level, a job within a box job runs as soon as the starting conditions for the box are satisfied.
- If there are no job-level starting conditions for some of the jobs in a box, those jobs will run in parallel.
  - The jobs will run only once even if multiple start times are specified for some of the individual jobs.
  - Consequently, jobs in boxes will not be run several times inadvertently.
- Whenever any job in a box changes state, all jobs in the box are checked to see if they are eligible to be run.

A command job is the type most commonly thought of as a “job.” The “command” can be a shell script, the name of an executable program, a file transfer, or any other command that causes

execution of a UNIX command on a client machine. When all of the starting conditions for the particular job have been met, AutoSys performs the following functions:

- executes the command (runs the job).
- captures the exit code at job completion.
- sends the exit event (success or failure) and code back to the relational database management system (RDBMS).

A file-watcher job functions in a manner that is similar to a command job; however, it has a special purpose, i.e., to monitor the creation and size of a particular operating system file. When the file has reached a specified minimum size and is no longer increasing in size, the file-watcher job sends AutoSys an event indicating that the file has arrived. The file-watcher job allows AutoSys to know the status of external files that are needed in the processing of command jobs or box jobs.

When determining whether to start a job of any type, AutoSys evaluates the job with respect to the following the following starting parameters:

- Date and time scheduling parameters are met.
- Starting Conditions specified in the job definition evaluate to “true.”
- For jobs in a box, the box must be in the RUNNING state.
- The current status of the job is not ON_HOLD or ON_ICE.

Every time there is an event that changes the truth of any of the preceding parameters, AutoSys finds all jobs that may be affected by the change and determines whether or not to start them.

In ECS each DPR generated by the Planning Subsystem defines a box job for AutoSys. Every DPR/box job is composed of seven command jobs that run in the following order:

- Allocation (EcDpPrEM)
- Staging (EcDpPrDM)
- Pre-processing (EcDpPrEM)
- Execution (EcDpPrRunPGE)
- Post-processing (EcDpPrEM)
- Insertion (EcDpPrDM)
- Deallocation (EcDpPrEM)

Each of the last six ECS command jobs is dependent on successful completion of the command job that precedes it. For example, staging does not start until allocation has been successfully completed.

Just as the command jobs within a box job are dependent on the successful completion of other jobs, a DPR/box job itself may be dependent on the successful completion of some other box job(s). Such dependencies usually involve a need for the output of another DPR as input.

The following rules apply to DPR dependencies:

- Any DPRs which depend on data that are not yet available are kept in a "held" state by AutoSys until their data availability subscriptions are fulfilled.

- The subscription manager software, which is part of the Planning Subsystem, receives subscription notifications for the DPRs and informs the DPS to release the AutoSys jobs after all data subscriptions for a given DPR are fulfilled.
- The Data Processing Subsystem (as managed by the AutoSys Job Scheduling engine) runs the PGEs and associated jobs as the resources required for the tasks become available.
- The procedure continues until all DPRs scheduled for that day have completed.

The optimum number of jobs for an AutoSys instance is about 3200 jobs (400 DPRs). During start-up the Job Management server in the Data Processing Subsystem determines the number of jobs in the PDPS database associated with Job Management's operating mode and compares the number with the maximum allowable for the mode. The maximum is specified in the Job Management configuration file (i.e., as DpPrAutoSysMaxJobs in EcDpPrJobMgmt.CFG). Job Management deletes from AutoSys the successfully completed jobs associated with the applicable mode only. Deleting completed jobs makes room for other jobs in the processing queue. It is possible to distribute the optimum number of jobs (3200) among the active modes according to their level of activity; e.g., 3000 for OPS mode and the remainder divided between the SSI&T and test modes (TS1 and TS2).

The DAAC Production Monitor uses AutoSys/AutoXpert when performing the following functions:

- modifying DPR priorities and inputs as required.
- transferring/deleting/suspending/resuming DPRs as required (e.g., requests, resource problems, input data schedule problems, special events, schedules replans, etc.).
- monitoring and providing processing status upon request.

The Production Monitor can configure some aspects of AutoSys/AutoXpert, including the runtime options.

Configuring AutoSys/AutoXpert Runtime Options

This section explains how to configure AutoSys/AutoXpert runtime options. The Production Monitor can define the following runtime options:

- Refresh Interval.
  - — Determines how often the View Region (the area on the right side of the GUI display where data are presented) will be updated.
- Ping Interval.
  - — Defines how often the connectivity will be evaluated.
- Hang Time.
  - — Specifies the length of time jobs will continue to be displayed within a machine after they have completed running.
- Inches/Hr.
  - — Indicates how much information is displayed on the screen.

There are default values that apply to the runtime options until the Production Monitor modifies them.

Table 5 lists the runtime options available for HostScape, TimeScape, and JobScape. Not all options are available for all GUI's.

Table 5. Runtime Options Table

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

The procedure for configuring AutoSys/AutoXpert runtime options assumes that AutoSys has been launched and the **AutoSys GUI Control Panel** (Figure 40) is being displayed. Perform only the steps that are applicable to the changes to be made (as specified in Table 5). Note that if the Freeze Frame feature is enabled, any changes entered will not take place until Freeze Frame has been disabled.

Configuring AutoSys Runtime Options

1 Click on either the **HostScape**, **TimeScape**, or **JobScape** button as applicable.
- The AutoXpert GUI corresponding to the selected button is displayed (Figures 42-44).

2 Select **Options → Edit Runtime Options** from the pull-down menu.
- The **Runtime Options** dialog box is displayed.

3 If the refresh interval is to be modified, click on **Refresh Interval (Seconds)** and either type in a value between **1** and **99999** or click on the <| and |> keys as necessary to decrease or increase the current numerical value until the desired value is reached.
- Default value is **30 seconds**.

Figure 42. AutoXpert HostScape GUI

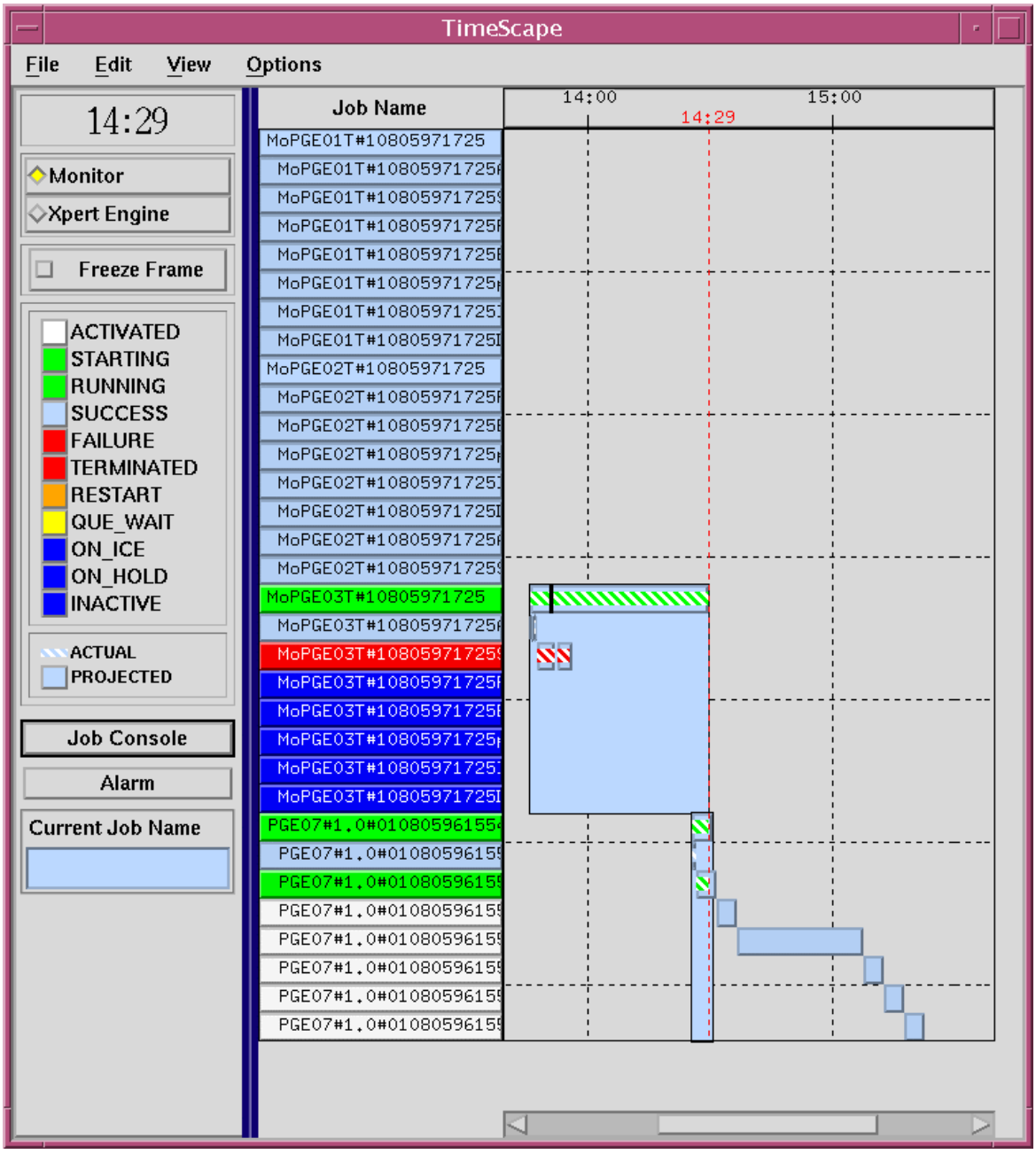

Figure 43. AutoXpert TimeScape GUI

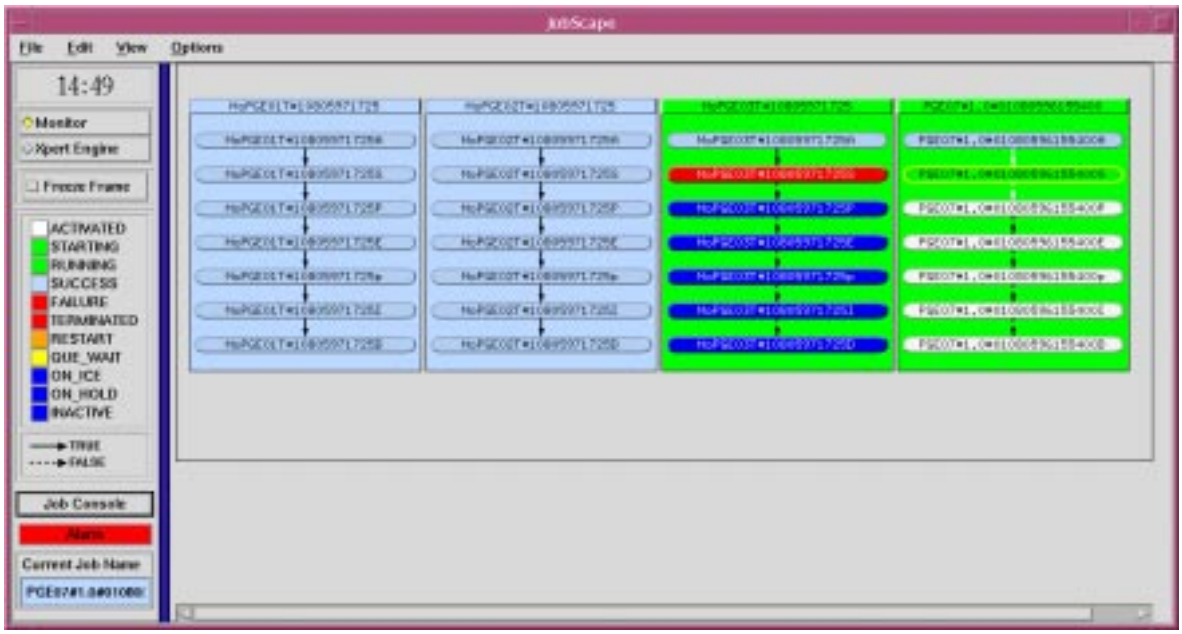

Figure 44. AutoXpert JobScape GU

- The **Reloading Job Data** window reappears as often as specified in the **Refresh Interval (Seconds)** field.

4 If the ping interval is to be modified, click on **Ping Interval (Seconds)** and either type in a value between **1** and **99999** or click on the <| and |> keys as necessary to decrease or increase the current numerical value until the desired value is reached.

- Default value is **300 seconds**.
- If **99999** is entered, no **ping** commands are issued.

5 If the hang time is to be modified, click on **Hang Time (Minutes)** and either type in a value between **1** and **99999** or click the <| and |> keys as necessary to decrease or increase the current numerical value until the desired value is reached.

- Default value is **1 minute**.

6 If the number of inches/hour is to be modified, click on **Inches/Hr (inches)** and either type in a value or click the <| and |> keys as necessary to decrease or increase the current numerical value until the desired value is reached.

- Default value is **2 inches/hr**.

7 When all desired modifications have been entered, click on the **OK** button.

- The runtime options are set.
- The dialog box closes.

8 If another of the AutoXpert GUIs needs to have its runtime options configured, repeat Steps 2 through 7 for the next GUI.

9 To quit any of the AutoXpert GUIs (HostScape, JobScape or TimeScape) select **File → Exit** then click on the **OK** button.

10 To quit AutoSys click on the **Exit** button of the **AutoSys GUI Control Panel**.

Configuring Hardware Groups

This section explains how to configure AutoSys hardware groups. The purpose of configuring hardware groups is to make it easier to monitor the hardware associated with a particular function (e.g., SSI&T, training, or processing in support of a particular instrument) rather than having to find those items in the default group, which is "All Machines."

The Production Monitor may define a specific set of machines to be monitored as a group. The Production Monitor must know which machines are to be included in the group and should devise a useful name for the group.

The Production Monitor must have access to UNIX commands in order to perform the procedure.

Configuring Hardware Groups

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.

- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Queuing Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0sps04**, **g0sps06**, **l0sps03**, or **n0sps08**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 Type **cd /*path*** then press **Return/Enter**.

- 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.g0sps06).
- The particular path to be typed may vary from site to site.

8 Type **source *AUTOSYSINSTANCE*.autosys.csh.*hostname*** then press **Return/Enter**.

9 Type **vi xpert.groups.*AUTOSYSINSTANCE*** then press **Return/Enter**.

- The configuration file is 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 machine group file.

10 Using vi editor commands create/modify hardware groups as necessary.

- An example of a hardware group file is shown in Figure 45.
- The first line of each machine group is in the format **groupname**: ***groupname***.
- The name of each machine to be included in the group is on a separate line.
- The following vi editor commands are useful:
  - **h** (move cursor left)
  - **j** (move cursor down)
  - **k** (move cursor up)
  - **l** (move cursor right)
  - **i** (insert text)
  - **x** (delete a character)
  - **u** (undo previous change)
  - **Esc** (switch to command mode)

11 Press the **Esc** key.

12 Type **ZZ**.

- New hardware groups are entered and saved in the file.
- UNIX prompt is displayed.

groupname: Training

g0pls02

g0sps06

g0spg01

groupname: SSI&T

g0ais01

g0sps06

g0spg01

Figure 45. AutoSys Hardware Group File

13 Launch **AutoSys** as described in the procedure for Launching Production Processing Applications.

- The **AutoSys GUI Control Panel** (Figure 40) is displayed.

14 Click on the **HostScape** button.

- The **HostScape** GUI (Figure 42) is displayed.

15 Select **View → Select Machine Group** from the pull-down menu.

- The **Machine Group Selection** dialog box is presented.

16 Select (highlight) the machine group to be applied.

- The **machine group** is highlighted.

17 Click on the **OK** button**.**

- The selected **machine group** is applied.
- The **Machine Group Selection** dialog box closes.

Reviewing Hardware Status, DPR Dependency, DPR Production Timeline, Alarms, and Job Activities

Reviewing Hardware Status

The Production Monitor reviews hardware status using AutoSys. Hardware status is displayed by the AutoXpert HostScape GUI. By checking the hardware status the Production Monitor can determine the status of processors, the condition of the queue, whether any processors are overloaded while others are idle, whether there are any system problems, etc.

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. HostScape allows the Production Monitor to check hardware status in real-time.

The procedure for reviewing hardware status starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Reviewing Hardware Status

1 Click on the **HostScape** button on the **AutoSys GUI Control Panel**.
- The **HostScape** GUI (Figure 42) is displayed.
- View presented is **Normal** View.

2 Review the Control Region (left side of the display) to identify the color codes for the status of the machines. In the View Region (right side of the display) the color code is displayed on the border of each machine box.
- **MACHINE UP** (active) is green.
- **MACHINE DOWN** (inactive and cannot be reached) is red.
- **MACHINE INACTIVE** is black**.** (The color code is not shown in the Control Region)

3 Review the machine type in the View Region (right side of the display).
- The name of the machine is displayed in the upper left-hand corner of each machine box.
- Server machines are in the first (top) row of the display.
- Event Server name appears below the list of jobs, if applicable.
- Event Processor name appears below the list of jobs, if applicable.
- Client machines are in the subsequent rows of the display.

4 Review the machine boxes in the View Region to determine the status of individual machines.
- The total number of jobs STARTING or RUNNING.
- All jobs RUNNING are listed.
- The View Region is scrollable.

5 Review the **Alarm** indicating buttons of individual machines in the View Region.
- Alarm button is in the upper right-hand corner of the box.

- Red indicates that an alarm has been generated.
- Gray (default color) indicates normal operation.
- If an alarm is present, clicking an alarm button brings up the Alarm Manager (described in a subsequent section).

6 Review the machine connection status in the View Region.
- Solid black line indicates that AutoSys can communicate with the client machine Internet daemon.
- Solid red line indicates that AutoSys cannot communicate with the client machine Internet daemon; however, the daemon does respond to **ping** commands.
- Dashed red line indicates that AutoSys cannot communicate with the client machine; the machine is probably turned off.

7 To exit from **HostScape**, select **File → Exit** from the pull-down menu then click on the **OK** button.
- **HostScape** quits (is closed).

Changing the Hardware Status View

The View Options provide the Production Monitor with the following three methods of viewing hardware status:

- Normal.
- Global.
- Zoom.

In the Normal (default) view three rows of machines with job activities are displayed. In the Global view seven rows of machines but no job activities are displayed. In the Zoom view one machine is displayed in great detail. The details include job name, description, status, and commands.

The Production Monitor selects the Global view to monitor the entire system and uses the Zoom view to focus on a specific machine, especially in case of a malfunction.

The procedure for changing hardware status views starts with the assumption that **AutoSys** is running in the **HostScape** mode with the default **Normal** view displayed.

Changing Hardware Status Views

1 Select a machine in the View Region by clicking on its name, then select **View → Select View Level → Global View** from the pull-down menu.
- The **Global** view is displayed.
- Seven rows of machines are displayed.
- No job information is displayed.

2 Select a specific machine by clicking on its name, then select **View → Zoom in Machine** from the pull-down menu.
- The **Zoom** view is displayed.
- A table listing the following data is displayed:

— **Job Name.**
— **Description.**
— **Status.**
— **Command.**

3 Select **Dismiss**.

- The **Global** view is displayed.

4 Select **View → Select View Level → Normal View** from the pull-down menu.

- The **Normal** view is displayed.
- Three rows of machines are displayed.
- Limited job information is displayed.

Reviewing DPR Dependencies

The Production Monitor reviews DPR dependencies using AutoSys. DPR dependencies are displayed by the AutoXpert JobScape GUI.

