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EOSDIS Core System Project

Interim Release One (Ir1) Maintenance and Operations Procedures

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Hughes Applied Information Systems
Landover, Maryland

Interim Release One (Ir1) Maintenance and Operations Procedures

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SUBMITTED BY

	12/15/95
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Preface

This document is a formal contract deliverable with an approval code 1. It requires Government review and approval prior to acceptance and use. Changes to this document shall be made by document change notice (DCN) or by complete revision.

This document is under the control of the ECS Configuration Control Board (CCB).

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Abstract

This document specifies the maintainence and operations procedures for Interim Release 1 (Ir1) of the ECS Project.

Keywords: Maintenance, Operations, Maintenance and Operations Procedures, Ir1

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1. Introduction

1.1 Identification

The Interim Release One (Ir1) Maintenance and Operations Procedures, Contract Data Requirements List (CDRL) item 116, whose requirements are specified in Data Item Description (DID) 609/OP1, is a required deliverable under contract NAS5-60000.

1.2 Purpose

This document describes the purpose and functions of Interim Release One of ECS (Ir1) and its components from an operations standpoint. This document provides background information that is the basis for the *Interim Release One (Ir1) Operator's Manual for the ECS Project* (DID 611/OP3). This document is intended to provide an operations overview that (1) supports the development of detailed science software integration and test procedures by the ECS Science Office, (2) supports TRMM interface testing, and (3) supports the use of the system by ECS maintenance and operations (M&O) staff.

1.3 Scope

This document applies to Ir1, and not to any subsequent releases of ECS. It is intended for use by ECS M&O staff and the ECS Science Office during the period in which Ir1 is used.

1.4 Status and Schedule

This submittal of DID 609/OP1 meets the milestone specified in the Contract Data Requirements List (CDRL) of NASA contract NAS5-60000.

This document reflects the August 21, 1995 Technical Baseline submitted via contract correspondence No. ECS 194-00343.

1.5 Organization

The document is organized to describe the maintenance and operations procedures for Ir1.

Section 1.0 provides information regarding the identification, scope, purpose, status, and organization of this document.

Section 2.0 provides a listing of related documents, which were used as source information for this document. The section also identifies the documentation provided for each Ir1 hardware and software component

Section 3.0 describes the physical components and organization of Ir1, and provides a context for understanding the maintenance and operations procedures described in subsequent sections.

Section 4.0 describes the purpose and operation of the test tools used to support TRMM interface testing.

Section 5.0 describes the purpose and operation of Ir1 capabilities associated with the integration and test of science software.

Section 6.0 describes the purpose and operation of the tools provided as part of the Ir1 infrastructure.

Appendix A describes Ir1 system status and error messages.

The Glossary section contains a glossary of terms used in this document.

The Abbreviations and Acronyms section contains an alphabetical list of the abbreviations and acronyms used in this document.

2. Related Documentation

2.1 Parent Document

The parent documents are the documents from which the scope and content of this Interim Release One (Ir1) Maintenance and Operations Procedures are derived.

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)

2.2 Applicable Documents

The following documents are referenced within this Interim Release One (Ir1) Maintenance and Operations Procedures, or are directly applicable, or contain policies or other directive matters that are binding upon the content of this volume.

194-207-SE1-001	System Design Specification for the ECS Project
209-CD-007-003	Interface Control Document Between EOSDIS Core System (ECS) and TRMM Science Data and Information System (TSDIS)
304-CD-003-002	Communications and System Management Segment (CSMS) Requirements Specification for the ECS Project
304-CD-004-003	Flight Operations Segment (FOS) Requirements Specification for the ECS Project, Volume 2: AM-1 Mission Specific
611-CD-001-001	Interim Release One (Ir1) Operator's Manual for the ECS Project
222-WP-001-002	Mission Statement for Interim Release One for the ECS Project
423-16-02	Goddard Space Flight Center, PGS Toolkit Requirements Specification for the ECS Project
560-203.103	Goddard Space Flight Center, Interface Control Document Between the Sensor Data Processing Facility (SDPF) and the Tropical Rainfall Measuring System (TRMM) Consumers

2.3 Information Documents

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 Interim Release One (Ir1) Maintenance and Operations Procedures.

Planning and Data Processing System Prototype

AutoSys User's Manual

ClearCase

ClearCase User's Manual

ClearCase Reference Manual

ClearCase Administrator's Manual

SPARCworks

SPARCworks Browsing Source Code

SPARCworks Building Programs with MakeTool 3.0.1

SPARCworks Debugging a Program 3.0.1

SPARCworks Merging Source Files 3.0.1

SPARCworks Managing The Toolset 3.0.1

SPARCworks Tutorial 3.0.1

SPARCworks Performance Tuning an Application 3.0.1

Database Administration

SA Companion User's Guide (Sybase)

System Administration Guide (Sybase)

Distributed Computing Environment

Introduction to OSF DCE

OSF DCE Administration Guide - Introduction

OSF DCE Administration Guide - Core Components

OSF DCE Administration Guide - Extended Services

OSF DCE Administration Reference

OSF DCE User's Guide and Reference

System Performance Management

HP OpenView Network Node Manager User's Guide

HP OpenView Network Node Manager Administrator's Reference

HP OpenView SNMP Agent Administrator's Reference

Bulletin Board Service

xvnews Man Pages

ctlinnd Man Pages

Office Automation

Microsoft Windows User’s Guide

Microsoft Excel User’s Guide

Microsoft Word User’s Guide

Microsoft PowerPoint User’s Guide

Microsoft Mail User’s Guide

Mail Systems

IRIX Advanced Site and Server Administration Guide

Mail Systems: User's Guide (HP 9000 Computers)

HP-UX Reference, Volume 1

IRIX Insight (on-line documentation)

Solaris AnswerBook (on-line documentation)

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3. Overview of Ir1

3.1 Ir1 Functional Overview

The ECS Interim Release One (Ir1) is deployed at three of the ECS Distributed Active Archive Centers (DAACs) - the Goddard Space Flight Center (GSFC), the EROS Data Center (EDC), and the Langley Research Center. In addition, Ir1 is deployed at the ECS Development Facility (EDF). The purpose of this section is to provide a brief description of the major functions of Ir1 in order to provide a context for understanding the operations tools described in subsequent sections.

3.1.1 Science Software Integration and Test

Ir1 provides an environment to support early integration and testing of science software. It also provides a user interface that has the "look and feel" of the Release A SSI&T environment. The following tools are provided to support the SSI&T capabilities:

a. SCF and DAAC versions of SDP Toolkit

b. Compilers: C, C++, FORTRAN 77 and 90, ADA (LaRC only)

c. File comparison utilities

d. Static and dynamic code checkers for standards compliance

e. Profiling Tools for resource monitoring

f. Product visualization/graphics Tool

g. Document viewing tools

h. Math, graphics, and statistics libraries

i. Software configuration management tool

Ir1 also provides a prototype Planning and Data Processing subsystem. The prototype provides basic capabilities for managing science data processing tasks. The prototype supports the manual generation of processing plans and manual process initiation and control. It also supports process execution profiling and diagnostic reports on Sun and SGI processors (note: the Sun is a 32-bit processor, while the SGI can operate in either a 32-bit or 64-bit mode). Ir1 provides a prototype scheduling capability that is based on the Release A COTS scheduler. The scheduler enables the execution of multiple PGEs in sequence, using pre-staged test data.

M&O issues associated with Science Software Integration and Test are addressed in Section 5.

3.1.2 TRMM Data Ingest Interface

Ir1 provides capabilities for supporting TRMM ingest interface testing. The system supports the testing of the automated network ingest interface with SDPF and TSDIS. This testing includes the exchange of security authentication messages, the verification of message protocols, and the verification of the ingest file transfer capability. Ir1 also supports the testing of the polling ancillary data ingest interface with NESDIS and DAO. M&O issues associated with the TRMM Data Ingest Interface are addressed in Section 4.3.

3.1.3 TRMM Data Retrieval Interface

Ir1 provides the capability to support the testing of the Data Server interface with TSDIS. This testing includes the exchange of security authentication messages, the verification of message protocols, and the verification of the capability to transfer files from the Data Server subsystem to TSDIS. The TRMM Data Server Interface is part of the Communications Gateway. M&O issues associated with the TRMM Data Retrieval Interface are addressed in Section 4.2.

3.1.4 Communications Gateway

In order to support the evolvability of ECS, Ingest and Data Server interfaces are designed to communicate with external clients using communication services provided by the Open Systems Foundation (OSF) Distributed Computing Environment (DCE). Currently, TRMM and SDPF use protocols that are based on UNIX sockets, not DCE. Ir1 provides a communications gateway which allows these external clients to interface with Ir1 using UNIX socket calls. M&O issues associated with the Communications Gateway are addressed in Section 4.2.

3.1.5 ECS Infrastructure

Ir1 provides an early implementation of communication and system management services in order to support evaluation and validation of the ECS communications and management infrastructure. The infrastructure consists of the following:

a. Basic naming and directory, time, thread and security services based on the OSF Distributed Computing Environment (DCE)

b. File transfer capability, email, bulletin board, event log, virtual terminal (telnet and X)

c. EDF-based framework for system management and DAAC performance monitoring

d. Site-based COTS, SNMP agents for hosts, and (as provided by Version 0) network components.

e. DCE account management, UNIX host-level account management, and (as provided by Version 0 networks) router-based security (address table management).

f. Site-based office automation tools

g. Configuration management tools for science software (at the DAACs) and development software at the EDF.

M&O issues associated with DCE are discussed in Section 6.1; system performance management is discussed in Section 6.2; office automation tools are discussed in Section 6.4; configuration management is discussed in Section 5.4.

3.2 DAAC System Overview

This section describes the major hardware components of Ir1 at the DAACs. The configurations and capabilities of Ir1 at the three DAACs are similar, with exceptions as noted below.

3.2.1 Ingest Server

The Ingest Server is an SGI Indigo2 computer which is used to support ingest interface testing. This computer hosts the ingest interface software. The Ingest Server is provided at the GSFC, and LaRC DAACs but not at the EDC DAAC.

3.2.2 Science Processor

The science processor hosts the Ir1 prototype Planning and Data Processing capability (See Section 5.1). It serves as a platform for integrating (checking, compiling, linking) and dynamically testing the Science Software developed by EOS instrument teams. In addition, this machine hosts the mail gateway for the Ir1 mail system. An SGI Power Challenge XL serves as the science processor at the GSFC, LaRC, and EDC DAACs.

3.2.3 SSI&T Workstations

Two SUN Sparc 20/50 workstations function as SSI&T workstations. In that capacity they serve as adjuncts to the Science Processor for the purpose of supporting more static processes associated with the integration and test of science software. One of the workstations has upgraded hardware capabilities and serves as a host for the Planning and Data Processing scheduler and for the Planning and Data Processing PGE database.

3.2.4 Database Server

The Database Server is the upgraded SSI&T workstation. The Database Server hosts two Sybase databases. One database is used by the Planning and Data Processing scheduler; the other database is the Planning and Data Processing PGE database.

At the EDC DAAC, the Database Server hosts the ASTER database, which is also implemented with the Sybase .

3.2.5 MSS Server

The MSS Server is a SUN Sparc 20/50 workstation and has four primary functions:

1. It hosts a Sybase database used to support the Ir1 Event Log (Section 6.7).
2. It provides configuration management support for science software at the DAAC (Section 5.4.1).
3. It hosts the Communications Gateway and Data Server interface (Section 4.2)
4. It supports the M&O activities of the operations staff. This platform provides the user interface for system management and DAAC performance monitoring capabilities (Section

6.2). In addition, the MSS Server provides Office Automation tools (Section 6.4), and access to Ir1 capabilities for reporting software discrepancies (Section 6.5).

At the GSFC DAAC, the MSS Server has a fifth function. It runs DCE Security and Directory server processes in "slave" mode. These processes are a backup to critical processes that run on the CSS Server at the EDF.

3.2.6 Printers

Ir1 provides two laser printers at each DAAC to support system operations, report generation, and the use of the office automation tools.

3.2.7 Network

Ir1 uses the existing Version 0 LAN infrastructure to support local networking at the GSFC and LaRC DAACs. Ir1 is connected to the Version 0 LAN at EDC via an Ethernet hub provided by Ir1.

3.3 EDF System Overview

This section describes the major components of Ir1 at the EDF, and describes the organization of those components. The EDF contains all of the Ir1 software and equipment found at any one of the DAACs. In addition, the EDF hosts Ir1 capabilities and supporting equipment which support the DAACs but are unique to the EDF. These capabilities include system monitoring, bulletin board services, and support for ECS software discrepancy reporting.

3.3.1 MSS Server

The EDF MSS Server is an HP 755 computer. The primary function of this computer is to run OpenView and thereby provide system status and performance monitoring capabilities for each of the Ir1 sites. The MSS Server also hosts the Communications Gateway and Data Server interface software.

3.3.2 CSS Server

The EDF CSS Server is an HP 755 computer. The primary function of this computer is to host the DCE Security, Directory, and Time server processes. The DCE Security and Directory server processes are necessary for the operation of DCE at all Ir1 sites, but normally run at the EDF, only. The GSFC DAAC provides the capability to run backup Security and Directory server processes in the event that the EDF CSS Server fails.

3.3.3 Bulletin Board Server

The EDF "newsroom" Bulletin Board Server hosts communications software required to support the Ir1 Bulletin Board Service. The software receives and scans news from external news providers and transmits news to external users. It hosts the Ir1 newsgroups. The Bulletin Board Server hosts other non-Ir1 ECS news services. Section 6.3 describes the Ir1 Bulletin Board Service in detail.

3.3.4 Printers

Ir1 provides a laser printer at the EDF to support operations.

3.3.5 Network

Ir1 uses the EDF production segment LAN and shares it with other non-Ir1 ECS operations. The EDF is connected to the Version 0 Wide Area Network. Ir1 uses the Version 0 WAN to communicate with the EDC, GSFC, and LaRC DAACs.

4. Interface Test Tools

4.1 Introduction

Ir1 provides test tools to support the testing of the interfaces between ECS and TRMM, including the ingest interfaces with SDPF and TSDIS, the ingest interfaces with NESDIS and DAO, and the data retrieval (Data Server) interface with TSDIS. In Ir1, the test tools are designed to test interface protocols only, and therefore do not employ a data storage archive. Data ingested via the ingest interface is not retrievable via the Data Server interface, nor is it provided to other Ir1 subsystems for further processing (e.g. SSI&T).

ECS internal tests are conducted with simulators to verify compliance with the ICDs and to identify unexpected problems in the interface design. External tests of the interfaces are conducted with live systems by EOSDIS Ground System I&T. Interface tests are conducted at the GSFC, and LaRC DAACs. Ir1 does not support interface testing at the EDC DAAC.

The interface test tools have two major components, the Communications Gateway Process and the Ingest Interface.

4.2 Communications Gateway Process

4.2.1 Overview

The Communications Gateway Process runs on the MSS Server at the LaRC and GSFC DAACs. This process provides the software interface between external entities and the Ingest and Data Server interfaces. The Ir1 Data Server interface is imbedded within the Communications Gateway Process.

4.2.1.1 Socket Interface with External Clients

In order to support the evolvability of ECS, the Ingest and Data Server interfaces are designed to communicate with external entities using communications services provided by DCE. TSDIS and SDPF use protocols based on UNIX sockets, not DCE. The Communications Gateway translates between UNIX sockets and DCE services enabling external entities to communicate with the Ingest and Data Server interfaces.

The Communications Gateway Process is started automatically when the MSS Server is started, and runs continuously. Once the process authenticates an initial request from an external client, the process creates a copy of itself that is dedicated to the interface with that particular client. This copy is called a Gateway Proxy process. The Gateway Proxy terminates processing once the session with the client has completed.

4.2.1.2 Data Server Interface

One of the main functions of the Communications Gateway Process is the Data Server Interface. The Data Server Interface is integrated with the Communications Gateway Process and is provided in order to support early interface testing with TSDIS. The Data Server Interface requires no configuration by the M&O staff during testing. The interface accepts requests for data from TSDIS and sends the identity (file name) of the requested data to TSDIS, if the data is available. In the event that the requested data is not available, the interface sends appropriate notifications to TSDIS. Data requested by TSDIS resides in a directory, called the "ftp pull area"; no "archive" is provided by Ir1. When TSDIS is notified that the data is available, the name of the corresponding file is sent to TSDIS. TSDIS then receives the file using ftp.

4.2.2 Inputs/Controls

The operation of the Communication Gateway Process is controlled by a single command line argument. The syntax of the startup command is

`Gateway` *`port`*

where

`port` is the port number used for the external socket interface. The port number must be identical for all external systems (i.e TSDIS and SDPF) that communicate with the Ingest and Data Server interfaces via the Communications Gateway.

4.2.3 Databases/Files

The Data Server Interface processes data retrieval requests from external users and generates appropriate responses. When the Data Server Interface processes a valid data request, it sends the requesting entity the identify of a disk file which corresponds to the requested (test) data. The disk file resides in a directory known as the "ftp pull area".

4.2.4 Displays

Not applicable.

4.2.5 Outputs/Reports

Not applicable.

4.2.6 Status/Log Messages

The communications gateway logs status and error messages to the **Gateway.log** file in the local Event Log Directory. Messages written to this file are copied automatically to the Event Log Database. The Event Log Directory and the Event Log Database are described in Section 6.7.

The Data Server Interface generates status and event messages and logs them to the **Data Server Log File**. Each of these messages is listed with an explanation, in Appendix A.

4.2.7 Diagnostic Capabilities

During interface testing errors and test results are logged to the **Data Server Log File**. The status and error messages are listed in Appendix A.

4.3 Ingest Interface

4.3.1 Overview

The Ingest Interface runs on the Ingest Server computer and processes requests to ingest data from external data providers. The Ingest Interface supports two kinds of interfaces, an Automated Network Ingest interface and a Polling Ingest interface. Both interfaces respond to valid ingest requests by transferring the data to be ingested onto the Ingest Server computer's local disk, by means of the ftp process.

4.3.1.1 Ingest Interface Processes

The Ingest Interface is made up of the following processes:

The **Ingest Server Process** starts up the Session Server Process (see below) whenever an external entity initiates an ingest session associated with one or more Automated Network Ingest requests. This process runs on the Ingest Server computer. It requires DCE and the Communications Gateway in order to run, and otherwise operates independently of the rest of Ir1. The Ingest Server Process is started automatically when the host computer is started, and runs continuously.

The **Session Server Process** processes Automated Network Ingest requests. One Session Server Process is run for each active session with an external data provider. This process runs on the Ingest Server computer and is started by the Ingest Server Process. It requires DCE and the Communications Gateway in order to run; otherwise, it operates independently of the rest of Ir1. The Session Server Process is started by the Ingest Server Process and terminates when it has processed all of the requests from the external data provider.

The **Polling Process** polls an external data provider to determine whether the provider has data to be ingested, and ingests the data when it is available. The polling is accomplished by the periodic examination of one or more remote directories owned by the data provider. If one of the directories contains a new file, the Polling Process assumes that the file is to be ingested. The Polling Process runs on the Ingest Server computer. It requires DCE in order to run, and otherwise operates independently of the rest of Ir1. The Polling Process is started automatically when the host computer is started, and runs continuously. One Polling Process is run for each external data provider that supports a Polling Ingest interface.

4.3.1.2 Capturing Test Results

The Ingest Interface logs messages which record key events during the testing of the Ingest interface and can be used to verify that the interface is performing correctly. The messages are written to the **IngestLocal.log** file in the local Event Log Directory (see Section 4.3.6).

