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End-to-End Test Plan for the ECS Project

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Abstract

This document describes the ECS End-to-End testing plan. The document will describe the purpose of the testing, the actual test scenarios, special tool needed, resources, and criteria for success. This document also contains a high level schedule for when the testing activities will occur.

Keywords: test, scenario, PGEs, ETS, performance, stability, GSFC, EDC, LaRC

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Abbreviations and Acronyms

1. Introduction

1.1 Scope

This document describes the ECS End-to-End testing plan. The document will describe the purpose of the testing, the actual test scenarios, special tools needed, resources, and criteria for success. This document also contains a high level schedule for when the testing activities will occur. ECS has been notified that this functionality is no longer required, however since formal notification has not arrived prior to writing this document, details are still included.

1.2 Purpose

The purpose of the End-to-End test is to verify performance criteria, which are outlined in feature tickets. The End-to-End test will be run at each site using Day-in-the-Life Scenarios. The scenarios will be used as the basis for validating systems operations. Additionally, the purpose will be to prove that the system can work around problems, recover from failures, and prove that the system is viable from an operations perspective.

1.3 Environment

The End-to-End test environment will be unique for each DAAC site. This plan will describe the local and specific DAAC environment which includes the site setup and configuration, the equipment, software, test tools, scripts, data source, Product Generation Executables (PGEs) and patches necessary to run end-to-end test activities at each site. In addition, the plan will identify known conflicts as well as establish contingencies to resolve conflicts (scheduling, work-around, etc).

1.4 Site Setup

During the site setup phase the End-to-End team will verify proper installation of the equipment and software at the DAACs. There will be a team dedicated to resolving system-tuning issues related to Operating Systems, Databases, and networks. The team will be charged with the responsibility of configuring the site specific equipment and software for optimum DAAC operations.

1.5 Equipment and Software

The equipment and software used at each DAAC during the End-to-End test phase will be based on the ECS drop 4PX.10 software running in the OPs mode. An equipment and software mapping is provided in Appendix A, which represents each DAACs configuration.

1.6 Test Tools

Test tools necessary to generate simulated data sets, user request and acquires, as well as for monitoring system activities (operations as well as performance) will be supplied at each DAAC. Test tools and scripts may be unique for each DAAC. A list of test tools and scripts along with a description of their intended purpose necessary for running End-to-End test at each DAAC will be provided with the actual test procedures in a separate document. Site licensing for any test tools that are required in the End-to-End test will be provided.

1.7 Data Source

During the End-to-End test period simulated and/or test data will be used to represent System Interfaces to ECS. It is not the intent of the End-to-End test activities to ingest data from the ECS external data providers as part of the test. Testing with ECS external data providers will be performed at a future time. Test data has been created by replicating the data provided by the Instrument Teams and external systems (e.g. LPS).

1.8 Product Generation Executables

All external interfaces will be simulated during the End-to-End tests.

1.9 Patches

A site audit will be performed two weeks prior to any End-to-End test activities being conducted. The End-to-End test team will determine the necessary patches that need to be employed at each DAAC. Since the End-to-End test Plan will be a living ECS document the patch list will change as problems are discovered at each DAAC.

1.10 Human Resources Needed for the End-to-End Testing

The Performance and End-to-End Testing will require a mixture of human resources from ECS Development, ECS Science Office, ECS System Engineering, and DAAC personnel. The assumption is that ECS personnel will go to the sites and assist DAAC personnel with the site preparations. Once the preparations have been complete, ECS personnel will perform the actual End-to-End test with assistance from DAAC personnel. The following tables (Table 1-1 and 1-2) list the Resource requirements that will be needed for the performance tests and the end-to-end testing tasks.

Table 1-1. Performance Testing Resources

Site	Total Number and Type of Resource	Organization
Landover		
	1 senior, 3 technical	System Engineering
	1 System Admin	ECS Facilities
EDC		
	1 senior, 3 technical	System Engineering
	1 System Admin	EDC Operations
LaRC		
	1 senior, 3 technical	System Engineering
	1 System Admin	LaRC Operations
GSFC		
	1 senior, 3 technical	System Engineering
	1 System Admin	GSFC Operations

Table 1-2. End to End Resources (1 of 2)

Site	Total Number and Type of Resource	Number and Type Needed for Site Setup	Number and Type Needed for End-to-End Testing	Organization
Landover				
	6 senior	NA	NA	Science Office
	3 senior, 3 technical	NA	NA	Test/System Engineering
	4 technical (on call)	NA	NA	Development
	System Admin.	NA	NA	ECS Facilities
EDC				
	2 senior	2 senior	1 senior	Science Office
	1 senior, 1 technical	1 senior, 1 technical	1 senior	Test/System Engineering
	4 technical	4 technical	1 technical	Development
	3 technical, 1 System Admin.	3 technical, 1 System Admin.	3 technical, 1 System Admin.	EDC Operations

Table 1-2. End to End Resources (2 of 2)

Site	Total Number and Type of Resource	Number and Type Needed for Site Setup	Number and Type Needed for End-to-End Testing	Organization
LaRC				
	2 senior	2 senior	1 senior	Science Office
	1 senior, 1 technical	1 senior, 1 technical	1 senior	Test/System Engineering
	4 technical	4 technical	1 technical	Development
	3 technical, 1 System Admin.	3 technical, 1 System Admin.	3 technical, 1 System Admin.	LaRC Operations
GSFC				
	2 senior	2 senior	1 senior	Science Office
	1 senior, 1 technical	1 senior, 1 technical	1 senior	Test/System Engineering
	4 technical	4 technical	1 technical	Development
	3 technical, 1 System Admin.	3 technical, 1 System Admin.	3 technical, 1 System Admin.	GSFC Operations

2. End-to-End Test Overview

The End-to-End test activities are based on normal production scenarios that will verify that ECS can sustain processing of science data that would normally be received from all external entities within a 24-hour period of time. Test should show ability to achieve 24 hours of operation in at most 24 hours (with a goal of 16 hours). Table 2-1 shows the performance goals that the success criteria are based on. The criteria for success of the ECS End-to-End test is based on the following:

- Meet High ingest, processing, and output volume
- Greater than 75% of total daily ingest volume
- Greater than 75% total daily processing through at least Level 2
- Greater than 25% of total daily output
- Connectivity of threads, i.e., ingest of data, processing of that data, search and order of ingested data and processing results, subsetting (for L-7)of ingested data, and search, order and distribution of ingested data and processing/subsetting results
- Concurrent ingest, processing, subsetting, search, and order and distribution throughout test
- 24 hours worth of planning should be executed concurrently with the activities defined above.
- Ability to demonstrate key current capabilities
  - SSI&T processing with ad hoc reprocessing.
  - Non-synchronized startup and shutdown across modes.

Assumptions

- Ability to address key operations functionality
  - System startup, shutdown and cleanup - Failure recovery
  - System backup
  - System monitoring
- All interfaces included as part of test in a simulated fashion
- Use and PGEs if available/applicable
- Tests at site should address that site's unique data processing and interface requirements
- Background assumptions
  - Assume existing large (100k granule) inventory at site prior to test
  - Assume 8 hour EDOS backlog at start of test

Table 2-1. ECS Performance Goals

Thread	GSFC Data Per Day (GB)	GSFC Required Throughput Based On Hrs of Sustained Ops Per Day			EDC Data Per Day (GB)	EDC Required Throughput Based On Hrs of Sustained Ops Per Day			LaRC Data Per Day (GB)	LaRC Required Throughput Based On Hrs of Sustained Ops Per Day			Current Status (Single Thread)	Expected At Launch (Concurrent)
		24 Hrs	20 Hrs	16 Hrs		24 Hrs	20 Hrs	16 Hrs		24 Hrs	20 Hrs	16 Hrs		
Electronic Ingest to Archive (MB/sec)	74.00	0.86	1.03	1.28	140.00	1.62	1.94	2.43	48.00	0.56	0.67	0.83	4.10	3.50
Media Ingest to Archive (MB/sec)					136.00	1.57	1.89	2.36	7.00	0.08	0.10	0.12	5.80	3.50
Archive to Production - L1 Only (MB/sec)	70.00	0.81	0.97	1.22					47.00	0.54	0.65	0.82	9.00	2.00
Production to Archive - L1 Only (MB/sec)	309.00	3.58	4.29	5.36					185.00	2.14	2.57	3.21		7.00
Archive to Production - Higher Level Processing (MB/sec)	197.00	2.28	2.74	3.42	43.00	0.50	0.60	0.75	48.00	0.56	0.67	0.83		4.00
Production to Archive - Higher Level Processing (MB/sec)	89.00	1.03	1.24	1.55	14.00	0.16	0.19	0.24	19.00	0.22	0.26	0.33		2.00
Archive to Subsetting Server (SS) (MB/sec)						2.31	2.78	3.47						4.10
SS to Media Distribution (MB/sec)					25.00	0.29	0.35	0.43						1.00
SS to Electronic Distribution (MB/sec)					25.00	0.29	0.35	0.43						1.00
Archive to Media Distribution (MB/sec)	265.33	3.07	3.69	4.61	9.33	0.11	0.13	0.16	123.33	1.43	1.71	2.14		1.00
Archive to Electronic Distribution (MB/sec)	265.33	3.07	3.69	4.61	9.33	0.11	0.13	0.16	123.33	1.43	1.71	2.14		5.00
# of Search Requests/hr		60.00	72.00	90.00		60.00	72.00	90.00		60.00	72.00	90.00		100.00
# of Orders/hr		6.25	7.50	9.40		6.25	7.50	9.40		6.25	7.50	9.40		50.00
AMASS RAID Partition (MB/sec)		14.70	17.63	22.04		6.39	7.66	9.58		6.95	8.34	10.43		30.00
STMGT RAID Partition (MB/sec)		18.46	22.16	27.70		18.67	22.41	28.01		7.91	9.49	11.86		30.00

2.1 End-to-End Test Approach

The End-to-End test approach is focused on the verification of operations and performance capabilities that are necessary/required to support launch critical features identified by ESDIS. ECS systems operations and performance are verified by End-to-End test procedures that are part of operational scenarios and system stability scenarios provided by the DAACs and the ECS team. The test procedures are based on DAAC scenarios that emulate the operations and user environment and ensure the system can meet its functional and performance goals.

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3. End-to-End Test Tools

This section identifies and describes the test tools (COTS and custom coded software) used to support the execution of the End-to-End Test activities. The tools for computer aided software test and performance, network status and monitoring, and external interface simulators are discussed below. Their uses will be detailed in the actual test procedures.