JobScape presents a Pert-like view of job processing from a logical (or job dependency) point of view. JobScape depicts all job types; i.e., command jobs, box jobs, and file-watcher jobs. In addition, it depicts the nesting of jobs within boxes and the dependencies between jobs.

JobScape can be used for monitoring job flow in real-time. It allows the Production Monitor to identify potential problems, try to prevent them from becoming actual problems, stop problem jobs in favor of letting good jobs run, etc.

AutoSys defines job status in the terms listed in Table 6. The different states are color-coded on the JobScape display. However, the codes can be changed. The color codes listed in the table are the default values.

Table 6. Job States (1 of 2)

Status	Color Code	Meaning
ACTIVATED	white	The top-level box that the job is in is now in the "running" state but the job itself has not started yet.
STARTING	green	The Event Processor has initiated the start procedure with the Remote Agent. The job is in the process of "coming up."
RUNNING	green	The job is running. If the job is a box job, "running" means that the jobs within the box may be started (other conditions permitting). If the job is a command job or a file-watcher job, "running" means that the process is actually running on the remote machine.

Table 6. Job States (1 of 2)

Status	Color Code	Meaning
SUCCESS	light blue	When the job had completed running, it had an exit code equal to or less than the "maximum exit code for success." By default, only the exit code "0" is interpreted as "success." However, a range of values up to the "maximum exit code for success" may be reserved for each job to be interpreted as success. If the job is a box job, "success" means that all jobs within the box had exit codes indicating "success" (default) or the "exit condition for box success" was "true."
FAILURE	red	When the job had completed running, it had an exit code greater than the "maximum exit code for success." The default is any non-zero exit code. If the job is a box job, "failure" means that at least one job within the box had an exit code greater than zero (the default meaning) or the "exit condition for box failure" was "true."
TERMINATED	red	The job terminated while in the "running" state. Termination may be the result of a user sending a "killjob" event, or a job may have been terminated because the job itself (or the box it is in) failed. If the job itself fails, it has a "failure" status rather than a "terminated" status.
RESTART	orange	The job was unable to start due to hardware or application problems and has been scheduled to restart.
QUE_WAIT	yellow	The job can logically run (i.e., all starting conditions have been met); however, there are not enough machine resources available to allow it to run.
ON_ICE	dark blue	The job is removed from all conditions and logic but is still defined to AutoSys. Operationally it is as though the job had been deactivated. The job remains "on_ice" until it receives the "job_off_ice" event. Downstream dependent jobs behave as though the "on_ice" job ran successfully. A job that is "starting" or "running" cannot be put "on_ice."
ON_HOLD	dark blue	The job is on hold and will not run until it receives the "job_off_hold" event. Downstream jobs will not run until the job is taken off hold. A job that is "starting" or "running" cannot be put "on_hold."
INACTIVE	dark blue	The job has not yet been processed. Either the job has never been run or its status was intentionally altered to "turn off" its previous completion status.

The procedure for reviewing DPR Dependencies starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Reviewing DPR Dependencies

1 Click on the **JobScape** button on the **AutoSys GUI Control Panel**.

- The **JobScape** GUI (Figure 44) is displayed.

2 Review the Control Region (left side of display) to identify the **True/False** dependency legend.

- **True** is indicated by a **solid** arrow, which indicates that job dependencies have been met.
  - The solid arrow is the default code for **True**; the codes can be changed.
- **False** is indicated by a **dashed** arrow, which indicates that job dependencies have **not** been met.
- Dependency arrows indicate only that a job dependency exits 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."

3 Review the Job Display to determine the status (color-coded) of DPRs.

- Default colors representing job statuses are listed in Table 6.

4 Review the Job Display to determine the types of jobs:

- Rectangle = **Box Job**.
- Ellipse = **Command Job**.
- Hexagon = **File Watcher Job**.

5 Select a job (for which descendants are to be determined) by placing the mouse cursor on the job and clicking with the **left** mouse button.

- Color of the border around the selected job changes to **yellow**.
- Name of the job appears in the **Current Job Name** area of the Control Region.

6 Review the job's descendants by placing the mouse cursor on the job and clicking and holding the **right** mouse button.

- **Descendants** pop-up menu appears. It has the following entries:
  - jobname.
  - 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.
- Color of the border around the selected job changes to **yellow**.
- Name of the job appears in the **Current Job Name** area of the Control Region.

7 Select (highlight) **Show Children** from the **Descendants** pop-up menu (release the right mouse button).
- Job's first-level Command, File-Watcher, and Box Jobs appear.
- Repeat Step 5 to select a different job.

8 Select **Show All Descendants** from the **Descendants** pop-up menu.
- Job's Command, File-Watcher, and Box Jobs appear for all levels.

9 Select **Hide All Descendants** from the **Descendants** pop-up menu.
- Default view is displayed.
- All descendants are hidden.

10 To exit from **JobScape**, select **File → Exit** from the pull-down menu then click on the **OK** button.

Reviewing the DPR Production Timeline

The Production Monitor reviews the DPR Production Timeline using AutoXpert TimeScape.

TimeScape presents a Gantt-like view of a job processing from a temporal (time-related) point of view. TimeScape depicts all job types; i.e., Command Jobs, Box Jobs, and File Watcher Jobs. It also depicts the nesting of jobs within boxes and the duration of time it will take for jobs to complete. TimeScape is used for monitoring job flow in real-time.

The procedure for reviewing the DPR production timeline starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Reviewing the DPR Production Timeline

1 Click on the **TimeScape** button on the **AutoSys GUI Control Panel**.
- The **TimeScape** GUI (Figure 43) is displayed.
- Current time is displayed in red in the View Region (right side of the display).

2 Review the Control Region (left side of display) to identify the **Actual/Projected** legend for making comparisons in the View Region. (Refer to Figure 46.)
- **Projected** is a rectangular (blue filled) graphic, to show average job completion time.
- **Actual** is a striped (white and blue) ribbon, to show how much of the job has completed.
  - If there is a green stripe, the job is running.
  - If there is a black stripe, the job has been completed.

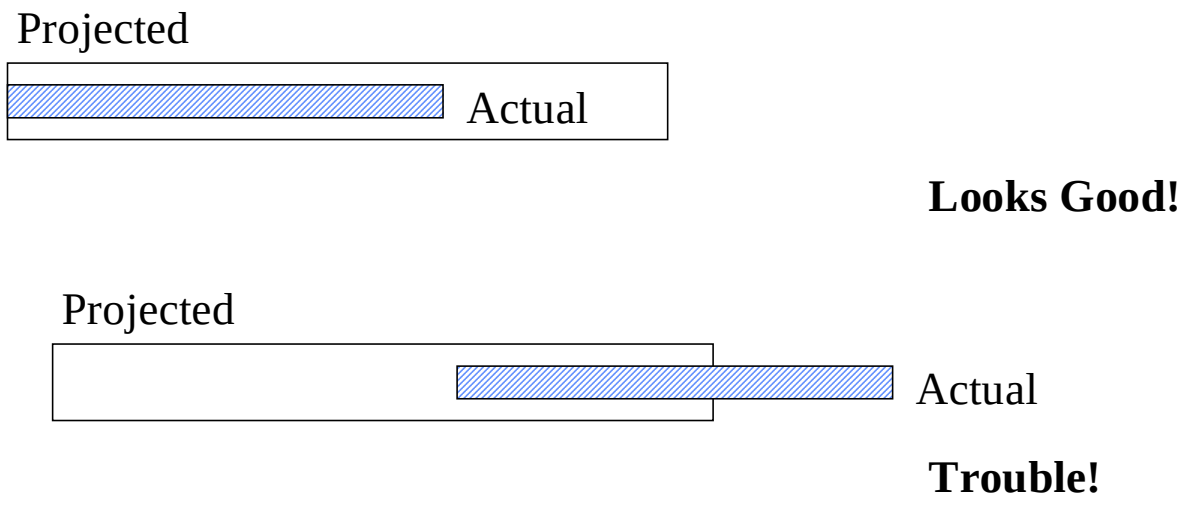

Figure 46. Evaluating Actual versus Projected Job Processing Time

3 Review a job's descendants by placing the **mouse cursor** on a job and clicking and holding the **right** mouse button.
- **Descendants** pop-up menu appears.
- An asterisk (*) indicates that a Box Job's descendants have been hidden.

4 Select (highlight) **Show Children** from the **Descendants** pop-up menu and release the mouse button.
- Job's first-level Command, File Watcher, and Box Jobs appear.
- Return to Step 3 to select a different job.
- Go to Step 5 to change the view.

5 Select (using the right mouse button) **Show All Descendants** from the **Descendants** pop-up menu.
- Job's Command, File Watcher, and Box Jobs appear with all levels.

6 Select (using the right mouse button) **Hide All Descendants** from the **Descendants** pop-up menu.
- Default view is displayed.
- All descendants are removed.

7 To exit from **TimeScape**, select **File → Exit** from the pull-down menu then click on the **OK** button.

Reviewing Alarms

Alarms indicate problems with job processing. They may involve a failure of job processing, a database problem, a communication problem, hardware or software failure or some other error in the data processing system.

The Production Monitor reviews alarms using the AutoSys Alarm Manager. The Alarm Manager allows the Production Monitor to perform the following functions:

- View alarms as they arrive.
- Provide a response to an alarm.
- Change alarm status.

The Production Monitor can configure the Alarm Manager to display certain types of alarms only. The Production Monitor may wish to see only certain types of alarms (e.g., job failure alarms) or only those alarms that are open (have not yet been acknowledged) or only the alarms that have occurred within the last thirty minutes.

The Production Monitor can select alarms to be displayed based on any or all of the following three criteria:

- Type of alarm
- Alarm state
- Time of the alarm

The procedure for reviewing alarms starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Reviewing Alarms

1 Click on the **Ops Console** button on the **AutoSys GUI Control Panel**.
- The **Job Activity Console** GUI, also known as the **Ops Console** GUI, (Figure 47) is displayed.

2 Click on the **Alarm b**utton.
- The **Alarm Manager** GUI (Figure 48) is displayed.
- Alarms are displayed in reverse order of occurrence; i.e., the most recent alarm appears at the top of the list.

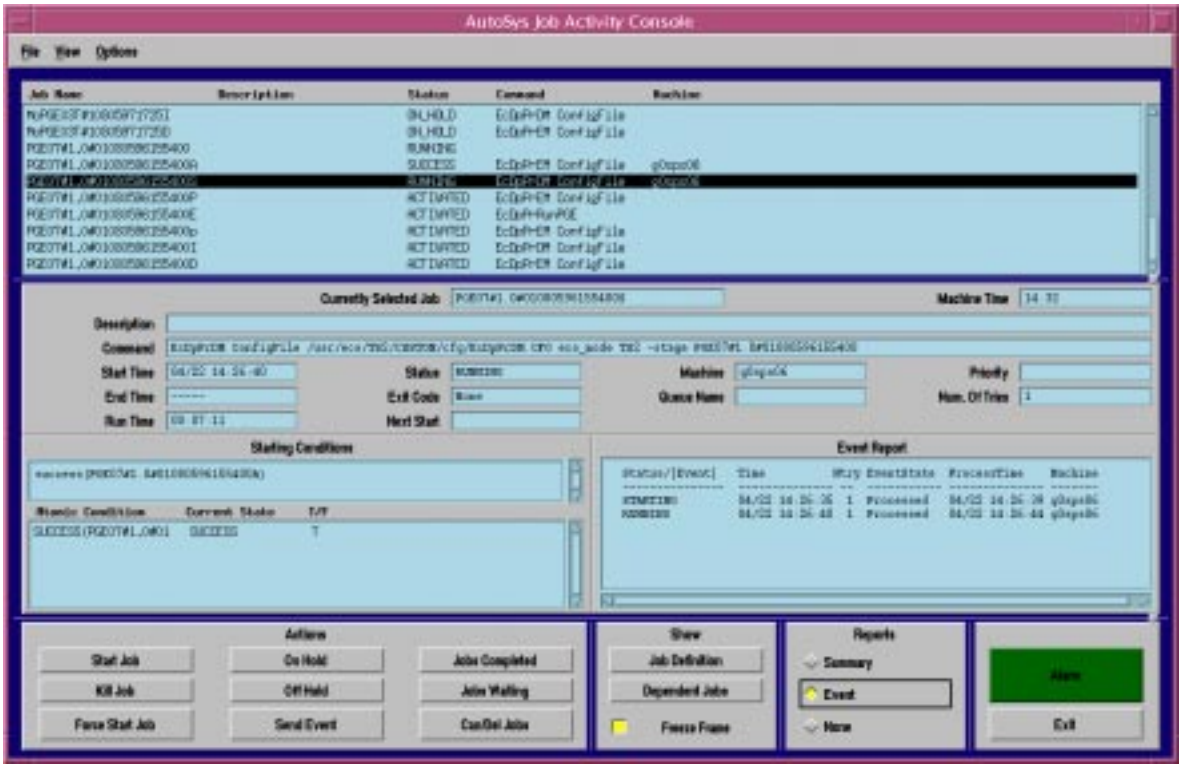

Figure 47. Job Activity Console (Ops Console) GUI

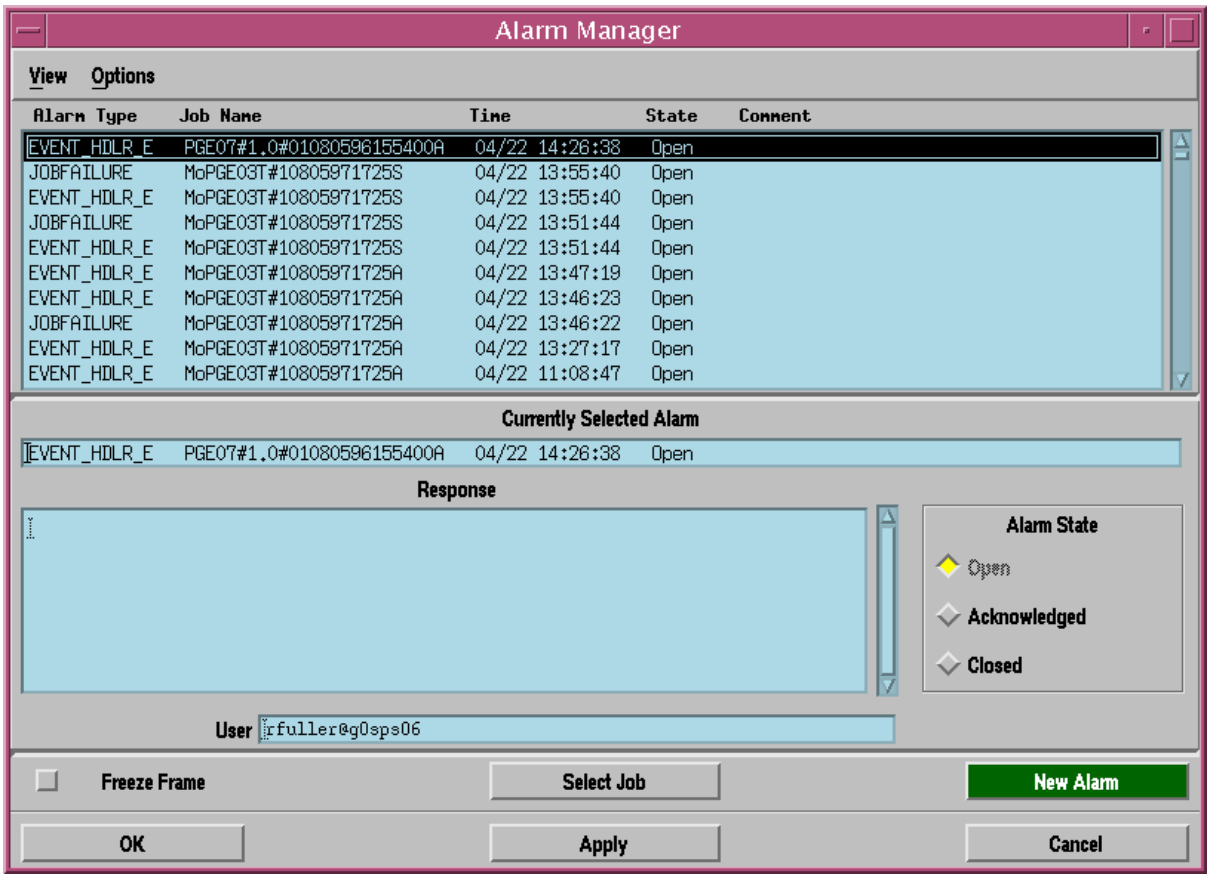

Figure 48. Alarm Manager GUI

- The following information is displayed:
  - — **Alarm Type.**
  - — **Job Name.**
  - — **Time.**
  - — **State.**
  - — **Comment**.

3 Click on an alarm in the **Alarm List**.

- Alarm is displayed in detail in the **Currently Selected Alarm** region of the display.
- Table 7 contains descriptions of AutoSys alarms.

Table 7. AutoSys Alarms (1 of 2)

ALARM	CODE*	DESCRIPTION
AUTO_PING		The **autoping** command has found a problem in trying to communicate with the Remote Agent on a client machine.
CHASE	514	The **chase** command has found a problem with a job that is supposedly running. The job and problem are listed.
DATABASE_COMM	516	The Remote Agent had trouble sending an event to the database. The job probably ran successfully. Inspect the Remote Agent Log file to determine what happened.
DB_PROBLEM	523	There is a problem with one of the AutoSys databases. This alarm can trigger a user-specified notification procedure.
DB_ROLLOVER	519	AutoSys has rolled over from Dual Server to Single Server Mode. This alarm can trigger a user-specified notification procedure.
DUPLICATE_EVENT	524	Duplicate events have been received in the Event Server. Typically, this means that two Event Processors are running, although “duplicate events” can also be caused by Event Server configuration errors.
EP_HIGH_AVAIL	522	The Event Processor High Availability system has detected some system or network problems. This alarm can trigger a user-specified notification procedure.
EP_ROLLOVER	520	The Shadow Event Processor is taking over processing. This alarm can trigger a user-specified notification procedure.
EP_SHUTDOWN	521	The Event Processor is shutting down. This may be due to a normal shutdown (SEND_EVENT) or due to an error condition. This alarm can trigger a user-specified notification procedure.
EVENT_HDLR_ERROR	507	The Event Processor had an error while processing an event. The job associated with the event should be inspected to see if manual intervention is required.
EVENT_QUE_ERROR	508	An event could not be marked as processed. This is usually due to a problem with the Event Server.
FORKFAIL	501	The Remote Agent was unable to start the user command because it was unable to get a process slot on the machine. AutoSys automatically attempts a RESTART when this happens.
INSTANCE_UNAVAILABLE	525	When different AutoSys instances communicate with each other, this alarm is generated when a receiving AutoSys instance (i.e., its Event Server) cannot be reached. The Event Server is probably down.
JOBFAILURE	503	A job has failed. Its current status is FAILURE.
JOBNOT_ONICEHOLD	509	To place a job either ON_HOLD or ON_ICE, a JOB_ON_HOLD or JOB_ON_ICE event (as applicable) is sent. There are certain conditions when the job cannot be placed ON_HOLD or ON_ICE (e.g., if it is already running). In such cases the alarm is sent alerting the operator that the job could not be put ON_HOLD or ON_ICE (as applicable).