4.3.2 Inputs/Controls

4.3.2.1 Environment Variables

The operation of the Ingest Interface is controlled, to some extent, by UNIX environment variables. Some of these environment variables are configurable by the operations staff and are as follows:

> **`ECS_INGEST_POLL_TIMER`** - This controls the polling frequency of the Polling Process. Its value is set to the number of seconds between each examination of the data provider's remote directory(s).

Some of the environment variables are not normally configured by the operations staff but are included here because they are referenced in Appendix A:

> **`ECS_INGEST_SESSION_FILE_PATH`** - This specifies the full path name of the Ingest Session File.
>
> **`ECS_INGEST_FTP_LOCAL_PATH`** - This specifies the full path name of the local directory used to receive files ingested via ftp.
>
> **`ECS_INGEST_DAA_ERROR_FILE`** - This specifies the full path name of the DAA Error File (see section 4.3.2.3).
>
> **`ECS_INGEST_DDN_ERROR_FILE`** - This specifies the full path name of the DDN Error File (see section 4.3.2.3).
>
> **`ECS_INGEST_HOST_FILE_PATH`** - This specifies the path name of the directory which contains the User Profile Files (see section 4.3.3.1).

4.3.2.2 Command Line Arguments for the Polling Process

The operation of the Polling Process is controlled by command line arguments. The syntax of the Polling Process command is

> *executable* **no** *provider* $directory_1$ $datatype_1$ $hostname_1$
> [$directory_2$ $datatype_2$ $hostname_2$]...

where

> *executable* is the file name of the Polling Process executable;
>
> *provider* is the name of the external data provider, e.g. ***"NOAA"***- this is the same data provider name that is used to form the name of the User Profile file described in section 4.3.3.1;
>
> $directory_n$ is the directory name of a remote directory at the site of the external data provider;
>
> $datatype_n$ can be any alphanumeric string; and
>
> $hostname_n$ is the UNIX hostname for the computer which hosts $directory_n$.

Each *directory-datatype-hostname* triple identifies a remote directory that belongs to the data provider. The Polling Process checks for ingest data at each remote directory that is identified in this way.

4.3.2.3 The DAA and DDN Error Files

The operation of the Session Server Process is controlled by two files:

The **DAA Error File** controls the type and content of the Data Availability Acknowledgment (DAA) message sent to the data provider by the Ingest Interface.

The **DDN Error File** controls the type and content of the Data Delivery Notice (DDN) message sent to the data provider by the Ingest Interface.

These files determine what information the Ingest Interface sends back to the data provider in response to certain protocol messages - <u>they do not log error messages!</u> They have identical formats and are edited using the UNIX **vi** editor. Each file contains two lines:

The first line contains the message type consisting of either a "1" or a "2" in the first column, where "1" indicates that the DAA (or DDN) message is to be "short" and "2" indicates that the message is to have the "long" format.

The second line contains a numeric value, beginning in the first column. This value determines the value to be placed in the "disposition" field of the DAA (or DDN) message. Valid error codes are as follows:

- 0-32 for short DAA (0-31 selects bit to be set; a value of 32 indicates all zeros)
- 0-16 for long DAA (0-15 selects bit to be set; a value of 16 indicates all zeros)
- 0-255 for short DDN (specifies actual value)
- 0-255 for long DDN (specifies actual value)

For Ir1, the Ingest Interface validates DAN messages only by checking the validity of the **expiration time** and **sequence number** fields in the message. If the DAN message is found to be invalid, then the values in the DAA and DDN Error Files are ignored. Instead, a short DAA will be returned to the client with a **disposition status** of "1" (for an invalid sequence number) or "14" (for an invalid expiration time).

4.3.3 Databases/Files

4.3.3.1 The User Profile Files

The **User Profile Files** store the usernames and passwords required by the Ingest Interface in order to copy the ingest data belonging to the data providers. There is one User Profile File for each data provider. The name of each User Profile File has the format

<*provider*>**_AcctProfile.dat**

where

provider is the name of the external data provider, e.g. **"NOAA".** In the case of the Polling Ingest Interface, this is the same data provider name described in section 4.3.2.2.

Each file contains the following on two separate lines, beginning in column 1:

username=*username*

password=*password*

where

username is the UNIX username required for ftp access to the ingest data at the data provider site; and

password is the UNIX password corresponding to *username*. The password is not encrypted.

4.3.3.2 Ingest File Reception Directory

Ingest files are transferred from external data centers into the Ingest File Reception Directory, during the testing of the Ingest Interface. These files accumulate over time, and must be deleted by the operations staff, as required, in order to free up disk space. The disk space used by the files can be determined using the UNIX **ls** command.

4.3.3.3 Ingest Log File

The **IngestLocal.log** file resides in the Local History Log Directory (see Section 6.7). This file records status and error messages associated with the operation of the ingest interface.

4.3.4 Displays

Not applicable.

4.3.5 Outputs/Reports

Not applicable.

4.3.6 Status/Log Messages

The Ingest Interface issues routine status messages to the **IngestLocal.log** file, in the local Event Log Directory, so that the operations staff can monitor the operation of the Ingest Interface. These messages are listed in Appendix A, along with the Ingest Interface error messages. Messages written to the file are copied automatically to the Event Log Database. The Event Log Directory and the Event Log Database are described in Section 6.7.

Critical errors detected by the Ingest Interface will cause an SNMP trap to occur which is then reported to the System Performance Management screens at the EDF (see Section 6.3).

4.3.7 Diagnostic Capabilities

The **IngestLocal.log** file and the Event Log Database record error messages when the interface detects a problem. In addition, The TRMM Interface Simulator generates a log which can be used to diagnose interface problems. The simulator log records all messages received from the Ir1 Ingest Interface.

5. Science Software Integration and Test

5.1 Planning and Data Processing Subsystem Prototype

5.1.1 Overview

Ir1 provides a prototype of the Planning and Data Processing Subsystem (PDPS). The prototype PDPS is used to support:

- the formal delivery of science software to the DAACs,
- the static checking of science software prior to dynamic testing, and
- the dynamic testing of science software.

It is intended for use by instrument teams and operations staff responsible for the integration and test of science software.

5.1.1.1 PDPS Components

The Ir1 PDPS is made up of components which run at the DAACs and are explained below:

- The **PGE Registration Tool** is a graphical user interface used to enter information about science software that is required by the production environment.
- The **Data Processing Request Tool** is used to define a Data Processing Request in order to run a PGE.
- The **AutoSys Scheduler** is used to monitor and schedule the execution of one or more Science Software executables in support of the integration and test of science software. AutoSys has three primary components (see Chapter 1 of the *AutoSys User Manual)*:
  - The Sybase **AutoSys Database** is the data repository for all system events, and for all job, monitor, and report definitions. This should be up and running at all times in order for PDPS to execute. See Section 5.6 for more information regarding the administration of the AutoSys Database.
  - The **Event Processor** is a UNIX daemon process that schedules and starts jobs based on information in the AutoSys Database. This should be up and running at all times in order for PDPS to execute.
  - The **Remote Agent** is a temporary process started by the Event Processor in order to perform a specific task on a remote machine. This runs in response to job actions submitted by the user.
- The **PGE Database** is used to store PGE registration information, data processing request information and AutoSys scheduling information. See Section 5.6 for more information regarding administration of the PGE Database.

- The **PDPS Execution Program** is used to create SDP Toolkit Process Control Files and execute PGEs. This process is run automatically by AutoSys, and is short lived. This runs in response to job actions.

5.1.1.2 Autosys Startup/Shutdown

The AutoSys scheduler is started automatically during the bootup of the SSI&T Server computer through the automatic execution of the **%eventor** startup script. The scheduler is shut down by stopping the Event Processor with the **%sendevent -E STOP_DEMON** command. The UNIX **kill** command is <u>not</u> to be used for this purpose. Chapter 2 of the *AutoSys User Manual* describes how to start, monitor, and stop the Event Processor.

5.1.1.3 Autosys User Account

AutoSys system administration is performed using the **autosys** UNIX user account.

5.1.2 Inputs/Controls

The location of the PDPS message file directory (see Section 5.1.3.2) is determined by the **$PGSMSG** environment variable.

5.1.3 Databases/Files

5.1.3.1 PGE and AutoSys Databases

Section 5.6 describes the PGE and AutoSys databases.

5.1.3.2 Message File Directory

All error and status messages issued by the PDPS custom software are defined in message files which are located in a special message file directory. The name of this directory is determined by the **$PGSMSG** environment variable. It is essential that these files are installed properly; otherwise, the PDPS will not have the capability to log error and status conditions.

5.1.4 Displays

5.1.4.1 AutoSys Displays

The AutoSys scheduler provides a graphical user interface (GUI) for defining PDPS jobs. This interface is documented in Chapter 5 of the *AutoSys User Manual.*

A command language interface (JIL) is also provided for monitoring PDPS jobs and is documented in both Chapter 6 and Appendix D of the *AutoSys User Manual.*

The AutoSys scheduler provides a GUI interface, called the **Operator's Console**, for the purpose of monitoring and controlling job activity in real time. This interface and its associated screen displays, is documented in Chapter 9 of the *AutoSys User Manual*.

5.1.4.2 PGE Registration Tool Displays

The displays of the PGE Registration Tool are accessed from the **SSI&T Manager** window (see Section 5.3.4), and are used to record information about science software executables (PGEs).

5.1.4.2.1 Select PGE & Version Window

Figure 5.1-1 illustrates the **Select PGE & Version** window. Varoius fields in the window are labeled with numbers. The following values are expected in the numbered fields:

1. **PGE Name** - Select an existing PGE name or **[New]** for a new type of PGE.
2. **PGE Version** - Select an existing version or **[New]** for a new version of the PGE

Selecting **[New]** from either of these displays causes the **New PGE and Version** window to be displayed.

Figure 5.1-1 Select PGE & Version Window

5.1.4.2.2 New PGE & Version Window

Figure 5.1-2 illustrates the **New PGE & Version** window. The following values are expected in the numbered fields:

1. **PGE Type** - If **[New]** was selected as PGE Name, enter new name.
2. **PGE Version** - If **[New]** was selected as PGE version, enter new version.
3. **PC File Directory** - Select a directory (standard file chooser) to read PC file from.
4. **PC File** - Select the PC file within the directory.
5. **Filter** button - Filter to the path given in the text field.

Figure 5.1-2 New PGE and Version Window

5.1.4.2.3 PGE Window

Figure 5.1-3 illustrates the **PGE** window. The following values are expected in the numbered fields:

1. **PGE Name** - (Read-only) name of selected PGE.
2. **PGE Version** - (Read-only) version of selected PGE.
3. Process Information **Executable** - default location of executable PGE file.

4. **Process Control Interface** - default location to put run-time generated PC file.
5. **Resource Profile Output** - default location to put run-time generated resource usage file.
6. **Performance Statistics** - resource usage information, as provided in resource usage file.
7. **Resource Requirements** - place holder only - resources required by the PGE (e.g.. Operating system, disk size etc.).
8. **Edit Performance Statistics** - alter the value of a selected performance statistic.
9. **Edit Resource Requirements** - alter the value of a selected resource requirement.
10. **New** button - add a new resource requirement.
11. **Mappings** button - open the **Parameters and File Mappings** window.

Figure 5.1-3 PGE Window

5.1.4.3 Data Processing Request Tool Displays

The displays of the Data Processing Request Tool are used to define a Data Processing Request (DPR) and are run from the **SSI&T Manager** window (see Section 5.3.4).

5.1.4.3.1 Parameter & File Mappings Window

Figure 5.1-4 illustrates the **Parameter & File Mappings** window. The following values are expected in the numbered fields:

1. **PGE Name** - select a type of PGE to run.
2. **PGE Version** - select the version of the PGE type to run.
3. **Parameter Edit** - modify the selected parameter description. Press return when finished. Must be in form {logical Id} {description}. Single quotes are not allowed in the description. To delete a parameter, simply delete the description and press return.
4. **Parameter Mapping** - modify the default value of the selected Parameter.
5. **Create New Parameter** - add a new parameter description / default value. Description and value must then be entered using Parameter Edit and Parameter Mapping fields.
6. **Files** - select a file description to edit the description or view/edit the default file location(s).
7. **File Mappings** - Select a file mapping to edit the default file location.

8. **Create New File Description** - add a new file description. A new name in the list is created and the user is prompted in the edit field.

   - File Edit - modify the selected file description. Press return when finished. Descriptions must be in the form {logical id} {science type} {PC file section}. To delete a file description and its mappings, simply delete the file description and press return.
   - Edit File Mapping - Alter the default location for a file. Press return when complete. To delete a mapping, delete the text and press return. Path names must be absolute, not relative, as this is a distributed system.

9. **Create New File Mapping** button - Add a new default location. Set the location using the Edit File Mapping field when complete.

Figure 5.1-4 Parameter & File Mappings Window

5.1.4.3.2 Select PGE for DPR Window

Figure 5.1-5 illustrates the **Select PGE for DPR** window. The following values are expected in the numbered fields:

The following values are expected in the numbered fields shown in figure 5.1-5:

1. **New DPR Id** - unique identifier for run (one is suggested but can be changed).
2. **PGE Name** - select a type of PGE to run.
3. **PGE Version** - select the version of the PGE type to run.

Figure 5.1-5 Select PGE for DPR Window

5.1.4.3.3 DPR Window

Figure 5.1-6 illustrates the **DPR** window. The following values are expected in the numbered fields:

1. **New DPR Id** - (read only) unique id of run.
2. **PGE Name** - (read only) type of PGE to run.
3. **PGE Version** -(read only) version of PGE to run.
4. Process Information **Executable** - location of PGE executable file.
5. **Process Control File** - location to put run time generated PC file.

6. **Resource Profile Output** - location to put run time generated resource use file.
7. **PGE Dependencies** - list of PGE runs that new run is dependent on.
8. **Resource Dependencies** - place holder - list of resources that new run requires.
9. **Edit PGE Dependency** - add a new PGE dependency.
10. **Edit Resource Dependency** - add a new resource requirement.
11. **Mappings** button - open the DPR Parameter & File Mappings Screen.

Figure 5.1-6 DPR Window

5.1.4.3.4 DPR Parameter & File Mappings Window

Figure 5.1-7 illustrates the **DPR Parameter & File Mappings** window. The following values are expected in the numbered fields:

1. **DPR Id** - (read only) unique id of run
2. **PGE Name** - (read only) type of PGE to run
3. **PGE Version** - (read only) version of PGE to run
4. **Parameters** - select a run time parameter to view/edit
5. **Parameter Mapping** - edit the value of a run time parameter
6. **Files** - select a file description to view/edit locations
7. **File Mappings** - select a file location to edit
8. **Create New Mapping** button - add a new file location for selected file type

Figure 5.1-7 DPR Parameter & File Mappings Window

5.1.5 Outputs/Reports

AutoSys has report generation capabilities available through its user interface. Report generation is covered in Chapter 8 of the *AutoSys User's Manual.*

5.1.6 Status/Log Messages

PDPS sends error messages to the **pdps_event.log** file (in the local Event Log Directory) and to PDPS displays. AutoSys sends error messages to Event Log Files and to the AutoSys displays.

Messages written to Event Log Files are copied automatically to the Event Log Database. The Event Log Files and the Event Log Database are described in Section 6.7.

5.1.7 Diagnostic Capabilities

AutoSys diagnostic capabilities are detailed in the *AutoSys User's Manual*, Appendix A. The Alarm Manager Dialog is described in detail in Chapter 9. A script exists to check to see if AutoSys is up and running called **chk_auto_up**, run from the UNIX command line.

Troubleshooting of AutoSys components (i.e. Event Server, Event Processor, and Remote Agent) are covered in Chapter 14 under AutoSys Troubleshooting of the *AutoSys User's Manual.*

5.2 DAAC SDP Toolkit

5.2.1 Overview

The DAAC SDP Toolkit is the DAAC version of the toolkit software supplied to instrument data processing software developers. The toolkit is the interface between science data processing software and the PDPS. The DAAC version will run on the DAAC SSI&T and science processing machines.

The DAACs have the capability to link science software with the SCF version of the toolkit and run the resulting executables. The SCF version of the toolkit is used internally by SSI&T Manager and the PDPS prototype software, so that the output from executables built from the DAAC version of the toolkit can be compared with the test output obtained at the SCF.

The toolkit is a software library consisting of several groups of custom (ECS) developed code and COTS packages. These groups are listed in Table 5.2-1.

Table 5.2–1 SDP Toolkit Components

Mnemonic	Class
AA	Ancillary Data Access
CBP	Celestial Body Position
CSC	Coordinate System Conversion
CUC	Constant and Unit Conversions
EPH	Ephemeris Data Access
GCT	Geo Coordinate Transformation
IO	Input Output (File I/O)
MEM	Memory Management
MET	Meta Data Access
PC	Process Control
SMF	Status Message File (Error/Status)
TD	Time Date Conversion
IMSL	Math and Statistics Package
IDL	Graphics Library
NCSA HDF	Data format library

5.2.2 Inputs/Controls

None

5.2.3 Databases/File

None

5.2.4 Displays

The toolkit is a library, accessed by command line and subroutine calls. Please see the toolkit Users Guide for complete specification of the user's interface. There is no separate interface for M&O usage.

5.2.5 Outputs/Reports

None

5.2.6 Status/Log Messages

Error and status messages are sent to an Event Log File in the local Event Log Directory. This log file is eventually loaded into the Ir1 Event Log Database (see Section 6.7).

5.2.7 Diagnostic Capabilities

None

5.3 The SSI&T Manager

5.3.1 Overview

The **SSI&T Manager** provides a common interface to the SSI&T software tools and manages their operation. The functions of the SSI&T Manager are performed by the **SSI&T Manager Process** and by subsidiary processes automatically created by the SSI&T Manager Process. The SSI&T Manager runs on the SSI&T Workstations.

5.3.2 Inputs/Controls

The SSI&T Manager is started by typing the **DpAtMgr** command at the UNIX prompt. It is not started automatically at system startup. The SSI&T Manager is shut down when the user exits from the application.

5.3.3 Databases/Files

The SSI&T Manager uses a **Process Control File** to determine the names and locations of files. This Process Control File defines the correspondence between specifications for actual files, and the logical identifiers used by the SSI&T Manager to access those files. Process Control Files are also used by the science software.

The Process Control File for the SSI&T Manager is specified by the **$PGS_PC_INFO_FILE** environment variable.

5.3.4 Displays

Figure 5.3-1 illustrates the **SSI&T Manager** window. Varoius fields in the window are labeled with numbers. The window presents a menu of options which correspond to the labels in the figure as folllows:

1. **Files** - Exit
2. **Tools -** Allows the selection of
    - Code analysis tools including SPARCworks (see Section 5.4.8) and CASEVision (see Section 5.4.7).
    - Office automation tools including GhostView (see Section 5.4.2), NCSA Mosaic, and Acrobat (See section 5.4.3).
    - Standards Checkers including FORCHECK (see section 5.4.4), Prohibited Function Checker (see Section 5.4.6) Process Control File Checker (see Section 5.4.5).
    - Product Examination tools including IDL (see Section 5.4.9), EOSView (see Section 5.4.13).
    - File Comparison tools including tools for comparing ASCII files (see Section 5.4.10), Binary files (see Section 5.4.11), and HDF files (see Section 5.4.12).

- Text Editors including Emacs and Xedit

3. **Run** - PGE Registration (see Section 5.1), PGE Processing (see Section 5.1)
4. **Checklist** - User supplied name entered here.
5. **Display checklist** - List of available user configured items to execute for the SSI&T.
6. **SSI&T Log** - Display window showing log of checklist activity. The buttons at the bottom of the screen are used as follows:
   - **Edit** - Brings up the text editor for annotating currently selected checklist items.
   - **Change State** - toggles between the currently selected checklist items done, and the checklist items not done.