3.1 Computer Aided Software Test and Performance Tools

The Mercury XRunner and LoadRunner are computer aided software test and performance test tools used to assist in the automation of testing. XRunner is designed to automate the test process by capturing, in a script file, keyboard, mouse input and system under test (SUT) responses, and then playing back those inputs and comparing the results to those stored in an expected results directory. LoadRunner is used to simulate a large number of actual users, in order to measure the response time of a server in a client/server application. Both tools offer sophisticated programming capabilities through a C based language called Test Script Language (TSL) that can be used to drive the system under test much more extensively than would be possible with manual testing. It also offers the virtue of repeating the test sequence with fidelity. The XRunner and LoadRunner tools also provide very reliable playback of user input. Specific usage of XRunner and LoadRunner in ECS End-to-End tests are discussed below.

3.1.1 XRunner Usage

The primary use of the XRunner tool is the automation of functional tests that involve heavy use of graphical user interfaces. Examples of such user interfaces are the Drop 4PX/L7 desktop Graphical User Interface (GUI), DAAC or SMC operator screens, and EOC operator screens.

3.1.2 LoadRunner Usage

LoadRunner is utilized for all response time testing that involves the Drop 4PX/L7 desktop GUI and during End-to-End tests that involve large numbers of test and operations personnel at multiple sites.

3.1.3 Test Execution Reports

Upon completion of a test script execution, both XRunner and LoadRunner automatically generate test execution reports. LoadRunner generates performance graphs for analysis.

3.2 Network Status and Monitoring

The three network tools utilized in acceptance tests are the HP OpenView, Sniffer Network Analyzer, and Netperf. Each are described below.

3.2.1 HP OpenView

The HP OpenView is network tool, which monitors and controls the entire network environment at each ECS site. As a diagnostic tool, it has the capability to isolate faults quickly. The tool, which resides on the Local System Management (LSM) at each ECS test site, allows the user to display a map of the network environment at that local site for the LSM and the maps of all sites at the SMC. These maps are real-time interactive graphical representations which allow the user to detect network problems as they occur without having to update or refresh the display screen, and to diagnose network connectivity. The tool allows the user to create submaps of the map, which can be as small as a software component on the system. The End-to-End Test Team (ATT) utilizes this tool to introduce systems and/or network faults to the system.

3.2.2 Network Analyzer/Sniffer

The Network Analyzer/Sniffer is a fault and performance management tool, which analyzes network activity and identifies problems on multitopology and multiprotocol networks.

3.2.3 Netperf

Netperf is a benchmark tool, which measures various aspects of network performance. Its primary focus is on bulk data transfer and request/response performance using either the TCP or UDP and the Berkeley Sockets interface.

3.3 External Interface Simulators

External interface simulators are used during acceptance testing when the real interfacing system is not available. For Drop 4P/4P1 & L7-NCR P1, the simulators used for acceptance testing are described below.

3.3.1 EOSDIS Test System (ETS)

The ETS is primarily designed to support ECS Drop 4P/4P1 & L7-NCR P1 and EOS Ground System (EGS) testing. For Drop 4PX/L7, pending availability, the Low Rate System and the Multimode Portable Simulator is used for EOC testing. In this configuration, ETS provides simulated telemetry data.

3.4 Data Editor, Generators, and View Tools

During acceptance testing, a variety of data editors, generators and viewing tools are used. Each of these tools are described below.

3.4.1 SCTGEN

SCTGEN is a software package with a graphical user interface that simulates CCSDS and non-CCSDS telemetry for both forward and return link data streams. When used as a test tool for EOSDIS it simulates EOS Data and Operations System (EDOS)-generated data products, such as EDOS Data Units (EDU), Expedited Data Sets (EDS), and Production Data Sets (PDS). SCTGEN provides comprehensive error insertion capabilities. SCTGEN generates test data off-line, and does not present a schedule conflict with operational systems. SCTGEN is a portable software system and requires little in terms of resources. The Simulated Consultative Committee for Space Data Systems (CCSDS) Telemetry Generator (SCTGEN) generates telemetry data files and related sets in various formats according to ECS specifications. In conjunction with other ETS components, SCTGEN supports EOS ground system integration, testing, verification, and validation.

3.4.2 ORBSIM

An ECS SDPS Toolkit utility for generating orbit (ephemeris) for use with testing PGEs. The only input to orbsim is a time range (in days) and a time increment for orbit data records. The output of orbsim is a toolkit readable file.

3.4.3 APPGEN

A utility created to convert an orbsim output file into a spacecraft binary format (not packet format, more a pre-packet format). The input to appgen is an orbsim-generated file. The output is a set of 12 pre-packet spacecraft (AM-1) ancillary data files. A utility that converts raw data into Production Data Sets, like L0sim or SCTGEN, must be run using the appgen output files as input in order to create an ancillary (APID 04) PDS.

3.4.4 Metadata Editor (mdedit)

The Metadata (medit) software test tool allows editing of the metadata portion of HDF files and the creation of any number of new files based upon the begin and end times specified. The mdedit tool uses one file as input and produces any number of output files all the same length and basic structure of the input file with the metadata values possibly modified. The original input file is unchanged, and a log file that encapsulates all the important information of the session is recorded. Medit is useful for both functional and performance testing.

3.4.5 Production Data Set (PDS_edit)

The Production Data Set (PDS_edit) software test tool allows the modification of the packet start and stop time (spacecraft portions of the construction record and packet time stamp in the secondary header of the packet file of the Production Data Set). The PDS_edit uses two files as input and then produces a new PDS construction record and packet file. The original input files are unchanged, and the new PDS files uses the current time as the set creation time imbedded in the file name and PDS_EDS_ID of the construction record.

3.4.6 L0sim

The L0sim allows the creation of various level 0 data products, such as CCSDS packet files in various formats. TRMM and EDOS AM-1 are among the various formats supported. The L0sim runs from the UNIX command prompt. It prompts for input, such as file start and stop date, time interval between packets, APID, and the name of the file containing simulated packet data.

3.4.7 DAN Simulator

The DAN Machine will allow for multiple ingest and archive operations on each of the 8 "Landsat7 End-toEnd seed" Level-0R datasets previously prepared for the test. This is accomplished by incrementing the DAN sequence number to make a dataset seem "new" to the system, even if the same exact files have been ingested before. The transmittal of a given dataset (with its new pair of DANs) to ECS is done according to a predetermined data flow timeline, to simulate a "day in the life". The important thing is that there are only 8 "unique" (for purposes of search) input datasets staged, from which the DAN Simulator creates dozens for archive (many of which will of course be non-unique for purposes of search).

3.5 HDF File Display/View Tools

HDF file display and viewing tools are explained below.

3.5.1 EOSview

EOSview is a file-viewing tool, which examines and verifies the HDF and HDF-EOS data files. EOSview allows the viewing of the HDF files and individual objects and displaying of all metadata fields and data objects. Attributes and annotations can also be viewed.

3.5.2 HDF Browser

The HDF Browser utility enables the examination of HDF file's hierarchy and components. When an HDF file is opened, the HDF Browser displays the hierarchical structure and organization of the file's contents. The capability for viewing each object in the file is also provided.

3.5.3 vshow

The vshow tool is a command-line utility, which are executed from the UNIX shell prompt. Vshow lists and displays information about Vdata objects in a HDF file. In addition, the metadata portion of the HDF file is displayed.

3.5.4 Basic File Display/View/Edit Tools

Basic file display capabilities include UNIX commands such as dmp, hexpert, od-x, od-c, diff and sdiff. These commands can be used for file displays, viewing and editing.

3.6 Test Data

A variety of test data is required for the End-to-Ends at each site. This test data will be used in conjunction with the simulators described above to stimulate the system. Test data provided by the instrument teams or simulators (i.e. EDOS, LPS, etc.) will be used whenever possible. The test data is validated and placed under configuration control prior to test execution. The following tables reflect the test data for the End-to-Ends by instrument.

Table 3-1. ASTER End-to-End Test Data Status

ESDT Short Name	Source	Usage	DAAC	Coverage Required	Status
DEM_100M	System	ASTER ACT and ACVS	EDC	North American Sample Tiles	Available at EDC
AST_L1B	D3 tape from GDS	ASTER, BTS, ACT, ACVS, DST	EDC	Temporal metadata unconstrained; space for ACT/ACVS needs to match DEM tiles	To be available from ASTER /JPL;8/21 granule does not run with ACT
GDAS0ZFH	ASTER Science Team (will provide test data)	ASTER ACT and ACVS	EDC	Needs to match L1B	Available
AST_ANC	ASTER Science Team	All ASTER PGEs	EDC	Needs to match L1B	Available

Table 3-2. LANDSAT End-to-End Test Data Status

ESDT Shortname	Source	Usage	DAAC	Coverage	Subinterval Size Needed (number of WRS Scenes)	Number of Replicants	Status
L70RF1	LPS	Ephemeral granule	EDC	range datetime			
				Four different dates	3	8	Completed 4 replicants.
				Three different dates	7	28	Completed 3 replicants.
				One date	35	1	VATC testers--to confirm quality of Simulated dataset. In progress.
L70RF2	LPS	Ephemeral granule	EDC		Same as for L70RF1		Same as for L70RF1
L7CPF	IAS	Granule	EDC	range datetime.	N/A	1 or a few.	Completed replicants as needed. Done.