Table 7. AutoSys Alarms (2 of 2)

ALARM	CODE*	DESCRIPTION
MAXRUNALARM	510	The job has been running for a time greater than that defined in the Maximum Run Alarm (**max_run_alarm**) field for the job. The job may continue to run; however, a warning alarm is generated.
MAX_RETRYS	505	AutoSys continues attempting to restart a job if there are system problems or if the job is configured for application restarts (**n_retrys**). There is a limit to the number of times it will attempt a restart, as defined in the configuration files (using **MaxRestartTrys**). When that limit has been reached, the MAX_RETRYS alarm is sent to alert operators that AutoSys has given up trying to start the job. After the problem has been fixed the job must be started manually.
MINRUNALARM	502	The job has completed running in a time less than that defined in the Minimum Run Alarm (**min_run_alarm**) field for the job.
MISSING_HEARTBEAT	513	A job has not sent a HEARTBEAT within the interval specified for the job. The operator should inspect the job to determine the cause.
RESOURCE	512	A resource needed for the job was not available. The types of resources are: (a) number of process slots and (b) file space. Specific information about the problem is in the comment associated with the alarm. If AutoSys encounters a resource problem, it attempts to restart the job after a suitable delay.
STARTJOBFAIL	506	AutoSys was unable to start the job. This is generally due to communication problems with the remote machine. AutoSys attempts to restart the job.
VERSION_MISMATCH	518	Generated by the Remote Agent when calling the routine (e.g., Event Processor, **chase**, **clean_files**, **autoping**, etc.) has a different version number than the Remote Agent. Inspect the Remote Agent Log file for the exact version mismatch. The proper Remote Agent version should be installed.

*The code number is used for viewing the event in the event table in the AutoSys database.

4 Click the **Response** edit box and type in a response, if desired, then press the **Tab** key on the keyboard.

- Response is updated on the GUI (but not yet recorded).

5 Update the **Alarm State** by clicking on the radio button that appropriately describes the **Alarm State**.

- The following **Alarm State** radio buttons are available:
  - **Open.**
  - **Acknowledged.**
  - **Closed**.
- The **Alarm State** is updated on the GUI (but not yet recorded).

6 Click on the appropriate button from the following selections:

- **OK -** to enter all alarm responses and dismiss the **Alarm Manager** GUI.
  - **Job Activity Console (Ops Console)** GUI is displayed.

- **Apply** - to enter all alarm responses without dismissing the **Alarm Manager** GUI.
  - — Repeat Steps 3 through 6 as necessary to review and update additional alarms.
- **Cancel** - to return to the **Job Activity Console (Ops Console)** GUI without entering any alarm responses.
  - — **Job Activity Console (Ops Console)** GUI is displayed.

7 To exit from the **Job Activity Console (Ops Console)** GUI click on the **Exit** button then on the **OK** button.

By configuring the AutoSys Alarm Manager the Production Monitor can control which alarms are displayed. Alarms can by selected by type, state, or time.

The procedure for configuring the Alarm Manager starts from the assumption that the **Alarm Manager** is currently running.

Configuring Alarm Selection

---

1 Select **View → Select Alarms** from the pull-down menu of the **Alarm Manager** GUI.

- **Alarm Selection** GUI (Figure 49) is displayed.
- **Alarm Selection** has the following defaults:
  - — **All Types** for **Select by Type.**
  - — **Open** and **Acknowledge** for **Select by State.**
  - — **All Times** for **Select by Time.**

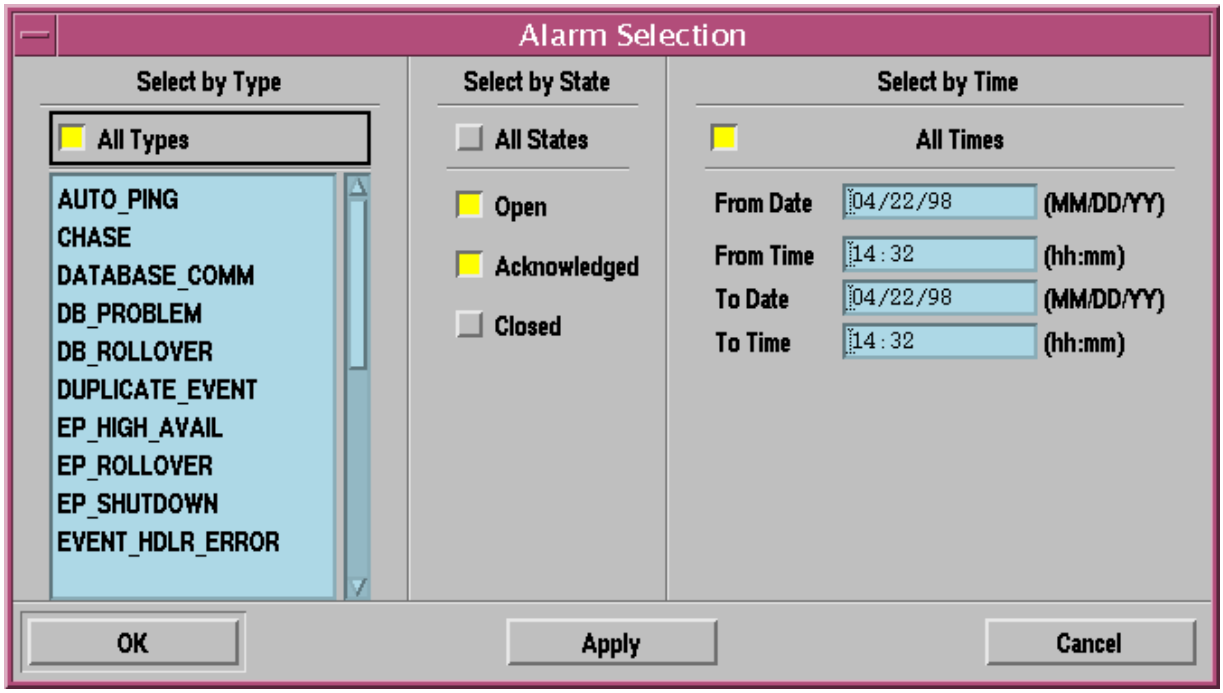

Figure 49. Alarm Selection GUI

2 To select a single type of alarm, click on the desired alarm in the **Select by Type** alarm list; to select all types of alarms, click on the **All Types** button.

- Desired alarm type is selected.
- If **All Types** are selected, the **All Types** button color changes to yellow.

3 To select multiple types of alarms: press and **hold** the **Control (Ctrl)** key on the keyboard while clicking the desired alarms in the **Select by Type** alarm list.

- Multiple alarms are selected.

4 To select all alarm states click on the **All States** button; to select alarms by state click on whichever of the **Select by State** toggle button(s) properly describe(s) the state(s) to be selected.

- The following **Select by State** toggle buttons are available:
  - **Open.**
  - **Acknowledge.**
  - **Closed.**
- Any or all of the buttons in the preceding list can be selected.
- The color of selected button(s) change(s) to yellow.

5 To select all times click on the **All Times** button.

6 To select alarms by time perform Steps 7 through 10; otherwise, go to Step 11.

7 Type the starting date (in *MM/DD/YY* format) in the **From Date** field and press the **Tab** key on the keyboard to advance to the next field.

- Starting date is entered.
- If **All Times** have been selected, proceed to Step 9.

8 Type the starting time (in *hh:mm* format) in the **From Time** field and press the **Tab** key on the keyboard to advance to the next field.

- Starting time is entered.

9 Type the end date (in *MM/DD/YY* format) in the **To Date** field, and press the **Tab** key on the keyboard to advance to the next field.

- End date is entered.

10 Type the end time (in *hh:mm* format) in the **To Time** field.

- End time is entered.

11 When the **Alarm Selection** GUI contains the desired set of alarm display criteria, 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 11 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.

12 If alarm sound is desired, select **Options → Sound On** from the pull-down menu of the **Alarm Manager** GUI.

- **Sound On** toggle button is yellow when the sound is on.

13 If no alarms are to be reviewed, click on the **OK** button to exit from the **Alarm Manager** GUI.

- **Alarm Manager** quits (is closed).
- **Job Activity Console (Ops Console)** GUI is displayed.

Specifying Job Selection Criteria

The Production Monitor reviews job activities using the AutoSys Job Activity Console as described in the section of the lesson that follows this one. 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 all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Specifying Job Selection Criteria

1 Click on the **Ops Console** button on the **AutoSys GUI Control Panel**.

- The **Job Activity Console** GUI, also known as the **Ops Console** GUI, (Figure 47) is displayed.

2 Select **View → Select Jobs** from the pull-down menu.

- The **Job Selection** GUI (Figure 50) is displayed.
- **Job Selection** has the following default values:
  - **All Jobs/Job Name** for **Select by Name.**
  - **All Statuses** for **Select by Status.**
  - **All Machines** for **Select by Machine.**
  - **Unsorted** for **Sort Order.**

3 To select all jobs click on the **All Jobs** button.

- When the **All Jobs** option is selected, the **All Jobs** button color changes to yellow.

4 To select a particular job by name, type the name of the desired job in the **Job Name** field.

- 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.)

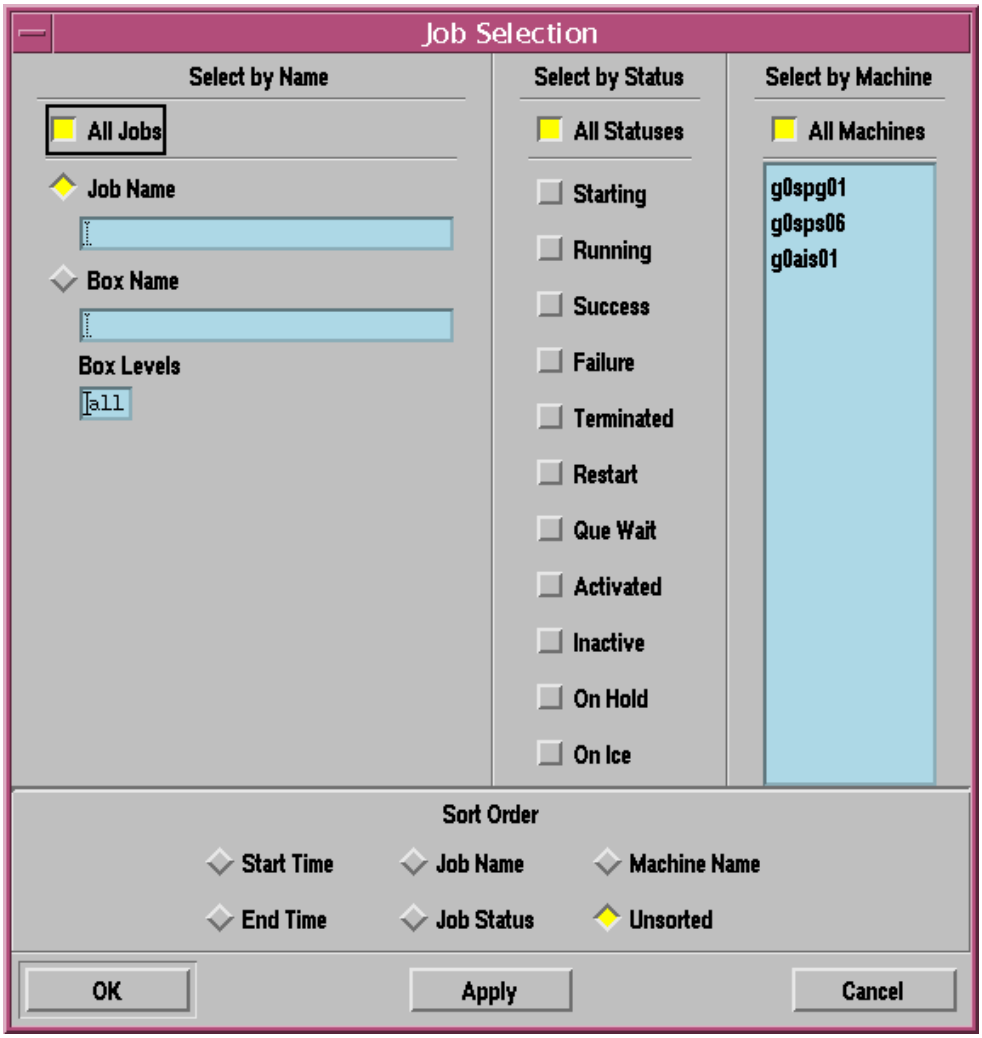

Figure 50. Job Selection GUI

- The asterisk (*) wildcard character can be used for entering a partial job or box name (e.g., *.ceres*)

5 To select a particular box by name, type the name of the desired box in the **Box Name** field then type in the **Box Levels** field how many levels of nesting you want to view for the box job.

- In the **Box Levels** field any valid positive integer can be entered 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 To select all job statuses click on the **All Statuses** button.

7 To select jobs by status click on whichever of the following **Select by Status** toggle buttons properly describe(s) the status(es) to be selected:

- **Starting**.
- **Running**.
- **Success**.
- **Failure**.
- **Terminated**.
- **Restart**.
- **Que Wait**.
- **Activated**.
- **Inactive**.
- **On Hold**.
- **On Ice**.

8 To select all machines click on the **All Machines** button.

- **All Machines** button turns yellow.

9 To select jobs by the particular machine click on the name of the desired machine in the **Select by Machine** list.

- To select multiple machines, click and hold on the first machine then 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 Click on the desired order in the **Sort Order** area.

- The following options are available for **Sort Order**:
  - **Start Time.**
  - **End Time.**
  - **Job Name.**
  - **Job Status.**
  - **Machine Name.**
  - **Unsorted.**

11 When the **Job Selection** GUI contains the desired set of job selection criteria, 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** GUI is displayed.
  - Job list based on the specified selection criteria is displayed in the **Job List** region of the **Job Activity Console**.
- **Apply** - to accept all specified job selection criteria without dismissing the **Job Selection** GUI.
  - Repeat Steps 3 through 11 as necessary to specify additional job selection criteria.
- **Cancel** - to dismiss the **Job Selection** GUI without accepting any job selection criteria.
  - **Job Activity Console** GUI is displayed

Reviewing Job Activities

The Production Monitor reviews job activities using AutoSys. The Job Activity Console is the primary interface that allows the operator to monitor all jobs that have been defined for AutoSys. The Job Selection GUI (described in the preceding section) is used for defining the criteria for displaying jobs on the Job Activity Console.

The procedure for reviewing job activities starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

Reviewing Job Activities

---

1 Click on the **Ops Console** button on the **AutoSys GUI Control Panel**.
- The **Job Activity Console** GUI, also known as the **Ops Console** GUI, (Figure 47) is displayed.

2 Generate a list of jobs to be displayed on the **Job Activity Console** GUI by performing the procedure for **Specifying Job Selection Criteria** (preceding section of this lesson).
- Job list based on the specified selection criteria is displayed in the **Job List** region of the **Job Activity Console**.

3 Review the **Job List** region of the **Job Activity Console**.
- The following job characteristics are displayed in a table:
  - **Job Name**.
  - **Description.**
  - **Status.**
  - **Command.**
  - **Machine.**

4 Click anywhere on a job row in the **Job List** region to have detailed information for that job displayed in the **Currently Selected Job** region of the display.

5 Review the data in the **Currently Selected Job** region of the display.
- The following job details are displayed in the **Currently Selected Job** region of the **Job Activity Console**:
  - Job name (**Currently Selected Job**).
  - **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**.

6 Review the data in the **Starting Conditions** region of the display.

- The following job starting conditions are displayed:
  - overall starting conditions (including all atomic conditions).
  - Identification of each **Atomic Condition**.
    - **Current State.**
    - **T/F** (true or false).
- 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.
- 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.
  - Figure 51 shows how atomic conditions relate to job dependencies as displayed using JobScape. (In this case DPR3 and DPR12 are atomic conditions for DPR45.)
  - Note that clicking on one of the atomic conditions listed on the Job Activity Console does **not** actually cause the JobScape GUI to be displayed.

7 In the **Reports** list click on the type of report to be reviewed then review the report in the **Job Report** region of the display:

- The following types of reports can be selected:
  - **Summary**, which shows the result of the last execution of the job including the following types of information:
    - Job Name
    - Last Start
    - Last End
    - Status
    - Run
    - Pri/Xit

Nuke'm

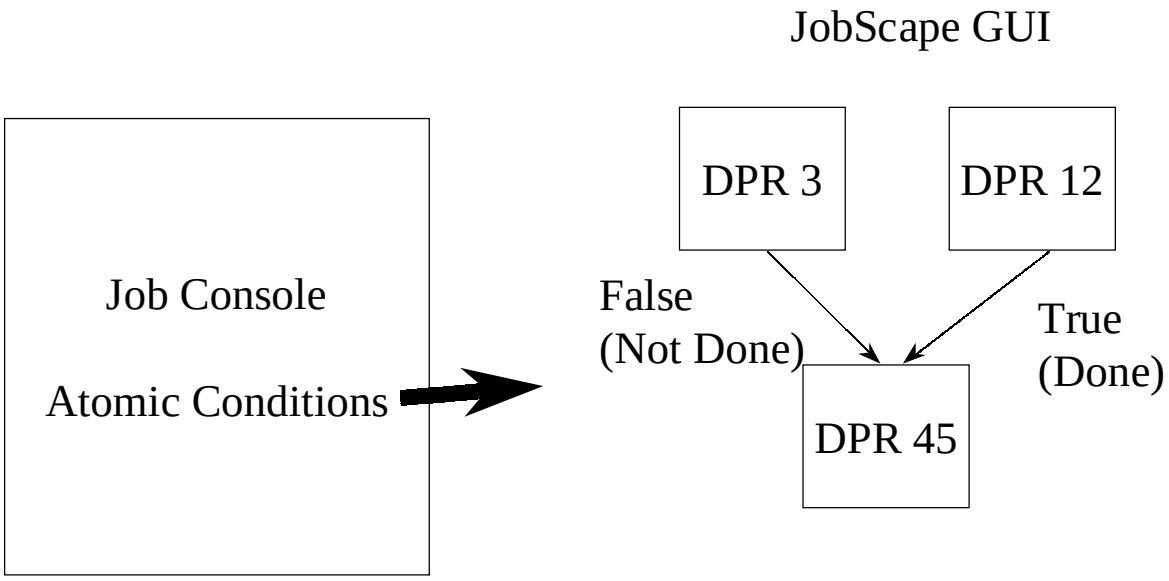

Figure 51. Atomic Conditions and Upstream Dependencies

— **Event**, which lists all events from the last execution of the job including the following types of information:
  - Status [Event]
  - Time
  - Ntry [number of tries]
  - EventState [e.g., "Processed"]
  - ProcessTime
  - Machine

— **None**.

- 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.

8 When all job activities have been adequately reviewed, click on the **Exit** button to quit the **Job Activity Console** display.

- AutoSys **Job Activity Console Exit** GUI is displayed to confirm the decision to quit the display.
- Subsequent sections of this lesson describe features that are accessible through the **Actions** and **Show** regions of the **Job Activity Console**.

- Use and configuration of **Alarm** functions were described in previous sections.

9 Click on the **OK** button.

- AutoSys **Job Activity Console** GUI quits (is closed).

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Modifying Job Priority

Job Priority

It is sometimes necessary to modify the priority of a job. For example, there may be a hardware or software problem that reduces the available resources to the point where some jobs are too large to be processed. Or it may become evident that due to the volume of large, high-priority jobs, some small, low-priority jobs will never be processed unless they are given higher priority.