Figure 5.3-1 SSI&T Manager Window

5.3.5 Outputs/Reports

None

5.3.6 Status/Log Messages

The SSI&T Manager displays errors in a popup message box. The SSI&T Manager also logs error and status messages to the **pdps_event.log** file in the local Event Log Directory. Log files in this directory are eventually loaded into the Event Log Database (see Section 6.7).

5.3.7 Diagnostic Capabilities

None

5.4 Science Software Integration & Test Tools

Ir1 provides software tools to support the checking of science software at the DAAC, prior to the dynamic testing of the science software. These tools are known as the science software integration and test (SSI&T) tools.

The software that comprises the SSI&T tools is logically divided into the following categories:

- **Configuration Management Tool -** The Ir1 Software Configuration Management (SCM) tool is used to store ECS custom software and science software and related science software files. See Section 5.4.1 for more information concerning this tool.
- **Documentation Viewing Tools -** The Documentation Viewing Tools are used for displaying and/or printing the science software documentation. See Sections 5.4.2 - 5.4.3 for more information concerning these tools.
- **Standards Checking Tools -** The Standards Checking Tools are used for checking the science software to determine whether or not it follows prescribed coding standards. See Sections 5.4.4 - 5.4.6 for more information concerning these tools.
- **Code Analysis Tools -** The Code Analysis Tools are used for checking the science software for ad-hoc analysis of science software, e.g. for detection of memory leaks. See Sections 5.4.7 - 5.4.8 for more information concerning these tools.
- **Data Visualization Tools -** The Data Visualization Tools display input, output, and intermediate data files for diagnostic purposes. The tools display the files as data dumps, plots, and/or images. See Section 5.4.9 for more information concerning these tools.
- **File Comparison Tools -** The File Comparison Tools provide capabilities for displaying data files and identifying differences between files. See Sections 5.4.10 - 5.4.13 for more information concerning these tools.

5.4.1 ClearCase

5.4.1.1 Overview

The Ir1 Software Configuration Management (SCM) tool is used to store ECS custom software and science software and related science software files, regulate access to these files, control and log file changes, perform builds of software, and keep a record of the build's content (files, compiler, and other resources used). It is intended for use by instrument teams and operations staff responsible for the integration and test of science software.

5.4.1.2 Inputs/Controls

Subsystem Startup - The startup of the subsystem occurs automatically during the bootup of the MSS Server and is controlled by the ClearCase startup script named **/etc/rc.atria** (HP) or **/etc/init.d/atria** (Sun, SGI). This script is discussed in chapter 16.1 of the *ClearCase Administrator's Manual*.

Subsystem Shutdown - The shutdown of the subsystem is accomplished using the ClearCase shutdown script named **/etc/rc.atria** (HP) or **/etc/init.d/atria** (Sun, SGI). This script is discussed in chapter 16.1 of the *ClearCase Administrator's Manual*.

ClearCase Periodic Maintenance - Chapters 11 through 19 of the *ClearCase Administrator's Guide* discuss how to conduct periodic maintenance, especially on Versioned Objects Bases (VOBs) and Views.

The **ClearMake** program is designed to automate the process of software builds. **ClearMake** is a superset of the standard UNIX **make** program. It is compatible with the UNIX **make** program and also supports the **pmake**, **smake** and GNU **make** programs. **ClearMake** has the capability to detect file opens and closes, as is useful for analyzing file usage. Further information can be found in Section 2.3 of the *ClearCase Administrator's Manual* and Chapter 10 of the *ClearCase User's Manual*.

5.4.1.3 Databases/Files

Create and initialize the VOB - The script **make_vob.sh** will only execute if the user is VOBADM.

Add a label to elements - The script **add_label.sh** will be provided to add a user-specified label to elements.

List labeled elements - The script **list_label.sh** will list all elements that have the user-specified label attached.

Check-in and Check-out all files in a directory - The script **checkout_all.sh** will checkout all files in a directory. It will have a "-recurse" option, to descend into and process subdirectories. The script **checkin_all.sh** will check in all files in a directory. It will have a "-recurse" option, to descend into and process subdirectories.

Backup the VOB - The script **backup_vob.sh** will backup all VOBs and Views on the system and create a log file.

Backup Views - The script **backup_view.sh** will backup all Views on the system and create a log file.

Display the backup log file - The script **backup_stat.sh** will display the contents of the log file created by the backup scripts.

5.4.1.4 Displays

5.4.1.4.1 ClearTool

ClearTool consists of a command-line interface, and is the primary tool for ClearCase usage and administration. Its used to create, configure, access, navigate, and delete VOBs (Versioned Objects Bases) and Views.

Further information can be found in Chapter 2 of the *ClearCase Users Manual* and the manual pages in the *ClearCase Reference Manual*. **ClearTool** subcommands and utility commands are detailed in Section 2.6 of the *ClearCase Administrator's Manual*.

5.4.1.4.2 xClearCase

The **xClearCase** Interface consists of windows which provide most of the functionality of **ClearTool**, and adds the ability to graphically examine the version history of objects in VOBs. In addition, **xClearCase** can graphically perform comparisons and merges of versions, run reports, and can use **ClearMake** to perform builds of software.

Section 3.1 of the *ClearCase Users Manual* describes how to start **xClearCase** and describes the screen displays. Chapter 3 describes how to use this interface. The *ClearCase Reference Manual* contains the manual pages for **xClearCase.**

5.4.1.5 Outputs/Reports

The **%cleartool lshistory** command is used to create a report from the command-line tool. The **lshistory** subcommand has a variety of of options. The these options are described in the manual pages in the *ClearCase Reference Manual.*

Via the GUI:

1. **%xclearcase &**
2. Select **Report**
3. Select **List History**
4. Select from available options

5.4.1.6 Status/Log Messages

Maintenance of System Logs - Chapter 1 of the *ClearCase Administrator's Guide* describes the ClearCase log files. A crontab script deletes the **.old** log file and renames the current .log file to creates a new **.old** log file. It is run automatically by the software, requiring no operator action.

Log file location - Log files are located in the directory /usr/adm/atria/log (HP) or **/var/adm/atria/log** (Sun,SGI).

5.4.1.7 Diagnostic Capabilities

The SCM tool uses several daemons, created at system boot that may be helpful for diagnostic purposes:

- The **albd_server** process is responsible for acquiring licenses for users as they attempt to access data stored in VOBs.
- The **lockmgr** process is responsible for coordinating access (via file locking) to VOBs.

Other processes that may be started by the SCM tool:

- The **view_server** manages access to the data in a view's storage directory.
- The **vob_server** manages access to a VOB.
- The **db_server** manages the requests from one ClearCase client to one or more VOBs.
- The **vobrpc_server** manages the requests from one or more view_server processes to a particular VOB.

As an aid in diagnosing ClearCase problems, the following commands may be executed. None should return an error message.

- **clearlicense** - Display the status of license usage.
- **cleartool lsvob** - Display the mount-point and storage directory of all VOBs on the system.
- **cleartool lsview** - Display the name and storage directory of all Views on the system.

5.4.2 Ghostview

5.4.2.1 Overview

This Documentation Viewing Tool is used for displaying and/or printing the science software documentation. This is a freeware tool that allows the operations staff to display PostScript files.

5.4.2.2 Inputs/Controls

None

5.4.2.3 Databases/Files

None

5.4.2.4 Displays

Ghostview is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **ghostview** command at the UNIX command line prompt.

5.4.2.5 Outputs/Reports

None

5.4.2.6 Status/Log Messages

None

5.4.2.7 Diagnostic Capabilities

None

5.4.3 Adobe Acrobat

5.4.3.1 Overview

The Documentation Viewing Tools are used for displaying and/or printing the science software documentation. This is a COTS tool that is used to view, distribute, print and save documents in Portable Data Format (PDF).

5.4.3.2 Inputs/Controls

None

5.4.3.3 Databases/Files

None

5.4.3.4 Displays

Acrobat is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **acroread** command at the UNIX command line prompt.

5.4.3.5 Outputs/Reports

None

5.4.3.6 Status/Log Messages

None

5.4.3.7 Diagnostic Capabilities

None

5.4.4 FORCHECK

5.4.4.1 Overview

FORCHECK is a COTS tool for verifying that science software code follows prescribed coding standards. Specifically, FORECHECK analyzes source code written in Fortran77 with ANSII extensions.

5.4.4.2 Inputs/Controls

None

5.4.4.3 Databases/Files

None

5.4.4.4 Displays

FORCHECK is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **forchk** command at the UNIX command line prompt.

5.4.4.5 Outputs/Reports

None

5.4.4.6 Status/Log Messages

None

5.4.4.7 Diagnostic Capabilities

None

5.4.5 Process Control File Checker

5.4.5.1 Overview

The **Process Control File Checker** is used to verify that the format of a **Process Control File** is correct. A Process Control File specifies the names and locations of files used by science software executables, and defines the correspondence between the file specifications and the logical identifiers used by the science software to reference the specified files.

5.4.5.2 Inputs/Controls

None

5.4.5.3 Databases/Files

None

5.4.5.4 Displays

The Process Control File Checker is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **DpAtMgrCheckPcF** command at the UNIX command line prompt.

The following values are expected in the numbered fields shown in figure 5.4-1:

1. **Filter** - file name filter
2. **Directories** - directory name list
3. **Files** - file name list
4. **PCF To Check** - name of input file

Figure 5.4-1 Process Control File Checker Window

5.4.5.5 Outputs/Reports

The Standards Checking Tools generate a report that can be printed or saved to a file. The file name is specified by the user.

5.4.5.6 Status/Log Messages

Status messages are displayed on the screen. System messages are written to an Event Log File in the local Event Log Directory. This log file is eventually loaded into the Event Log Database (see Section 6.7).

5.4.5.7 Diagnostic Capabilities

None

5.4.6 Prohibited Function Checker

5.4.6.1 Overview

The **Prohibited Function Checker** is used for checking the science software to determine whether or not it follows prescribed coding standards. This is a custom software tool that is used to check science software source code for calls to functions that are prohibited because they conflict with the ECS processing environment.

5.4.6.2 Inputs/Controls

None

5.4.6.3 Databases/Files

The Prohibited Function Definition Files are used to define prohibited functions for various programming languages as follows:

prohibitedFunctionsC.txt (C language)

prohibitedFunctionsF77.txt (Fortran 77)

prohibitedFunctionsF90.txt (Fortran 90)

prohibitedFunctionsAda.txt (Ada language)

The name and location of these files is given in the Process Control File for the SSI&T Manager (see Section 5.3.3).

5.4.6.4 Displays

The Prohibited Function Checker is accessed from the **SSI&T Manager** window (see Section 5.3.4). It can also be accessed by typing commands at the UNIX command line prompt: The **xbadfunc** command is typed in order to access the Prohibited Function Checker via a GUI interface; the **badfunc** command is run in order to access the Prohibited Function Checker via a command-line interface.

The capabilities of the Prohibited Function Checker are provided by the **Prohibited Function Checker** window (Figure 5.4-2). The following values are expected in the numbered fields shown in the figure:

1. **Analyze** button - brings up a window that allows the user to pick files they wish to analyze.

Figure 5.4-2 Prohibited Function Checker Window

5.4.6.5 Outputs/Reports

The Standards Checking Tools generate a report that can be printed or saved to a file. The file name is specified by the user.

5.4.6.6 Status/Log Messages

Status and error messages are presented on the **Prohibited Function Checker** window. System messages are written to an Event Log File in the local Event Log Directory. This log file is eventually loaded into the Event Log Database (see Section 6.7).

5.4.6.7 Diagnostic Capabilities

None

5.4.7 CaseVision

5.4.7.1 Overview

CaseVision is a COTS code analysis tool used for checking the science software for memory leaks. It has the capability to perform static code analysis on the SGI Science Processor. On-line documentation available by typing: **/usr/sbin/insight** at the SGI Science Processor.

5.4.7.2

None

5.4.7.3 Databases/Files

None

5.4.7.4 Displays

CaseVision is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **/usr/sbin/cvproj** command at the UNIX command line prompt.

5.4.7.5 Outputs/Reports

None

5.4.8.6 Status/Log Messages

None

5.4.8.7 Diagnostic Capabilities

None

5.4.8 SPARCworks

5.4.8.1 Overview

SPARCworks is a COTS code analysis tool used for the analysis of the science software, e.g. checking for memory leaks. This tool has the capability to perform static code analysis on the SSI&T Workstations. On-line documentation available by typing: **answerbook** from the Sun workstation.

5.4.8.2 Inputs/Controls

None

5.4.8.3 Databases/Files

None

5.4.8.4 Displays

SPARCworks is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **sparcworks** command at the UNIX command line prompt.

5.4.8.5 Outputs/Reports

None

5.4.8.6 Status/Log Messages

None

5.4.8.7 Diagnostic Capabilities

None

5.4.9 Interactive Data Language

5.4.9.1 Overview

The **Interactive Data Language** (IDL) is a COTS data visualization tool used to display input, output, and intermediate data files for diagnostic purposes. This software package supports the interactive analysis and visualization of scientific and engineering data.

5.4.9.2 Inputs/Controls

None

5.4.9.3 Databases/Files

None

5.4.9.4 Displays

The **IDL** GUI is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **idltool** command at the UNIX command line prompt.

5.4.9.5 Outputs/Reports

None

5.4.9.6 Status/Log Messages

None

5.4.9.7 Diagnostic Capabilities

None

5.4.10 ASCII File Comparison Tool

5.4.10.1 Overview

The **ASCII File Comparison Tool** provides capabilities for displaying ASCII data files and identifying differences between ASCII files. This tool consists of the **xdiff** program which provides an X-Windows interface to the UNIX ASCII file comparison program **diff**.

5.4.10.2 Inputs/Controls

None

5.4.10.3 Databases/Files

None

5.4.10.4 Displays

The **xdiff** program is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **xdiff** command at the UNIX command line prompt.

5.4.10.5 Outputs/Reports

None

5.4.10.6 Status/Log Messages

None

5.4.10.7 Diagnostic Capabilities

None

5.4.11 Binary File Comparison Tool

5.4.11.1 Overview

The **Binary File Comparison Tool** is custom software that assists the operations staff in the development of software to display and compare binary files.

5.4.11.2 Inputs/Controls

None

5.4.11.3 Databases/Files

The Binary File Comparison Tool provides various files necessary to support the development of file comparison software. The files are not modified by the operations staff and are follows:

DpAtMgrBinDiffTemplate.c
DpAtMgrBinDiffPrepareFiles.sh
DpAtMgrBinDiffSimpleCmp.c
DpAtMgrBinDiffTemplate.f
DpAtMgrBinDiffTemplate.mak
DpAtMgrBinDiffTemplate.pro
DpAtMgrBinDiffTemplate.sh
DpAtMgrBinDiffTemplateDriver.c
DpAtMgrBinDiffTemplateDriver.f
DpAtMgrBinDiffTemplateDriver.pro
DaacBinDiff_Ex_array_records.c
DaacBinDiff_Ex_array_records.mak
DaacBinDiff_Ex_array_records.mak.contrib
DaacBinDiff_Ex_array_records.pro
DaacBinDiff_Ex_array_records.sh
DaacBinDiff_Ex_array_records_driver.c
DaacBinDiff_Ex_array_records_driver.pro
DaacBinDiff_Ex_array_records_f.f
DaacBinDiff_Ex_array_records_f.mak
DaacBinDiff_Ex_array_records_f_driver.f
DaacBinDiff_Ex_byte_image.c
DaacBinDiff_Ex_byte_image.mak
DaacBinDiff_Ex_byte_image.pro
DaacBinDiff_Ex_byte_image.sh

DaacBinDiff_Ex_byte_image_driver.c
DaacBinDiff_Ex_byte_image_driver.pro
DaacBinDiff_Ex_byte_image_f.f
DaacBinDiff_Ex_byte_image_f.mak
DaacBinDiff_Ex_byte_image_f_driver.f
DaacBinDiff_Ex_create_array_records.c
DaacBinDiff_Ex_create_array_records.f
DaacBinDiff_Ex_create_byte_image.c
DaacBinDiff_Ex_create_byte_image.f

5.4.11.4 Displays

The Binary File Comparison Tool program is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **DpAtMgrBinDiff** command at the UNIX command line prompt.

The capabilities of the Binary File Comparison Tool are provided by the **Binary File Comparison** window (Figure 5.4-3). The following values are expected in the numbered fields shown in the figure:

1. **Select Language** - choose one of the options shown (C, FORTRAN or IDL).
2. **Compare Function** - Choose one of the options shown (Image or Structure).
3. **Driver** - Choose one of the options shown (Image or Structure).

Figure 5.4-3 Binary File Comparison Window

5.4.12 HDF File Comparison

5.4.12.1 Overview

The **HDF File Comparison Tool** is a custom software tool which is used to display HDF files and compare differences between HDF files.

5.4.12.2 Inputs/Controls

None

5.4.12.3 Databases/Files

None

5.4.12.4 Displays

The HDF File Comparison Tool is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **DpAtMgrCheckHdfFile.sh** command at the UNIX command line prompt.

The capabilities of the HDF File Comparison Tool are provided by the use of the **HDF File Comparison** window (Figure 5.4-4). The following values are expected in the numbered fields shown in the figure:

1. **File #1 -** First file to compare
2. **File #2 -** Second file to compare
3. **Tolerances** button - Brings up editor for entering and saving data tolerances

Figure 5.4-4 HDF File Comparison Window

5.4.12.5 Outputs/Reports

None

5.4.12.6 Status/Log Messages

None

5.4.12.7 Diagnostic Capabilities

None

5.4.13 EOSView

5.4.13.1 Overview

EOSView is used for displaying HDF data files. This program is part of the EOS-HDF package.

5.4.13.2 Inputs/Controls

None

5.4.13.3 Databases/Files

None

5.4.13.4 Displays

The **EOSView** program is run from the **SSI&T Manager** window (see Section 5.3.4) or can be run by typing the **EOSView** command at the UNIX command line prompt.

The capabilities of **EOSView** are provided by the **EOSView Main** window (Figure 5.4-5). The following values are expected in the numbered fields shown in the figure:

1. **File -** Select file to open
2. **Window -** Selects which EOSView window to bring to front
3. **Bugs! -** For bug reports

Figure 5.4-5 EOSView Main Window

5.4.13.5 Outputs/Reports

None

5.4.13.6 Status/Log Messages

None

5.4.13.7 Diagnostic Capabilities

None

5.5 Science Software Integration and Test Remote Access

5.5.1 Overview

Ir1 provides the SCFs remote access to Ir1 capabilities for science software integration and test. Remote logon access is being provided with telnet and X-Windows services. The SCFs are provided access to the Ir1 code checkers and target platform compilers. The goal is to identify integration issues prior to formal DAAC-based I&T.

Table 5.5-1 identifies various Ir1 capabilities and the method by which these capabilities can be remotely accessed.

Table 5.5-1 Ir1 Remote Access Characteristics

Ir1 Tools or Application	IR1 Host	Access Method
Code Checkers:		
FORTRAN 77	AI&T Workstation	telnet
SPARCworks (Sun)	AI&T Workstation	telnet
CASEVision (SGI)	Science Processor	telnet
"Standards" Checker	AI&T Workstation	telnet
Compilers:		
AI&T Workstation (Sun)	AI&T Workstation	telnet
Science Proc (SGI)	Science Processor	telnet
File Comparison Tools	AI&T Workstation	telnet
Toolkit Libraries:		
IMSL & IDL	AI&T Workstation & Science Processor	telnet
SCF & DAAC TKs	AI&T Workstation & Science Processor	telnet
AI&T Manager	AI&T Workstation	X-Windows
Office Automation (OA) Tools	AI&T Workstation	X-Windows
PDPS Prototype	AI&T Workstation & Science Processor	X-Windows
ClearCase	AI&T Workstation	X-Windows

5.5.2 Inputs/Controls

None

5.5.3 Databases/Files

None

5.5.4 Displays

All the tools mentioned in the above table are discussed in their individual sections.