Table 3-3. MISR End-to-End Test Data Status (1 of 2)

ESDT Short Name	Source	Usage	DAAC	Coverage Required	Status
L0 9 Camera Input	MISR SCF	MISR PGE01	LARC	14orbits	2 orbits generated
AM1ATTNF (native format attitude	MISR SCF – Use thru Toolkit	MISR PGE01	LARC	July 1, 1996 14:37:41 to 16:16:31	Simulated JPL data available
MN1EPHNO (native format ephemeris)	MISR SCF – Use thru Toolkit	MISR PGE01	LARC	July 1, 1996 14:37:41 to 16:16:31	Simulated JPL data available
MIANCGM	MISR SCF	MISR PGE07	LARC	July 1, 1996 (probably not time sensitive)	Jan. 19, 1998 thru June 30, 1998 data available
MIANCAGP	MISR SCF	MISR PGE07, PGE01, PGE08c	LARC	PATH #27	Data available
MICNFG	MISR SCF	MISR PGExx	LARC	Not sensitive to time or path	Data available
MIANPP	MISR SCF	MISR PGE01	LARC	PATH #27	Data available
MIRFOI	MISR SCF	MISR PGE01	LARC	PATH #27	Data available
MIANCSSC	MISR SCF	MISR PGE01, PGE08c	LARC	PATH #27	Data available

Table 3-3. MISR End-to-End Test Data Status (2 of 2)

ESDT Short Name	Source	Usage	DAAC	Coverage Required	Status
MIANRCCT	MISR SCF	MISR PGE01	LARC	Not sensitive to time or path	Data available
MIANCARP	MISR SCF	MISR PGE01, PGE08c	LARC	Apparently not time sensitive	Nov. 11, 1997 thru30, 1998 data available

Table 3-4. MODIS End-to-End Test Data Status

ESDT Short Name	Source	Usage	DAAC	Coverage Required	Status
SEA_ICE	NCEP	MODIS PGE03	GDAAC	August 1997	Data available/Larryserver
MOD00	EDOS L0 Data Simulator	MODIS PGE01	GDAAC	August 1997	Received 24 hrs of L0 from SCF. Staged at GSFC & Landover
GDAS_0ZF	NCEP	MODIS PGE03	GDAAC	August 1997	Data available/Larryserver
OZ_DAILY	NCEP	MODIS PGE03	GDAAC	August 1997	Data available/Larryserver
DEM_1km	Toolkit	MODIS PGE01	GDAAC	August 1997	Delivered with Toolkit
AM1EPHHx (ephem)	EDOS to Ingest to DPREP to Toolkit	MODIS PGE01	GDAAC	August 1997	ORBSIM, APPGEN, SCTGEN used to generate
AM1ATTHx (attitude)	FDD to Ingest to DPREP to Toolkit	MODIS PGE01	GDAAC	August 1997	Received from FDD
REYNSST	NCEP	MODIS PGE03	GDAAC	August 1997	Data available/Larryserver

4. End-to-End Test Preparation

The End-to-End test preparation consists of activities. These activities include System Audits, Stability/Performance testing, and End-to-End testing. The System Audits verify that the correct system configuration is installed at each site before testing can begin. The Stability Testing/Performance Testing will verify that the system can perform single threaded scenarios within the performance requirements placed on the system. The End-to-End Tests will verify the operational scenarios that will be discussed in Sections 5, 6, and 7.

4.1 System Audit Plan

In order to baseline the system, reference to XRP II, the baseline manager tool, will be used. XRP II contains information that defines the contents and configurations of each DAAC, in addition to the VATC at Landover, MD. ClearCase is the development software configuration management tool, and is also involved in the audit.

4.1.1 Background

For 20 months, interrogation scripts have been run and matured which provide visibility to the "as-built" configurations of all ECS host machines. These scripts are run remotely, using "expect" scripts, and the output is posted in html format on the CM server Pete at Landover. This information is replicated on server cmdm.east for DAAC visibility. The information provided by the interrogation scripts provides the following information for each DAAC and EDF host:

- Hardware configuration
- COTS software products, versions, and installation paths
- Custom code metadata in the /usr/ecs/<mode> areas

Part of Configuration Management's responsibilities has also included the processing of the program's Release Tapes. For the custom software, there are four tapes; one each for the three platforms and one for Toolkit. These tapes are processed for their files' metadata. All files are checksummed. These checksums provide the mechanism for ensuring that the installed version of each file is the same as the released version. For executables, embedded versioning was implemented. The version identifier is buried into each executable as part of the earlier build process. The executable then carries its version throughout its life. During the custom code audit, the version identifier in the installed file can then be compared to the release versions identifier.

4.1.2 Plan

In order to guarantee that the test environment is well defined and correct, the following steps will be taken.

1) Install the custom S/W of the version specified on the CM master tape.

2) Freeze all configuration changes to the site.

3) Just prior to test, the site's hosts will be interrogated by scripts run by the CM organization. This will snapshot the H/W configuration, the COTS S/W configuration, and the custom S/W.

4) The following verification steps then will occur:

    a) H/W Verification - scripts have been written to generate discrepancies between the XRP II baseline information and the "as-built" configuration. Components to be checked are the hosts' RAM memory, number and size of the disk drives connected to the hosts and specific H/W options. Operating system patches are checked at this point also.

    b) COTS S/W Verification - scripts have been written to show the differences in the COTS installed versus the XRP II baseline. The information checked is comprised of the COTS product name, COTS patches for that product (if there are any), the COTS version, and the COTS installation path.

    c) CUSTOM S/W - scripts exist will be ensure that any file that is installed in the /usr/ecs/<mode> path is of the drop version. Executables will be checked for the embedded version identifier, and the remaining files will have their checksums compared.

5) A Configuration Report will be generated to provide a synopsis of any differences, as well as the detail reports on a per host basis. The detail reports are automatically generated. A tiger team will be formed to help resolve any discrepancies.

4.2 Stability Testing

Stability testing is a precursor to the End-to-End testing. This testing was designed by the development organization to isolate faults that could only be detected by sustained and concurrent operation. A set of scenarios have been designed to simulate at-launch service request loads on the system using very small data files and PGEs that utilize very small amounts of CPU time. This approach enables the service request load that would normally occur during a typical day or week to be simulated in a few hours to a few days. This strategy enables a high percentage of defects related to concurrent and sustained request processing to be isolated before testing with large data files and long running PGEs occurs in the field. The following is a list of scenarios that are being executed:

- Scenario E1 – Ingest 600 Tiny;
- Scenario E2 – Created 1,000 Subscriptions with up to 100 Subscriptions on a Single Event;
- Scenario E3 – Create a One Month MODIS Production Plan;
- Scenario E4 - Execute 2,100 MODIS L1 PGEs (equivalent to one week's worth of MODIS L1 processing);
- Scenario E5 – Create a 100,000 Granule Inventory and Simulate a 25 User Pull Load;
- Scenario E6 - Simulate at At-Launch System Load by Executing Scenarios E1, E4 and E5 Concurrently;
- Scenario E7 – User Operator Tools, Reliably Startup and Shutdown All System Components;
- Scenario E8 – Execute the Failure and Recovery Scenarios Defined in the Drop 4 Exit Criteria;
- Scenario E9 – Execute Scenario E6 While Performing File System and Database Backups; and
- Scenario E10 – Simulate Concurrent Production and Planning by Concurrently Executing Scenarios E4 and E3.
- Scenario V1 – Ingest a Full ASTER D3 Tape at Launch Rates;
- Scenario V2 – Ingest 8 hours of L7OR Data At-Launch Rates;
- Scenario V3 - Execute VATC Scenarios V1 and V2 Concurrently at At-Launch Rates;
- Scenario V4 – Execute VATC Scenario V3 While Distributing 35 L7OR Fixed Scene Products to Users;

- Scenario V5 – Ingest 24 hours of MODIS LO Data at At-Launch Rates;
- Scenario V6 – Execute VATC Scenario V5 and Process the Data to Level 1 at Keep-Up Rates;
- Scenario V7 – Execute VATC Scenario V6 and EDF Scenario E5 Concurrently for 8 Hours.
- Scenario V8 – Execute EDF Scenario 2 and VATC Scenario V7 so that MODIS L1 Inserts Trigger Large Numbers of Subscriptions; and
- Scenario V9 – Execute VATC Scenario V8 Together with a Single Order for 10 Large MODIS L1B Granules.

4.3 Performance Engineering Test

There are two phases of the performance tests. The first phase will use the stability scenarios to benchmark system performance on a thread by thread basis. The second phase will use results gained by the end-to-end testing to verify performance criteria. The performance criteria are detailed in the feature tickets that have been approved by ESDIS. The first phase of the performance testing will begin during the site preparation phase of the end-to-end testing. Results found during this phase will help with some final tuning of the system at each site for the end-to-end tests.

4.4 End-to-End Test

The End-to-End Test activities are broken up into two phases. The first phase is the site preparation phase. The second phase is the actual running of the formal end-to-end test.

Phase I will concentrate on setting up the system, (ex. Staging data, setting up system configurations, etc…), to begin the End-to-End testing and dry running the actual End-to-End scenarios. The dry running of the test scenarios will be phased such that each phase builds on the previous phase until the entire End-to-end scenario is run. Also during this phase actual PGE performance will be measured and compared to current baseline. See Section 4.4.1 for details.

Phase II of the End-to-End testing will be the actual End-to-End test. They will concentrate on proving that the ECS system can meet its functional and performance objectives. The criteria for success are defined in Section 2 of this document.

4.4.1 PGE Performance

Preliminary performance numbers for the key End-to-End PGEs are shown in Table 4-1. The technical baseline information is provided for reference (i.e. the official ECS Technical Baselines is Feb 96 while the Apr 97 Baseline is only a draft). The performance numbers were generated in the ECS mini-DAAC is subject to the mini-DAAC hardware limitations. For example, the MISR L1 PGE will operationally process all nine cameras simultaneously across 9 processors at the Langley DAAC. The mini-DAAC is limited to only 4 processors and the numbers shown for MISR PGE 01 have been extrapolated from multiple individual PGE runs.

New performance numbers will be generated at each appropriate DAAC as part of the early site preparation phase. The numbers below were utilized to developing the processing schedule discussed for each DAAC in the following chapters. Changes to these schedules will be made to reflects updated PGE performance where warranted.