Job priorities are assigned using numbers according to the following rules:

- 1 (one) has the highest priority.
- Higher-priority jobs (lower numerically) completely block lower-priority jobs.
  - — Prevents situations where a high-priority, resource-intensive job cannot obtain enough resources to run because smaller, lower-priority jobs continually grab the small amounts of resources available.

The Production Monitor uses AutoSys when modifying job priority. The procedure for making the modification starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

CAUTION

The only field that may be modified on the **Job Definition Advanced Features** GUI is the **Que Priority** field. ECS cannot disable these GUI features, because AutoSys/ AutoXpert is a commercial off-the-shelf (COTS) product.

Modifying Job Priority

1 Click on the **Job Definition** button.
- The **Job Definition** GUI (Figure 52) is displayed.

2 Type the name of the job with the priority to be modified in the **Job Name** field.
- If necessary, you can select the name of the job from the list of all jobs in the database by typing the **%** wildcard character in the **Job Name** field, clicking on the **Search** button, and double-clicking on the appropriate job in the pop-up **Selection List** window.

3 Click on the **Adv Features** button.
- The **Job Definition Advanced Features** GUI (Figure 53) is displayed.

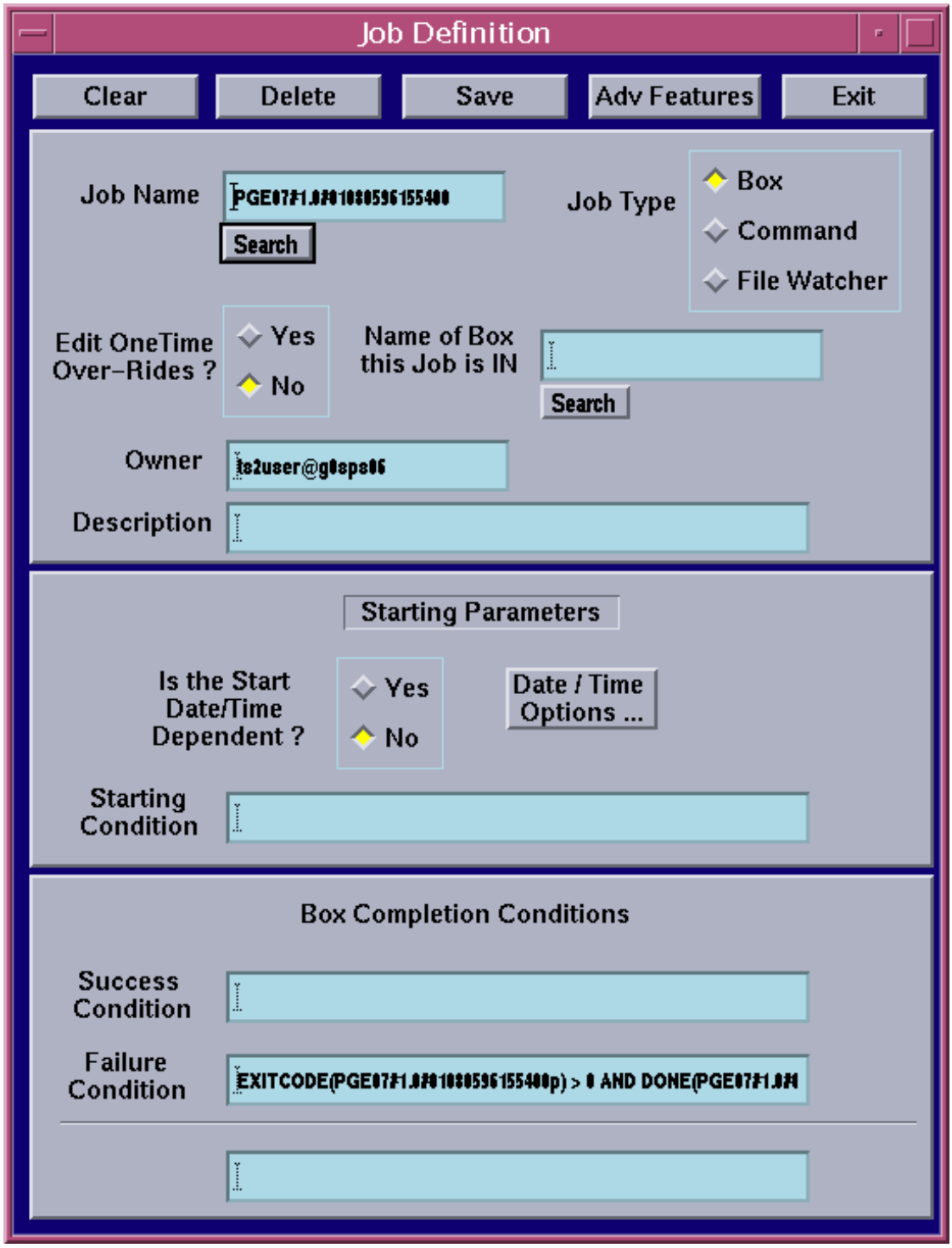

Figure 52. Job Definition GUI

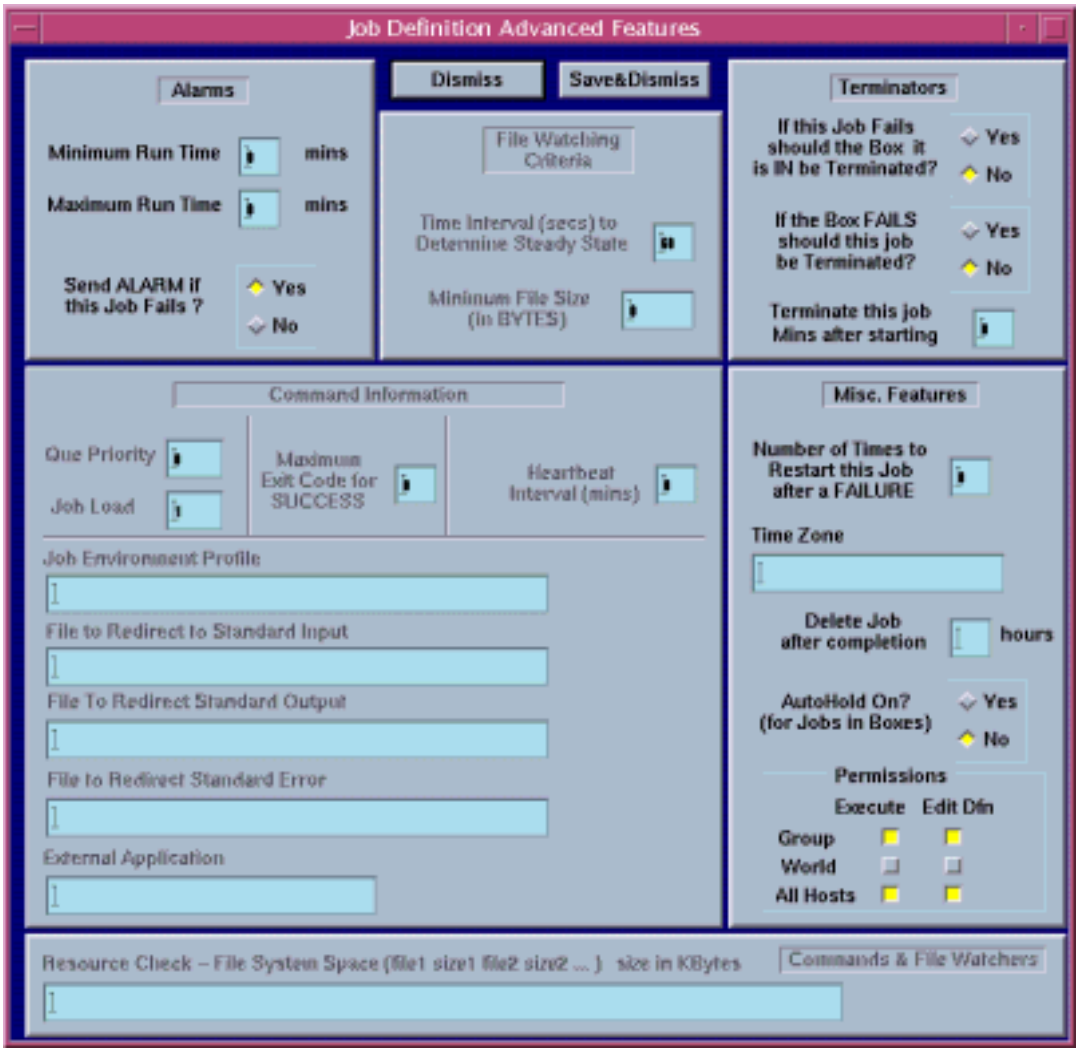

Figure 53. Job Definition Advanced Features GUI

4 In the **Command Information** area of the **Job Definition Advanced Features** GUI, click in the **Que Priority** field and type in the desired priority value.

- Remember that the only field you may change on the **Job Definition Advanced Features** GUI is the **Que Priority**.

5 Click on the **Save&Dismiss** button.

- The modified **Que Priority** value is saved.
- The **Job Definition** GUI (Figure 52) is displayed.

6 Click on the **Exit** button to quit the **Job Definition** GUI.

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Modifying Job Status

Job Status

Sending an Event to a Job

At times the Production Monitor may need to modify a particular job in any of the following ways:

- Start the job.
- Kill the job.
- Force the job to start.
- Place the job on hold.
- Take the job off hold.
- Perform certain Job Management Client functions (described in a subsequent section of the lesson).

Alternatively, the Production Monitor may need to generate one of the following types of reports:

- Jobs Completed.
- Jobs Waiting.

The Production Monitor can initiate any of the preceding actions by clicking on the corresponding button in the **Actions** region of the **Job Activity Console (Ops Console)**, Figure 47. However, there is an alternative method for accomplishing many of those operations. It involves the use of the **Send Event** GUI (Figure 54), which allows the Production Monitor to initiate any of the following actions:

- Start the job.
- Kill the job.
- Force the job to start.
- Place the job on hold.
- Take the job off hold.
- Change the job's status.
- Change the job's priority.
- Put the job on ice.

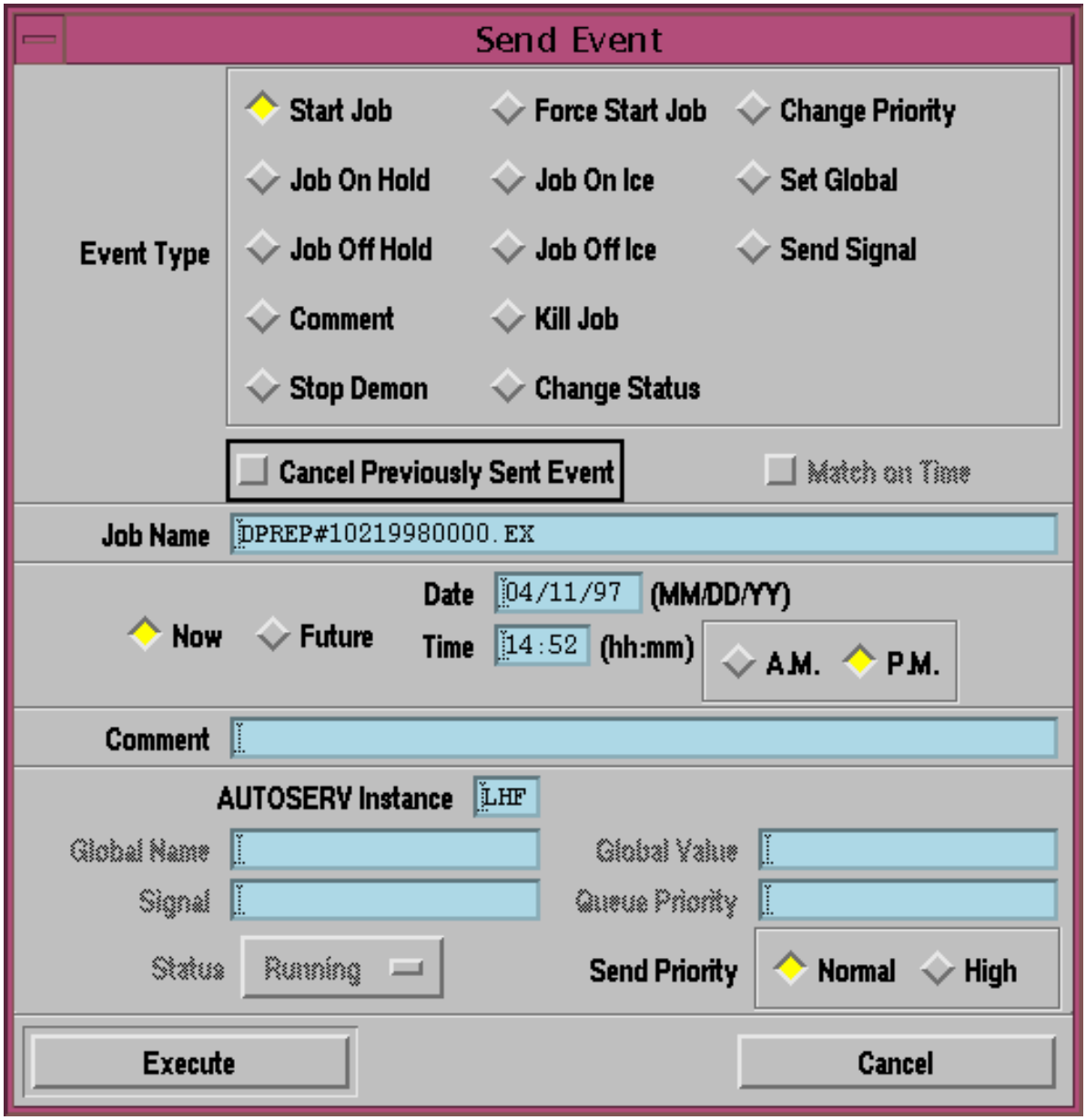

Figure 54. Send Event GUI

- Take the job off ice.
- Stop the daemon (stop the Event Processor in an emergency).
- Set a global value.
- Send a signal concerning the job.
- Make a comment (for example, why a job start was forced).

The Production Monitor uses either the **Ops Console** or the AutoSys **Send Event** GUI to send an event to a job. The procedure starts with the assumption that all applicable servers are currently running and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

CAUTION

Once an event has been sent from the **Send Event** dialog, it may not be possible to cancel or modify it.

Sending an Event to a Job

---

1 Click on the **Ops Console** button on the **AutoSys GUI Control Panel**.
- The **Job Activity Console** GUI, also known as the **Ops Console** GUI, (Figure 47) is displayed.

2 Generate a list of jobs to be displayed on the **Job Activity Console** GUI by performing the procedure for **Specifying Job Selection Criteria**.
- Job list based on the specified selection criteria is displayed in the **Job List** region of the **Job Activity Console**.

3 Review the **Job List** region of the **Job Activity Console** to identify the job with the status to be modified.

4 In the **Job List** region of the **Job Activity Console** click on the job row corresponding to the job with the status to be modified.

5 In the **Actions** region of the **Job Activity Console** click on the button corresponding to the desired action to be taken with respect to the selected job (if there is a corresponding button).
- **Actions** region of the **Job Activity Console** has the following buttons.
  - **Start Job.**
  - **Kill Job**
  - **On Hold** (Put job on hold)**.**
  - **Off Hold** (Take job off hold)**.**
  - **Force Start Job.**
  - **Send Event** (Send an event (signal) to a job)**.**
  - **Jobs Completed** (Display a "Jobs Completed" report)**.**
  - **Jobs Waiting** (Display a "Jobs Waiting" report)**.**
  - **Client Tool** (Perform Job Management Client functions – described in a subsequent section of the lesson)**.**
- If there is no button corresponding to the desired action, modify job status using the **Send Event** GUI (continue with the next step).

6 Click on the **Send Event** button if there is no other button corresponding to the desired action in the **Actions** region of the **Job Activity Console** GUI.
- The **Send Event** GUI (Figure 54) is displayed.

- **Send Event** has the following default values.
  - **Start Job** for **Event Type**.
  - **Now** for **Time**.
  - **Normal** for **Send Priority**.

7 Verify that the correct job is listed in the **Job Name** field of the **Send Event** GUI.

- If not, click on the **Cancel** button and select the correct job (perform Steps 2 through 6).

8 Click on **Event Type** to select the desired type of job status to be modified.

- **Event Type** has the following options.
  - **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**.
  - **Send 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**.

9 To enter the desired date and time when the job status is to be modified, either right away or at some time in the future**,** click on either **Now** or **Future.**

- Select **Now** for immediate execution. (Current date and time are default values.)
- Select **Future** for a future date and time.

10 If **Future** was selected in the previous step, perform Steps 10 through 12; otherwise go to Step 13.

11 Type the date (in *MM/DD/YY* format) for future execution in the **Date** field.

12 Type the time (in *hh:mm* format) for future execution in the **Time** field.

13 Click on either **A.M.** or **P.M.** as appropriate.

14 Type any comments in the **Comment** field.

- **Comment** is a free-form field for entering text that should be associated with the event in the database.
  - For example, explain why the selected "send event" was initiated.

15 Review the **AUTOSERV Instance** field.

- **Instance** field specifies the instance of AutoSys/AutoXpert to which the event will be sent. (You can send events to instances of AutoSys/AutoXpert other than the one you are running.)
- The current AutoSys/AutoXpert instance should be displayed by default in the **AUTOSERV Instance** field.

- If the event specified in the **Event Type** field should be sent to a different instance of AutoSys/AutoXpert, type the name of the other instance in the **AUTOSERV Instance** field.

16 Review the **Global Name** and **Global Value** fields.

- **Global Name** and **Global Value** are accessible only if **Set Global** was selected in the **Event Type** region.
- If **Set Global** was specified in the **Event Type** field, type the appropriate entries in the **Global Name** and **Global Value** fields.

17 Review the **Signal** field.

- **Signal** is accessible only if **Send Signal** or **Kill Job** was selected in the **Event Type** region.
- If either **Send Signal** or **Kill Job** was specified in the **Event Type** field, type the appropriate signal **number(s)** in the **Signal** field.
  - Table 8 is a list of UNIX signals.

18 Review the **Queue Priority** entry.

- Queue priority can be changed only if **Change Priority** was selected in the **Event Type** region.
- If the queue priority is to be changed, type the new priority in the **Queue Priority** field.

19 Review the **Status** option menu.

- Status can be changed only if **Change Status** was selected in the **Event Type** region.
- Click on the **Status** button and select (from the pick-list) the job status to which the job should be changed.
- **Status** has the following options.
  - **Running.**
  - **Success.**
  - **Failure.**
  - **Terminated.**
  - **Starting.**
  - **Inactive.**

20 Review the **Send Priority** radio buttons.

- Send priority refers to the priority for sending the event (not the job priority).
- If the send priority is to be changed, click on the button corresponding to the desired send priority.
- **Send Priority** has the following options.
  - **Normal.**
  - **High.**
- **High** priority is reserved for emergencies.

Table 8. UNIX Signals

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
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.

21 Click on the **Execute** button then click on the **Yes** button to enable the modified event.
- **Job Activity Console (Ops Console)** GUI is displayed.
- Once an event has been sent from the **Send Event** dialog, it may not be possible to cancel or modify it.

Canceling a Sent Event

It may be possible to cancel an event sent to an AutoSys job, especially if the event was previously scheduled for *sometime in the future*.

The Production Monitor uses the AutoSys **Send Event** GUI to cancel an event sent to a job. The procedure starts with the assumption that all applicable servers are currently running and the **Job Activity Console** GUI (Figure 47) is being displayed.