5.5.5 Outputs/Reports

None

5.5.6 Status/Log Messages

None

5.5.7 Diagnostic Capabilities

None

5.6 Database Administration

5.6.1 Overview

The Planning and Data Processing Subsystem utilizes two Sybase databases which reside on the Database Server computer. One database is used by the AutoSys scheduler product; the other database is the PGE database used by custom applications. Both databases are managed by a single Sybase SQL Server. A Sybase SQL Server is a set of one or more cooperating processes that manage one or more databases and provide database access to multiple users.

The Sybase name for the AutoSys database is **autosys31**; the name of the PGE database is **ir1_pdps**. The Sybase *System Administration Guide* provides comprehensive information regarding Sybase database administration. Chapter 14 of the *AutoSys User Manual* discusses database administration as it applies to the AutoSys database.

At the EDC DAAC, ASTER will implement a third database on the MSS Server. This database will be managed by a second SQL Server. The ASTER database will be administered by the ASTER team and not by the ECS M&O staff.

5.6.1.1 Startup/Shutdown

The SQL Server is started up automatically when the Database Server computer is started up. Likewise, the SQL Server is shutdown when the Database Server computer is brought to an orderly shutdown. Scripts are provided to allow the operations staff to effect the startup and shutdown of the SQL Server independently, without having to force the shutdown of the Database Server computer. Chapter 3 of the *Sybase SA Companion User's Guide* describes startup and shutdown procedures in detail.

5.6.1.2 Database Backup

The operations staff are responsible for performing database backups. Database backup is required for two reasons. First, the database must be backed up on a regular basis in order to protect the data from loss due to system failure. Second, database backup must be done in order to preserve the database configuration set up by one instrument team, prior to turning the system over to another instrument team.

Database backup is accomplished with the **dump database** command. This must be done when the database is in single-user mode or is not in use. Database restoration is accomplished with the **load database** command. See the Sybase *System Administration Guide* for more information.

5.6.1.3 Transaction Log Maintenance

Each database has a transaction log that records all changes to its database. The transaction log grows in size over time, and can cause problems when full. The transaction log must be dumped periodically. See the Sybase *System Administration Guide* for more information.

Several custom scripts have been written to clear the transaction logs for the PDPS databases..

- **SP_interimthresholdaction -** Clears out the PDPS Sybase transaction log when it is approximately 50% full.
- **SP_thresholdaction -** Clears out the PDPS Sybase transaction log when it is close to stopping the Sybase server.

5.6.1.4 Deleting Unwanted DPRs

The accumulation of Data Processing Requests (DPRs) in the PGE database can eventually lead to the database becoming full. The custom Sybase stored procedure, **sp_delete_dprs** is used to delete unwanted DPRs.

5.6.2 Inputs/Controls

The following environment variables define fundamental database parameters:

`SYBASE` - This specifies the path name of the Sybase directory (see section 5.6.3).

`DSQUERY` - This specifies the name of the Sybase SQL Server for all client applications.

5.6.3 Databases/Files

The **Sybase directory** contains all files associated with Sybase configuration and operational files.

The **interfaces file** must reside on the Database Server, the (other) SSI&T Workstation, and the SSI&T Processor. Each entry in the file tells the host machine how to connect to a SQL Server. This file is normally located in the Sybase directory.

The Sybase **transaction log** is a database table that records all changes to its respective database.

The SQL server **errorlog file** contains error messages generated by the SQL Server.

5.6.4 Displays

The *Sybase SA Companion User's Guide* describes the use of displays used for database administration.

5.6.5 Outputs/Reports

Chapter 8 of the *Sybase SA Companion User's Guide* discusses how to obtain various reports which support the operations staff in database administration.

5.6.6 Status/Log Messages

Sybase errors are logged at the system console and on the SQL Server error log. Chapter 3 of the *Sybase SA Companion User's Guide* discusses the use of the Errorlog screen for browsing error logs.

5.6.7 Diagnostic Capabilities

The AutoSys product has a **chl_auto_up** command to allow the operations staff to determine whether AutoSys has a valid database connection and whether or not the SQL Server is running.

6. Infrastructure Tools

6.1 Distributed Computing Environment

6.1.1 Introduction

The Distributed Computing Environment (DCE) is a set of services that support the interaction of applications in a distributed computer system. DCE supports the following:

- Interprocess communication between clients and servers
- A Directory Service which allows distributed computers, peripherals, files, and users to be used and managed using a common location-independent naming system
- A Distributed Time Service which synchronizes the clocks in the various Ir1 computers
- A Security Service which controls access to resources and provides for secure communication
- A Distributed File Service which allows users to store and access data stored in files located on remote computers

See the *OSF DCE Administration Guide - Introduction* for a general introduction to DCE and associated M&O issues.

6.1.1.1 DCE Cells

DCE is administered as a collection of one or more cells. A DCE cell consists of a set of associated users, computers, and supporting resources. A cell establishes a security boundary between the users and resources within the cell and those outside of the cell. All of the Ir1 computers and resources are encompassed by a single DCE cell.

The Cell Directory Service (CDS) is the critical component of DCE that makes it possible for client processes to locate and obtain services from server processes. A computer system that hosts the CDS is called a CDS Server. The Ir1 CSS Server performs the function of the CDS Server.

6.1.1.2 DCE Login

DCE M&O functions require the use of various DCE utility commands run on the CSS Server at the EDF. These commands can only be used by the system administrator after he has logged into DCE using the **`dce_login`** command. Chapter 3 of the *OSF DCE User's Guide and Reference* describes the DCE login procedure; Chapter 9 describes the **`dce_login`** command.

6.1.1.3 DCE M&O Functions

The M&O activities required for DCE in Ir1 are primarily concerned with the following:

1. DCE User Administration
2. Changing Security Privileges

3. Setting the System Time
4. DCE Monitoring
5. DCE Failover
6. DCE Data Backup

These functions are described in the sections that follow.

6.1.2 DCE User Administration

DCE users are known as "principals". Principals include human users, servers, machines, and cells. The **rgy_edit** program is an interactive, command-line interface used to create and maintain information about DCE principals. The use of the **rgy_edit** program is described in *OSF DCE Administration Guide - Core Components*. Chapter 24 contains a procedure for adding new user accounts.

A principal must have a "service ticket" in order to access a DCE service. A service tickets is presented to DCE servers by the requesting principal when the principal wishes to access the service. The service ticket tells the server that the principal has been authenticated by the DCE Security Service. Principals can request and receive service tickets only if they have a a ticket-granting ticket (TGT). Service tickets and TGTs have limited lifetimes determined by the system administrator. The **klist** command is used to display information about current tickets and privilege attributes associated with the user. Chapter 3 of the *OSF DCE User's Guide and Reference* describes the use of the **klist** command.

6.1.2.1 Inputs/Controls

The **rgy_edit** program is controlled by various subcommands which direct the program to perform specific administration tasks. For example, the **add** and **delete** subcommands is used to add and delete principals, groups, organizations, or accounts. In Ir1, it is standard procedure to have a corresponding UNIX user defined for every DCE user.

The use of the **rgy_edit** subcommands is described in *OSF DCE Administration Guide - Core Components*. Additional **rgy_edit** documentation can be found in Chapter 4 of *OSF DCE Administration Reference.*

6.1.2.2 Databases/Files

DCE user administration involves maintaining information contained in the DCE registry database. The registry database contains information similar to that found in the UNIX group and password files. The **rgy_edit** program modifies the registry database.

The **passwd_override** file is stored on individual machines and can be used to override information in the registry database as it applies to that machine. The use and format of this file is discussed in Chapter 24 of *OSF DCE Administration Guide - Core Components*.

Chapter 28 of *OSF DCE Administration Guide - Core Components* describes how to salvage and reconstruct a registry database.

6.1.2.3 Displays

The **rgy_edit view** command generates a display of account information that is described in Chapter 3 of the *OSF DCE User's Guide and Reference* .

The **klist** command generates a display of information about current tickets and privilege attributes associated with the user. The display is described in Chapter 3 of the *OSF DCE User's Guide and Reference* .

6.1.2.4 Outputs/Reports

The **rgy_edit** program provides a **help** subcommand for displaying help information. The **view** subcommand is used to display information in the registry database. Other outputs are discussed in *OSF DCE Administration Guide - Core Components*.

6.1.2.5 Status/Log Messages

Not applicable.

6.1.2.6 Diagnostic Capabilities

The **klist** command can be used by any user to determine his own privileges and whether or not that user is logged on to DCE.

6.1.3 Changing DCE Security Privileges

DCE controls user access to the named objects that it manages. These objects include files, directories, clients, and servers. DCE grants users (principals) access to named objects through the use of Access Control Lists (ACLs). Each named object has an associated ACL. The object's ACL contains individual entries that specify the permissions that are granted to a principal for the purpose of accessing that object.

The **acl_edit** command used to create, modify, and delete ACL entries for an object. An introduction to ACLs and the **acl_edit** command is given in Chapter 7 of *OSF DCE Administration Guide - Core Components.* See Chapter 4 of the *OSF DCE User's Guide and Reference* for complete information on ACLs and the use of the **acl_edit** command.

6.1.3.1 Inputs/Controls

The **acl_edit** command can be invoked in either the interactive mode or the command-line mode. In either mode, the operation of the **acl_edit** command is controlled by subcommands.

6.1.3.2 Databases/Files

Not applicable.

6.1.3.3 Displays

Normally, the **acl_edit** command runs a GUI in interactive mode. Various, subcommands display help information, ACLs, and permissions. These subcommands and the displays that they generate are described in Chapters 4 and 9 of the *OSF DCE User's Guide and Reference*.

6.1.3.4 Outputs/Reports

Not applicable.

6.1.3.5 Status/Log Messages

Not applicable.

6.1.3.6 Diagnostic Capabilities

Not applicable.

6.1.4 Setting the System Time

DCE provides the Distributed Time Service (DTS) which is used to provide fault-tolerant clock synchronization for the computers in Ir1. Chapter 13 of *OSF DCE Administration Guide - Core Components* describes how DTS works.

DTS provides a command interface for all DTS configuration and management functions. The interface is accessed by entering the **dtscp** command at the system prompt. Afterwards DTS commands can be entered at the **dtscp** prompt. Chapter 13 of *OSF DCE Administration Guide - Core Components* and Chapter 3 of *OSF DCE Administration Reference* describe how to use DTS commands.

Ir1 is not using an external time source; therefore, it is the responsibility of the operations staff at the EDF to manually set the correct time. The DTS command interface can be used to set the system time. The DTS **update** command is used to update the system time monotonically; the DTS **change** command is used to update the system time non-monotonically. Normally, the **update** command is used.

Once the system time is set, DTS keeps the Ir1 computer clocks in synchronization by comparing the clocks of three of the Ir1 computers. These computers are designated as "DTS Servers". Chapter 13 of *OSF DCE Administration Guide - Core Components* describes how DTS performs clock synchronization.

6.1.4.1 Inputs/Controls

The DTS clock synchronization function is controlled by various characteristics that can be set with the DTS **set** command. Chapter 13 of *OSF DCE Administration Guide - Core Components* describes these settings.

6.1.4.2

Not applicable.

6.1.4.3 Displays

Not applicable.

6.1.4.4 Outputs/Reports

The DTS clock synchronization function is controlled by various characteristics that are set with DTS commands. The values of these settings can be displayed at any time with the DTS **show** command.

6.1.4.5 Status/Log Messages

DTS has an event reporting capability that notifies the M&O staff whenever a system clock is inaccurate or fails to synchronize. Status and log messages are written to the UNIX system log of the CSS Server. These messages can be viewed using standard UNIX commands (e.g. **grep)** for examining ordinary ASCII files.

6.1.4.6 Diagnostic Capabilities

The DTS **show** command can be used to diagnose problems with DTS. If there is no response to a DTS **show all** command, then there is a problem with one or more of the DTS servers.

6.1.5 DCE Monitoring

The **cdscp** command and the CDS Browser are used to monitor the CSS Server and the growth in the size and number of CDS directories. Chapter 6 of *OSF DCE Administration Guide - Introduction* provides a summary of CDS monitoring tasks. The *OSF DCE Administration Guide - Core Components* and the *OSF DCE Administration Reference* describe the use of the **cdscp** command in detail. The use of the CDS Browser is described in Chapter 2 of *OSF DCE User's Guide and Reference.*

The DTS **show** command (see Section 6.1.4) can be used to verify that all three DTS servers are available to DTS and are functioning normally.

The **sec_admin** command can be used to determine whether or not the master Directory and Security processes are operational on the EDF CSS Server. See Section 6.1.6.6.

6.1.5.1 Inputs/Controls

Not applicable.

6.1.5.2 Databases/Files

Not applicable.

6.1.5.3 Displays

Chapter 2 of *OSF DCE User's Guide and Reference* describes the use of the CDS Browser GUI.

6.1.5.4 Outputs/Reports

Chapter 10 of *OSF DCE Administration Guide - Core Components* describes the output of the CDS control program **show** and **list** commands.

6.1.5.5 Status/Log Messages

DCE logs status messages on the system log (e.g. **syslog**) of each host computer. DCE shares the system log with the host operating system. DCE logs a status message on the CSS Server whenever a client process starts a DCE session with a server process, and whenever a client process terminates a DCE session with a server process.

Appendix D of *OSF DCE Administration Guide - Core Components* lists event messages that are issued by the DCE Cell Directory Service.

6.1.5.6 Diagnostic Capabilities

Ir1 provides a system monitoring capability that will notify the operations staff if there is a problem with either the CSS Server or its backup. Section 6.2 describes this capability in more detail.

6.1.6 DCE Failover

The successful operation of DCE at the DAACs and at the EDF depends on the operation of the DCE Security and Directory processes. Normally, these processes run on the CSS Server at the EDF, and nowhere else. Since these processes are so critical to the operation of Ir1, backup Security and Directory processes are available at the GSFC DAAC. These backup processes take over in the event of a failure of the CSS Server. This occurs automatically, without operator intervention.

Once the backup Security and Directory processes take over, DCE cannot be reconfigured in any way until the operation of the primary Security and Directory processes is restored.

When the failed EDF CSS Server is restarted and put back on-line, the Security and Directory processes restart automatically, and resume as the master Security and Directory processes for Ir1. The GSFC processes automatically assume their previous role as backup processes.

6.1.6.1 Inputs/Controls

Not applicable.

6.1.6.2

Not applicable.

6.1.6.3 Displays

Not applicable.

6.1.6.4 Outputs/Reports

Not applicable.

6.1.6.5 Status/Log Messages

Not applicable.

6.1.6.6 Diagnostic Capabilities

The **sec_admin** command can be used to determine whether or not the master Directory and Security processes are operational on the EDF CSS Server. When the **sec_admin** command is entered it is normal for the following message to be displayed:

> **`Default replica:`** *`cellname`***`/subsys/dce/sec/master`**
>
> **`Default Cell:`** *`cellname`*

where *`cellname`* is the name of the Ir1 DCE cell. If the name of the default replica ends with "master" as shown, then the EDF CSS Server is running the master Directory and Security processes. If the name ends with "(read-only)" then the backup Directory and Security processes have become operational at the GSFC DAAC.

Ir1 provides a system monitoring capability that will notify the operations staff if there is a problem with either the CSS Server or its backup. Section 6.2 describes this capability in more detail.

6.1.7 DCE Data Backup

In Ir1, critical DCE databases and files are maintained on the CSS Server at the EDF. This data is backed up along with other CSS Server files using normal UNIX file backup utilities. No special backup operations are required for DCE databases and files.

6.2 System Performance Management

Ir1 provides capabilities for monitoring Ir1 system performance and for managing system components The overall management and monitoring of Ir1 is based at the EDF. The DAACs are given access to a subset of these capabilities, via the EDF, to demonstrate functions that will be available in future releases of ECS.

Ir1 system performance management is based on the HP OpenView product which includes the HP OpenView Network Node Manager and HP OpenView Windows. The Network Node Manager is a network management application that manages TCP/IP networks and devices that support the Simple Network Management Protocol (SNMP). HP OpenView Windows provides an X-Windows user interface to the functions provided by the Network Node Manager.

System monitoring and management is performed using a set of **submaps** displayed in single windows by the HP OpenView Windows user interface. Each submap shows a set of related symbols that individually represent a component of the Ir1 network. The color of each symbol indicates the status of the component. The symbol also represents a "child" submap for that component. Child submaps are displayed by double-clicking on the symbols. Section 6.2.1.3 describes these windows and their associated functions in detail.

6.2.1 System Performance Management at the EDF

The Network Node Manager employs a **manager system** on the EDF MSS Server to monitor the Ir1 network. The manager system employs network management processes that are started automatically when the MSS Server is started. The manager system communicates with **agent systems** that are the managed devices and computers in Ir1. The following system performance management capabilities are available at the EDF:

- the capability to display the entire Ir1 network configuration and network fault status
- the capability to display the status for Ir1 components at the site, computer, device, and process level
- the capability to monitor system performance and diagnose performance problems
- the capability to generate and extract reports on system performance
- the capability to alert the operations staff of Ir1 system problems that occur anywhere in the network
- the capability to login to Ir1 computer hosts directly from the monitoring displays

The submaps for Ir1 are displayed at the EDF MSS Server when the **ovw** command is issued. This command starts both HP OpenView Windows and the Network Node Manager. When started the Network Node Manager automatically "discovers" all available components on the Ir1 network.

The startup procedure for HP OpenView Windows and the Network Node Manager is discussed in Chapter 2 of the *HP OpenView Network Node Manager User's Guide*. The procedure for exiting the Network Node Manager from a submap is described in the same chapter.

Administration of the Ir1 system performance management capability is conducted at the EDF using the **ovadmin** user account.

6.2.1.1 Inputs/Controls

The format of the **ovw** command is given in the *HP OpenView Network Node Manager Administrator's Reference*.

6.2.1.2 Databases/Files

The system performance management software has the capability to generate performance reports. The output of these reports are saved in files which reside in the **report directory** on the MSS Server. The path name of the report directory is as follows:

`/users/report/report`

6.2.1.3 Displays

The various submaps are displayed in windows which adhere to the same conventions for screen navigation and screen format. Each submap consists of the following parts:

- menu bar
- viewing area
- status line
- button box

An on-line help capability is available using the menu bar. Chapter 2 of the *HP OpenView Network Node Manager User's Guide* provides a detailed description of the conventions that apply to each part of the submap window.

All of the submaps show the status of various Ir1 system components by coloring the symbols that represent those components. The status associated with the colors is shown in Table 6.2-1.

Table 6.2-1 Ir1 Component Status Colors

Color	**Status Condition**
Green	All devices represented by the symbol are operating normally
Blue	One component represented by the symbol is operating in a warning/degraded condition
Yellow	Multiple components represented by the symbol are operating in a warning/degraded condition
Orange	One component represented by the symbol is operating normally, all the rest are reporting abnormal conditions
Red	The component represented by the symbol is down, off-line, or is inaccessible to the Network Node Manager

The Ir1 submaps are described in the sections that follow.

6.2.1.3.1 Ir1 Submap

The **Ir1 Submap** (Figure 6.2-1) and the **Event Categories** window (see Section 6.2.1.3.5) are the first displays presented to the user. This submap shows a map of the U.S.A. with overlaid symbols representing (1) the status of the various Ir1 sites, and (2) a "router" symbol representing the Ir1 communications network.