Table 4-1. Preliminary PGE Performance Versus Technical Baseline (1 of 2)

		Feb 96 Tech Baseline				Apr 97 Tech Baseline				Oct 98 Measurements			
PGE	**# in Test**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**
ASTER													
DST	310	43235.0	4	1,117	0.776	107,177	9	2,769	1.923	219,375	20.9	6,474	4.496
BTS	5	3656.0	0	2	0.001	557	0	0	0.000		0.2	1	0.001
ACVS	0	243975.0	20	-	-	182,500	15	-	-			-	-
ACT	5	38813.0	3	16	0.011	12,500	1	5	0.004		1.2	7	0.005
ETS	5	5266.0	0	2	0.002	4,200	0	2	0.001		0.5	3	0.002
					0.789				**1.928**				**16.146**
MODIS													
PGE01	12	1014341.3	85	1,014	0.704	760768.1	63	761	0.528	9,360,000	780	9,360	6.500
PGE02	288	389666.9	32	9,352	6.494	292250.2	24	7,014	4.871	306,000	17	4,896	3.400
PGE03	288	69763.3	6	1,674	1.163	52323.0	4	1,256	0.872	370,000	31	8,880	6.167
					8.362				**6.271**				**16.067**

Table 4-1. Preliminary PGE Performance Versus Technical Baseline (2 of 2)

		Feb 96 Tech Baseline				Apr 97 Tech Baseline				Oct 98 Measurements			
PGE	**# in Test**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**	**Millions of FP Ops**	**PGE Exec time (mins)**	**Total Time (mins)**	**# CPUs**
MISR													
PGE1	15		-	-	-		-	-	-				
PGE7													
CA/CF/ DA/DF	15	675693.0	56	3,378	2.346	675693.0	56	3,378	2.346				
AA/AF/ BA/BF	15	780150.0	65	3,901	2.709	780150.0	65	3,901	2.709				
AN	15	2239252.0	187	2,799	1.944	2239252.0	187	2,799	1.944				
PGE8	15	4652000.0	388	5,815	4.038	4652000.0	388	5,815	4.038				
					11.037				**11.037**				**-**

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5. End-to-End Test at the Goddard Space Flight Center (GSFC) DAAC

5.1 GSFC End-to-End Test

The End-to-End test activities at GSFC is based on Scenarios developed that address ECS operations and performance goals and objectives. An ECS GSFC End-to-End context diagram is provided in Figure 5.1. The GDAAC context diagram addresses interfacing, ingesting of data, processing of data, user request profiles as well as the electronic and physical media distribution of data to/from the GDAAC. Additionally, Tables 5.1 - 5.5 provide the daily End-to-End Daily output volume sizing requirements for the GDAAC.

5.2 GSFC Day in the Life

End-to-End testing at GSFC will be accomplished through the execution of the launch critical and launch operational and performance scenarios described in the following sections. The step-by-step details of the test procedures that make up each scenario will be provided during the preparation phase of the End-to-End test activities. The GSFC "Day In the Life Scenario" and assumptions are defined as follows:

GDAAC/MODIS Day in the Life

Assumptions:

- OPS Mode is used for End-to-End production
- TS1 Mode is used for concurrent SSI&T activities.
- All required simulated data is available (including at least 8 hours of L0 data and L0 ancillary data)
- ESDTs installed
- Twenty-four hours of Level 1 data is in the archive at the start of the production run
- PGE registrations are migrated to OPS mode for : DPREP, MODIS PGEs: 1, 2, 3
- Disk space is cleaned; logs have been cleared out
- All ECS Servers are Up and Running

Initialization (to start at TBD hours/days in advance of the End-to-End test:

- Enter Production Requests DPREP, MODIS PGEs 1, 2, 3
- Create Plan for the Week/PWB:
  - DPREP to run at 2-hour intervals to process Ephemeris Data
  - DPREP to run 12x per day for Attitude Data
  - MODIS PGE01 to run at ~ 2-hour intervals (12x per day); starts when attitude data and ephemeris data are available – 1 day's attitude data, 2 hours of ephemeris
  - MODIS PGE02 to run on 5-min. intervals (~264 x per day) PGE02 starts on 22 DPRs after 2 hours of L0 have been processed by PGE01 and 24 granules destaged, as the granules are destaged.
  - MODIS PGE03 to run on 5-min. intervals (288x per day) PGE03 starts on 24 DPRs almost simultaneously with PGE02 after 2 hours of L0 have been processed by PGE01 and 24 granules destage, as the granules are destaged.
- Enter subscriptions on products for science QA and user orders

At 00 Hours:

- Activate Day-in-the-Life Plan/PWB
- If L0 data and L0 ancillary data are already back-logged then jobs (DPREP, and then the L1 processing) will start immediately.
- MODIS L0 Data Arrival: at 2-hour intervals
- L0 Ancillary Data Arrival: at 2-hour intervals
- FDD Attitude Data Arrival: at 2-hour intervals
- Ancillary Data Arrival (NCEP Data): daily
- NCEP Data ingested (and preprocessed)
- FDD Attitude Data Arrival - Ingest FDD Attitude Data - Triggers DPREP
- Ingest L0 Ancillary Data - Triggers DPREP
- Ingest L0 Data - Insert L0 Data in Archive Triggers MODIS PGE01
- Monitor DPR completions
- Examine/Visualize Products
- Execute User Search and Orders

5.3 ECS End-to-End Site Preparations at the GDAAC

The site preparation phase is tentatively scheduled for a three-week period prior to End-to-Ends. During this period, the site hardware and software will be baselined to run the site specific End-to-End tests. The production scenarios will be installed and tested with every increasing layers of duration and concurrency of other activities leading to a final confidence check that the site is ready for End-to-End testing. Also during this period, the ECS team will finalize a site specific script, detailing and scheduling all events that will comprise the End-to-End testing.

5.3.1 Assumptions

- DAAC staff will participate with ECS in End-to-End preparations
- OPS mode is configured at 4PX plus released patches to 4PX and has been checked-out
- DAAC staff will have completed SSI&T successfully for all End-to-End PGEs in the SSI&T mode
- DAAC engineering staff will support all configuration changes that are needed.
- All test data needed for the End-to-End test will be transferred to the DAAC in advance

5.3.2 Procedural Issues

An End-to-End meeting will be held daily at 8:00 a.m. to review progress, obstacles, and necessary actions; also to keep the DAAC management informed on end-to-end activities.

5.3.3 Countdown

Week 1

- Arrive at GDAAC; meet with GDAAC staff for configuration briefing and End-to-End Readiness statusing
- Review configuration audit report
- Verify configuration in OPS mode
- Identify any corrective measures (patches to be installed)
- Verify that ESDTs are installed; install ESDTs as needed
- Start to register in OPS all PGEs to be used (scripted); based on SSI&T mode registration at the DAAC
- Register the synthetic PGEs.
- Assess test data status and location of all test data to be used
- Identify any corrective action needed to obtain and configure test data

- Start to implement corrective actions to configure test data
- Verify that all test tools are configured and operable
- Complete PGE registrations
- Complete any corrective actions for configuration of test data, tools
- Enter Production Requests to be used in testing
- Run a series of tests to verify operability of the configuration (ingest, production planning and processing, distribution)
- Start Progressive Sustained Testing
- Ingest 2 hours of L0 data
- Create a production plan for 4 hours of MODIS L0 to L1A processing
- Activate plan
- Ingest 2nd L0 granule which will trigger 2nd DPR (second 2 hr segment)
- Monitor production (both L0 segments can process concurrently; (approx. an 18 hour elapsed time test)
- Ensure that SSI&T mode is started-up, a new ESDT is installed, and a DAP ingested
- Register a PGE in SSI&T mode
- Ensure that SSI&T mode is shut-down
- Create next day's production plan for processing 4 hours of L1A data through L2

Week 2

- Analyze results of L1A processing. One extra day is for any patch required due to NCRs.
- If system ready, and if products seem correct, activate today's plan for processing of the L1A data to the L1B and L2 levels.
- While plan is active, the following concurrent activities should occur:
- Recovery from STMGT and DDIST failures
- Search and Order for 12 L1A granules
- Distribution of 6 L1A granules by 8mm media
- Distribution of 6 L1A granules by ftp push
- Monitor plan; validate distribution
- Analyze results of previous day's processing and validate
- Ensure that only L0 segment and some L1 data is staged for next processing

- Create a production plan for next segment of processing; 4 hrs of L0 data through L1B, concurrent with L1A to L1B. (Start with L0 segment already ingested)
- Activate plan
- Ingest 2nd L0 granule which will trigger 2nd DPR (second 2 hr segment)
- Monitor production (both L0 segments can process concurrently; (approx. an 18 hour elapsed time test)
- While plan is active, the following concurrent activities should occur:
- Recovery from PRONG and SBSRV failures
- Search and Order for 12 L1B granules
- Distribution of 6 L1B granules by 8mm media
- Distribution of 6 L1B granules by ftp push
- Analyze results of test; NCRs which require patches; install and check-out after patch installation

Week 3

- If system has been patched, repeat test at end of Week 1
- Prepare configuration for Day-in-the-Life test
- End-to-End Readiness Assessment
- Start Ingest of 24 hours of MODIS L0 data Ingest ancillary data (larryserver)
- Ingest FDD attitude data
- Ingest L0 ancillary (orbit) data
- Create Plan for MODIS L1A processing
- Activate plan to create MODIS L1A products (Run MODIS L0 data through L1A products for 24 hours of data)
- When complete: 120 GB of MODIS L1A data is in the processing cache; MODIS L1B processing will start as soon as a plan is activated.
- Create plan for MODIS processing from L1A to L1B to L2 End-to-End Readiness Briefing

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Figure 5-1. ECS End-to-End Test GDAAC Context Diagram

Table 5-1. ECS End-to-End Test GDAAC Daily Output Sizing

Product	File Size * Frequency	Daily Volume GB/Day
MOD01 Level 1A	355 MB * 288	102.24
MOD03	61 MB * 288	17.568
MOD02OBC	57 MB * 288	16.416
MOD021KM	262 MB * 288	75.456
MOD02HKM	168 MB * 288	48.384

Table 5-2. ECS End-to-End Test GDAAC Daily Output

Product	File Size * Frequency	Daily Volume GB/Day
MOD02QKM	168 MB * 288	48.384
MODICSRG		
MODVOLC		
MOD35_L2	48 MB * 288	13.824
MOD07_L2	28 MB * 288	8.054

Table 5-3. ECS End-to-End Test GDAAC Daily Output Sizing

Product	File Size * Frequency	Daily Volume GB/Day
AM1ATTH	* 12	.33
AM1ATTN	* 12	Inc. In AM1ATTH
AM1EPHEMH	* 12	.18
AM1EPHEMN	* 12	Inc. in AM1EPHEMH

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Figure 5-2a. MODIS GDAAC to EDC Chain at Launch PGEs

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Figure 5-2b. MODIS GDAAC to EDC Chain at Launch PGEs

5.4 GSFC Full-Up End-to-End Tests

This scenario exercises: (1) Planning, ingest, and archiving of MODIS and related data to demonstrate the GSFC DAAC's ability to conduct end-to-end operations to meet performance loads (ingest 24 hours of L0 data from EDOS (simulated) and; ingest 7 granules of ancillary data from NOAA; ingest 24 hours of Attitude data, and 12 granules of Orbit data from FDD (simulated); and concurrently (2) Product generation, archiving, and distribution of data products from the ingested data (288 subscriptions per day, and 564 PGE executions per day).

The test cases cited in the following tables are intended to serve only as the basis for developing a site specific script that will detail the evolutions to be completed in the 24hr period. These test cases are not intended to be run as part of the End-to-End Scenarios.