Canceling a Sent Event

---

1 Click on the **Send Event** button in the **Actions** Region of the **Job Activity Console**.
- The **Send Event** GUI (Figure 54) is displayed.

2 Click on **Event Type** to select the type of event that was sent to the job and is to be canceled.

3 Click on the **Cancel Previously Sent Event** radio button.

4 Verify that the correct job is listed in the **Job Name** field of the **Send Event** GUI.
- Type the job name in the **Job Name** field if necessary.
- **Not** necessary for the following types of events:
  - SET_GLOBAL
  - STOP_DEMON
  - ALARM
  - COMMENT

5 Click on the **Execute** button then click on the **Yes** button to enable the modified event.
- The event is cancelled.
- **Job Activity Console (Ops Console)** GUI is displayed.

Performing Job Management Client Functions

It is possible to perform the following Job Management Client functions from AutoSys by clicking on the **Client Tool** button in the **Actions** region of the **Job Activity Console** (Figure 47):

- 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.

Clicking on the button invokes the Job Management Client program. Using this interface to the ECS PDPS Processing software maintains synchronization with the PDPS database. For example, jobs should **not** be deleted using the AutoSys **Job Definition** GUI because it does not communicate with the PDPS database.

The Production Monitor starts the process of performing Job Management Client functions from the AutoSys **Job Activity Console** (**Ops Console**). The procedure starts with the assumption that all applicable servers are currently running and the AutoSys **Job Activity Console** (Figure 47) is being displayed.

Performing Job Management Client Functions

1 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**) .
- 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** (Figure 47).

2 Click on the **Client Tool** button in the **Actions Region** of the **Job Activity Console**.
- The **Ready to Invoke** (Job Management Client) dialog box (Figure 55) is displayed.

3 Click on the **yes** button.
- The dialog box closes.
- The **Job Activation User Interface** window (Figure 56) 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

4 **Enter** the number corresponding to the desired function at the **enter an option** prompt.

5 **Enter** responses to Job Management Client prompts.

6 Enter **0** at the **enter an option** prompt to quit the Job Management Client.

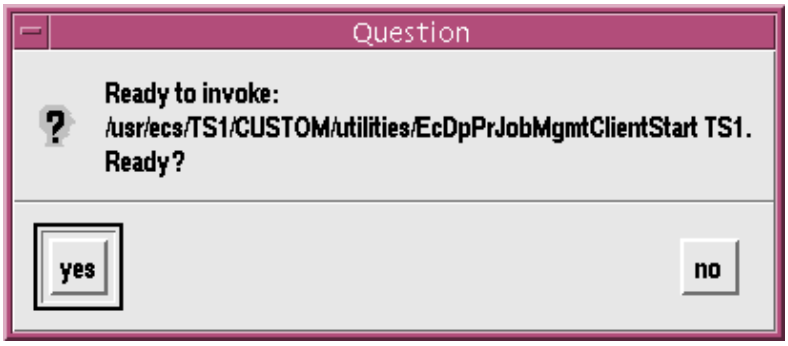

Figure 55. Ready to Invoke (Job Management Client) Dialog Box

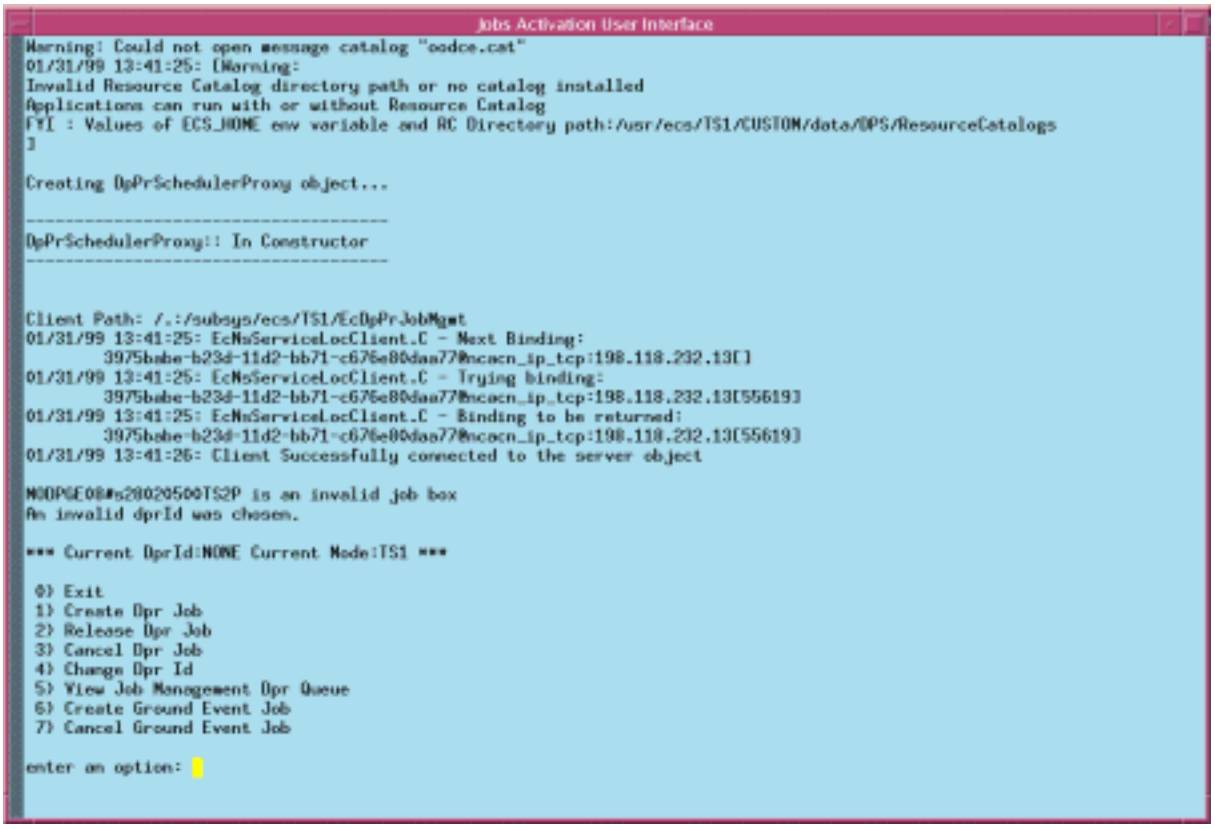

Figure 56. Job Activation User Interface Window

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Reviewing Activity and Job Dependency Logs

Reviewing an Activity Log

The Production Monitor reviews the activity log to obtain the following types of information:

- which jobs have been completed.
- which jobs are currently running.
- which jobs are in the queue.

The Production Monitor reviews the activity log using the AutoSys **autorep** command. The **autorep** command reports information about a job, jobs within boxes, machines, and machine status. Figure 57 shows a sample activity log.

```
-----------------------------------< Date: 06/14  21:52:04   >----------------------------
EVENT: CHANGE_STATUS          STATUS:  STARTING   JOB: stage.DPR_04
EVENT: CHANGE_STATUS          STATUS:  RUNNING    JOB: stage.DPR_04
EVENT: CHANGE_STATUS          STATUS:  SUCCESS    JOB: stage.DPR_04

-----------------------------------< Date: 06/14  21:53:04   >----------------------------
EVENT: CHANGE_STATUS          STATUS:  STARTING   JOB: prepare.DPR_08
EVENT: CHANGE_STATUS          STATUS:  RUNNING    JOB: prepare.DPR_08
EVENT: CHANGE_STATUS          STATUS:  SUCCESS    JOB: prepare.DPR_08
```

Figure 57. Sample Activity Log

The procedure starts with the assumption that the Production Monitor has logged in to the system.

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.
- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Queuing Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0sps04**, **g0sps06**, **l0sps03**, or **n0sps08**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.
- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 Type **cd /*path*** then press **Return/Enter**.
- 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.g0sps06).
- The particular path to be typed may vary from site to site.

8 Type **source *AUTOSYSINSTANCE*.autosys.csh.*hostname*** then press **Return/Enter**.
- The **source** command sets the environment variables.

9 Type **autorep -J ALL** unless the command needs to be modified in one of the following ways:
- To specify a particular job, type the job name instead of **ALL.**
- To obtain a machine report, type **-M *machine_name*** after either **ALL** or the job name.
- To obtain a summary report, type **-s** after either **ALL** or the job name.
- To obtain a detailed report, type **-d** after either **ALL** or the job name.

- To obtain a query report, type **-q** after either **ALL** or the job name.
- To display the document one page at a time, type either **| pg** or **| more** after typing the code for whichever of the preceding options are desired.
- To print the document, type **| lp** after typing the code for whichever of the preceding options are desired.
- To save the report in a file, type **> /*path*/*filename*** after either **ALL** or the job name.

10 Press the **Return/Enter** key on the keyboard to obtain access to the **Activity Log**.
- The **Activity Log** (Figure 57) is displayed.
- If **| lp** was typed on the command line, the **Activity Log** is printed.
- If **> /*path*/*filename*** was typed on the command line, the **Activity Log** is has been saved under the specified ***filename***.

11 Review the **Activity Log** to determine job states.
- Completed.
- Currently running.
- In the queue.

Reviewing a Job Dependency Log

The Production Monitor reviews a job dependency log using the AutoSys **job_depends** command. The **job_depends** command reports information about the dependencies and conditions of jobs. The command can be used for determining 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.

The procedure starts with the assumption that the Production Monitor has logged in to the system.

Reviewing a Job Dependency Log

1 Set up **AutoSys** as described in Steps 1 through 8 of the procedure for **Reviewing an Activity Log**.

2 Type **job_depends -c -J ALL** unless the command needs to be modified in one of the following ways:
- To specify a particular job, type the job name instead of **ALL**.
- To obtain the current condition status, type **-c** before **-J**.
- To obtain the dependencies only, type **-d** before **-J**.
- To obtain the time dependencies, type **-t** before **-J**.
- To display the document one page at a time, type either **| pg** or **| more** after typing the code for whichever of the preceding options are desired.
- To print the document, type **| lp** after typing the code for whichever of the preceding options are desired.
- To save the report in a file, type **> /*path*/*filename*** after either **ALL** or the job name.

3 Press the **Return/Enter** key on the keyboard to obtain access to the Activity Log.
- The **Job Dependency Log** (Figure 58) is displayed.

- If **| lp** was typed on the command line, the **Job Dependency Log** is printed.
- If **> /*path*/*filename*** was typed on the command line, the **Activity Log** is has been saved under the specified ***filename***.

4 Review the **Job Dependency Log** to determine job status, including the status of atomic conditions.

Job Name	Status	Date Cond?	Start Cond?	Dependent Jobs?
DPR##	Activated	No	Yes	No

Condition: (success(DPR_##) and exit code(execute.DPR_##)<5)

Atomic Condition	Current Status	T/F
SUCCESS(SPR_##)	SUCCESS	T
EXIT_CODE(execute.DPR_##)	SUCCESS	F

Figure 58. Sample Job Dependency Log

Defining and Running Monitors/Browsers

Defining Monitors/Browsers

The current edition of the *Version 2.0 Operations Tools Manual for the ECS Project (*609-CD-003-002) indicates that ECS does not support the AutoSys monitor/browser capabilities. However, they are functional and the Production Monitor can use them.

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"). They use the browser function (Figure 59) to determine such things as the current status of a particular job or which jobs presently have a particular status (e.g., which jobs, if any, are on hold).

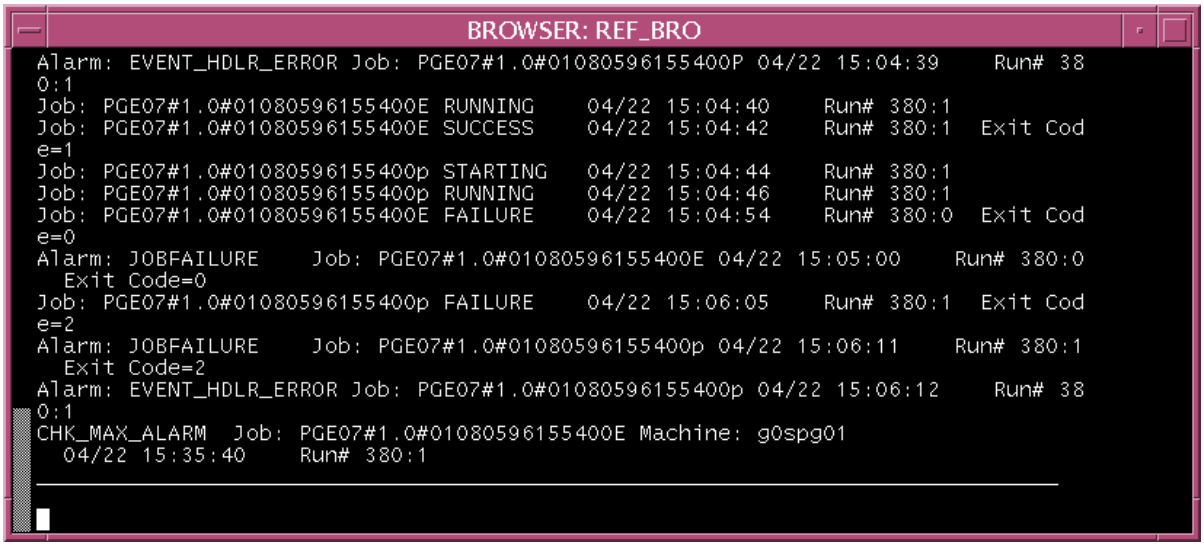

Figure 59. Sample Browser Screen

The procedure for defining monitors or browsers starts with the assumption that all applicable servers are currently running, AutoSys has been launched, and the **AutoSys GUI Control Panel** (Figure 40) is being displayed.

1 Click on the **Monitor/Browser** button on the **AutoSys GUI Control Panel**.
- The **Monitor/Browser** GUI (Figure 60) is displayed.

2 Type a name for the monitor or browser in the **Name** field near the top of the GUI.
- Name must be in valid file-name format.
- If a pre-defined monitor or browser is desired, use the **Search** button under the **Name** field to call it up.

3 Click on either the **Alarms** button or the **ALL EVENTS** button for **Types of Events.**

4 Click on either **ALL Job Status Events** or the corresponding toggle button(s) to select individual **Job Status Events.**
- Any or all of the following **Job Status Events** can be selected:
  - **Running**.
  - **Success.**
  - **Failure.**
  - **Terminated.**
  - **Starting.**
  - **ReStarting.**
  - **On Ice**.
  - **On Hold.**

5 Click on the corresponding toggle button to select the desired **Job Selection Criteria.**
- Job selection criteria options are as follows:
  - **All Jobs.**
  - **Box with its Jobs.**
  - **Single Job.**

6 If **Single Job** was selected in the previous step, type the job name in the **Job Name** field.

7 Click on the corresponding toggle button to select the desired **Monitor Options.**
- **Monitor Options** refers to one of the following choices:
  - **Sound.**
  - **Verification Required for Alarms.**

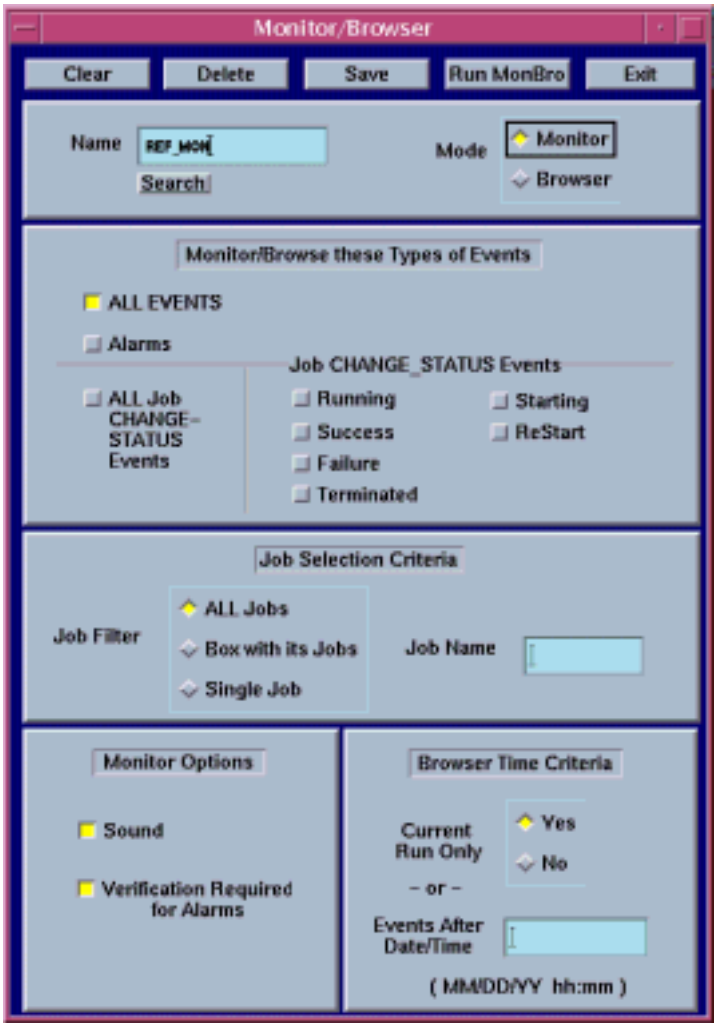

Figure 60. Monitor/Browser GUI

8 Click on **Yes** or **No** to select the desired **Current Run Time** and/or **Events After Date/ Time**, which are the **Browser Time Criteria.**

9 If **Events After Date/Time** was selected in the previous step, type the starting date and time (in *MM/DD/YY hh:mm* formats) in the **Events After Date/Time** field.

10 Click on the corresponding toggle button to select the desired **Mode**.

- The following options are available:
  - **Monitor.**
  - **Browser.**
- If **Monitor** is selected, settings are defined for a monitor.
- If **Browser** is selected, settings are defined for a report.

11 Click on the **Save** button.

- The monitor or browser definition is saved to the database.
- Before running a monitor or browser you must **Save** the monitor/browser definition first.

12 Click on the **Run MonBro** button to run the monitor/browser that has just been defined.

13 Review the monitor/browser results.

14 Type Ctrl-C to exit from a browser or monitor.

Running Monitors/Browsers

There are two procedures for running monitors/browsers. Monitors/browsers may be run from the **Monitor/Browser** GUI as described in the preceding procedure or they may be run using UNIX commands. In either case, the procedure starts with the assumption that the Production Monitor has logged in to the system.

Running Monitors/Browsers Using UNIX Commands

1 Set up **AutoSys** as described in Steps 1 through 8 of the procedure for **Reviewing an Activity Log**.

2 Type **monbro -N *name* &** then press the **Return/Enter** key on the keyboard to run the previously defined monitor/browser.

- 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 User Manual* for all options and displays for all **monbro** reports.

3 Review the monitor/browser results.

4 Type Ctrl-C to exit from a browser or monitor.

Changing the Database Maintenance Time

Database Maintenance Time

Once a day the Event Processor goes into an internal database maintenance cycle. During this time, it does not process any events and it waits for the maintenance activities to be completed before resuming normal operations. The time of day for start-up of the maintenance cycle is pre-set to 3:30 AM. The database maintenance cycle takes approximately one minute. If it is necessary to change the time when the maintenance cycle occurs, the Production Monitor can reset it, preferably to a time when there is minimal activity.

The procedure for changing the database maintenance time starts with the assumption that the Production Monitor has logged in to the system.