The **Site Submap** (see Section 6.2.1.3.3) for a DAAC or the EDF can be displayed by double-clicking on the appropriate site symbol. The **Internet Submap** (see next section) is displayed by double-clicking on the router symbol. The **Ir1 Submap** is the "home" submap and can be displayed from any of the other submaps by clicking on the **Home** button at the bottom of the submap window.

Figure 6.2-1 Ir1 Submap

6.2.1.3.2 Internet Submap

The **Internet Submap** (Figure 6.2-2) shows a map of the U.S.A. with overlaid symbols representing the status of Ir1 communications links and "discovered" communication nodes.

Figure 6.2-2 Internet Submap

6.2.1.3.3 Site Submap

The **Site Submap** (Figure 6.2-3) shows (1) the status of monitored computer nodes and printers at a selected site, and (2) a "router" symbol representing the Ir1 communications network.. Computer nodes are represented by symbols depicting a computer screen and keyboard.

The **Site Submap** provides the capability to login to any computer node represented on the submap. The login is accomplished by selecting **Misc: Terminal Connect -> Telnet (xterm)** from the menu bar.

The **Node Submap** for any of the represented computer nodes can be displayed by double-clicking on the appropriate computer node symbol. The **Internet Submap** (see Section 6.2.1.3.2) is displayed by double-clicking on the router symbol.

Figure 6.2-3 Site Submap

6.2.1.3.4 Node Submap

The **Node Submap** (Figure 6.2-4) shows the status of the computer node's network interface and any monitored processes that run on that computer.

Figure 6.2-4 Node Submap

6.2.1.3.5 Event Categories Window

The **Event Categories** window (Figure 6.2-5) provides a notification of when events occur.

Figure 6.2-5 Event Categories Window

The window has a button corresponding to each of the Ir1 event categories. An **Event Browser** window (next section) is displayed for an event category when the operator clicks on the button for that category. The Ir1 event categories are shown in Table 6.2-2.

Table 6.2-2 Ir1 Event Categories

Event Category	Description
Error Events	Events that indicate that inconsistent or unexpected behavior occurred
Threshold Events	Events that indicate that a threshold was exceeded
Status Events	Events that indicate that the status of a component or interface has changed
Configuration Events	Events that indicate that a node's configuration has changed
Application Alert Events	Events that describe the status of the system performance management software
ECS Application Events	Events that describe the status of Ir1 applications
All Events	All events listed above

6.2.1.3.6 Event Browser Window

The **Event Browser** window (Figure 6.2-6) displays event messages that are issued from managed components of Ir1 and correspond to the category selected from the **Event Categories** window. The window displays the following for each event:

- Severity
- Date/Time
- Source
- Event Message

The **Source** displayed for each event specifies the managed component that issued the event. The operator can display the submap corresponding to that component (if one exists) by double-clicking on the display line for that event.

Figure 6.2-6 Event Browser Window

6.2.1.4 Outputs/Reports

The system performance management software has the generic capability to generate performance reports. However, Ir1 is not pre-configured to produce specific reports. The M&O staff at the EDF has the capability to set up performance reports tailored to DAAC requirements. The following is a partial list of the types of reports that can be set up:

- Disk utilization
- Available free memory for a specified processor

- Communication link traffic volume
- System up time
- CPU Utilization

Figure 6.2-7 illustrates a sample report that shows the communication traffic volume between the GSFC and LaRC DAACs over time.

The output of these reports is available in the **report directory** on the MSS Server, to both EDF and DAAC operations staff. Access to the report output is via ftp under the **report** user account.

Figure 6.2-7 Communication Traffic Report

6.2.1.5 Status/Log Messages

The Network Node Manager issues notifications, called "events", that indicate a change in the status or performance of Ir1 or its components. These notifications are displayed in the **Event Browser** window (See Section 6.2.1.3.6).

6.2.1.6 Diagnostic Capabilities

The Network Node Manager has diagnostic capabilities that apply to the product itself and not to the Ir1 network or other Ir1 components. The capabilities are discussed in Chapter 4 of the *HP OpenView Network Node Manager Administrator's Reference*.

6.2.2 System Performance Management at the DAACs

The overall management and monitoring of Ir1 is based at the EDF; however, the DAACs can access system monitoring capabilities that apply to their site, via the EDF. These capabilities are available to the EDC, GSFC, and LaRC DAACs on a demonstration basis and are as follows:

- the capability to display the entire Ir1 network configuration and network fault status
- the capability to display the status for Ir1 components at the site, computer, device, and process level
- the capability to monitor system performance and diagnose performance problems
- the capability to generate and extract reports on system performance
- the capability to alert the operations staff at the DAAC of local system problems
- the capability to login to Ir1 computer hosts directly from the monitoring displays

DAAC operations staff access the submaps and performance management displays for Ir1 by logging in to an X-Windows terminal under the **hpov** user account, and performing a remote login to the MSS Server at the EDF. The remote login is accomplished using the **hpov Account** window described in Section 6.2.2.3.

6.2.2.1

Not applicable.

6.2.2.2 Databases/Files

Not applicable.

6.2.2.3 Displays

The DAACs have the capability to view the same displays as the EDF does (See Section 6.2.1.3). However, the DAACs have a read-only capability that does not allow them to modify the Ir1 system configuration.

The **hpov Account** window (Figure 6.2-8) is used by the DAACs to login to the EDF system and access the submaps and displays associated with system performance management. The window is displayed immediately after the user successfully performs a login under the **hpov** UNIX user account. Once the window is displayed the user must enter either the full name (machine name) of the local computer, or its IP address.

Figure 6.2-8 hpov Account Window

6.2.2.4 Outputs/Reports

The system performance management software has the generic capability to generate performance reports in PostScript format. However, Ir1 is not pre-configured to produce specific reports. The M&O staff has the capability to set up performance reports tailored to DAAC requirements.

The output of these reports is available from the **report directory** on the MSS Server at the EDF (See Section 6.2.1.2). Access to the report output is via ftp under the **report** user account.

6.2.2.5 Status/Log Messages

The Network Node Manager issues notifications, called "events", that indicate a change in the status or performance of Ir1 or its components. These notifications are displayed in the **Event Browser** window (See Section 6.2.1.3.6)

6.2.2.6 Diagnostic Capabilities

The troubleshooting of the Ir1 system performance management function is the responsibility of the operations staff at the EDF.

6.3 Bulletin Board Service

6.3.1 Overview

The Bulletin Board Service (BBS) supports a capability for sharing information, among Ir1 users, testers, and operations staff. The **xvnews** program is provided which allows users to read, store, send, and print Usenet news articles. News articles are organized within named "newsgroups". The **xvnews** program provides the user the capability to list available newsgroups. Ir1 provides the following newsgroups:

- info.ir1
- info.ir1.pdps
- info.ir1.idg
- info.ir1.science

The Bulletin Board Service provides the **ctlinnd** control program for adding and deleting newsgroups. The use of the **ctlinnd** control program for the administration of the Ir1 Bulletin Board Service is described in *Bulletin Board System Guide*.

The Ir1 Bulletin Board Service utilizes communications software that resides on the Bulletin Board Server at the EDF. This software receives and scans news from external news providers (Usenet), and transmits news articles to external providers as required. Maintenance and operations associated with the BBS is an EDF responsibility.

The Bulletin Board Server also hosts other non-Ir1 ECS functions. It is important that M&O activities (especially startup and shutdown) associated with non-Ir1 functions are coordinated with Ir1 operations.

6.3.2 Inputs/Controls

The operation of the **xvnews** program is controlled by command line parameters and environment variables. See *xvnews Man Pages* for further information.

The operation of the **ctlinnd** program is controlled by command line parameters. See *ctlinnd Man Pages* for further information.

6.3.3 Databases/Files

The expiration control file controls how long articles remain on the Bulletin Board Server before they expire. This directly affects the amount of disk space that is required by the Bulletin Board Service. This file is described in *Bulletin Board System Guide*.

6.3.4 Displays

The use of the **xvnews** program and associated displays are described in *xvnews Man Pages*.

6.3.5 Outputs/Reports

The **xvnews** program provides the capability to print news articles. This capability is described in *xvnews Man Pages, July 1994*.

6.3.6 Status/Log Messages

Not applicable.

6.3.7 Diagnostic Capabilities

Troubleshooting procedures can be found in the *Bulletin Board System Guide*.

6.4 Office Automation Tools

6.4.1 Overview

Ir1 provides office automation tools at the DAACs. These tools are hosted on the two SSI&T Workstations and on the MSS Server. These workstations have the capability to run Microsoft Windows and the Microsoft Office suite of office automation tools. Microsoft Windows is run from the UNIX command line using the **SoftWindows** command.

The MS Office Standard version 4.2, software package contains the following office automation tool packages:

- *Microsoft Excel 5.0* - This is the Ir1 spreadsheet application for tables and calculations. The use of this application is documented in the *Microsoft Excel User's Guide*.
- *Microsoft Word 6.0* - This is the Ir1 word processor application. The use of this application is documented in the *Microsoft Word User's Guide*.
- *PowerPoint 4.0* - This is the Ir1 application for producing presentation slides, drawings, and graphs. The use of this application is documented in the *Microsoft PowerPoint User's Guide*.
- *Microsoft Mail 3.2* - The use of this application is documented in the *Microsoft Mail User's Guide*.

6.4.2 Inputs/Controls

The operation of Microsoft Office is controlled by the configuration of Microsoft Windows on the host computer. See the *Microsoft Windows User's Guid*e for more information.

6.4.3 Databases/Files

The operation of Microsoft Office is controlled by configuration files used by Microsoft Windows on the host computer. See the *Microsoft Windows User's Guid*e for more information.

6.4.4 Displays

The Office Manager program is started from MS-Windows by double-clicking the Microsoft Office icon. The icons displayed by the toolbar represent the available applications. Click an icon application and it will start the software application running.

6.4.5 Outputs/Reports

The Microsoft Office applications have the capability to print their respective documents, spereadsheets, and slides to the Ir1 laser printers.

6.4.6 Status/Log Messages

Status messages are displayed on the screen. These are documented in the Microsoft Office documentation, referenced in 6.4.1.

6.4.7 Diagnostic Capabilities

Not applicable.

6.5 Software Discrepancy Reporting

6.5.1 Overview

Ir1 provides a capability for reporting and tracking suspected problems associated with the custom code delivered to implement Ir1. This capability is a prototype capability intended for use by the DAAC operations staff only, and is not intended for use as a mechanism for tracking problems with science software.

The main component of the software discrepancy reporting capability at each DAAC is the Mosaic World Wide Web (WWW) browser. Mosaic provides access to the **NCR Home Page** which provides the user interface for reporting software discrepancies. This capability is only usable from the EDF and from the SSI&T Workstations at the DAACs. Other WWW users. particularly non-ECS users, are denied the use this capability by Ir1 security mechanisms.

6.5.2 Inputs/Controls

The user interface for software discrepancy reporting is a page on the World Wide Web. The page is titled "ECS Non-Conformance Report" and is accessed using the following URL:

`http://newsroom/sit/ddts/ddts.html`

Once the page is accessed, the user is required to enter a password.

6.5.3 Databases/Files

Not applicable.

6.5.4 Displays

6.5.4.1 NCR Home Page

Figure 6.5-1 illustrates the **NCR Home Page** used for Ir1 software discrepancy reporting. All underlined words and phrases represent hypertext. An appropriate display is presented when the user clicks on the hypertext. The following is a list of the hypertext phrases along with a description of the action caused when the text is selected by the user:

DDTS (Distributed Defect Tracking System) - The selection of this phrase causes a description of DDTS to be displayed.

Introduction - The selection of this phrase causes instructions for the use of the **NCR Home Page** to be displayed.

Submit New NCR - The selection of this phrase causes the **Submit NCR Page** to be displayed (see section 6.5.4.2).

General Search for NCRs - The selection of this phrase causes the **NCR Search Page** to be displayed (see section 6.5.4.3).

Defect ID - The selection of this phrase causes the presentation of a display which allows the user to enter a Defect ID for an NCR. Once the Defect ID is entered the specified NCR is displayed.

Submitter ID - The selection of this phrase causes the presentation of a display which allows the user to enter a Submitter ID. Once the Submitter ID is entered, all NCRs for that "submitter" are displayed.

Submitted Date - The selection of this phrase causes the presentation of a display which allows the user to enter a Submitted Date. Once the Submitted Date is entered, all NCRs for that date are displayed.

Assigned Engineer - The selection of this phrase causes the presentation of a display which allows the user to enter the name of an Assigned Engineer. Once the name is entered, all NCRs assigned to that engineer are displayed.

Management Report - The selection of this phrase causes the presentation of the report display. This display allows the user to list NCRs, in various output formats, for specified dates.

Figure 6.5-1 NCR Home Page

6.5.4.2 Submit NCR Page

The **Submit NCR Page** is used to submit an NCR and is displayed in two parts, Part 1 and Part 2. Figure 6.5-2 illustrates Part 1 of the **Submit NCR Page**. The page contains two labeled pull-down menus. The menus are displayed by clicking on the boxes to the right of the labels. The user is required to enter information in boxes or make selections from pull-down menus, as follows:

Submitter Name: - The name of the individual submitting the NCR is entered here.

Phone Number: - The submitter's phone number is entered here.

E-Mail Address: - The submitter's E-mail address is entered here.

Location: - A location name is selected from one of the choices presented by a pull-down menu.

Submit to Which Class: - A class name is selected from one of the choices presented by a pull-down menu. If the User clicks on the hypertext, an brief explanation for this box is displayed.

Figure 6.5-2 Submit NCR Page - Part 1

After the user finishes entering the required information, the user selects the continue button. This causes the Part 2 of the **Submit NCR Page** to be displayed (see Figures 6.5-3a and 6.5-3b). Part 2 is too large to be displayed at once. A scroll bar is used to position the display so that desired portions of the display are presented.

The display contains boxes for data entry. All of the boxes have hypertext labels. If the user clicks on a label, then a brief explanation of the box is displayed. The page also contains labeled pull-down menus. The menus are displayed by clicking on the boxes to the right of the labels. The user is required to enter information in boxes or make selections from pull-down menus, as follows:

Submit to Which Project: - A project name is selected from one of the choices presented by a pull-down menu. The menu is displayed by clicking on the box.

Software: - The name of the software that is the subject of the NCR is entered here.

Version: - The version of the software is entered here.

Summary of Defect: - A short summary of the defect is entered here.

Defect Description: - A full description of the defect is entered here.

Detection Method: - A detection method is selected from one of the choices presented by a pull-down menu. The menu is displayed by clicking on the box.

Detect in Phase: - A phase is selected from one of the choices presented by a pull-down menu.

Test Program Name: - The name of the relevant test program is entered here.

Test System: - The name of the relevant test system is entered here

Version of OS: - The version of the operating system is entered here.

Problem Severity: - A severity designation is selected from one of the choices presented by a pull-down menu.

Affects Project: - The name of the affected project is entered here.

Need Fix By: - A date is entered here to indicate when the problem needs to be fixed.

Related CCR Number: - The CCR number of any related CCR is entered here.

Enhancement Request: - "Yes" or "No" is selected from the pull-down menu to indicate whether or not this NCR is a request to enhance an existing capability.

Show Stopper?: - "Yes" or "No" is selected from the pull-down menu to indicate whether or not the reported problem has the highest severity.

Two buttons are at the bottom of the page. The first is the **Clear Form** button. Clicking on this button causes the boxes on the screen to be cleared of any entries. The second button is the

Submit Defect Report button. Clicking on this button causes the NCR to entered into the problem tracking system.

Clicking on the **Return to NCR Home Page** hypertext causes the **NCR Home Page** to be displayed.

Figure 6.5-3a Submit NCR Page - Part 2

Figure 6.5-3b Submit NCR Page - Part 2 (continued)

6.5.4.3 NCR Search Page

Figure 6.5-4 illustrates the **NCR Search Page.** The page displays a **Class Name** pull-down menu. The menu is used to select a defect class. After the class is selected, the **CONTINUE** button is pressed to display the **Search Setup Page**.

Clicking on the **Return to NCR Home Page** hypertext causes the **NCR Home Page** to be displayed.

Figure 6.5-4 NCR Search Page

6.5.4.4 Search Setup Page

Figure 6.5-5 illustrates the **Search Setup Page.** The page is used to setup an NCR search and to display NCRs collected and sorted according to the search criteria.. The search is performed as follows:

The **Projects** pull-down menu is used to select the project for which the NCRs apply.

One or more of the six boxes under the **States** label are selected. Only NCRs that are identified with one of the selected "states" will be collected by the search operation.

One of **Engineer** or **Submitter** is selected when the search is to collect NCRs associated with a specific individual. If either is selected, the name of the Engineer/Submitter is entered in the box on the right.

One of **Project ID**, **Severity**, **State**, or **Date** is selected to indicate how the collected NCRs are to be sorted.

Two buttons are at the bottom of the page. The first is the **Clear** button. Clicking on this button causes the screen to be cleared of any entries. The second button is the **Search** button. Clicking on this button causes the search to proceed and the collected NCRs to displayed on the screen.

Clicking on the **Return to NCR Home Page** hypertext causes the **NCR Home Page** to be displayed.

Figure 6.5-5 Search Setup Page

6.5.5 Outputs/Reports

Lists of NCRs can be displayed as described in sections 6.5.4.1 and 6.5.4.4.

6.5.6

Not applicable.

6.5.7 Diagnostic Capabilities

Not applicable.

6.6 Mail Systems

6.6.1 Overview

Ir1 provides a capability to send and receive electronic messages among the users of the Ir1 system. The mail system is shared among the multi-vendor computer platforms at the Ir1 sites. The Science Processor at each site serves as a mail gateway to the internet. Users create, send, and read messages using a user interface program which interacts with the underlying UNIX mail system. Each Ir1 computer platform supports one or more user interface programs as shown in table 6.6-1.

Table 6.6-1 Mail Interface Programs

Computer/OS	Interface Program	**Documentation Reference**
SUN/Solaris	mail, mailx	Solaris AnswerBook (on-line reference)
SGI/IRIX	Media Mail	Media Mail on-line help, IRIX Insight (on-line documentation)
SGI/IRIX	System V mail, BSD Mail	IRIX Insight (on-line reference)
HP/HP-UX	elm, mailx	*Mail Systems: User's Guide* (HP manual), and *HP-UX Reference, Volume 1*
HP/HP-UX	mail	*HP-UX Reference, Volume 1*

The **sendmail** system provides the underlying capability for routing messages across the Ir1 network. Documentation for the SGI/IRIX **sendmail** facility can be found in Chapter 20 and Appendix D of *IRIX Advanced Site and Server Administration Guide*.

6.6.2 Inputs/Controls

See the documentation references provided in Section 6.2.1.

6.6.3 Databases/Files

Each mail user has a "mailfile" which contains that user's incoming mail. The mailfiles for all users reside in the same directory.

6.6.4 Displays

See the documentation references provided in Section 6.2.1 for a description of the displays associated with the mail user interfaces.

6.6.5 Outputs/Reports

The mail user interfaces provide the capability to display messages on the screen and to print them. See the documentation references provided in Section 6.2.1.

6.6.6 Status/Log Messages

Not applicable.

6.6.7 Diagnostic Capabilities

Not applicable.

6.7 Event Logging

6.7.1 Overview

Ir1 provides an event logging capability at each site. Each Ir1 application generates event messages an writes them to its own **Event Log File**. The application's Event Log File is located on the application's host computer. At each site, the Event Log Files for all of the site's applications are periodically collected from each computer, and are loaded into the **Event Log Database**. The Event Log Database is a Sybase database that resides on the MSS Server computer at each site. The database is managed by a Sybase SQL Server (see section 5.6.1) and is named **eventlogdb**.