Table 5-4. GSFC End-to-End Test Scenarios

F1 GSFC End-to-End Scenario	F2 Description	Performance Criteria
12.1.1.1 System Start up B120110.020$G	Use HPOpenView to Start and monitor all of the servers	Successfully start up or shutdown of all servers.
12.3.2.1 Production Planning (and Subscriptions) B120440.010$G	Plan for: Chaining of PGE01, PGE02, PGE03 Ingest Planning: Ingest 24 hours of L0 data (12 granules per day from EDOS (simulated)) Ingest and preprocessing of Ancillary data (7 granules per day from NOAA) Ingest 24 hours of Ephemeris data (12 granules per day from EDOS) Ephemeris data Production Planning: Determine data and external interfaces (simulated) Register PGEs and create a MODIS plan for a 24-hour run. (Assumption: All necessary ESDTs are already in the system and the Resources were defined in SSI&T). Also need to include the PGEs for preprocessing orbit and attitude data. Ground event jobs. Subscriptions: Need subscriptions for all products (L1A, L1B and Cloudmask) 140 subscriptions – 3.2.4 Multiple users submitting subscriptions via the Subscription GUI (Can enter these while creating the production plan) Use subscriptions on behalf of SCF users to test the ftp push/pull functions and e-mail notifications	Plan for: Execution of 564 MODIS PGEs per day: PGE01 (1A) – 12 PGE02 (1B) – 264 PGE03 – 288 Output: 330.3 GB/day Input: 12 L0 granules per day; 78 GB/day; 5.7 MB ephemeris; 3.3MB attitude; < 1MB NCEP ancillary

Table 5-4. GSFC End-to-End Test Scenarios (cont.)

F1 GSFC End-to-End Scenario	F2 Description	Performance Criteria
12.6.1.1 High Data Rate Ingest (L0, ancillary, etc.) and Archiving **B120810.010$G**	This test will ingest and archive data from all sources: L0 from EDOS (simulated) Ancillary from NOAA (larry server)	MODIS L0, 12 granules per day (70 GB per day) Orbit/Attitude – 24 granules per day (<1 GB per day) Ancillary – 7 granules per day (<1 GB per day) GSFC At-launch Performance Requirements vs. Current Status table (see below)
12.3.2.3 MODIS Daily Product Generation and Archiving at the GSFC DAAC **B120440.040$G**	Bring up AutoSys. Production will automatically begin as soon as data is ingested. PGE chaining	Level 1 and 2 Processing Execution of 564 MODIS PGEs per day: PGE01 (1A) – 12 PGE02 (1B) – 264 PGE03 – 288 Output: 330.3 GB/day
12.3.2.6 MODIS Product Distribution **B120440.070$G**	Product Distribution Subscriptions and processing of standing orders Science QA of data Distribution of data via 8mm tapes Multi-user Search and Order Use EOSView to view data Distribution will begin as soon as the first products are archived.	# of search requests per hour - 100 # of orders per hour - 50
10.2.1.2 Search and Order products to Update Operations QA **(additional detail is contained in Chapter 15 of DID 611 "Quality Assurance**	Operational Quality Assurance is performed by DAAC operations personnel. Personnel will modify either the ScienceQualityFlag and OperationalQualityFlag attributes of core metadata for a granule. SCFs will send email requests to the DAAC to update the ScienceQualityFlag while the DAAC QA personnel will have responsibility to modify the value of the Operational QA flag attribute value for a product generated at a DAAC. The QA monitor will allow DAAC QA personnel to perform this function with the "at launch" system. The QA monitor will be used to: request the SDSRV to search for specific types of data granules; query, retrieve and update metadata; transfer data granules and production history to the operator's computer; view graphical images of data granules; and print/display lists of data granules/data types.	QA monitor will allow the DAAC and SCF quality setting of a data granule parameter, selected by the user. The valid values are: passed failed being investigated not investigated inferred passed inferred failed

Table 5-4. GSFC End-to-End Test Scenarios (cont.)

F1 GSFC End-to-End Scenario	F2 Description	Performance Criteria
12.1.2.1End-to-End Fault Management **B120110.050$G**	The End-to-End Fault Management test procedure builds on earlier fault tests performed in Section 8 (System Management) and Section 9 (Push). The End-to-End Fault management test confirms the ability to monitor and to stop and restart ECS host applications. This section will test the ability of the system to handle faults that occur between the subsystems. Specific tests include: 1.PDPS fault recovery; 2.SDSRV fails during PGE execution and is restarted; 3.DDIST fails during PGE execution and is restarted; 4.Archive server fails during PGE execution and is restarted; 5.Storage Management server fails during PGE execution and is restarted; 6.Cold restart after Ingest Client failure; 7. Cold start and resource cleanup after Storage Management failure;	
10.2.1.1 GSFC Science Software Installation and Maintenance (SSI&M) **B100230-010$G** **(Specific procedures for the SSI&T concurrency are contained in the "PDPS Checkout Procedures – Drop 4+" last modified 9/4/98)**	Demonstrate that SSI&T activities to include full DAP ingest, test data insertion, register PGE, Plan PGE execution and execute plan can be run concurrently with routine science data processing operations. The PDPS Checkout procedures cover the following SSI&T threads: Full DAP Ingest, Test data insertion, Register PGE, Plan PGE execution and execute plan.	

5.5 Goddard Distribution Plan

5.5.1 GSFC Product Distribution for End-to End

Distribution of MODIS products for the End-to-End tests at GSFC will be divided between 8mm tape, electronic push via subscriptions and electronic pull using B0SOT. For GSFC, the required data distribution was based on 25% of 1.6 times the anticipated daily output. This total required distribution (123.6 GB) was then divided up into 50% tape media and 25% each to ftp push and pull. Table 5.5 provides specific details regarding the GSFC data distribution plan. Availability of MODIS products is based upon the concurrent processing of both newly ingested MODIS L0 data and MODIS L1A data available from the archive.

The following table details the distribution requirement for the LaRC DAAC.

Table 5-5. GSFC End-to-End Test Data Distribution Plan

GSFC End-to-End Test Data Distribution Plan	
Required Data Distribution Volume	123.6 GB
Electronic Push	30.9 GB
Electronic Pull	30.9 GB
8mm Tape:	61.8 GB

5.6 GSFC DAAC Test Scenario Execution Sequence and Schedule

5.6.1 GSFC Scenario Testing Sequence

A script describing the test sequence will be provided as a separate cover.

6. End-to-End Test at the Langley Research Center (LaRC) DAAC

6.1 LaRC End-to-End Test

The End-to-End test activities at LaRC are based on Scenarios developed that address ECS operations and performance goals and objectives. The LaRC End-to-End MISR Chain is provided in Figure 6-2. The LDAAC diagram addresses interfacing, ingesting of data, processing of data, user request profiles, as well as the electronic and physical media distribution of data to/from the LDAAC. Additionally, Tables 6-1 through 6-3 provide the daily End-to-End Daily output volume sizing requirements for the LDAAC.

The LDAAC End-to-End test will prove that systems operational support and performance targets can be met at the LDAAC for data received from EDOS in support of the AM-1 Mission including MISR Level-0 Data Ingest; MISR Level 1-2 Production, Archive and Distribution.

6.2 LaRC Day in the Life

End-to-End Testing at LaRC will be accomplished through the execution of the launch critical and launch operational and performance scenarios described in the following sections. The step-by-step details of the test procedures that make up each scenario will be provided during the preparation phase of the End-to-End test activities. The LaRC "Day In the Life Scenario" and assumptions are defined as follows:

MISR Day in the Life

Assumptions

- End-to-End will be conducted in the OPS mode.
- All ESDTs installed
- PGE 7 does not require Activity Schedule input
- PGE 1 does not output Local Mode data
- MISR PGE 7, 9 instances of PGE 1, and PGE 8c registered in PDPS for Orbit-based processing
- PDPS orbit and pathmap models match MISR test data orbit times
- Attitude and Ephemeris data are in Toolkit format, suitable for PGE processing (DPREP has already run)

- All static data have been inserted
- L0 construction records are in correct format for Ingest
- Science processor and Storage management each have 50 GB disk available
- Science processor has 1 GB memory and 8 CPUs available
- AMASS has 2 tape drives available
- All ECS servers are stable, up and running
- All log files cleaned out
- Enter subscriptions on products for science QA and user orders

Initialization*

Enter 11 Production Requests:

PGE7 – 1

PGE1 – 9

PGE8c – 1

Create plan for ***15*** orbits:

1. PGE7 runs once per orbit
2. PGE1 runs 9 times per orbit, using PGE7 output and 9 cameras worth of L0 input
3. PGE8c runs once per orbit, using 9 cameras worth of PGE1 output

* This scenario assumes that a single orbit chain runs at a time. At LaRC, some parallelization may be introduced; eg. PGE07 runs on one machine, while PGE1 and PGE8c run on another machine.

Activation

Activate plan

For each 98 minute orbit, simultaneously:

- Ingest 9 L0 granules
- Insert Attitude and Ephemeris granules using SSIT tool (simulates running DPREP)
- Stage Ancillary input granules for chain.

PGE 7 starts when both Attitude and Ephemeris have been inserted into the archive

Each PGE 1 instance starts after PGE 7 is done, when its corresponding L0 granule has been ingested into the archive

PGE 8c starts after all 9 PGE 1 instances are done, i.e., when all 27 PGE 1 outputs it needs have been Inserted into the archive.

6.3 ECS End-to-End Site Preparations at the LaRC

The site preparation phase is tentatively scheduled for 21 days. During this period, the site hardware and software will be baselined to run the site specific End-to-End tests, the production scenarios will be installed and tested with every increasing layers of duration and concurrency of other activities leading to a final confidence check that the site is ready for End-to-End testing. Also during this period, a site specific script, detailing and scheduling all events that will comprise the End-to-End testing, will be finalized by the ECS team.