Changing the Database Maintenance Time

NOTE: Commands in Steps 1 through 8 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.
- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Queuing Server host by typing **/tools/bin/ssh *hostname*** (e.g., **e0sps04**, **g0sps06**, **l0sps03**, or **n0sps08**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.
- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 Type **cd /*path*** then press **Return/Enter**.

- 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 **config.*AUTOSYSINSTANCE*** file.
- The particular path to be typed may vary from site to site.

8 Type **vi config.*AUTOSYSINSTANCE*** then press **Return/Enter**.

- The configuration file is displayed by the vi text editor.

9 Using vi editor commands find **DBMaintTime=** and replace the existing time with the desired time in 24 hour format (hh:mm).

- 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)
  - **i** (insert text)
  - **x** (delete a character)
  - **u** (undo previous change)
  - **Esc** (switch to command mode)

10 Press the **Esc** key.

11 Type ZZ.

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

Troubleshooting Processing Problems

Trouble Symptoms

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).
- Interoperability Subsystem (IOS).
- Communications Subsystem (CSS).

Table 9 describes actions to be taken in response to some common Processing problems. If the problem cannot be identified and fixed without help within a reasonable period of time, the appropriate response is to call the help desk or submit a trouble ticket in accordance with site Problem Management policy.

Table 9. Troubleshooting Processing Problems (1 of 2)

Symptom	Response
Unable to log in to the Queuing Server host (e.g., g0sps06).	Check with the Operations Controller/System Administrator to ensure that the host is “up."
GUI not displayed when the start-up script has been properly invoked.	1. Ensure that the DISPLAY variable was set properly. 2. Ensure that the xhost command was given on the initial login host. [For detailed instructions refer to the procedure for **Launching Production Processing Applications** (previous section of this lesson).]
AutoSys job hangs (does not complete within the predicted time period).	Refer to the procedure for **Handling a Job that is Hanging in AutoSys** (subsequent section of this lesson).
“Allocate” job fails.	Refer to the procedure for **Handling an Allocation Job Problem** (subsequent section of this lesson).
“Stage” job fails.	Refer to the procedure for **Handling a Staging Job Problem** (subsequent section of this lesson).
“Preprocess” job fails.	Refer to the procedure for **Handling a Preprocessing Job Problem** (subsequent section of this lesson).

Table 9. Troubleshooting Processing Problems (2 of 2)

"Execute" job fails.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," refer the problem to SSI&T personnel.
"Post-process" job fails.	Refer to the procedure for **Handling a Postprocessing Job Problem** (subsequent section of this lesson).
"Insert" job fails.	Refer to the procedure for **Handling an Insertion Job Problem** (subsequent section of this lesson).
"Deallocate" job fails.	1. Ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up." 2. If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView. 3. If hosts/servers are all "up," check the log files (e.g., *DPR#*.ALOG) in the /usr/ecs/*MODE*/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).]
Other problems.	Check the log files (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, *DPR#*.ALOG, *DPR#*.err) in the /usr/ecs/*MODE*/CUSTOM/logs directory for error messages. [For detailed instructions refer to the procedure for **Checking Log Files** (subsequent section of this lesson).]

Table 10. Hosts, Servers, Clients and Other Software Relevant to ECS Data Processing Phases(1 of 2)

HOST **SERVER/CLIENT/OTHER SOFTWARE** **NOTE:** Servers that are displayed on ECS Assistant are shown in **boldface** type in the table. **NOTE:** Depending on the installation, software may be loaded on hosts other than the examples provided.	**PROCESSING PHASE**						
	ALLOCATE	**STAGE**	**PREPROCESS**	**EXECUTE**	**POSTPROCESS**	**INSERT**	**DEALLOCATE**
Science Processor (e.g., x0spg01)	X	X	X	X	X	X	X
PGE Management (EcDpPrRunPGE)				X			
Resource Usage (EcDpPrRusage)				X			
PGE				X			

Table 10. Hosts, Servers, Clients and Other Software Relevant to ECS Data Processing Phases(2 of 2)

HOST SERVER/CLIENT/OTHER SOFTWARE **NOTE:** Servers that are displayed on ECS Assistant are shown in **boldface** type in the table. **NOTE:** Depending on the installation, software may be loaded on hosts other than the examples provided.	PROCESSING PHASE						
	ALLOCATE	STAGE	PREPROCESS	EXECUTE	POSTPROCESS	INSERT	DEALLOCATE
Queuing Server (e.g., x0sps04)	X	X	X	X	X	X	X
Job Management Server (EcDpPrJobMgmt)	X	X	X	X	X	X	X
Deletion Server (EcDpPrDeletion)	X	X	X	X	X	X	X
Data Management (EcDpPrDM)		X				X	
Execution Management (EcDpPrEM)	X		X		X		X
Resource Management (EcDpPrRM)	X	X				X	X
Subscription Manager (EcDpPlSubMgr)							
Distribution Server (e.g., x0dis02)	X	X				X	
Distribution Server (EcDsDistributionServer)	X	X				X	
SDSRV Server (e.g., x0acs05)	X	X				X	
Science Data Server (EcDsScienceDataServer)	X	X				X	
APC Server (e.g., x0acg01)	X	X				X	
Archive Server (EcDsStArchiveServer)	X	X				X	
FTP Distribution Server (EcDsStFtpDisServer)	X	X				X	
Staging Monitor Server (EcDsStStagingMonitorServer)	X	X				X	
Staging Disk Server (EcDsStStagingDiskServer)	X	X				X	
Pull Monitor Server (EcDsStPullMonitorServer)							
Interface Server 01 (e.g., x0ins02)	X	X				X	
Advertising Server (EcIoAdServer)	X	X	X			X	
Interface Server 02 (e.g., x0ins01)	X	X				X	
Subscription Server (EcSbSubServer)	X	X				X	
Event Server (EcSbEventServer)							
Data Dictionary (EcDmDictServer)							

Handling a Job that is Hanging in AutoSys

If an AutoSys job is hanging, the job symbol in AutoSys JobScape, TimeScape, or HostScape GUI will have turned green to indicate that the job is running but it would not have turned either red ("failed") or light blue ("success") within the predicted period of time. The following conditions can cause an AutoSys job to hang:

- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute files (e.g., the PGE tar file in the allocation job or input data in staging) but cannot because Storage Management (STMGT) is down.
- The Science Data Server (SDSRV) may be waiting for a request to Data Distribution (DDIST) to distribute files (e.g., the PGE tar file in the allocation phase or input data in staging); however, Storage Management (STMGT) cannot ftp the file to the data directory on the science processor disk, so DDIST cannot distribute the files.
- The SDSRV may be "down."

The procedure for Handling a Job that is Hanging in AutoSys starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host(e.g., g0sps06).

Handling a Job that is Hanging in AutoSys

1 Access a terminal window logged in to the Queuing Server host (e.g., e0sps04, g0sps06, l0sps03, n0sps08).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the DPR .err files (e.g., ACT#syn1#004130123TS1.err).

3 Type **/usr/xpg4/bin/tail -f -n 20 *filename*** then press **Return/Enter**.
- ***filename*** refers to the DPR .err file to be reviewed (e.g., ACT#syn1#004130123TS1.err).
- The last 20 lines of the .err file are displayed and additional data (if any) is displayed as it is written to the file.

4 Review the .err file to identify problems that are occurring or have occurred.
- Most likely either nothing is being written to the file or the job is in a retry loop.

5 If the job is in a retry loop, verify (e.g., using ECS Assistant) that the hosts/server processes necessary for the affected job are "up."
- The SDSRV may be down.
- The first retry is designed to fail, because the software is retrieving server-side information to refresh the client side at this point.
- Refer to Table 10 to determine which hosts/servers are critical to the job.

6 If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
- Go to the procedure for **Force-Starting a Job** (subsequent section of this lesson) after the problem has been corrected.

7 If nothing is being written to the .err file, ask the Ingest/Distribution Technician to check whether the distribution request has been suspended with errors.
- If the distribution request has been suspended with errors, the Ingest/Distribution Technician should take the following actions:

- Requests the Operations Controller/System Administrator to bounce the STMGT servers.
- "Resumes" the distribution request.
- Verifies that the distribution request resumes processing.

8 If the distribution request resumes processing after the Ingest/Distribution Technician has taken action, go to the procedure for **Force-Starting a Job** (subsequent section of this lesson).

9 If the distribution request does **not** resume processing, log in to the Science Processor host (e.g., e0spg01, g0spg01, l0spg01, n0spg03) as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

10 Type **cd /usr/ecs/*MODE*/CUSTOM/pdps/*processor*/data/DpPrRm/*processor*_disk** then press **Return/Enter**.

- ***processor*** refers to the Science Processor host (e.g., e0spg01, g0spg01, l0spg01, n0spg03).
- The ***processor*_disk** directory (e.g., g0spg01_disk) is the target directory where the data server puts the inputs needed for processing.

11 If the target directory does **not** exist, notify the Operations Controller/System Administrator to have it restored.

- Go to the procedure for **Force-Starting a Job** (subsequent section of this lesson) after the problem has been corrected.

12 If the target directory does exist, try to ftp a file to the directory on the science processor.

13 Notify the Operations Controller/System Administrator of the results of the attempt to ftp a file to the target directory.

- Go to the procedure for **Force-Starting a Job** (subsequent section of this lesson) after the problem has been corrected.

Force-Starting a Job

The procedure for Force-Starting a Job starts with the assumption that AutoSys has been launched and either JobScape (Figure 44) or TimeScape (Figure 43) is being displayed.

Force-Starting a Job

1 Click and hold on the applicable job symbol in the AutoSys JobScape or TimeScape GUI with the **right** mouse button

- **Descendants** pop-up menu appears.

2 Select (highlight) **Force Start Job** from the **Descendants** pop-up menu (release the right mouse button).
- The job symbol in AutoSys JobScape or TimeScape GUI should turn green ("starting") within a short period of time.

3 If the job symbol in AutoSys JobScape or TimeScape GUI does **not** turn green ("starting") within a short period of time, return to Step 1.

Handling an Allocation Job Problem

If the allocation job fails, the ALOG file on the Data Processing host can be checked to see whether the PGEEXE.tar file was successfully acquired. If there is an acquire failure, the appropriate action is to perform the procedure for **Handling an Acquire Failure** (subsequent section of this lesson).

The procedure for checking the Allocation Job ALOG file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking the Allocation Job ALOG File

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data processing log files (e.g., ACT#syn1#004130123TS1.ALOG).

3 Type **pg *filename*** then press Return/Enter.
- ***filename*** refers to the data processing log file to be reviewed (e.g., ACT#syn1#004130123TS1.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**, **tail**) can be used to review the log file.

4 Review the log file to determine whether the PGEEXE.tar file was successfully acquired.

5 If the PGEEXE.tar file was successfully acquired, go to the procedure for **Force-Starting a Job** (previous section of this lesson).

6 If there is an acquire failure, perform the procedure for **Handling an Acquire Failure** (subsequent section of this lesson).

Handling an Acquire Failure

Diagnosing an acquire failure involves examining the following system log files and directories involved in the process:

- Science Data Server ALOG File (EcDsScienceDataServer.ALOG file).
- Archive Server ALOG File (EcDsStArchiveServer.ALOG)
- Staging Area
  - Presence of the relevant file

- Staging Disk ALOG File (EcDsStStagingDiskServer.ALOG or EcDsStStagingMonitorServer.ALOG)
- Space available in the staging area

Checking the Science Data Server ALOG File

The procedure for checking the EcDsScienceDataServer.ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Science Data Server ALOG File

1 Log in to the SDSRV Server host (e.g., e0acs05, g0acs03, l0acs03, n0acs04) as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/mode/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsScienceDataServer.ALOG** then press **Return/Enter**.

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

4 Review the log file to determine whether the relevant file was successfully acquired.

- The EcDsScienceDataServer.ALOG file should contain entries identifying the file to be acquired by the ShortName of the corresponding ESDT.
- The EcDsScienceDataServer.ALOG file should contain entries regarding the acquire activity. The following types of messages should be included in the ALOG file:
  Msg: File 1 to be distributed: :SC:MOD03.001:1369:1.HDF-EOS
  Priority: 0 Time : 07/29/98 12:35:42
  PID : 24279:MsgLink :1684108385 meaningfulname
  :DsSrWorkingCollectionDistributeOneDistributFile
  Msg: File 2 to be distributed: SCMOD03.0011369.met
- If the ShortName does not appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, SDSRV may not be running, or may not be communicating with other servers.
- If the ALOG file does contain entries for that ShortName, and indicates that two files (the file and its associated metadata file) are being distributed, SDSRV has completed its role in the acquire.
- If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, the data file needs to be removed from the Science Data Server and reinserted.
  - This is usually done using a script called DsDbCleanGranules.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the ShortName does **not** appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

7 If the ALOG contains the ShortName, and also contains an error showing that the data file time stamp does not match the time stamp required by the acquire, notify the Archive Manager to have the data file removed from the Science Data Server and reinserted.
- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

8 If the ALOG file does contain entries for the ShortName and indicates that two files (the file and its associated metadata file) are being distributed, continue with the procedure for **Checking the Archive Server ALOG File**.

Checking the Archive Server ALOG File

Acquire success from the Science Data Server is only part of the acquire process. Since any file entered into SDSRV is stored in the archive, the Archive Server must be involved during an acquire. Consequently, it may be useful to inspect the Archive Server ALOG file (EcDsStArchiveServer.ALOG) to check for error messages associated with the ShortName of the file type.

The procedure for checking the archive server ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Archive Server ALOG File

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsStArchiveServer.ALOG** then press **Return/Enter**.
- Although this procedure has been written for the **view** command, any UNIX editor or visualizing command (e.g., **vi**, **pg**, **more**, **tail**) can be used to review the log file.

4 Review the log file to determine whether the relevant file was successfully acquired.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the relevant file was **not** successfully acquired, notify the Archive Manager to have the data file reacquired for Data Processing.
- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

7 If the relevant file was successfully acquired, continue with the procedure for **Checking the Staging Disk**.

Checking the Staging Disk

During an acquire, files are copied to a staging area as an intermediate step before distributing them to their destination. As part of diagnosing an acquire failure it is useful to check the staging area to ascertain whether the files have completed part of their journey. Both the file and a subdirectory containing metadata information should be written to the staging area.

The procedure for checking the staging disk starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/drp/*archivehost*/data/staging/user#** then press **Return/Enter**.

3 Type **ls -lrt** then press **Return/Enter**.

4 Review the directory to determine whether the relevant file was successfully staged.

5 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

6 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Staging Disk ALOG File** to try to determine why it was not successfully staged.

Checking the Staging Disk ALOG File

If the failure occurs in copying the files to the staging area, then the Staging log files (EcDsStStagingDiskServer.ALOG or EcDsStStagingMonitorServer.ALOG) may reveal the cause.

The procedure for checking the staging disk ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Staging Disk ALOG File

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsStStagingDiskServer.ALOG** or **EcDsStStagingMonitorServer.ALOG** then press **Return/Enter**.

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

4 Review the log file to determine whether the relevant file was successfully staged.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the relevant file was successfully staged, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.

- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

7 If the relevant file was **not** successfully staged, continue with the procedure for **Checking the Space Available in the Staging Area**.

Checking the Space Available in the Staging Area

Failure can be caused by a lack of space in the staging area.

The procedure for checking the space available in the staging area starts with the assumption that the operator has logged in to the ECS system.

Checking the Space Available in the Staging Area

1 Log in to the Distribution Server (e.g., e0dis02, g0dis02, l0dis02, n0dis02) host as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/drp/*archivehost*/data/staging/user#** then press **Return/Enter**.

3 Type **df -k .** then press **Return/Enter**.

4 Review the available space listed to determine whether there is adequate space for staging the relevant file.

5 If there is **not** adequate space for staging the relevant file, notify the Operations Controller/System Administrator of the lack of space.

6 If there is adequate space for staging the relevant file, notify the Archive Manager to have the data file reacquired for Data Processing.

7 Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

Handling a Staging Job Problem

The staging step in processing involves acquiring files from the archive. The ALOG file on the Data Processing host can be checked to see whether the files were successfully acquired. If there is an acquire failure, the appropriate action is to perform the procedure for **Handling an Acquire Failure** (previous section of this lesson).

The procedure for checking the Staging Job ALOG file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking Staging Job ALOG File

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data processing log files (e.g., ACT#syn1#004130123TS1.ALOG).

3 Type **pg *filename*** then press Return/Enter.
- ***filename*** refers to the data processing log file to be reviewed (e.g., ACT#syn1#004130123TS1.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**, **tail**) can be used to review the log file.

4 Review the log file to determine whether the input data files were successfully acquired.

5 If the input data files were successfully acquired, go to the procedure for **Force-Starting a Job** (previous section of this lesson).

6 If there is an acquire failure, perform the procedure for **Handling an Acquire Failure** (previous section of this lesson).

Handling an Preprocessing Job Problem

Preprocessing rarely fails completely. However, it may not generate the system Process Control File (PCF) correctly. The general process for handling a preprocessing job problem is as follows:

- Check the ALOG file to determine whether there is a problem with the PCF.
- If the ALOG file indicates that there is a problem with the PCF, put the execution job on hold.
- Check the system PCF to determine whether it matches expectations.

The procedure for checking the Preprocessing Job ALOG file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking the Preprocessing Job ALOG File

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data processing log files (e.g., ACT#syn1#004130123TS1.ALOG).

3 Type **pg *filename*** then press Return/Enter.
- ***filename*** refers to the data processing log file to be reviewed (e.g., ACT#syn1#004130123TS1.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**, **tail**) can be used to review the log file.

4 Review the log file to determine whether there is any indication that there is a problem with the PCF.

5 If there is **no** indication that there is a problem with the PCF, go to the procedure for **Force-Starting a Job** (previous section of this lesson).

6 If there is some indication that there is a problem with the PCF, continue with the procedure for **Putting the Execution Job on Hold** and **Checking the Process Control File** (subsequent sections of this lesson).

The procedure for putting the execution job on hold starts with the assumption that the starts with the assumption that AutoSys has been launched and either JobScape (Figure 44) or TimeScape (Figure 43) is being displayed..

Putting the Execution Job on Hold

---

1 Click and hold on the applicable job symbol in the AutoSys JobScape or TimeScape GUI with the **right** mouse button

- **Descendants** pop-up menu appears.

2 Select (highlight) **On Hold** from the **Descendants** pop-up menu (release the right mouse button).

- The job symbol in AutoSys JobScape or TimeScape GUI should turn dark blue ("on hold") within a short period of time.

The procedure for checking the system PCF starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking the Process Control File

---

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*mode*/CUSTOM/pdps/*hostname*/data/DpPrRm/*hostname*_disk/*pgeId*/*dprId*_*hostname*** then press **Return/Enter**.

- Change directory to the directory containing the PCF (e.g., ***pgeId*.Pcf**).

3 Type **pg *filename*** then press Return/Enter.

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

4 Review the PCF to determine whether there are errors in the file.

5 If there are errors in the PCF, refer the problem to SSI&T personnel.

6 If there are **no** errors in the PCF, click and hold on the job symbol for the execution job in the AutoSys JobScape or TimeScape GUI with the **right** mouse button

- **Descendants** pop-up menu appears.

7 Select (highlight) **Off Hold** from the **Descendants** pop-up menu (release the right mouse button).

- The job symbol in AutoSys JobScape or TimeScape GUI should turn white ("activated") within a short period of time.

8 Go to the procedure for **Force-Starting a Job** (previous section of this lesson).

Handling an Post-Processing Job Problem

Post-Processing does not often fail, but it may show as a failure in AutoSys if the Execution stage has failed.