6.7.1.1 Event Log Directories

All of the Event Log Files on each Ir1 computer reside in the computer's **Event Log Directory**. Periodically, the Event Log Files are copied from the Event Log Directory and placed in the **Download Directory** on the same computer. Subsequently, the files in the Download Directory are copied to the **Upload Directory** on the local MSS Server. These copy and download operations are controlled by a **cron** script that runs on each Ir1 host computer under the **logftp** UNIX user account. The Upload Directory contains Event Log Files from every local Ir1 host.

6.7.1.2 Loading the Event Log Database

Periodically, the MSS Server loads the Event Log Files from the Upload Directory into the Event Log Database. The load operation is controlled by a **cron** script that runs on the MSS Server under the **logdbuser** UNIX user account.

6.7.1.3 Database Startup and Shutdown

The SQL Server is started up automatically when the MSS Server computer is started up. Likewise, the SQL Server is shutdown when the MSS Server computer is brought to an orderly shutdown. Scripts are provided to allow the operations staff to effect the startup and shutdown of the SQL Server independently, without having to force the shutdown of the MSS Server computer. Chapter 3 of the *Sybase SA Companion User's Guide* describes startup and shutdown procedures in detail.

6.7.1.4 Database Backup

The operations staff are responsible for performing database backups. The database must be backed up on a regular basis in order to protect the data from loss due to system failure.

Database backup is accomplished with the **dump database** command. This must be done when the database is in single-user mode or is not in use. Database restoration is accomplished with the **load database** command. See the Sybase *System Administration Guide* for more information.

6.7.1.5 Transaction Log Maintenance

Each database has a transaction log that records all changes to its database. The transaction log grows in size over time, and can cause problems when full. The transaction log must be dumped periodically. See the Sybase *System Administration Guide* for more information.

6.7.2 Inputs/Controls

The Sybase name for the Event Log Database is **eventlogdb**. The following environment variables define other fundamental database parameters:

SYBASE - This specifies the path name of the Sybase directory (see section 6.7.3).

DSQUERY - This specifies the name of the Sybase SQL Server for all client applications. This name must be different than the name used for the SQL Server used by the Planning and Data Processing Subsystem.

6.7.3 Databases/Files

6.7.3.1 Directories

On each Ir1 computer host, the Event Log Directory is **/usr/local/hislog;** the Download Directory is **/usr/local/hislog/download**. On the MSS Server, the Upload Directory is **/usr/local/hislog/upload**

6.7.3.2 Internal Event Log Format

Ir1 Event Log entries are stored in the database in plain text. Each entry contains a number of fields separated by a vertical bar "|" character, as follows:

event | *severity* | *disp* | *time* | *application* | *version* | *pid* | *OS* | *OSV* | *address* | *cell* | *text* |

where,

event is an event number assigned by the application,

severity is the severity code associated with the event,

disp is the disposition code (always means "notify operator" for Ir1),

time is the time that the event was issued,

application is the name of the application reporting the event,

pid is the UNIX process ID for *application*,

OS is the name of the operating system running the application,

OSV is the version number of *operating system*,

address is the IP address for the host platform running *application*,

cell is the name of the Ir1 DCE cell, and *text* is the text of the event message. Explanations for *text* are found in Appendix A.

6.7.3.3 Sybase Files and Tables

The **Sybase directory** contains all files associated with Sybase configuration and operational files.

The **interfaces file** must reside on all Ir1 computer platforms. Each entry in the file tells the host machine how to connect to a SQL Server. This file is normally located in the Sybase directory.

The Sybase **transaction log** is a database table that records all changes to its respective database.

The SQL server **errorlog file** contains error messages generated by the SQL Server.

6.7.4 Displays

The *Sybase SA Companion User's Guide* describes the use of displays used for database administration.

6.7.5 Outputs/Reports

Ir1 provides scripts for displaying selected messages from the Ir1 Event Log, according to user-specified selection criteria. The **logreport** UNIX user account has query privileges for the Event Log Database.

Chapter 8 of the *Sybase SA Companion User's Guide* discusses how to obtain various reports which support the operations staff in database administration.

6.7.6 Status/Log Messages

Sybase errors are logged at the system console and on the SQL Server error log. Chapter 3 of the *Sybase SA Companion User's Guide* discusses the use of the Errorlog screen for browsing error logs.

6.7.7 Diagnostic Capabilities

The SQL Server error log is used for diagnosing Sybase errors.

Appendix A. System Messages

Communications Gateway Event Messages

The Communications Gateway issues both status and error messages to the **Gateway.log** Event Log File on the DAAC MSS Server. These messages are listed below.

`Authentication Success`	**Cause:** This is a status message indicating that an external client has been authenticated.
`myServerListenThd DCE Exception` *`DCEtext`*	**Cause:** A DCE exception occurred while the Communications Gateway was listening for a remote procedure call. "*DCEtext*" is information provided by DCE to clarify the error message. **Corrective Action:** Verify that a Gateway Proxy process did not abnormally terminate.
`myServerListenThd Gateway Proxy Exception` *`error`*	**Cause:** An error occurred while a Gateway Proxy process was listening for a remote procedure call. **Corrective Action:** Verify that the Ingest Interface did not abnormally terminate; verify that the Communications Gateway process did not abnormally terminate.
`Socket Exception` *`error`*	**Cause:** An error occurred during an attempt to communicate with an external client. **Corrective Action:** Verify that the external client is still in operation; verify that the communication path to the external client is operational.
`Invalid configuration file` *`number`*	**Cause:** An error was encountered while attempting to access information in a configuration file. **Corrective Action:** This is an error that requires the advice of the development staff.
`Gateway Proxy Exception` *`errortext`*	**Cause:** An unrecoverable error was detected by a Gateway Proxy process. **Corrective Action:** This is an error that requires the advice of the development staff.
`Invalid Message Type`	**Cause:** The external client sent the Communications Gateway a message haviing a message type not recognized by the Communications Gateway. **Corrective Action:** Verify that the external client is sending messages in the correct format.

`DCE Exception` *`DCEtext`*

Cause: A DCE exception occurred. "*DCEtext"* is information provided by DCE to clarify the meaning of the error message.
Corrective Action: This is an error that requires the advice of the development staff.

Data Server Interface

The Data Server Interface issues both status and error messages to the Data Server Log File on the DAAC MSS Server.

Ingest Interface Status and Error Messages

The Ingest Interface issues both status and error messages to the **IngestLocal.log** Event Log File on the Ingest Server. These messages are listed below. The status messages are identified as such (i.e. "This is a status message...") and indicate the status of the operation of the Ingest Interface. Error messages indicate that a problem has occurred, and that the problem needs correction by the operations staff. Corrective actions are suggested for each error message.

`Added Successfully clientId =` *`client`* `and Process Id =` *`processid`*

Cause: This is a status message issued by the Ingest Server Process to indicate that a record was added to a housekeeping file.

`AddSession Environment variable ECS_INGEST_SESSION_FILE_PATH not defined`

Cause: The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured.
Corrective Action: Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.

`CreateSess RPC rcvd from client =` *`client`*

Cause: This is a status message issued by the Ingest Server Process to indicate that a RPC was received from the Communications Gateway at the initiation of a connection with an external client.

`CreateSessRPC - Error forking process for Ingest Session`

Cause: The Ingest Server process was unable to create a Session Server process.
Corrective Action: This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.

`CreateSessRPC - Error Invoking executable for Ingest Session`	**Cause:** The Ingest Server process was unable to create a Session Server process. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate that the Session Server executable is missing or cannot be executed.
`DAN message received from client =` *`client`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DAN message was received from a client.
`DAN message received from client =` *`client`*`, ID =` *`id`*`,DAN SeqNum =` *`number`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DAN message was received from a client.
`DAN with duplicate sequence number rcvd from Client =` *`client`*`, ID =` *`id`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DAN message with a duplicate sequence number was received from a client.
`DDA rcvd,  Request NOT found in request list for DAN SeqNum =` *`number`*`, from client =` *`client`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DDA message was received from a client that specified an unknown DAN.
`DDA received with DAN# =` *`number`*`, from client =` *`client`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DDA message was received from a client.
`DeleteSession Environment variable ECS_INGEST_SESSION_FILE_PATH not defined`	**Cause:** The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`ECS_INGEST_EXE - Path not set for SessServer executable`	**Cause:** The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.

`Environment Variable not defined :` *`varname`*	**Cause:** The environment variable specified by *`varname`* was not set properly prior to the startup of the Session Server process. The application environment for the Session Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`Error -- Cannot access file status for file "`*`filename`*`"`	**Cause:** The Polling Process detected an error while attempting to open the file specified by *filename*. **Corrective Action:** Verify that the file exists and has appropriate access permissions.
`Error -- Cannot Open "`*`filename`*`" for input`	**Cause:** The Polling Process detected an error while attempting to open the file specified by *filename*. **Corrective Action:** Verify that the file exists and has appropriate access permissions.
`Error -- Corresponding Data Type or Host Name for Dir "`*`dirname`*`" is not defined!!`	**Cause:** The Polling Process was started with a *directory* command argument without corresponding *datatype* and *hostname* command arguments. **Corrective Action:** Restart the Polling Process with the correct command arguments (See Section 4.3.2.2).
`Error -- Data Provider, Directory, Data Type, and Host Name specification are not defined!!`	**Cause:** The Polling Process was started with missing command arguments. **Corrective Action:** Restart the Polling Process with the correct command arguments (See Section 4.3.2.2).
`Error -- Delivery Record Flag is not provided!!`	**Cause:** The Polling Process was started with only one command argument. **Corrective Action:** Restart the Polling Process with the correct command arguments (See Section 4.3.2.2).
`Error -- Delivery Record Indicator, Data Provider, Directory, Data Type, and Host Name specification are not defined!!`	**Cause:** The Polling Process was started with missing command arguments. **Corrective Action:** Restart the Polling Process with the correct command arguments (See Section 4.3.2.2).
`Error -- FTP remote file list failed with error code` *`error`*	**Cause:** The Polling Process detected an ftp error during an attempt to get directory information from the remote site. **Corrective Action:** Verify that the directory(s) specified in the Polling Process command line exists and has the appropriate access permissions. Verify that the local computer system has access permissions to logon to the remote site. Verify that a network error has not occurred.

`Error -- Incomplete input information! Required arguments are: IngestPolling <DeliveryRecordFlag> <DataProvider> <Directory1> <DataType1> <HostName1>!!`	**Cause:** The Polling Process was started with missing command arguments. **Corrective Action:** Restart the Polling Process with the correct command arguments (See Section 4.3.2.2).
`Error -- Unable to retrieve the value of environment variable` *`varname`*`.`	**Cause:** The environment variable specified by *`varname`* was not set properly prior to the startup of the Polling Process. The application environment for the Polling Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`Error -- user name not defined in:` *`filename`*	**Cause:** The Polling Process detected an error while accessing the contents of the User Profile File specified by *filename*. **Corrective Action:** Verify that the specified User Profile File exists and that it contains a valid username specification; verify that the User Profile File has the appropriate access permissions.
`Error -- user password not defined in:` *`filename`*	**Cause:** The Polling Process detected an error while accessing the contents of the User Profile File specified by *filename*. **Corrective Action:** Verify that the specified User Profile File exists and that it contains a valid password specification; verify that the User Profile File has the appropriate access permissions.
`Error Adding Session for client =` *`clientid`*`, PID =` *`processid`*	**Cause:** The Ingest Server process detected an error while interfacing with the Communications Gateway. **Corrective Action:** This is an error that may indicate a problem with the operating system, the Ir1 installed configuration, or a problem with the Communications Gateway.
`Error creating local directory; check access mode...`	**Cause:** The Session Server process was unable to create a directory during an attempt to transfer ingest data. **Corrective Action:** Verify that the ECS_INGEST_FTP_LOCAL_PATH environment variable is properly set and that the directory it specifies exists and has the appropriate access permissions.
`Error in FTP setting local path; status:` *`ftpstatus`*`...`	**Cause:** The Session Server process detected an ftp error during an attempt to transfer ingest data. **Corrective Action:** Verify that the username and password are correct in the User Profile File.

`Error in Registering/Adding request with DAN#` *`number`*`, from client =` *`client`*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.
`Error Open File in Search Sess =` *`filename`*	**Cause:** An error when the Ingest Server process attempted to open a file. **Corrective Action:** Verify that the ECS_INGEST_SESSION_FILE_PATH environment variable is set properly; or, verify that the file *filename* exists and has the appropriate access permissions.
`Error opening DDN Error Code File as defined by ECS_INGEST_DDN_ERROR_FILE:` *`filename`*	**Cause:** The Session Server process detected an error while accessing the DDN Error File. **Corrective Action:** Verify that the ECS_INGEST_DDN_ERROR_FILE environment variable is defined and that the file it specifies exists; verify that the file has the appropriate access permissions.
`Error opening UserProfileFile:` *`filename`*	**Cause:** The Session Server process detected an error while accessing the contents of a User Profile File. **Corrective Action:** Verify that the specified User Profile File exists and that its contents are correct; verify that the User Profile File has the appropriate access permissions.
`Error Returned from InShortDAA::FillDAA status =` *`status`*`, DAN# =` *`number`*`, from client =` *`client`*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is a serious error that likely indicates that insufficient memory was available to continue processing.
`Error returned from Request class, status =` *`status`* `,danSeq =` *`number`*`,client =` *`client`*	**Cause:** The Session Server Process detected an error that is further explained in a companion message that is issued immediately before this message. The companion message is documented in this table. **Corrective Action:** See corrective action associated with companion message.
`FTP Error - file :` *`filename`*`, ftpstatus =` *`ftpstatus`*	**Cause:** The Session Server process detected either an ftp error or a remote login error during an attempt to transfer ingest data. **Corrective Action:** Verify that the local computer system has access permissions to logon to the remote site. Verify that a network error has not occurred.

`InDAN -- Can not open file` *`filename`*`; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** The Session Server process detected an error while accessing the DAA or DDN Error File. **Corrective Action:** Verify that the ECS_INGEST_DAA_ERROR_FILE and ECS_INGEST_DDN_ERROR_FILE environment variables are defined and that the specified files exist; verify that the files have the appropriate access permissions.
`InDAN -- Can not read DAA error code from file` *`filename`*`; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** The Session Server process detected an error while accessing the contents of the DAA Error File. **Corrective Action:** Verify that the file exists and contains a valid error code on the second line.
`InDAN -- Can not read DAA msg type from file` *`filename`*`; DAN Sequence No:` *`number;`* `Data Provider:` *`provider`*	**Cause:** The Session Server process detected an error while accessing the contents of the DAA Error File. **Corrective Action:** Verify that the file exists and contains a valid message type on the first line.
`InDAN -- Can not read DDN error code from file` *`filename`*`; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** The Session Server process detected an error while accessing the contents of the DDN Error File. **Corrective Action:** Verify that the file exists and contains a valid error code on the second line.
`InDAN -- Can not read DDN msg type from file` *`filename`*`; DAN Sequence No:` *`number;`* `Data Provider:` *`provider`*	**Cause:** The Session Server process detected an error while accessing the contents of the DDN Error File. **Corrective Action:** Verify that the file exists and contains a valid message type on the first line.
`InDAN -- Environment variable for` *`varname`* `is not set; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** The environment variable specified by *`varname`* was not set properly prior to the startup of the Session Server process. The application environment for the Session Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`InDAN -- Fill Short DAA error code:` *`code`*`; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** This is a status message issued by the Session Server Process to report that appropriate information is not available to return a DAA message.
`InDAN -- Fill Short DDN error code:` *`code`*`; DAN Sequence No:` *`number`*`; Data Provider:` *`provider`*	**Cause:** This is a status message issued by the Session Server Process to report that appropriate information is not available to return a DDN message.

`InDAN -- Get Long DAA error code:` *code*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** This is issued by the Session Server Process to report that there was a problem in constructing a long DAA message. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.
`InDAN -- Get Long DDN error code:` *code*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** This is issued by the Session Server Process to report that there was a problem in constructing a long DDN message. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.
`InDAN -- Get Short DAA error code:` *code*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** This is issued by the Session Server Process to report that there was a problem in constructing a short DAA message. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.
`InDAN -- Get Short DDN error code:` *code*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** This is issued by the Session Server Process to report that there was a problem in constructing a short DDN message. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.
`InDAN -- Invalid DAA message type:` *type*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** The Session Server process detected an error in the value of the message type specified in the first line of the DAA Error File. **Corrective Action:** Verify that the file contains a valid error code on the first line.
`InDAN -- Invalid DAN file name:` *filename*; DAN Sequence No: *number*, Data Provider: *provider*	**Cause:** This is issued by the Polling Process to report that an error was encountered in accessing the DAN file previously generated by the Polling Process.
`InDAN -- Invalid DAN message length; DAN Sequence No:` *number*, Data Provider: *provider*	**Cause:** This is a status message issued by the Session Server Process to report that wrong information was received in a DAN message.
`InDAN -- Invalid DAN Sequence No:` *number*; Data Provider: *provider*	**Cause:** This is a status message issued by the Session Server Process to report that a wrong DAN Sequence Number was received in a DAN message.
`InDAN -- Invalid DDN message type:` *type*; DAN Sequence No: *number*; Data Provider: *provider*	**Cause:** The Session Server process detected an error in the value of the message type specified in the first line of the DDN Error File. **Corrective Action:** Verify that the file contains a valid error code on the first line.

`InDAN -- Invalid expiration Date:` *date*`; DAN Sequence No:` *number*`; Data Provider:` *provider*	**Cause:** This is a status message issued by the Session Server Process to report that a wrong expiration time value was received in a DAN message.
`InDAN -- Parsing PVL statement error code:` *code*`; DAN Sequence No:` *number*`, Data Provider:` *provider*	**Cause:** This is a status message issued by the Session Server Process to report that wrong information was received in a DAN message.
`InDelSessionRPC delivered with status =` *status*	**Cause:** This is a status message issued by the Session Server Process to indicate that a RPC was delivered to the Ingest Server Process for cleanup purposes upon the termination of a session with an external client.
`InLongDAA -- Invalid DAA message length; DAA message is not generated; DAN Sequence No:` *number*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is a serious error that likely indicates that insufficient memory was available to continue processing.
`InLongDAA -- Invalid DAN Sequence Number:` *number*	**Cause:** This is a status message issued by the Session Server Process to report that a long DAA is being generated in response to a DAN with an invalid sequence number.
`InLongDDN -- Invalid DAN Sequence Number:` *number*	**Cause:** This is a status message issued by the Session Server Process to report that an invalid sequence number has been detected.
`InLongDDN -- Invalid DDN msg length; DDN msg is not generated; DAN Sequence No:` *number*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is a serious error that likely indicates that insufficient memory was available to continue processing.
`InRequest - DDN Delivered to Gateway, Status =` *status*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DDN message was delivered to the Communications Gateway.
`InRequest::FillData - Unable to get Data Type info from DAN, status =` *status* `and SessionId =` *id*	**Cause:** This is a status message issued by the Session Server Process to report that wrong information was received in a DAN message.
`InRequest::FillData failure, status =` *status* `and SessionId =` *sessionid*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.