6.3.1 Assumptions

- DAAC staff will participate with ECS in End-to-End preparations
- OPS mode is configured at 4PX plus released patches to 4PX and has been
- checked-out
- DAAC staff will have completed SSI&T successfully for all End-to-End PGEs
- in the SSI&T mode
- DAAC engineering staff will support all configuration changes that are needed.
- All test data needed for the End-to-End test will be transferred to the DAAC in
- advance

6.3.2 Procedural Issues

An End-to-End meeting will be held daily at 8:00 a.m. to review progress, obstacles, and necessary actions; also to keep the DAAC management informed on end-to-end activities

6.3.3 Countdown

Week 1

- Arrive at LaRC; meet with LaRC staff for configuration briefing and E-T-E Readiness statusing
- Review configuration audit report
- Verify configuration in OPS mode
- Identify any corrective measures (patches to be installed)
- Verify that ESDTs are installed; install ESDTs as needed
- Start to register in OPS all MISR PGEs to be used (scripted); based on SSI&T mode registration at the DAAC

Week 2

- Assess test data status and location of all test data to be used
- Identify any corrective action needed to obtain and configure test data
- Start to implement corrective actions to configure test data
- Verify that all test tools are configured and operable
- Complete PGE registrations

Weeks 3-4

- Complete any corrective actions for configuration of test data, tools
- Enter Production Requests to be used in testing
- Run a series of tests to verify operability of the configuration (ingest, production planning and processing, distribution)

Weeks 5-6

- Start Progressive Sustained Testing
- Ingest a single orbit of MISR L0 data
- Create a production plan for multiple orbits of MISR L0 to L1 (PGE07-01) processing
- Activate plan
- Ingest 2nd L0 granule which will trigger 2nd DPR (second orbit segment)

- Monitor production (both L0 segments can process concurrently;
- Ensure that SSI&T mode is started-up, a new ESDT is installed, and a
- DAP ingested
- Register a PGE in SSI&T mode
- Ensure that SSI&T mode is shut-down
- Create next day's production plan for processing 2 orbits of L0 data through L2

Weeks 7-8

- Analyze results of L1 processing. One extra day is for any patch required due to NCRs.

Weeks 9-10

- If system ready, and if products seem correct, activate today's plan for processing of the L1 and L2 levels.
- While plan is active, the following concurrent activities should occur:
- Recovery from STMGT and DDIST failures
- Search and Order for 12 L1A granules
- Distribution of 6 L1A granules by 8mm media
- Distribution of 6 L1A granules by ftp push
- Monitor plan; validate distribution

Weeks 11-12

Analyze results of previous day's processing and validate

- Ensure that only L0 segment and some L1 data is staged for next processing
- Create a production plan for next segment of processing; 2 orbits of L0 data through L1, concurrent with L1 to L2. (Start with L0 segment already ingested)
- Activate plan
- Ingest 2nd L0 granule which will trigger 2nd DPR (second 2 hr segment)
- Monitor production (both L0 segments can process concurrently;

- While plan is active, the following concurrent activities should occur:
  - Recovery from PRONG and SBSRV failures
  - Search and Order for 12 L1B granules
  - Distribution of 6 L1B granules by 8mm media
  - Distribution of 6 L1B granules by ftp push

Weeks 13-14

- Analyze results of test; NCRs which require patches; install and check-out after patch installation

Weeks 14-16

- If system has been patched, repeat test of Day 5-6

Week 17

- Prepare configuration for Day-in-the-Life test

Week 18

- End-to-End Readiness Assessment

Week 19

- Start Ingest of 24 hours of MISR L0 data Ingest ancillary data
- (LATIS) Ingest FDD attitude data
- Ingest L0 ancillary (orbit) data

Week 20

- Create Plan for MISR processing of 14 orbits

Week 21

- End-to-End Readiness Briefing

Available in Hardcopy only.

Figure 6-1. Schedule for Scenario Testing Sequence at the LaRC DAAC

Table 6-1. ECS End-to-End Test LaRC DAAC Daily Input Sizing

Product	File Size * Frequency	Daily Volume MB/Day
AM1ATTF (FDD Attitude)	2.64 MB	2.64
AM1ANC (EDOS Ephemeris)	5.64 MB	5.64
MISL0xx (EDOS)	2,953 BM * 14.5	42,819
		=========
	Subtotal Input	42,827.28
		=========
	Total Input	43 GB

Table 6-2. ECS End-to-End Test LaRC DAAC Daily Input Sizing

Product	File Size * Frequency	Daily Volume GB/Day
(Following only produced for terrain radiances)		
MIB2GEOP	8 MB * 14.5	0.116
MIL1A	4417 MB * 14.5	64.05
MI1B1	5579 MB * 14,5	80.9
MI1B2E	5125 MB * 14.5	74.31
MI1B2T	5125 MB * 14.5	74.31
MISQA	9 MB * 14.5	0.13
(Extrapolated from 2/9 test runs)		
MIRCCM	307 MB * 14.5	4.45
MIRCCH	0.1 MB * 14.5	.0015
MIL2TCCL	1672 MB * 14.5	24.25
		========
	Total Output	Approx. 322.70 GB

Table 6-3. ECS End-to-End Test LaRC DAAC Daily Output Sizing

Output further reduced given the following considerations:	**- 80896**
1. MI1B1 is an interim product not permanently archived	**==========**
	221.926
2. Data represents full swath of 180 blocks: normal case will be for 140 blocks, or 77.8% or current net	**221926 * .77.8 = 172.568 GB**

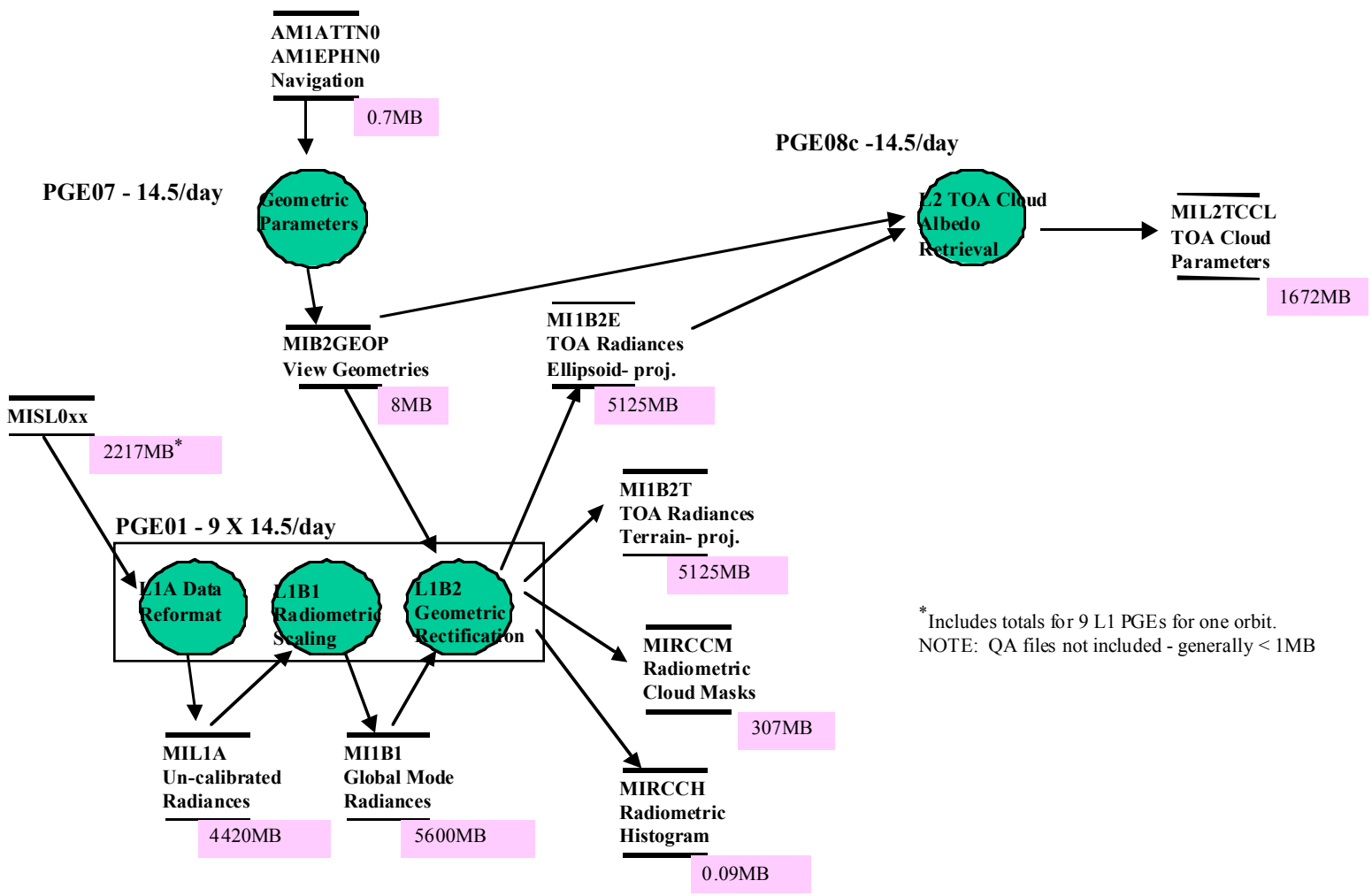

Figure 6-2. MISR LaRC per Orbit Chain (V2.0 PGEs)

Table 6-4. MISR LaRC per Orbit Chain (Ancillary Inputs)

PGE07

MIANCGM (Camera Geom. Model) 0.05MB
MIANCAGP (Anc. Geograph. Prod.) 230MB
MICNFG (Configuration File) 0.007MB
*ACTSCHED (Detailed Activity Schedule)

PGE08c

MIANCAGP (see PGE07)
MIANCSSC (see PGE01)
MIANCARP (see PGE01)
*MIANAZM (Azimuthal Model Dataset) 1MB
*MIANLDBM (Anc. Land Biom. Dataset) 15MB
*MIANTASC (TASC Dataset) 0.13MB
*MODIS data ???

PGE01

*ACTSCHED (shared)
MICNFG (see PGE01)
MIANCAGP (see PGE01)
MIANCGM (see PGE01)
MAINPP (Projection Parameters) 9*900 = 8100MB
MIRFO1(Reference Orbit Images) 9*266 = 2400MB
MIANCSSC (Cloud Screening Surface Classification) 4.5 MB
MIANRCCT (Radiometric Camera-by-Camera Threshold) 36MB
MIANCARP (Anc. Radiometric Prod.) 4MB

*Not used in V2.0
Chain

6.4 LaRC Full-up End-to-End Tests

- This scenario exercises (1) Planning, ingest, and archiving of MISR, and related data to demonstrate the LaRC DAAC's ability to conduct end-to-end operations to meet performance loads (ingest 24 hours of L0 data from EDOS (simulated); ingest 42 granules of ancillary data from NOAA; ingest 24 granules of Orbit/Attitude data from FDD; and concurrently (2) Product generation, archiving, and distribution of data products from the ingested data (140 subscriptions per day, and 165 PGE executions per day resulting in 1845 granules produced per day).