The procedure for checking the Post-Processing Job ALOG file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking the Post-Processing Job ALOG File

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data processing log files (e.g., ACT#syn1#004130123TS1.ALOG).

3 Type **pg *filename*** then press Return/Enter.
- ***filename*** refers to the data processing log file to be reviewed (e.g., ACT#syn1#004130123TS1.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**, **tail**) can be used to review the log file.

4 Review the log file to determine whether there is any indication that the execution job failed.

5 If there is **no** indication that the execution job failed, go to the procedure for **Force-Starting a Job** (previous section of this lesson).

6 If there is an indication that the execution job failed, check the response listed for "'Execute' job fails" in Table 9, Troubleshooting Processing Problems.

Handling an Insertion Job Problem

If the insertion (destaging) job fails, the job symbol in AutoSys JobScape, TimeScape, or HostScape has turned red (failed). The following activities should help isolate the problem:

- Check the .err log file.
- Check the ALOG file.
- Check for an Insert failure.

The procedure for checking the Insertion job .err file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host(e.g., g0sps06).

Checking the Insertion Job .err File

1 Access a terminal window logged in to the Queuing Server host (e.g., e0sps04, g0sps06, l0sps03, n0sps08).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

- Change directory to the directory containing the DPR .err files (e.g., ACT#syn1#004130123TS1.err).

3 Type **/usr/xpg4/bin/tail -f -n 20** ***filename*** then press **Return/Enter**.

- ***filename*** refers to the DPR .err file to be reviewed (e.g., ACT#syn1#004130123TS1.err).
- The last 20 lines of the .err file are displayed and additional data (if any) is displayed as it is written to the file.

4 Review the .err file to identify problems that are occurring or have occurred.

5 If the message **Error archiving metadata into catalog** is found and the problem occurred for an existing ESDT which has previously worked within the past day or two, go to the procedures for **Handling an Insert Failure** (subsequent section of this lesson).

- STMGT log files may have indications of problems relating to changes/defects in the stored procedures.

6 If the message **Error archiving metadata into catalog** is found and the ESDT is new or has recently been installed, go to the procedures for **Handling an Insert Failure** (subsequent section of this lesson).

- The values of the mandatory parameters in the .MCF file in the runtime directory may not be consistent with "valids" in the SDSRV database.
- Alternatively, a SDSRV temporary directory may be getting filled up.

7 If the message **Error modifying file usage** is in the file, manually reset to 1 the numberOfUsage column in DpPrFile for the particular file.

- The message indicates that the numberOfUsage column in DpPrFile for a particular file is at 0 and the software is trying to decrement it. This 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 no longer be synchronized.
- Go to the procedure for **Force-Starting a Job** (subsequent section of this lesson) after the problem has been corrected.

8 Type **cd /usr/ecs/*MODE*/CUSTOM/pdps/*processor*/data/DpPrRm/*processor*_disk** then press **Return/Enter**.

- ***processor*** refers to the Science Processor host (e.g., e0spg01, g0spg01, l0spg01, n0spg03).
- The ***processor*_disk** directory (e.g., g0spg01_disk) is the target directory where the data server puts the inputs needed for processing.

9 Type **ls** then press **Return/Enter**.

10 Review the directory contents to determine whether there are science data files in the disk partition but no metadata files.

- If there are science data files in the disk partition but no metadata files, DDIST and STMGT are functioning properly but SDSRV is not.
  - Otherwise, STMGT may not be functioning properly.

11 Continue with the procedure for **Checking the Insertion Job ALOG File** (subsequent section of this lesson).

The procedure for checking the Insertion Job ALOG file starts with the assumption that the operator has logged in to the ECS system and the Queuing Server host (e.g., g0sps06).

Checking the Insertion Job ALOG File

1 Access a terminal window logged in to the Queuing Server host (e.g., g0sps06).

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.
- Change directory to the directory containing the data processing log files (e.g., ACT#syn1#004130123TS1.ALOG).

3 Type **pg *filename*** then press Return/Enter.
- ***filename*** refers to the data processing log file to be reviewed (e.g., ACT#syn1#004130123TS1.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**, **tail**) can be used to review the log file.

4 Review the log file to determine whether there is any indication that there is a problem inserting files in Data Server.

5 If there is **no** indication that there is a problem inserting files in Data Server, go to the procedure for **Force-Starting a Job** (previous section of this lesson).

6 If there are indications that there are problems inserting files in Data Server, continue with procedures for **Handling an Insert Failure** (subsequent section of this lesson).

Handling an Insert Failure

If the Science Data Server returns a message indicating that the insertion of output granules into the archive has failed, or if the insertion job fails as indicated in AutoSys, the problem can be diagnosed by verifying the following items:

- Applicable ESDT is in the Science Data Server (SDSRV) database.
- Applicable ESDT is in the advertising database.
- SDSRV ALOG file indicates that the insertion occurred.
- Applicable servers are running.
- DCE Login is valid.

Checking for the Applicable ESDT in the SDSRV Database

No granules can be inserted into the archive unless there is a valid ESDT for the type of granule to be inserted. There must be a valid ESDT in both the SDSRV database and the advertising database. In the SDSRV database the ShortName for the ESDT should be listed in a table called DsMdCollections. If the ShortName is not listed in the table, the ESDT must be inserted in the Science Data Server before the granule insertion can succeed.

The procedure for checking for the applicable ESDT in the SDSRV database starts with the assumption that the operator has logged in to the ECS system.

Checking for the Applicable ESDT in the SDSRV Database

1 Log in to the SDSRV Server host (e.g., e0acs05, g0acs03, l0acs03, n0acs04) as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Enter isql commands for checking the SDSRV database DsMdCollections table for the ShortName for the ESDT.

3 If the ShortName for the ESDT is not listed in the SDSRV database DsMdCollections table, notify the Science Data Specialist to have the ESDT added.

- After the ESDT has been added go to the procedure for **Force-Starting a Job** (previous section of this lesson).

4 If the ShortName for the ESDT is listed in the SDSRV database DsMdCollections table, continue with the procedure for **Checking for the Applicable ESDT in the Advertising Database**.

Checking for the Applicable ESDT in the Advertising Database

When an ESDT is installed into the Science Data Server database, the system also makes entries in the advertising (IOS) database. The number and types of entries depends on the contents of the ESDT descriptor file. File insertion failures may also be caused by missing or incomplete IOS database entries for the ESDT. Therefore, it is useful to check IOS to make sure the ESDT corresponding to the file type to be inserted has been properly advertised. This is done by checking the advertising database, IoAdAdvService_*mode*, in a table called IoAdAdvMaster, for the ShortName in question. For each ESDT ShortName the table should show several entries, the number depending on the descriptor file contents. An example of such a listing is given in Table 11.

Table 11. Sample Listing of ESDT Entries in Advertising Database

IoAdAdvMaster
MOD03.001
MOD03.001:ACQUIRE
MOD03.001:INSERT
MOD03.001:UPDATEMETADATA
MOD03.001:BROWSE
MOD03.001:GETQUERYABLEPARAMETERS
MOD03.001:INSPECT
MOD03.001:INSPECTCL
MOD03.001:DELETE
Subscribable Event:ID:##: MOD03.001:DELETE
Subscribable Event:ID:##: MOD03.001:INSERT
Subscribable Event:ID:##: MOD03.001:UPDATEMETADATA

The procedure for checking for the applicable ESDT in the advertising database starts with the assumption that the operator has logged in to the ECS system.

Checking for the Applicable ESDT in the Advertising Database

1 Log in to the Interface Server 01 (e.g., e0ins02, g0ins02, l0ins02, n0ins02) host as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Enter isql commands to check the IoAdAdvService_*mode* database IoAdAdvMaster table for the ESDT's ShortName.

3 If the ShortName for the ESDT is not listed in the IoAdAdvService_*mode* database IoAdAdvMaster table, notify the Science Data Specialist to have the ESDT added.

- After the ESDT has been added go to the procedure for **Force-Starting a Job** (previous section of this lesson).

4 If the ShortName for the ESDT is listed in the IoAdAdvService_*mode* database IoAdAdvMaster table, continue with the procedure for **Checking the Science Data Server ALOG File**.

Checking the Science Data Server ALOG File

During any operation involving the Science Data Server, useful information reflecting SDSRV activities is written to the following two log files:

- EcDsScienceDataServer.ALOG.
- EcDsScienceDataServerDebug.log.

Entries to the ALOG file should include the ShortName of the file data type. Timestamps, which appear throughout the logs files, should be checked to make sure any entries found for a ShortName correspond to the time of the attempted insertion. If the ShortName does not appear, the file insertion request was not communicated to SDSRV. This might be the case if the SDSRV subsystem is not running.

The procedure for checking the EcDsScienceDataServer.ALOG file starts with the assumption that the operator has logged in to the ECS system.

Checking the Science Data Server ALOG File

1 Log in to the SDSRV Server host (e.g., e0acs05, g0acs03, l0acs03, n0acs04) as described in Steps 1 through 5 of the procedure for **Launching Production Processing Applications** (previous section of this lesson).

2 Type **cd /usr/ecs/MODE/CUSTOM/logs** then press **Return/Enter**.

3 Type **view EcDsScienceDataServer.ALOG** then press **Return/Enter**.

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

4 Review the log file to determine whether the relevant file was successfully inserted.

- The EcDsScienceDataServer.ALOG file should contain entries identifying the file to be inserted by the ShortName of its ESDT.

- If the ShortName does **not** appear in the ALOG file, with a timestamp corresponding to the time of the attempted insert, SDSRV may not be running, or may not be communicating with other servers.
- If the ShortName does appear in the ALOG file, a message of the following type indicating that the metadata for the granule have been validated should be included in the ALOG file:
  End Metadata Validation. (Metadata is valid).
- If the metadata is **not** valid, the metadata validation section of the ALOG can be scanned to find what metadata errors have been identified by SDSRV.

5 Type **:q!** then press **Return/Enter** to quit the view application.

6 If the ShortName does **not** appear in the ALOG file, with a timestamp corresponding to the time of the attempted acquire, ensure (e.g., using ECS Assistant) that the necessary hosts and servers (listed in Table 10) are "up."

- If hosts/servers have gone down, notify the Operations Controller/System Administrator to have servers brought back up using HP OpenView.
- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problem has been corrected.

7 If the ALOG contains the ShortName and the metadata are valid go to the procedure for **Force-Starting a Job** (previous section of this lesson).

8 If the ALOG contains the ShortName but the metadata are **not** valid, consult with the SSI&T personnel to have the metadata problems corrected.

9 If hosts/servers are up, review the log file to determine whether there are any messages indicating DCE problems.

10 Notify the Operations Controller/System Administrator of suspected DCE problems.

- Go to the procedure for **Force-Starting a Job** (previous section of this lesson) after the problems have been corrected.

Checking Log Files

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

- DCE problems.
- Database problems.
- Lack of disk space.

The procedure for checking log files starts with the assumption that the operator has logged in to the ECS system and the Planning Subsystem host.

Checking Log Files

1 Access a terminal window logged in to the appropriate host.

2 Type **cd /usr/ecs/*MODE*/CUSTOM/logs** then press **Return/Enter**.

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

3 Type **pg *filename*** then press Return/Enter.

- ***filename*** refers to the data processing log file to be reviewed (e.g., EcDpPrJobMgmt.ALOG, EcDpPrDeletion.ALOG, *DPR#*.ALOG, *DPR#*.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**, **more**) can be used to review the log file.

4 Review the log file to identify problems that have occurred.

5 Respond to problems as follows:

- DCE problems.
  - Notify the Operations Controller/System Administrator of suspected DCE 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 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.

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Launching the QA Monitor

Launching the QA Monitor

Access to the QA Monitor must be gained through the use of UNIX commands. The process starts with the assumption that the applicable servers are running and the Production Monitor has logged in to the ECS system.

Launching the QA Monitor

NOTE: Commands in Steps 1 through 9 are typed at a UNIX system prompt.

1 At the UNIX command line prompt type **xhost *hostname*** then press the **Return/Enter** key on the keyboard.

- ***hostname*** refers to the host on which GUIs are to be launched during the current operating session. Multiple hostnames can be specified on the same line.
- The use of **xhost +** is discouraged because of a potential security problem.

2 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.

3 Open another UNIX (terminal) window.

4 Start the log-in to the Planning/Management Workstation by typing **/tools/bin/ssh *hostname*** (e.g., **e0pls03**, **g0pls01**, **l0pls02**, or **n0pls02**) 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 5.
- If you have not previously set up a secure shell passphrase; go to Step 6.

5 If a prompt to **Enter passphrase for RSA key '<*user@localhost*>'** appears, type your ***Passphrase*** then press the **Return/Enter** key.

- Go to Step 7.

6 At the **<*user@remotehost*>'s password:** prompt type your ***Password*** then press the **Return/Enter** key.

7 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.

8 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.

9 Type **EcDpPrQaMonitorGUIStart *MODE ApplicationID*** then press **Return/Enter** to launch the **QA Monitor** GUI.

- The **QA Monitor** GUI (Figure 41) is displayed.

Figure 41. Q/A Monitor GUI - QRU Data Tab

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Performing Science Product Quality Assurance

Science Product Quality Assurance

Science product quality assurance (QA) involves the use of the Q/A Monitor application. Science Computing Facility (SCF) personnel have the responsibility for performing QA of their products. The Production Monitor's role in QA is limited to updating the QA metadata. The procedure for updating QA metadata is performed in response to a request from SCF personnel to set the metadata flags on specified granule(s).

The procedure for updating QA metadata starts with the assumption that all applicable servers are currently running and the **Q/A Monitor** GUI **QRU data** tab (Figure 41) (QRU = Query, Retrieve and Update) is being displayed.

Updating Quality Assurance (QA) Metadata

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 is 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 (Figure 61) 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 is to be updated.

- The selected parameter is highlighted.

7 Click on the **OK** button.

- The **Update Meta Data** window (Figure 62) is displayed.

8 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 **Operator QA Flag** option button.
- The following options are available:
  - **Passed.**
  - **Failed.**
  - **Being Investigated.**
  - **Not Being Investigated.**

9 Type an explanation of the QA flag selection in the **Explanation** field.

10 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.

11 Type an explanation of the QA flag selection in the **Explanation** field.

NOTE: The **Auto Quality Flag** option button should not be accessible.

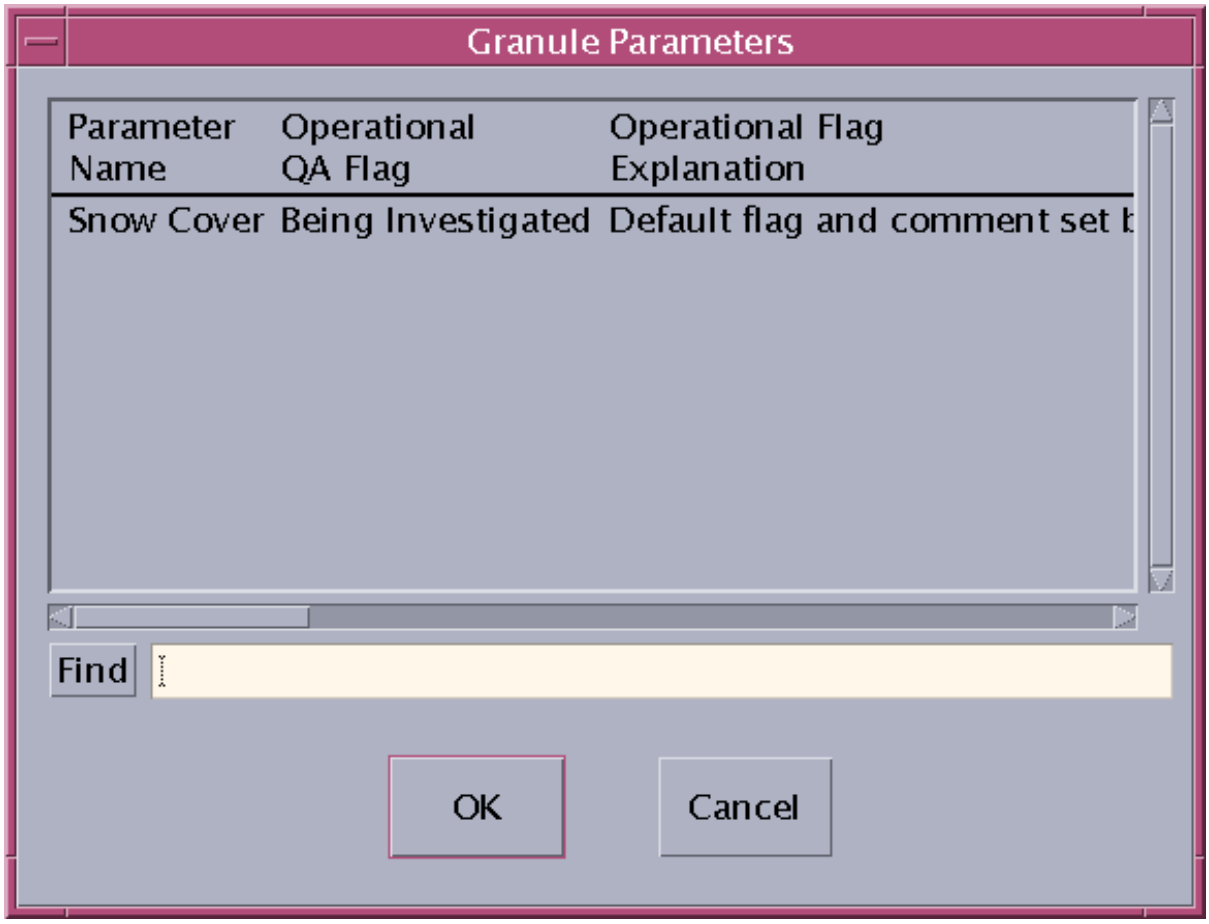

Figure 61. QA Monitor Granule Parameters Window•

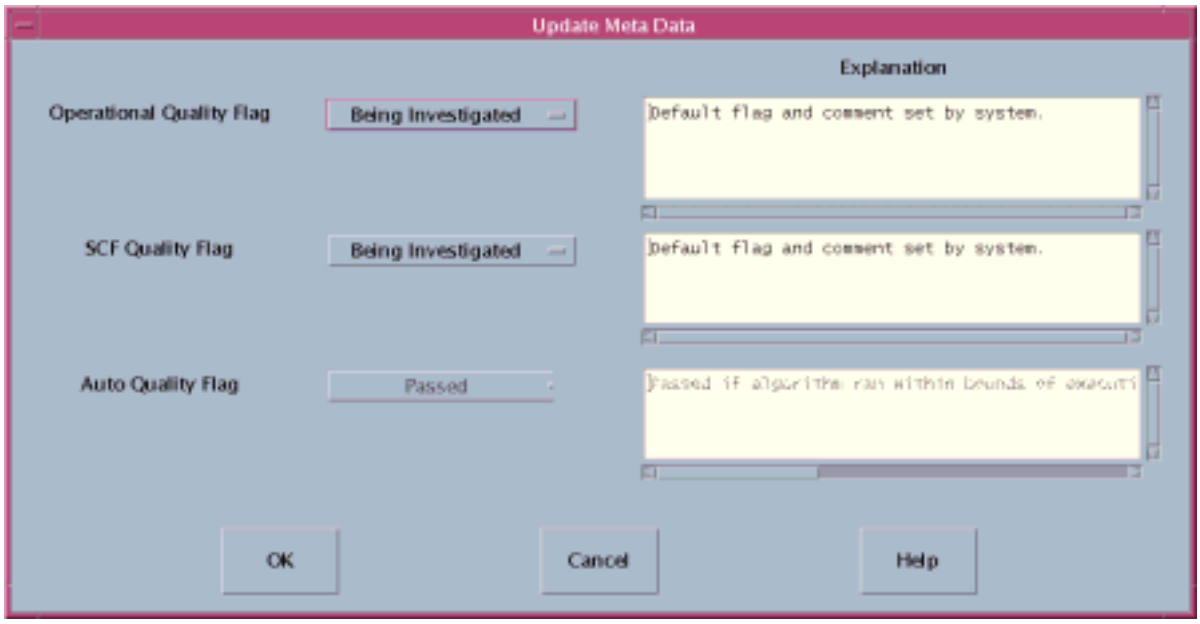

Figure 62. QA Monitor Update Meta Data Window

12 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 (Figure 61) is displayed.