`InShortDAA -- Invalid DAN sequence : `*`number`*`; DAAStatus: `*`status`*	**Cause:** This is a status message issued by the Session Server Process to report that a short DAA is being generated in response to a DAN message received with an invalid DAN sequence number.
`InShortDAA -- Invalid Short DAA message length; DAA message is not generated; DAN Sequence No: `*`number`*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is a serious error that likely indicates that insufficient memory was available to continue processing.
`InShortDDN -- Invalid DAN Sequence Number: `*`number`*	**Cause:** This is a status message issued by the Session Server Process to report that an invalid DAN sequence number was detected while generating a short DDN.
`InShortDDN -- Invalid DDN msg length; DDN msg is not generated; DAN Sequence No: `*`number`*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is a serious error that likely indicates that insufficient memory was available to continue processing.
`Invalid ClientId = `*`clientid`*	**Cause:** The Ingest Server process detected an error while interfacing with the Communications Gateway. **Corrective Action:** This is an error that may indicate a problem with the operating system, the Ir1 installed configuration, or a problem with the Communications Gateway.
`Invalid clientId = `*`clientid`*` OR Process Id = `*`processid`*	**Cause:** The Ingest Server process detected an error while interfacing with the Communications Gateway. **Corrective Action:** This is an error that may indicate a problem with the operating system, the Ir1 installed configuration, or a problem with the Communications Gateway.
`ListSession Environment variable ECS_INGEST_SESSION_FILE_PATH not defined`	**Cause:** The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`Local Dir is not set = `*`directory`*	**Cause:** The ECS_INGEST_FTP_LOCAL_PATH environment variable is not set. **Corrective Action:** Verify that the ECS_INGEST_FTP_LOCAL_PATH environment variable is properly set and that the directory it specifies exists and has the appropriate access permissions.

`No corresponding DAN# :` *`number`* `for DDA, from client =` *`client`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a DDA message was received from a client with no corresponding DAN number.
`Open file error =` *`filename`*	**Cause:** An error when the Ingest Server Process attempted to open a file. **Corrective Action:** Verify that the ECS_INGEST_SESSION_FILE_PATH environment variable is set properly; or, verify that the file *filename* exists and has the appropriate access permissions.
`Open Session file error -` *`filename`*	**Cause:** An error when the Ingest Server Process attempted to open a file. **Corrective Action:** Verify that the ECS_INGEST_SESSION_FILE_PATH environment variable is set properly; or, verify that the file *filename* exists and has the appropriate access permissions.
`Record Deleted from file for PID =` *`processid`*`, Client =` *`client`*	**Cause:** This is a status message issued by the Ingest Server Process to indicate that a record was deleted from a housekeeping file, upon termination of a session with a client.
`Record Successfully Deleted from file for PID =` *`processid`*	**Cause:** This is a status message issued by the Ingest Server Process to indicate that a record was deleted from a housekeeping file.
`Request Deleted from list for DAN SeqNum =` *`number`*`,client =` *`client`*	**Cause:** This is a status message issued by the Session Server Process upon receipt of a DDA, in order to indicate the completion of a request.
`Search Invalid PID =` *`processid`*	**Cause:** The Ingest Server process detected an invalid process ID. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. The problem occurred during an attempt to perform a UNIX "fork" function.
`SearchSession - Error Open File =` *`filename`*	**Cause:** An error when the Ingest Server process attempted to open a file. **Corrective Action:** Verify that the ECS_INGEST_SESSION_FILE_PATH environment variable is set properly; or, verify that the file *filename* exists and has the appropriate access permissions.

`SearchSession Environment variable ECS_INGEST_SESSION_FILE_PATH not defined`	**Cause:** The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`SearchSessionPID - Environment variable ECS_INGEST_SESSION_FILE_PATH not defined`	**Cause:** The specified environment variable was not set properly prior to the startup of the Ingest interface software. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`Session already exists for client =` *`client`*`, New Session NOT created!`	**Cause:** This is a status message issued by the Ingest Server Process to indicate that an external client has attempted to initiate a session before the client's previous session was terminated.
`Session LookupByGroup Failed, st =` *`status`*	**Cause:** The Ingest Server process detected a DCE error while attempting to lookup a server process name using the DCE Cell Directory Service. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Setenv or invalid Client Error returned from SearchSession status =` *`status`*`, for client =` *`client`*	**Cause:** An environment variable used by the Ingest Server Process was not set properly prior to the startup of the process. The application environment for the Ingest Server Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`stopGWServer RPC delivered with status =` *`status`*	**Cause:** This is a status message issued by the Session Server Process. The message indicates that the process has notified the Communications Gateway that the Session Server is terminating execution. The Communications Gateway termiates its session with the external client as a result.

`Success -- New files found in directory "`*`dirname`*`"`	**Cause:** This is a status message issued by the Polling Process to report that it has polled a remote directory for ingest data and found files in the directory that were not found previously.
`Success -- No files found in directory "`*`dirname`*`"`	**Cause:** This is a status message issued by the Polling Process to report that it has polled a remote directory for ingest data and found no files in the directory.
`Success -- No new DAN file is created for ingest`	**Cause:** This is a status message issued by the Polling Process to indicate that no new request was generated by the Ingest Interface.
`Success -- No new files found in directory "`*`dirname`*`"`	**Cause:** This is a status message issued by the Polling Process to report that it has polled a remote directory for ingest data and found no files in the directory that were not found previously.
`Success -- Start Polling`	**Cause:** This is a status message issued by the Polling Process to report that it has begun polling a remote directory for ingest data.
`Terminate session for client = `*`client`*	**Cause:** This is a status message issued by the Session Server Process to indicate that a client session has been terminated.
`Unable to get FileInfo from DAN, status = `*`status`*` and SessionId = `*`id`*	**Cause:** This is a status message issued by the Session Server Process to report that file information required to perform an ftp file transfer was not retrieved from a DAN message.
`Unable to lookup Ingest server, DelSessRPC not sent. Process Id = `*`processid`*	**Cause:** The Session Server process detected a DCE error while attempting to lookup a server process name using the DCE Cell Directory Service. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to populate DAN, status = `*`status`*` and SessionId = `*`sessionid`*	**Cause:** The Session Server Process detected an error while processing an ingest request. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration.

`Unable to spawn a Ingest InRequest thread status =` *`DCEerror`* `and SessionId =` *`sessionid`*	**Cause:** The Session Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to spawn a Ingest Server thread Status =` *`DCEerror`*	**Cause:** The Ingest Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to spawn a Session Server thread Status =` *`DCEerror`*	**Cause:** The Session Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to start Ingest Server Thread - status =` *`DCEerror`*	**Cause:** The Ingest Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to start Session Server Thread - status =` *`DCEerror`*`, PID:` *`processid`*	**Cause:** The Session Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`Unable to wait for termination of Ingest Server thread Status =` *`DCEerror`*	**Cause:** The Ingest Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.

`Unable to wait for termination of Sess Server thread Status =` *`DCEerror`*	**Cause:** The Session Server process detected a DCE error. **Corrective Action:** This is an error that indicates either a problem with the operating system or the Ir1 installed configuration. It may indicate a problem with the DCE configuration. Contact the DCE administrator at the EDF.
`User name not defined in file =` *`filename`*	**Cause:** The Session Server process detected an error while accessing the contents of a User Profile File. **Corrective Action:** Verify that the specified User Profile File contains a valid username specification.
`User password not defined in file =` *`filename`*	**Cause:** The Session Server process detected an error while accessing the contents of a User Profile File. **Corrective Action:** Verify that the specified User Profile File contains a valid password specification.
`UserProfileFile :` *`filename`* `is empty or doesn't exist.`	**Cause:** The Session Server process detected an error while accessing the contents of a User Profile File. **Corrective Action:** Verify that the specified User Profile File exists and that its contents are correct; verify that the User Profile File has the appropriate access permissions.
`Warning -- Cannot Open "`*`filename`*`" for Cleanup`	**Cause:** The Polling Process detected an error while attempting to open the file specified by *filename*. **Corrective Action:** Verify that the file exists and has appropriate access permissions.
`WARNING -- File "`*`filename`*`" does not exist.  Creating one...`	**Cause:** The Polling Process detected that an internal work file was missing. **Corrective Action:** This condition is automatically corrected by the Polling Process and is not a processing error. No intervention is required by the operations staff.
`Warning -- POLL_TIMER env is NOT set! Default timer is used.`	**Cause:** The `POLL_TIMER` environment variable was not set properly prior to the startup of the Polling Process. The application environment for the Polling Process is not properly configured. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.

Science Data Processing Toolkit Error Messages

The following messages are issued by the Science Data Processing Toolkit. These messages are logged in the **pdps_event.log** Event Log File on the MSS Server.

`50 iterations without conv`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`a freeform error has occurred`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`A unit in the data file is corrupted`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`accuracy of the output is suspect`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Address %d is not allocated previously`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`altitude specified is more than 50,000 km below surface of Earth`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`an error has occurred in the PeV tool`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error in mapping parm from suppSupport list file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error occurred in at least one of the transformations`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`an error occurred in computing at least one after dark value`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error occurred in computing at least one subsatellite point value`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error occurred in determining if point was in the FOV for at least one case`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error occurred in determining if the CB was in the FOV for at least one case`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`an error was detected while extracting support data`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`An error was found in the file header PGSTK, PGSAA, 10`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`An invalid file duration setting was requested`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`an open file call failed`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`an open file call failed`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Check for existence of named file.
`At least 1 packet had a bad Application ID`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`At least 1 packet had a bad data length`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Attempt to do FORTRAN Open with STATUS=NEW failed!`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Attempt to do FORTRAN Open with STATUS=OLD failed!`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Attempt to do FORTRAN Open with STATUS=UNKNOWN failed!`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Attempt to map logical to physical file failed.`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Attribute %s is not defined for parameter %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`azimuth worthless because ray is at zenith`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Bad default setting detected for I/O path`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`bad Earth model specified (e.g. negative or zero Earth radii or prolate Earth)`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`bad ordering of input times (start time <= desired time <= stop time)`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Bad SC ephemeris values encountered for some pixels`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`bad value for latitude`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`bad value for longitude`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:**
`Base node, aggregate cannot be formed`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:**
`below the ground`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Buffer size must be a positive integer`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Can't extract point information`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Can't get path to Area Feature Table`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`can't insert a new aggregate into the tree`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`can't map from pevlogical to filename`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`can't open file to create ODL tree`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check for existence of named file.

`Can’t open input file`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`can’t parse data file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Can't find 1st packet in dataset`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Cannot find location in any data base faces`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
`cbId of Earth`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** None
`check to see if the Earth's bulge occults the CB`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Conflict with data dictionary for Metadata %s, The data dictionary definition of %s is %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Convergence Error`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`coordinate system transformation flag not recognized/supported`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`could not establish min./max. range for the DEM`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`could not establish parameter datatype`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`could not establish support file id`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`could not establish tile status of the DEM file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Couldn't initialize Data file`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Check for existence of named file.
`CUC runtime error`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** None
`Data field is NULL.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error.
`data Rate attribute unset in support file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`DCW error`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Default Earth model used`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Default file location not specified.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`DEM datafile datatype is unknown`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Direction should either be forward or inverse`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`Division pointer equal to NULL - PCF was invalid at initialization.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Division pointer not pointing to divider symbol.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Earth blocks the celestial body`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Earth blocks the FOV`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Encountered unexpected end-of-file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Environment not defined by Process Control Tools: %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Environment variable "PGSMEM_SHM_SYSKEY" is not set`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Environment variable not set: %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Ephemeris data (file) is unavailable.`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Ephemeris out of span`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Equal latitudes for St. Parallels on opposite sides of equator`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`ERRNO %d, %s`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error accessing internal virtual file table`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error accessing Process Control Status data.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`error computing Greenwich Hour angle from either getting UTC time, Julian date, polar motion correction, or GMST time`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error during read of physical file header for initialization`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error has occurred in the GCTP library`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`error in accessing spacecraft ephemeris file`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Check for existence of named file.
`error in ASCII time string format (generic format: YYYY-MM-DDThh:mm:ss.ddddddZ)`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`error in ASCII time string value (e.g. hours > 23)`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`error in executing autoOperation`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

error in executing operation	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
error in file header of spacecraft ephemeris file	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
error in flattening value used, flattening must be < 1	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
error in GEO extraction	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
error in PeV tool obtaining dbin	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
error obtaining file name	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check for existence of named file.
Error occurred attempting to get physical file header information	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
Error occurred determining file information	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
Error occurred during memory allocation	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
Error occurred during time conversion	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
Error occurred in JPL Ephemeris software function PLEPH	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Error opening file:  %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Error opening next physical file in sequence`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error opening State Plane parameter file`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Check for existence of named file.
`error returned from PGS_AA_2D geo`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Error while reading from Process Control file:  %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`euler angle index is out of range - should be one of 1, 2 or 3`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Exceeded amount of shared memory requested - write failed.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Failed to close physical file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Failed to initialize internal physical file table`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Failed to locate requested byte in file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Failed to process this file logical in process control file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`failure in calculation of structure from lat/lon`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`failure in Freeform db_events function`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`failure in Freeform db_set function`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`failure in Freeform make_dbin function`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`failure to malloc`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`failure to transfer selected values from parmBuffer to results`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`File could not be located on disk`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`File creation could not be achieved`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`File does not exist, or cannot be deleted`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Check access privileges are set correctly.
`File does not exist, or cannot be created.`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`File exists! Changing access mode from Write to Update`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None

`File exists! resetting access mode to PGSd_IO_Gen_Append Update`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None.
`File not found in product group: %d`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Check for existence of named file.
`File not positioned`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`File reference could not be achieved`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`File table lookup index is out of range`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`File table lookup index points to unused table entry`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`flattening should be about 1/300 for Earth`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`format or input data file inaccessible`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`FOV perimeter vectors are invalid`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`FOV specification outside algorithmic limits`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`function failure to read parameter values from buffer`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`function failure to read parameter values from buffer`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Generated temporary file name missing key component`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Generic IO - Attempt to close file failed.`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Generic IO - Attempt to open file failed.`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Generic IO - Invalid mode for file open.`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Granule data section not in the MCF`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff. T
`he given projection does not exist`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Header not found`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Illegal class type for parameter %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Illegal first packet number`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Illegal number of differing Application IDs`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Illegal number of packets`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Illegal packet number`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Illegal spacecraft tag`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Illegal value for logical unit number: can't deallocate`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Check for existence of named file.
`Illegal value for record length`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Illegal value of the parameter %s defined in the PC table`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Illegal zone for the given spheroid`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`In object %s value %s for parameter DATA_LOCATION is invalid`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Inclination angle of the satellite should be between 0 and PI`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`incorrect array size`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`incorrect array size (e.g. negative) specified`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`incorrect array size (i.e. < 0) specified`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Incorrect format in line of file: %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`indicates input date not = to J2000 as required`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`initial time incorrect`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Input data error`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Input file can't be opened`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`input Julian day out of range for tabulated corrections`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`input Julian day out of range for tabulated corrections`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Input odl type is invalid`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Input unit is not known`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:**
`input values out of data set range`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`input vector with zero length when direction is required`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Insufficient footer buffer size - data truncated`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient header buffer AND footer buffer sizes - data truncated`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient header buffer size - data truncated`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient packet buffer size - data truncated, error opening next physical file in sequence`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient packet buffer size - data truncated, reached end of the current data set`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient packet buffer size - data truncated, new physical file open - file header has changed`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Insufficient packet buffer size - data truncated`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Intermediate file duration may not be modified in this access mode`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`interrupted region encountered for some of the input points`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** None
`invalid altitude - probably indicates bad input data`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Invalid arrays size`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid cb_id`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid celestian body identifier`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid data type definition in DD for parameter %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`invalid euler angle representation`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid flag`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Invalid requested body`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`Invalid SPCS Spheroid (only CLARK66 or GRS80_WGS84)`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`invalid sun zenith limit tag`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid system key`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`invalid tag for vector whose zenith and azimuth are sought`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Invalid time format`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`invalid zenith angle specified`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Iteration failed to converge`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Latitude failed to converge`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Latitude failed to converge after 15 iterations`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Latitude value should range between -PI/2 to PI/2`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`location is below surface`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Location of data base information not found`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
`Logical ID error from PCF.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Longitude value should range between -PI to PI`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`look point altitude unreasonably low or high`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`look vector does not intersect Earth`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Mandatory Parameter %s not set in %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Max. no. of open Level 0 data sets exceeded`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Maximum memory size reached: %d in bytes`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Maximum system-imposed shared memory exceeded`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Memory address has been allocated previously`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Memory allocation failed, array may be to large`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Metadata control file is not yet loaded using PGS_MET_Init()`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`microsecond field too large, should be < 1000`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`millisecond field too large, should be < 86401000`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Minimum value is greater than the maximum value of parameter %s in %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Mode value not defined:  %d`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`More than one shared-memory is created for a given PGE script`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Multiply attached shared-memory in a process`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff. a
`n error has occurred in the PeVarray Tool`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`NCOEFF is invalid`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`need to open new file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Open new file.
`New file was created even though access mode was not explicit write`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`New name could not be generated for this temporary file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`New physical file open - file header has changed`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`No attribute was found that matches the attribute passed in.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`no autoOperation found in support file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No configuration value exists for logical`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`No conversion between units`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** None
`No data found in data base`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.

`no data has been requested (i.e. all data flags set to PGS_FALSE)`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`No free logical unit number available to allocate`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No group called %s found in the MCF`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`no leap second correction available`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`No librations`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No Mandatory Parameter found in %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No matching file path to input field`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Check for existence of named file.
`No memory space available for current process`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No nutations`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`No physical file currently open for this virtual data set`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`No reference was found matching Product ID and Version number.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`no UT1 value available`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`no. of parms incorrect`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`not all elements of input array have been initialized with data`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`nPOints argument out of range`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Number of parameters for input invalid`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Number of points should be greater than or equal to one`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`one of the Earth point vectors was zero`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`one or more bad vectors for requested times`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`one or more of the requested values could not be determined, undetermined values set to 1.0E50`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`one or more spacecraft times in the input array (other than the 1st) could not be deciphered`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`operation not set by user`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`orbit/attitude simulator error`	**Cause:** The SDP Toolkit (Ephemeris Data Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Output file can't be opened`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Output unit is not known`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Packet buffer too small; no data was read`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Packet not found in current physical file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Parameter node not found`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Parameter node not found`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Parameter not found within input file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Parameter not found within input file`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`parameter(s) not found in the support file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`parameters requested from more than one physical file`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Parm input from user cannot be found in dbase`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`perfectly spherical body assumed`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`Point cannot be projected`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Point projects into a circle of radius 2 * PI * radius_major`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Point projects into infinity`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Pointer to aggregate label parsing error`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Pointer to aggregate label parsing error`	**Cause:** The SDP Toolkit (Constants and Units Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`poor convergence - suggests bad Earth model or bad data`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Check data or Earth model for possible errors.
`predicted value of TAI-UTC used (actual value unavailable)`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`prolate body assumed`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`radius must be greater than 0.0`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Reached end of the current data set`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`Read error record`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Records do not overlap or abut`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** None.
`Records not written`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Requested start time not found; file pointer position was unchanged`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`seconds field to large, should be < 86401`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Semi major axis greater than Semi minor axis`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Semi major axis value should be greater than zero`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.

`Semi minor axis value should be greater than zero`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Shared-memory has not been attached to the process`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Shared-memory has not been created`	**Cause:** The SDP Toolkit (Memory Management Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Singularity at N or S pole - or bad data`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Some of the mandatory parameters are not set`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Some points were not located in the DEM`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** None
`some sort of UNIX error occurred`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`spacecraft tag is unknown or not currently supported`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Specified command code is illegal`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Standard Parallels on opposite sides of equator`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`status of data should be one of 'f' for final, 'p' for predicted or 'i' for interim`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`status of data used is interim`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`status of data used is predicted`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** None
`support or format files inaccessible`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Target equal to center`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The attribute was truncated due to maxSize being exceeded.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The data requested is not in the line found.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The file requested to be removed was not on disk: %s`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Check for existence of named file.
`the first 9 bits of the P-field (which are constant for EOS PM) differ from the expected state`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`the initial spacecraft time in the input array cannot be deciphered`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`the input quaternion is invalid, the sum of the squares of the components of a quaternion must = 1`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`the input time is outside the range of allowable values for the spacecraft clock`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`the input time string seconds field has been reduced from 60 to 59`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** None
`The LUN marked for deallocation was not allocated`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`The metadata %s is not yet set`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`the position in the parmBuffer of the requested values was miscalculated`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The Product ID does not contain a configuration value.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`The Product ID does not contain a physical reference.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The reference does not contain an attribute.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The requested parameter %s could not be found in %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`the rotation could not be determined`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`the secondary header ID flag (one bit value) is set to 1 (should be set to 0)`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`The size of the file footer as indicated in the file header is invalid`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`The size of the variable header as indicated in the fixed header is invalid`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`the time string passed in is in proper CCSDS ASCII Time Format B`	**Cause:** The SDP Toolkit (Time/Date Conversion Tool) detected an error. **Corrective Action:** None
`The total number of packets as indicated in the file header is invalid`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`The total number of packets as indicated in the file header is zero`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** None
`The total size of the packet data as indicated in the file header is invalid`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`the TRUE/FALSE flag has invalid value`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`The value was truncated.`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error.