- The test cases cited in the following tables are intended to only serve as the basis for developing a site specific script that will detail the evolutions to be completed in the 24 hr period. These test cases are not intended to be run as part of the End-to-End scenarios.

Table 6-5. LaRC End-to-End Scenarios

LaRC End-to-End Scenario	F2 Description	Success Criteria
12.1.1.1 System Start up **B120110.020$L**	Use HPOpenView to: Start and monitor all of the servers	Successfully start up or shutdown of all servers.
12.4.1.1 MISR Production Planning **B120510.010$L**	The MISR Production Planning test case verifies that the ECS develops the plans and schedules and coordinates input data needs for generating MISR products at the LaRC DAAC. Plan for: 11 Production requests: PGE07 – 1 PGE01 – 9 PGE8c – 1 And create a plan for 15 orbits: PGE07 runs once per orbit PGE01 runs 9 times per orbit using PGE07 output and 9 cameras worth of L0 input and PGE08c runs once per orbit using 9 cameras worth of PGE01 output. Plan for: Chaining of PGE01, PGE07, and PGE08c <u>Production Planning</u>: Determine data and external interfaces (simulated) Register PGEs and create a MISR plan for a 24-hour run. (Assumption: All necessary ESDTs are already in the system and the Resources were defined) Also need to include the PGEs for preprocessing orbit and attitude data. Ground event jobs.	Plan for: Execution of 165 MISR PGEs per day: PGE01 – 9x15 = 135 PGE07 - 1x15 = 15 PGE8c – 1x15 = 15 Output: 322GB/day

Table 6-5. LaRC End-to-End Scenarios (cont.)

LaRC End-to-End Scenario	F2 Description	Success Criteria
12.4.1.2 MISR Level 0 Data Ingest and Archiving **B120510.020$L**	The MISR Level 0 Data Ingest and Archiving test case verifies that the LaRC DAAC ingests and archives MISR Level 0 data and associated metadata received from EDOS. The EDOS interface in this test will be simulated. Ingest Planning: Ingest 24 hours of L0 MISR data (for this test, data will consist of 15 orbits (simulated). In normal operations, ingest would consist of 12 2hr granules from EDOS) The End-to-End testing will commence with a minimum of 8hrs of simulated L0 MISR backlog in the archive.	Input: 15 L0 granules per day (each granule consisting of a single MISR orbit); 43 GB/day; 5.7 MB ephemeris; 3.3MB attitude; < 1MB ancillary
12.4.1.3 MISR Ancillary Data Ingest and Archiving. **B120510-030$L_4**P	The MISR Ancillary Data Ingest and Archiving test case verifies that the LaRC ECS DAAC ingests and archives MISR ancillary data and EOSDIS products used in generating the MISR products. 1.Ingest and preprocessing of Ancillary data	
12.4.1.3 MISR Product Generation and Archiving **B120510.040$L**	The MISR Product Generation and Archiving test case verifies that the LaRC DAAC generates and archives MISR data products.	The following performance requirements must be met for 24 hours of MISR Level 1 Processing at LaRC ECS DAAC: 1364 MFLOPS 165 PGE Executions 1845 Granules produced 184 GB output 12 Granules 47 GB input

Table 6-5. LaRC End-to-End Scenarios (cont.)

LaRC End-to-End Scenario	F2 Description	Success Criteria
12.4.1.5 MISR Product Distribution **B120510.050$L**	The MISR Product Distribution test case verifies that the ECS processes user requests for MISR products and distributes the products requested. In this test case, the user already knows which products he/she desires to receive. Subscriptions: Need subscriptions for all products Multiple users submitting subscriptions via the Subscription GUI (Can enter these while creating the production plan) Use subscriptions on behalf of SCF users to test the ftp push/pull functions and e-mail notifications Product Distribution Subscriptions and processing of standing orders Science QA of data Distribution of data via 8mm tapes Multi-user Search and Order Use EOSView to view data Distribution will begin as soon as the first products are archived.	# of search requests per hour - 100 # of orders per hour - 50
10.2.1.2 Search and Order products to Update Operations QA **(additional detail is contained in Chapter 15 of DID 611 "Quality Assurance"**	DAAC operations personnel perform operational Quality Assurance. Personnel will modify either the ScienceQualityFlag and OperationalQualityFlag attributes of core metadata for a granule. SCFs will send email requests to the DAAC to update the ScienceQualityFlag while the DAAC QA personnel will have responsibility to modify the value of the Operational QA flag attribute value for a product generated at a DAAC. The QA monitor will allow DAAC QA personnel to perform this function with the "at launch" system. The QA monitor will be used to: request the SDSRV to search for specific types of data granules; query, retrieve and update metadata; transfer data granules and production history to the operator's computer; view graphical images of data granules; and print/display lists of data granules/data types.	QA monitor will allow the DAAC and SCF quality setting of a data granule parameter, selected by the user. The valid values are: passed failed being investigated not investigated inferred passed inferred failed

Table 6-5. LaRC End-to-End Scenarios (cont.)

LaRC End-to-End Scenario	F2 Description	Success Criteria
12.1.2.1 End-to-End Fault Management B120110.050$L	The End-to-End Fault Management test procedure builds on earlier fault tests performed in Section 8 (System Management) and Section 9 (Push). The End-to-End Fault management test confirms the ability to monitor and to stop and restart ECS host applications. This section will test the ability of the system to handle faults that occur between the subsystems. Specific tests include: 1.PDPS fault recovery; 2.SDSRV fails during PGE execution and is restarted; 3.DDIST fails during PGE execution and is restarted; 4.Archive server fails during PGE execution and is restarted; 5.Storage Management server fails during PGE execution and is restarted; 6.Cold restart after Ingest Client failure; 7. Cold start and resource cleanup after Storage Management failure;	
10.2.1.1 LaRC Science Software Installation and Maintenance (SSI&M) **B100230-010$G** **(Specific procedures for the SSI&T concurrency are contained in the "PDPS Checkout Procedures – Drop 4+" last modified 9/4/98)**	Demonstrate that SSI&T activities to include full DAP ingest, test data insertion, register PGE, Plan PGE execution and execute plan can be run concurrently with routine science data processing operations. The PDPS Checkout procedures cover the following SSI&T threads: Full DAP Ingest, Test data insertion, Register PGE, Plan PGE execution and execute plan.	

6.5 LaRC Distribution

The following table details the distribution requirement for the LaRC DAAC.

Table 6-6. LaRC End-to-End Test Distribution Plan

Required Data Distribution Volume:	128.8GB	(((322)*1.6)*0.25)
Electronic Push	32.2GB	
Electronic Pull	32.2GB	
8mm Tape:	64.4GB (assume 9 drives available	

Media Type	Product	Scenario	Vol/ Order (MB)	# Orders	Total Vol (MB)	Elapsed Time (Hrs)	Thruput Needed (MB/sec)
8mm Tape		Via B0SOT, once every hour for 6 hrs, starting at hour 0, submit 1 order for a MIL1A granule	4,417	6	26,502		
		Via B0SOT, once every hour for 6 hrs, starting at hour 7, submit 1 order for a MI1B1 granule	5,579	6	33,474		
		Via B0SOT, at hour 12 submit 3 orders for MIL2TCCL granules	1,672	3	5,016		
Ftp Pull		Via B0SOT, once every hr for 3 hrs, starting at hour 0, submit 1 order for a MI1B1 granule	5,579	3	16,737		
		Via B0SOT, once every hr for 3 hrs, starting at hour 3, submit 1 order for MIL1A granules	4,417	3	13,251		
		Via B0SOT, once every hr for 3 hrs, starting at hour 6, submit 1 order for MIL2TCCL granules	1,672	3	5,016		
Ftp Push		Via subscription, submit 8 orders for MIL1A granules	4,417	8	35,336		
				32	135,332		

6.6 LaRC Product Distribution for End-to End

Distribution of MISR products for the End-to-End tests at LaRC will be divided between 8mm tape, electronic push via subscriptions and electronic pull using BOSOT. For LaRC, the required data distribution was based on 25% of 1.6 times the anticipated daily output. This total required distribution (128.8GB) wwill then be divided up into 50% tape media and 25% each to ftp push and pull. Table 6.6 provides specific details regarding the LaRC data distribution plan.

6.7 LaRC DAAC Test Scenario Execution Sequence and Schedule

6.7.1 LaRC Scenario Testing Sequence

A script describing the test sequence will be provided as a separate cover.

7. EROS Data Center (EDC) ECS DAAC

7.1 EDC End-to-End Test

The End-to-End test activities at EDC are based on Scenarios developed that address ECS operations and performance goals and objectives. An ECS EDC End-to-End context diagram is provided in Figures 7.2a through 7.2b. These diagrams represent an ASTER science scenario diagram as well as a LandSat processing scenario. The EDC context diagram addresses interfacing, ingesting of data, processing of data, user request profiles, in addition to the electronic and physical media distribution of data to/from the EDC. Additionally, Tables 7.2 through 7.3 provide the End-to-End Daily output volume sizing requirements for LandSat data at the EDC.

EDC's role in End-to-End testing involves support of the following activities: Landsat 7 Level-0R Data Ingest; ASTER/MODIS Science Software I&T; Ingest and Storage of Landsat 7 Metadata Data; Ancillary Data Ingest; AM-1 Mission Support; Landsat 7 Support; ASTER Level 1A &1B Data Ingest; ASTER Level 2 Production, Archive & Distribution; Landsat 7 Data Access & Ordering Support.

7.2 EDC Day in the Life

End-to-End testing will be accomplished by the execution of the launch critical and certain launch essential operational and performance scenarios described in the following sections. The step-by-step details of the test procedures that make up each scenario will be provided during the preparation phase of the End-to-End test activities. The EDC "Day In the Life Scenario" and assumptions are defined as follows:

7.2.1 EDC/ASTER Day in the Life

Overview

The ASTER Day-in-the-Life scenario consists of receipt and ingest of D3 tapes, executing ASTER Routine Production (DST PGE), and handling on-demand user requests for production.

Assumptions:

- OPS mode is used for production
- TS1 mode is used for concurrent SSI&T activities
- On-demand user requests for production are assumed to be against L1B granules already in the archive.
- On-demand requests arrive via e-mail (or by phone), and are processed by the staff in batches.

- Batches of ready-to-run requests can be carried over to the next shift for processing.
- Newly arrived tapes are held for processing by the next shift.
- A tape delivery contains data from a single calendar day.
- All input data are available locally.
- Enter subscriptions on products for science QA and user orders.