13 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 12 as necessary to revise the QA metadata for the granule parameter.

14 Repeat Steps 6 through 13 to update the QA metadata for any additional granule parameters.

15 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

Regenerating Granules•

Regenerating Granules in Response to Loss of Files from the Archive

The reason for regenerating granules is to produce replacements for previously generated granules that have been lost or corrupted due to failure in the ECS archive. The overall process involves the following general operations:

- Retrieval of the Production History files (PH) for lost granules to determine parameters for the generation of replacement granules.
- Creating Production Requests for the generation of replacement granules.
- Creating and activating a Production Plan that includes the Production Requests for the generation of replacement granules.
- Preparing (if applicable) a "PDPS Residual Granules List," which identifies granules that either cannot or should not be regenerated at the DAAC.
  - — Some granules do need not be reproduced; e.g., if there is a more recent version of the product available.

The regeneration process is initiated when the Production Planner receives a list of "Granules for PDPS Re-Generation." The list contains information about the granules to be regenerated and Universal References (URs) for the associated Production History tar files. The list is the product of a Science Data Server (SDSRV) procedure concerning SDSRV Retrieval of Granule Production History Metadata.

The following considerations apply to the regeneration of granules in response to the loss of files from the archive:

- When regenerating lost granules, all outputs of the PGE [not just those equivalent to the lost granule(s)] are to be produced and archived.
- There is no guarantee that when a PGE is re-run it will use the same inputs as were used during the original execution of the PGE; consequently, the output may be different from the original granule(s).
  - — The variability of: Optional/Alternate inputs, Ad Hoc Reprocessing, Metadata Checks, Metadata Query and other production rules affects PGE output.
  - — It is possible that at the time of the original run of the PGE, certain optional/alternate inputs were not available, which became available later. During the re-run of the PGE use of those additional or other optional inputs cannot be avoided. However, it can be assumed that an equivalent or better product than the original will be produced as a result.
- PDPS maintains a minimal amount of granule-level versioning. By design, only the latest version of the granule is used.
  - — If the PGE to be re-run uses inputs that have more than one granule-level version, PDPS uses only the latest version of those inputs.
  - — However, if references to those granules have been deleted from the PDPS database (a delete script, which runs periodically, cleans up unused database

entries), PDPS chooses the first one returned from SDSRV. SDSRV does not guarantee any sort of ordering in this case but PDPS selects the latest granule from those returned.

- At Production Request time, the default values for metadata checks can be overridden. The new values used are stored in the PDPS database but not in the Production History. If at the time a PGE is re-run the references to the PGE have been deleted from PDPS database, the default metadata checks are used.
  - It is possible that default metadata check values would cause the DPR not to be run; e.g., if the metadata checks are more restrictive than those used in the original run.
  - If changes to metadata checks were required in order to get DPRs to run originally, it is assumed that the values were saved as part of the PGE profile.
- For reasons of production timing or updated QA values, during regeneration a PGE subject to a metadata query could have input which is different from that used in the original processing.
  - The assumption is that regeneration will result in a better product.
- Other production rules (e.g., tiling) could make it impossible to reproduce identical granules.
- If a PGE (PGE name, version and profile) has to support lost granule regeneration, the PGE should not be deleted from the PDPS database.
  - In the SSIT **Operational Metadata** GUI, the delete flag for the PGE should not be checked.

The procedure for regenerating granules in response to loss of files from the archive starts with the assumption that all applicable production planning servers and data server servers are running.

Regenerating Granules in Response to Loss of Files from the Archive

1 Determine which granules in the **Granules for PDPS Re-Generation** list should be regenerated (and which granules do not need to be reproduced).

2 Add granules that either cannot or do not need to be reproduced to the **PDPS Residual Granules** list.

3 Retrieve (using the **QA Monitor GUI**) the Production History tar file from the archive for each granule in the **Granules for PDPS Re-Generation** list that needs to be reproduced.

- Use the lost granule's datatype, and begin date and end date values that encompass its RangeBeginningDateTime and RangeEndingDateTime.
- **QA Monitor** interprets dates in UTC format.
- For each granule that meets the query conditions and is displayed on the **QA Monitor GUI**, the granule's UR, its Production History tar file's UR, and the name of the Production History tar file are shown. For only one of the granules will the URs (both the granule UR and the Production History UR) match the URs for this granule in the input list.
- 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 $ECS_HOME/<MODE>/CUSTOM/data/DPS.

- If more than one granule in the input list maps to the same Production History tar file, the Production History tar file need not be retrieved multiple times.

4 Extract information needed to re-run the PGE from the Process Control File (PCF) in the PH.

- Information to be extracted from the PCF:
  - — PGE Name.
  - — PGE Version.
  - — PGE Profile ID.
  - — DPR Start time.
  - — DPR Stop time.
  - — PGE runtime parameters and their associated values.
- Identification of information in the PCF:
  - — The PGE Name, PGE Version, and the PGE Profile appear in the System Runtime Parameters section of the PCF. They are concatenated (with a # sign to separate them) and appear in the place reserved for "Software ID".
  - — DPR Start time appears in the User Defined Parameter Section of the PCF under the logical ID 10258.
  - — DPR Stop time also appears in the User Defined Parameter Section of the PCF under logical ID 10259.
  - — All other logical IDs in the User Defined Parameter Section of the PCF form the run time parameters and their associated values. Note the logical ID and its corresponding values.

5 If the Query failed or did not return any hit that matched, add the granule to the **PDPS Residual Granules** list.

6 If the PGE name (including version and profile) that is extracted from the PCF does not appear as an Existing/New PGE, add the granule to the **PDPS Residual Granules** list.

7 From the SSIT host, launch the **SSIT Manager** GUI and invoke the **PDPS Operational Metadata** GUI.

8 Invoke the **PDPS Operational Metadata** GUI.

9 If the PGE is not registered, register the PGE using the **PDPS Science Update Metadata Update** from the **SSIT Manager** GUI.

- The PGE must be registered before a PR can be entered.

10 If it is decided not to re-register the PGE, add the granule to the **PDPS Residual Granules** list.

11 Launch the **Production Request Editor** GUI.

12 Create a Production Request for the relevant PGE/version/profile ID.

- Use **Ad-Hoc Reprocessing** for the **Processing Type**.
- Use the DPR Start and Stop Time listed in the Production History for the **Begin** and **End** times.
- Compare the default PGE runtime parameters with the runtime parameters obtained from the Production History tar file.

— Modify the runtime parameter values to match exactly what was used in the original run.

- If granules to be regenerated are produced by PGEs that are chained, the PRs must be entered in the proper order.
  — For instance, if granules A and B are to regenerated, and PGEs P1 & P2 produce them and if P1 & P2 are chained (P2 takes P1's outputs as its inputs), then the production request for P1 must be entered before entering one for P2.

13 Launch the **Planning Workbench**.

14 Create and activate a production plan that includes the newly created Production Request(s).

15 Send the **PDPS Residual Granules** list to the originator of the **Granules for PDPS Re-Generation** list.

Practical Exercise

Introduction

This exercise is designed to give the students practice in production planning and processing activities.

Equipment and Materials

One ECS workstation per student.

Statement of the requirements for the exercise.

Version 2.0 Operations Tools Manual for the ECS Project, 609-CD-003-002, one copy per student.

Mission Operation Procedures for the ECS Project, 611-CD-004-003, one copy per student.

Launching the Production Request Editor

The exercise involves launching the production request editor using UNIX commands. The exercise begins with a student acting in the role of Production Planner recognizing the need to launch the production request editor. The student launches the production request editor as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Log-in to the Planning Subsystem host.
3. Set the necessary environmental variables.
4. Start the Production Request Editor GUI in the appropriate mode.

Creating a New Production Request

The exercise involves the preparation of a new production request. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for creating a new production request. The student prepares a new production request that is consistent with the requirements.

Perform the following steps:

1. Access the Production Request Editor.
2. Prepare a new production request that is consistent with the written or stated requirements.
3. Save the new production request.

Editing/Modifying a Production Request

The exercise requires the editing of a production request. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for editing an existing production request. The student modifies the production request consistent with the requirements.

Perform the following steps:

1. Access the Production Request Editor.
2. Select the Production Request to be modified.
3. Make production request modifications consistent with the written or stated requirements.
4. Save the modified production request.

Deleting a Production Request

The exercise involves deleting a production request. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for deleting an existing production request. The student deletes the production request as specified in the requirements.

Perform the following steps:

1. Select the DPR List tab on the Production Request Editor GUI.
2. Select the production request to be deleted from those listed.
3. Delete the production request.

Reviewing Data Processing Requests

The exercise involves reviewing data processing requests. The exercise begins with a student acting in the role of Production Planner being directed to review specific data processing requests to determine specified characteristics. The student reviews the data processing requests consistent with the requirements.

Perform the following steps:

1. Select the DPR List tab on the Production Request Editor GUI.
2. Select a Production Request from the list on the option button.
3. Select a DPR from the list displayed.
4. Open the DPR.
5. Respond to questions concerning the characteristics of the DPR without error.

Deleting a Data Processing Request

The exercise involves deleting a data processing request. The exercise begins with a student acting in the role of Production Planner being directed to delete a specific data processing request. The student deletes the data processing request as specified in the requirements

Perform the following steps:

1. Select the DPR List tab on the Production Request Editor GUI.
2. Select the appropriate Production Request from the list on the option button.

3. Select the DPR to be deleted from the list displayed.
4. Delete the DPR.

Submitting or Withdrawing a Subscription

The exercise involves submitting or withdrawing a subscription using the Subscription Editor. The exercise begins with a student acting in the role of Production Planner being directed to submit or withdraw a subscription using the Subscription Editor. The student submits or withdraws the subscription as specified in the requirements.

Perform the following steps:

1. Log in to the Planning/Management Workstation.
2. Launch the Subscription Editor.
3. Respond to prompts to submit or withdraw the specified subscription.

Launching Planning Workbench-Related GUIs

The exercise involves launching planning workbench-related GUIs using UNIX commands. The exercise begins with a student acting in the role of Production Planner recognizing the need to launch planning workbench-related GUIs. The student launches planning workbench-related GUIs as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Log-in to the Planning Subsystem host.
3. Set the necessary environmental variables.
4. Start the Planning Workbench GUI in the appropriate mode.
5. Start the Production Strategies GUI in the appropriate mode.

Defining a Production Strategy

The exercise involves the preparation of a production strategy. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for creating a production strategy. The student prepares a production strategy that is consistent with the requirements.

Perform the following steps:

1. Select priorities for the values for PR Type, User Type, and PGE Type.
2. Type weights for the preceding three DPR attributes (as needed).
3. Type a weight in the User Selected field.
4. Click on the Normalize button.
5. Type delta priority for Inter-DAAC Delta (if needed).
6. Type delta priority for Late Start Delta (if needed).
7. Save the Production Strategy.

Creating a New Production Plan

The exercise involves the preparation of a new production plan. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for creating a new production plan. The student prepares a new production plan that is consistent with the requirements.

Perform the following steps:

1. Access the Planning Workbench.
2. Prepare a new production plan that is consistent with the written or stated requirements.
3. Save the new production plan.
4. Activate the plan (if specified in the requirements).

Reviewing a Plan Timeline

The exercise involves reviewing a production plan timeline. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for reviewing a production plan timeline. The student reviews the specified production plan timeline and responds to questions concerning timeline characteristics.

Perform the following steps:

1. Access the specified production planning timeline.
2. Review the specified production planning timeline.
3. Respond to questions concerning the production planning timeline without error.

Troubleshooting Production Planning Problems

The exercise involves troubleshooting production planning problems. The exercise begins with a student acting in the role of Production Planner recognizing the need to troubleshoot production planning problems. The student troubleshoots production planning problems as specified in the requirements.

Perform the following steps:

1. Review the trouble symptoms.
2. Check the status of relevant hosts/servers as necessary.
3. Check log files as necessary.
4. Take action to correct the problem(s).

Launching Production Processing Applications

The exercise involves launching production processing applications using UNIX commands. The exercise begins with a student acting in the role of Production Monitor recognizing the need to launch production processing applications. The student launches production processing applications as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Log-in to the Data Processing Subsystem host.

3. Set the necessary environmental variables.
4. Source the appropriate file.
5. Start the appropriate instance of AutoSys.

Configuring AutoSys Runtime Options

The exercise involves the configuration of AutoSys runtime options. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/ requirements for configuring AutoSys runtime options. The student configures AutoSys consistent with the requirements.

Perform the following steps:

1. Launch AutoSys.
2. Access the AutoSys functions specified in the written or stated requirements.
3. Select the AutoSys runtime options specified in the written or stated requirements.
4. Apply the AutoSys runtime options specified in the written or stated requirements.

Reviewing Hardware Status and Changing Hardware Status Views

The exercise involves reviewing hardware status (including changing hardware status views) using AutoSys. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for reviewing hardware status using AutoSys. The student reviews hardware status using AutoSys as specified in the requirements.

Perform the following steps:

1. Access HostScape.
2. Review hardware status as specified in the written or stated requirements.
3. Change hardware status views as specified in the written or stated requirements.
4. Exit from HostScape.

Reviewing DPR Dependencies

The exercise involves reviewing DPR dependencies. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for reviewing DPR dependencies. The student reviews DPR dependencies as specified in the requirements.

Perform the following steps:

1. Access JobScape.
2. Review DPR dependencies as specified in the written or stated requirements.
3. Exit from JobScape.

Reviewing the DPR Production Timeline

The exercise involves reviewing the DPR production timeline. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/ requirements for reviewing the DPR production timeline. The student reviews the DPR production timeline as specified in the requirements.

Perform the following steps:

1. Access TimeScape.
2. Review the DPR production timeline as specified in the written or stated requirements.
3. Exit from TimeScape.

Reviewing Alarms and Configuring Alarm Selection

The exercise involves reviewing and configuring AutoSys alarms. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/ requirements for reviewing and configuring AutoSys alarms. The student reviews and configures AutoSys alarms as specified in the requirements.

Perform the following steps:

1. Access the Alarm Manager through the Ops Console.
2. Review and configure alarms as specified in the written or stated requirements.
3. Exit from the AutoSys Alarm Manager.

Specifying Job Selection Criteria and Reviewing Job Activities

The exercise involves specifying job selection criteria and reviewing job activities using AutoSys. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for specifying job selection criteria and reviewing job activities using AutoSys. The student specifies job selection criteria and reviews job activities using AutoSys as specified in the requirements.

Perform the following steps:

1. Access the AutoSys Job Activity Console.
2. Specify job selection criteria as specified in the written or stated requirements.
3. Review job activities as specified in the written or stated requirements.
4. Exit from the AutoSys Job Activity Console.

Modifying Job Priority

The exercise involves modifying job priority using AutoSys. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for modifying job priority using AutoSys. The student modifies job priority using AutoSys as specified in the requirements.

Perform the following steps:

1. Access the AutoSys Job Definition Advanced Features GUI.
2. Modify the job Que Priority as specified in the written or stated requirements.
3. Exit from the AutoSys Job Definition Advanced Features GUI and the Job Definition GUI.

Modifying Job Status

The exercise involves modifying job status using AutoSys. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for modifying job status using AutoSys. The student modifies job status using AutoSys as specified in the requirements.

Perform the following steps:

1. Access the AutoSys Send Event GUI through the Ops Console and the Job Activity Console.
2. Modify the job status as specified in the written or stated requirements.
3. Exit from the AutoSys Send Event GUI.

Reviewing Activity Logs and Job Dependency Logs

The exercise involves reviewing activity logs and job dependency logs. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/ requirements for reviewing activity logs and job dependency logs. The student reviews an activity log and a job dependency log as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Type the appropriate command for an activity log as specified in the requirements.
3. Review the activity log.
4. Type the appropriate command for a job dependency log as specified in the requirements.
5. Review the job dependency log.

Defining and Running Monitors/Browsers

The exercise involves defining and running monitors/browsers. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for defining and running monitors/browsers. The student defines and runs monitors/browsers as specified in the requirements.

Perform the following steps:

1. Access the Monitor/Browser GUI.
2. Define monitors/browsers as specified in the requirements.

3. Save the monitors/browsers.
4. Run the monitors/browsers.

Reviewing the Database Maintenance Time

The exercise involves reviewing the database maintenance time. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/ requirements for reviewing the database maintenance time. The student reviews the database maintenance time as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Access the AutoSys configuration file.
3. Review the database maintenance time.

Troubleshooting Processing Problems

The exercise involves troubleshooting production processing problems. The exercise begins with a student acting in the role of Production Monitor recognizing the need to troubleshoot production processing problems. The student troubleshoots production processing problems as specified in the requirements.

Perform the following steps:

1. Review the trouble symptoms.
2. Check the status of relevant hosts/servers as necessary.
3. Check log files as necessary.
4. Take action to correct the problem(s).

Launching the QA Monitor GUI

The exercise involves launching the QA Monitor GUI using UNIX commands. The exercise begins with a student acting in the role of Production Monitor recognizing the need to launch the QA Monitor. The student launches the QA Monitor as specified in the requirements.

Perform the following steps:

1. Access the command shell.
2. Log-in to the Data Processing Subsystem host.
3. Set the necessary environmental variables.
4. Start the QA Monitor GUI in the appropriate mode.

Updating Quality Assurance (QA) Metadata

The exercise involves updating the QA metadata of a science product granule at the request of Science Computing Facility (SCF) personnel. The exercise begins with a student acting in the role of Production Monitor receiving the necessary information/requirements for performing a science product QA metadata update. The student performs science product QA metadata update as specified in the requirements.

Perform the following steps:

1. Set up and query the database using the QA Monitor GUI.
2. Select the granule with QA metadata to be updated.
3. Set the operational and SCF quality flags to the appropriate value (as specified in the requirements).
4. Verify that the flags have actually been set in the database.

Regenerating Granules in Response to Loss of Files from the Archive

The exercise involves regenerating granules in response to a loss of files from the archive. The exercise begins with a student acting in the role of Production Planner receiving the necessary information/requirements for regenerating granules. The student determines which granules to regenerate, creates the necessary Production Request(s), and creates and activates a Production Plan as specified in the requirements.

Perform the following steps:

1. Retrieve the Production History files (PH) for lost granules.
2. Create Production Requests for the generation of replacement granules.
3. Create and activate a Production Plan that includes the Production Requests for the generation of replacement granules.
4. Prepare (if applicable) a “PDPS Residual Granules List.”

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Slide Presentation

Slide Presentation Description

The following slide presentation represents the slides used by the instructor during the conduct of this lesson.

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