`There is NO data for time specified.`	**Cause:** The SDP Toolkit (Celestial Body Position Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Time of last packet is earlier than time of first packet in file header`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Too many iterations in inverse`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`too many PeV files open, increase MAXFILES`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`tool support file is corrupted or incomplete`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Transformation cannot be computed at the poles`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to access the data dictionary to obtain %s of parameter %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to allocate memory for the HDF attribute`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to check the range for metaData %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to confirm %s's value against DD`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to convert %s into an ODL format`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Unable to convert attribute values from the odl format`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to convert the value of configuration parameter %s from the PCS file into an ODL format`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to create a new odl %s , probably due to lack of memory`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to create odl aggregate %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to create ODL tree %s with file id %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`unable to extract value from dbin`	**Cause:** The SDP Toolkit (Ancillary Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to find %s  in file %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to find %s definition in the %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to find data files for State Plane`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Check for existence of named file.
`Unable to find requested packet`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to get the attr index`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Unable to load %s information`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to obtain %s from the PC table`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to obtain the value of configuration parameter %s from the PCS file`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to open %s file with file id %s`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Check for existence of named file.
`Unable to open pc attribute file`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Unable to open PCS file`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Check for existence of named file.
`Unable to open physical file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Unable to open the HDF file`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`unable to perform refraction calculation`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to read HDF attribute`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`Unable to read no. file versions from process control file`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to retrieve data from the PC table`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to retrieve sd attribute information`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`Unable to set the HDF file attribute`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`unknown/unsupported spacecraft tag`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`user-provided instrument offset exceeds 120 meters`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`user-provided pixel unit vector has zero length`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:**
`UTM zone value should only be between -60 to 60`	**Cause:** The SDP Toolkit (Geo Coordinate Transformation Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Value of metadata %s at position %s is out of range`	**Cause:** The SDP Toolkit (MetaData Access Tool) detected an error. **Corrective Action:** Call SSI&T support staff.
`value of rotation axis index invalid`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Value other than PGS_TRUE or PGS_FALSE detected`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

`vector whose zenith angle is sought is below horizon`	**Cause:** The SDP Toolkit (Coordinate System Conversion Tool) detected an error. **Corrective Action:** Enter requested data in correct format.
`Version number must be greater than or equal to one (1).`	**Cause:** The SDP Toolkit (Process Control Tool) detected an error.
`Virtual data set is not open`	**Cause:** The SDP Toolkit (File I/O Tool) detected an error. **Corrective Action:** Call SSI&T support staff.

SSI&T Manager

The following messages are issued by the Science Data Processing Toolkit. These messages are logged in the **pdps_event.log** Event Log File on the MSS Server.

`Bad environment variable`	**Cause:** The SSI&T Manager was unable to determine the value of an environment varable.. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`Bad return from 'system' for` *`executable`*	**Cause:** The SSI&T Manager received an error status from a call to the UNIX "system" function, while attempting to execute *executable*. **Corrective Action:** This is a serious system error whose cause will require investigation. Network problems, disk problems, etc. might cause this.
`Cannot find program` *`executable`*	**Cause:** The SSI&T Manager received an error status from a call to the UNIX "system" function, while attempting to execute *executable*. The function was unable to locate *executable*. **Corrective Action:** (1) Make sure program in question has correct spelling in the SSI&T Manager internal process control file; if not, change spelling, save file, and click on program on SSI&T Manager. menu again. (2) Check that the program in question is in your path by typing "which <program_name>" at the UNIX prompt. If not, either (a) insert the path in your "$path" environment variable, type "rehash" at the UNIX prompt, and restart SSI&T Manager. or (b) edit the SSI&T Manager internal process control file entry for the program in question to add the full path for the program, then click on the program on the SSI&T Manager. menu again.
`Cannot open file`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`Cannot open file`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.

`Cannot open file`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`DPAT_PGS_SHELL_PATH environment variable not set`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format. Call SSI&T support staff.
`error opening file`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check access privileges are set correctly.
`INPUT_ERROR...'=' is missing form the name=value format`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...Bad PGE dependency value string`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...DPR ID is defined more than once`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...DPR Id is not defined`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...Format for mapping definition is incorrect`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...name = value format is incorrect`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...PGE name is defined more than once`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...PGE name is not defined`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.

`INPUT_ERROR...PGE version is defined more than once`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...PGE version is not defined`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...Some of the old mappings were not found in the data base`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
`INPUT_ERROR...Some of the parameter definitions were not found in the data base`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Enter requested data in correct format.
`INPUT_ERROR...string length is too long in one of the arguments`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...There is no option specified with an argument`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`INPUT_ERROR...Unable to open specified Process Control file`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file. Check access privileges are set correctly.
`INPUT_ERROR...Unable to read from specified Process Control file`	**Cause:** The SSI&T Manager detected an error while attempting to read from a Process Control File. **Corrective Action:** Verify that access privileges are set correctly; verify that the specified file exists.
`invalid directory specified`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** re-enter valid directory. Call SSI&T support staff.
`Invalid filename`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file.
`PGE Dependencies' first argument must be SUCCESS or FAILURE`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.

`Program` *`program`* `is not yet available`	**Cause:** The SSI&T Manager detected an error. The program *program* in question is not yet available. **Corrective Action:** Edit the SIT Manager internal process control file to remove the "*" from in front of the program name in question.
`SCIENCE_CODE_ERROR...PGE's exit status shows PGE abnormal termination or PGS_PC_Shell.sh not found`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check for existence of named file.
`Successful operation`	**Cause:** SSI&T Manager. **Corrective Action:** No action required - informational message.
`SYSTEM_ERROR...An Id is not valid or non-unique in the DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Command object failed to add data to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Command object failed to connect to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Command object failed to find row in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Command object failed to get data from database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Check access privileges are set correctly. Call SSI&T support staff.
`SYSTEM_ERROR...Command object failed to set data in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Connection to DPR database failed`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.

`SYSTEM_ERROR...Data Id is not valid or non-unique in PGE database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Dir. Name must not be NULL`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`SYSTEM_ERROR...DpAt Execution error`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Re-Run. Call SSI&T support staff.
`SYSTEM_ERROR...DPR Id is not valid or non-unique`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to add a command to the DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to add a parameter to the DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to add a PGE dependency to the DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to add a resource dependency to the DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to create a new DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:**
`SYSTEM_ERROR...Failed to find the command to add to a DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to find the DPR to update PGE info in`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to find the execution info to update in a DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Failed to find the parameter to add to a DPR`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.

SYSTEM_ERROR...Failed to get PGE Database data from DBMS	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
SYSTEM_ERROR...Failed to recreate an old DPR	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...Failed to send event to start job in Scheduling COTS	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...Failed to submit job to Scheduling COTS	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...Failure in creating job for submission to Scheduling COTS	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...File Name must not be NULL	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
SYSTEM_ERROR...Illegal sequence number obtained from the command object	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...Invalid PGE Database data retrieved from DBMS	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...List Item must not be NULL	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
SYSTEM_ERROR...PGE Id is not valid or non-unique	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...PGE Type (name) is not valid in database	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...PGE Version is not valid in database	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
SYSTEM_ERROR...Retrieved corrupt execution info for a DPR from the database	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.

`SYSTEM_ERROR...Retrieved corrupt file commands data for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Retrieved corrupt parameters data for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Retrieved corrupt PGE dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Retrieved corrupt PGE info for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Retrieved corrupt resource dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Retrieved corrupt UR dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...serious error in routine input data`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check input data for possible corruption. Call SSI&T support staff.
`SYSTEM_ERROR...Unable to add DPR data to the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Check access privileges are set correctly. If these items appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to add DPR Execution data to the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Enter requested data in correct format.
`SYSTEM_ERROR...Unable to add DPR PGE Info data to the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to add Parameter data to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.

`SYSTEM_ERROR...Unable to add PGE data to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Check access privileges are set correctly.
`SYSTEM_ERROR...Unable to add PGE Execution data to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Check access privileges are set correctly.
`SYSTEM_ERROR...Unable to add PGE performance data to database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Check access privileges are set correctly.
`SYSTEM_ERROR...unable to allocate memory dynamically`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to connect to database for Parameter data`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to find Parameter data in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to get DPAT_TK_DPR_ID`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get DPR data from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Enter requested data in correct format.
`SYSTEM_ERROR...Unable to get DPR data from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get DPR data from the database, corrupt field`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.

`SYSTEM_ERROR...Unable to get Parameter data from database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to get PGE data from database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get PGE Names from PGE Database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get PGE Versions from PGE Database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the execution info for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the file commands for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the parameters for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the PGE dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the PGE info for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to get the resource dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.

`SYSTEM_ERROR...Unable to get the UR dependencies for a DPR from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to obtain commands Ids from the given page`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check access privileges are set correctly.
`SYSTEM_ERROR...Unable to obtain parameter from the parameter object`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check access privileges are set correctly.
`SYSTEM_ERROR...Unable to obtain parameter ids from the given page`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to obtain science type of the command object`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to obtain tkDataType from the command object`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to obtain unique id for the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
`SYSTEM_ERROR...Unable to obtain Ur from the command object`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`SYSTEM_ERROR...Unable to select DPR data from the database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.
`SYSTEM_ERROR...Unable to select PGE data in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined.
`SYSTEM_ERROR...Unable to set Parameter data in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check to see if database attributes are correctly defined. If these appear correct, call SSI&T support staff.

`SYSTEM_ERROR...Unable to set PGE data in database`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Check access privileges are set correctly. If these appear correct, call SSI&T support staff.
`Unable to fork 'system' for %s`	**Cause:** The SSI&T Manager detected an error. A call to the UNIX function "system" failed because fork to child process failed. **Corrective Action:** Check whether the system in question has any more processes allowed; try "ls" at the UNIX prompt -- you will see the message "No more processes". If this is the problem, kill some processes, then try to select the SSI&T Manager. menu item again.
`Unknown system error`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`USER_WARNING...All Process Information Directories and Filenames are required`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Dir. Name must include a /`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Directory Name must not be missing`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Directory Name must start with a '/'`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Display Text`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`USER_WARNING...DPAT_DPR_HELP_URL environment variable not set`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.

USER_WARNING...DPAT_FILE_HELP_URL environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_HELP_PATH environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PGE_HOME_PATH environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PGE_MESSAGE_PATH environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PR_FILE_HELP_URL environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PR_HELP_URL environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PR_NEW_GUI_HELP_URL environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
USER_WARNING...DPAT_PR_SELECT_HELP_URL environment variable not set	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.

`USER_WARNING...DPAT_SELECT_HELP_URL environment variable not set`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Verify that the process was started up under the proper user account. Verify that setup scripts for the appropriate environment variables were run.
`USER_WARNING...Each Files item must have at least one File Mapping item`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...File Name must not be missing`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Files item must have three arguments`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Files item's first argument must be a short integer`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Help not available or an error has occurred in the help system`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`USER_WARNING...List item not selected`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Must select item from File Mappings first`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
`USER_WARNING...Must select item from Parameter Mappings first`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Must select item from PGE Dependencies first`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Must select item from Resource Dependencies first`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.

USER_WARNING...New PGEs name is not defined	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...New PGEs version is not defined	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Parameter item must have two arguments	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Parameter item's first argument must be a short integer	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Parameter Mapping must have one argument	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...PGE Dependencies item must have two arguments	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...PGE Dependencies item must not be blank	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Please select a valid directory name	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Please select a valid item in the list	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
USER_WARNING...Process Information string is too long	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Call SSI&T support staff.
USER_WARNING...Resource Dependencies item must have three arguments	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.

`USER_WARNING...Resource Dependencies item must not be blank`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...Text field value is unacceptable`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.
`USER_WARNING...The text field entry requires two parameters`	**Cause:** The SSI&T Manager detected an error. **Corrective Action:** Enter requested data in correct format.

CDS Control Program (cdscp) Error Messages

Appendix C of *OSF DCE Administration Guide - Core Components* lists the error messages issued by the CDS control program.

Glossary

access control list A mechanism used by DCE to control the access by DCE principals (e.g. users) to named objects (e.g. files, directories).

agent system An agent system is a device or computer system that is managed by the HP OpenView Network Node Manager.

CDS Server The CDS Server is a computer system that runs the DCE Cell Directory Service. The Ir1 CSS Server performs the function of the CDS Server.

cell A cell is an administrative entity within DCE that consists of a set of associated users, computers, and supporting resources. A cell establishes a security boundary between the users and resources within the cell and those outside of the cell.

Cell Directory Service The Cell Directory Service (CDS) is the DCE component that looks up and manages names within a DCE cell.

DCE DCE is the Distributed Computing Environment. DCE is a set of services that support the interaction of applications in a distributed computer system. DCE supports interprocess communication between clients and servers, a common location-independent naming system for computer resources, a distributed time service, a security service, and a distributed file service.

Distributed Time Service The Distributed Time Service (DTS) is the DCE component that synchronizes the computer clocks within a network.

event An event is an unsolicited notification from the HP OpenView performance management software that describes a change in the status or performance of Ir1.

Event Log Database The Event Log Database resides at each Ir1 site. It records status and error messages generated by the various Ir1 applications at the site.

Event Log Directory This directory resides on every Ir1 computer platform and contains the log files used by applications to report status and error messages. Log files in the Event Log Directory are loaded into the Event Log Database on a periodic basis.

manager system An HP OpenView software system that executes network management operations which monitor and control components (agent systems) of Ir1.

Network Node Manager The Network Node Manager is part of the HP OpenView product and is a network management application that manages TCP/IP networks and devices that support SNMP.

OpenView Windows OpenView Windows is suppied as part of the HP OpenView product and provides the X-Windows interface to the Ir1 system performance management capabilities.

principal	A principal is a user of a DCE-based system. DCE principals include human users, servers, machines, and cells.
Process Control File	A Process Control File specifies the names and locations of files used by science software executables, and defines the correspondence between the file specifications and the logical identifiers used by the science software to reference the specified files.
registry database	The registry database is a database utilized by DCE to maintain information about DCE users (principals), groups, organizations, and accounts. The database contains information similar to that contained in the UNIX group and password files.
SQL Server	A SQL Server is a set of cooperating processes that manage multiple Sybase databases and multiple users.
submap	A submap is an X-Windows display that contains symbols that represent portions of the Ir1 network that are managed by HP OpenView.

Abbreviations and Acronyms

ACL	access control list
ADC	affiliated data center
AI&T	algorithm integration and test
AITTL	Algorithm Integration and Test CSCI
AM-1	EOS AM Project spacecraft 1, morning spacecraft series -- ASTER, CERES, MISR, MODIS and MOPITT instruments
ANSI	American National Standards Institute
API	application program (or programming) interface
ASCII	American Standard Code for Information Exchange
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
CD-ROM	compact disk -- read only memory
CDRL	contract data requirements list
CDS	Cell Directory Service
CERES	Clouds and Earth's Radiant Energy System
COTS	commercial off-the-shelf
CPU	central processing unit
CSMS	Communications and Systems Management Segment
DAAC	Distributed Active Archive Center
DAN	Data Availability Notice
DAO	Data Assimilation Office
DAS	data availability schedule
DCE	Distributed Computing Environment
DDA	Data Delivery Acknowledgment
DDN	Data Delivery Notice
DID	data item description
DPR	data processing request
DTS	Distributed Time Service
ECS	EOSDIS Core System
EDC	EROS Data Center

EDF	ECS Development Facility
EDHS	ECS Data Handling System
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing (Descending) Mission -- see AM-1
EOSDIS	Earth Observing System Data and Information System
ESDIS	Earth Science Data and Information System
ESN	EOSDIS Science Network
FDDI	fiber distributed data interface
GB	gigabyte
GNU	(recursive acronym: “GNU’s Not Unix”); a project supported by the Free Software Foundation dedicated to the delivery of free software
GSFC	Goddard Space Flight Center
GUI	graphic user interface
GV	ground validation
HDF	hierarchical data format
HDF-EOS	an EOS proposed standard for a specialized HDF data format
HIPPI	high performance parallel interface
HMI	human machine interface
HTML	HyperText Markup Language
HTTP	Hypertext Transport Protocol
I&T	integration and test
I/F	interface
I/O	input/output
ICD	interface control document
ID	identification
INGST	Ingest Services CSCI
IP	international partners
Ir1	Interim Release One
IRD	interface requirements document
ISO	International Standards Organization
IV&V	independent verification and validation
JPL	Jet Propulsion Laboratory

L0-L4	Level 0 (zero) through Level 4
LAN	local area network
LaRC	Langley Research Center (DAAC)
LIS	Lightning Imaging Sensor
MB	megabyte (10^6)
MFLOPS	mega (millions of) floating-point operations (10^6) per second
MISR	Multi-Angle Imaging SpectroRadiometer
MODIS	Moderate-Resolution Imaging Spectrometer
MOPITT	Measurements of Pollution in the Troposphere
MSS	System Management Subsystem (of CSMS)
MTBF	mean time between failure
MTPE	Mission to Planet Earth
MTTR	mean time to restore
NESDIS	National Environmental Satellite Data and Information Service
NMC	National Meteorological Center (NOAA)
NNM	Network Node Manager
NOAA	National Oceanic and Atmospheric Administration
O/A	orbit/altitude
ODC	other data center
OSF	Open Systems Foundation
OSI	Open System Interconnect
OVW	OpenView Windows
PDPS	Planning & Data Processing System
PDR	Preliminary Design Review
PDS	production data set
PGE	product generation executable
POSIX	Portable Operating System Interface for Computer Environments
PR	Precipitation Radar (TRMM)
QA	quality assurance
RMA	reliability, maintainability, availability
RTF	rich text format

SAA	satellite active archive
SAGE	Stratospheric Aerosol and Gas Experiment
SCF	Science Computing Facility
SDP	Science Data Processing
SDPF	Sensor Data Processing Facility (GSFC)
SDPS	Science Data Processing Segment (ECS)
SFDU	Standard Format Data Unit
SMC	System Management Center (ECS)
SNMP	Simple Network Management Protocol
SPRHW	Science Processing HWCI
SRS	software requirements specification
SSI&T	Science Software Integration and Test
SSM/I	Special Sensor for Microwave/Imaging (DMSP)
SST	sea surface temperature
TBD	to be defined
TBD	to be determined
TMI	TRMM Microwave Image
TOMS	Total Ozone Mapping Spectrometer
TONS	TDRS On-board Navigational System
TRMM	Tropical Rainfall Measuring Mission (joint US-Japan)
TSDIS	TRMM Science Data and Information System
USNO	US Naval Observatory
UT	universal time
UTC	universal time code
V0	Version 0
VIRS	Visible Infrared Scanner (TRMM)
WAIS	Wide Area Information Server
WAN	wide area network
WWW	World-Wide Web