Initialization (to be completed in advance of The End-to-End Test):

- ESDTs installed and PGEs registered.
- D3 tapes are in hand.
- Other input data have been inserted to archive:
  - Additional AST_L1B granules (earlier dates) exist in the local archive
  - Matching GDAS0ZFH and OZ2DLYH granules exist in the local archive
  - Static files (including DEM_100M) have been inserted as part of PGE registration
- Batch of on-demand DPRs from previous shift exist:
  - approx 15 ready-to-run ad hoc requests against existing AST_L1B granules have been entered in PRE
  - candidate plan created but not activated
- Several e-mail messages (approx. 15) containing on-demand processing requests have arrived via during the night, and await action by the ops staff.
- Disk space has been cleaned, and all servers are alive.

At 00 Hours:

- D3 tape ingest
  - Operator records current time as Start Time
  - D3 tape(s) mounted
  - ASTER L1B scenes ingested (310 AST_L1B granules)
  - Operator records current time as Stop Time
- Ready-to-run DPRs

  Production plan containing outstanding ready-to-run on-demand DPRs (carry-over from previous shift) is activated, and processing on those commences.

- On-demand product requests

  Overnight e-mail backlog worked first, new requests prepped towards end of shift and carried over to next shift for action

  - Operator uses script to query SDSRV for SingleDateTime associated with the UR in the user's request e-mail
  - Operator creates DPRs with PRE for products specifying appropriate PGE profile, etc.
  - Operator enters subscriptions for output products on user's behalf
  - Operator adds DPRs to a candidate plan, assigning elevated priority to the on-demand requests
  - Candidate plan containing overnight backlog is activate, and production commences
  - Candidate plan containing shift's accumulated requests is held for next shift to activate, becoming the next day's ready-to-run DPRs.

- ASTER DST Routine Production

  Begins after last AST_L1B granule has been ingested from tape

  - Operator runs SDSRV script to determine bounding times for just-ingested granules (operator supplies the start and stop times recorded for the Ingest process)
  - Operator enters the returned bounding times into the PRE and creates DPRs for DST
  - Operator saves active plan into new candidate plan
  - Operator adds DST DPRs to this candidate plan
  - Operator activates this candidate plan to begin Day-in-the-Life production.
  - On-demand DPRs (ACT, ACVS, BTS, and ETS) execute in priority of DST DPRs
  - Execution of all PGEs is throttled by CPU availability

- Ingest Ancillary products from GSFC
- InterDAAC transfer workaround...
- Monitor DPR progress
- Examine products
- Log receipt of delivery of latest set of D3 tapes

7.2.2 EDC/Landsat 7 Day in the Life

Assumptions:

- OPs Mode is used for End-to-End production.
- Another Mode is used for concurrent SSI&T and failover activities.
- No live-interface testing (LPS, IAS, MOC) will be conducted.
- F1 and F2 deliveries of a single dataset will be modeled as near simultaneous (rather than up to 8 hours apart)
- Production of Scene (L70RWRS) only
- At-Launch products (L70R, L7CPF, Browse, ECSCCA) will not be demonstrated in the End-to-End.
- All ECS Servers are “Up and Running”.
- ESDTs installed.
- Testdata will be simulated Feb’98 baseline testdata
- Presence of staged testdata is verified: LPS Level0R - four 3-scene subintervals, three 7-scene subintervals, and one 35-scene subinterval
- IAS CPF testdata (four datasets) is primed in the system.

Initialization (to start at TBD hours/days in advance of the End-to-End Test):

Create Plan for the Day:

- Ingest and archival of 333 Scenes (141 Gb) of LPS Level-0R data
  - 20 of 3-scene dataset (two ingests of each of the four 3-scene staged datasets).
  - 34 of 7-scene dataset (ten ingests of each of the three 7-scene staged datasets).
  - 1 of 35-scene dataset (seven ingests of the 35-scene staged dataset).
- Search/Order/Production/Distribution of 94 Scenes (40 Gb) of Level-0R Distribution Product.
  - All scenes from 8 of the archived instances of 3-scene dataset.
  - All scenes from 10 of the archived instances of 7-scene dataset.

At 00 Hours:

- Activate "L7 DAN Machine".
- LPS Level-0R data arrival—fundamental unit is the 90-minute imaging pass. L7 ETM+ performs imaging both day and night. Three homogeneous-sized data-arrival scenarios are:
  - 3-scene subinterval—maximum of 12 per 90-minute period.
  - 7-scene subinterval—maximum of 5 per 90-minute period.
  - 35-scene subinterval—maximum of one per 90-minute period.
- Ingest LPS Level-0R data using the "L7 DAN Machine".
- Process LPS Level-0R data (combining F1 and F2, creating one L70R granule, 1 to 35 L70RWRS virtual-granules, and 1 to 35 Browse granules).
- Search for L70RWRS granules
- Acquire L70RWRS granule data.
  - Subset one L70RWRS granule (from L70R).
  - Reformat the above to create one Scene Level-0R Distribution Product.
- Order Scene Level-0R Distribution Product.
- Distribute the Scene Level-0R Distribution Product.
- Examine/Visualize Scene Browse files

- Examine Scene Level-0R subsets
- Examine/Visualize Scene Level-0R Distribution Product

7.3 ECS End-to-End Site Preparations at the EDC

The site preparation phase is tentatively scheduled for 21 days. During this period, the site hardware and software will be baselined to run the site specific End-to-End tests, the production scenarios will be installed and tested with every increasing layers of duration and concurrency with other activities leading to a final confidence check that the site is ready for End-to-End testing. Also during this period, a site specific script, detailing and scheduling all events that will comprise the End-to-End testing, will be finalized by the ECS team.

7.3.1 Assumptions

- DAAC staff will participate with ECS in End-to-End preparations
- OPS mode is configured at 4PX plus released patches to 4PX and has been checked-out
- DAAC staff will have completed SSI&T successfully for all End-to-End PGEs
- in the SSI&T mode
- DAAC engineering staff will support all configuration changes that are needed.
- All test data needed for the End-to-End test will be transferred to the DAAC in advance

7.3.2 Procedural Issues

An End-to-End meeting will be held daily at 8:00 a.m. to review progress, obstacles, and necessary actions; also to keep the DAAC management informed on end-to-end activities

7.3.3 Countdown

Week 1

- Arrive at EDC; meet with EDC staff for configuration briefing and E-T-E Readiness statusing
- Review configuration audit report
- Verify configuration in OPS mode
- Identify any corrective measures (patches to be installed)
- Verify that ESDTs are installed; install ESDTs as needed
- Start to register in OPS all ASTER PGEs to be used (scripted); based on SSI&T mode registration at the DAAC

Week 2

- Assess test data status and location of all test data to be used
- Identify any corrective action needed to obtain and configure test data
- Start to implement corrective actions to configure test data
- Verify that all test tools are configured and operable
- Complete PGE registrations

Weeks 3-4

- Complete any corrective actions for configuration of test data, tools such as the DAN simulator for Landsat 7
- Enter Production Requests to be used in testing
- Run a series of tests to verify operability of the configuration (ingest, acquires production planning and processing, subsetting (Landsat only) distribution)

Weeks 5-6

- Start Progressive Sustained Testing
- Test ASTER D3 and Lansat 7 Ingest functionality
- Create a production plan for ASTER routine production (approximately 8hrs or ~100 L1B granules)
- Activate plan and run concurrently with Landsat Ingest
- Ensure that SSI&T mode is started-up, a new ESDT is installed, and a DAP ingested
- Register a PGE in SSI&T mode
- Ensure that SSI&T mode is shut-down
- Create next day's production plan for processing ~ 100 granules of ASTER L1B

Weeks 7-8

- Analyze results of ASTER processing. One extra day is for any patch required due to NCRs.

Weeks 9-10

- If system ready, and if products seem correct, activate today's plan for processing of the ASTER L1B.
- While plan is active, the following concurrent activities should occur:
  - Recovery from STMGT and DDIST failures
  - Search and Order for 12 L1A granules
  - Distribution of 10 ASTER 06V,06S and 06T granules by 8mm media
  - Distribution of 30 ASTER 06 granules by ftp push
- Monitor plan; validate distribution

Weeks 11-12

- Analyze results of previous day's processing and validate
- Create a production plan for 8hrs of processing of ASTER L1B and a minimum of 5 ASTER on demand processing (manual workaround) requests.
- Activate plan
- Ingest a minimum 0f 100 Landsat scenes (consisting of 3,7 and 35 scene data)
- Monitor a minimum of 10Landsat subsetting requests (via subscription)
- While plan is active, the following concurrent activities should occur:
  - Recovery from PRONG and SBSRV failures
  - Search and Order for 30 ASTER 06 granules
  - Distribution of 10 Landsat scenes by 8mm media
  - Distribution of 10 subsetted Landsat scenes by ftp push

Weeks 13-14

- Analyze results of test; NCRs which require patches; install and check-out after patch installation

Weeks 14-16

- If system has been patched, repeat test of Week 5-6

Week 17

- Prepare configuration for Day-in-the-Life test

Week 18

- End-to-End Readiness Assessment

Week 19

- Start Ingest of required ancillary data
- Ingest (prestage) 250 scenes (1day's worth) of Landsat-7
- Ingest (prestage) 8hrs of ASTER L1B

Week 20

- Create Plan for ASTER L1B

Week 21

- End-to-End Readiness Briefing

Available in Hardcopy only.

Figure 7-1. ECS End-to-End EDAAC Context Diagram

Available in Hardcopy only.

Figure 7-2. ASTER at EDC

Available in Hardcopy only.

Figure 7-3. Landsat at EDC

7.4 EDC Full-up End-to-End Tests

- This scenario exercises (1) Planning, ingest, and archiving of ASTER, Landsat 7, and related data to demonstrate the EDC DAAC's ability to conduct end-to-end operations to meet performance loads.
- The test cases cited in the following tables are intended to only serve as the basis for developing a site specific script that will detail the evolutions to be completed in the 24 hr period. These test cases are not intended to be run as part of the End-to-End scenarios.

Table 7-1. EDC End-to-End Scenarios

EDC End-to-End Scenario	F2 Description	Success Criteria
12.1.1.1 System Start up B120110.020$L	Use HPOpenView to: Start and monitor all of the servers	Successfully start up or shutdown of all servers.
12.4.1.3 EDC Ancillary Data Ingest and Archiving. B120510-030$E	The EDC Ancillary Data Ingest and Archiving verifies that the EDC DAAC ingests and archives ancillary data and EOSDIS products used in generating the ASTER and MODIS products.	
12.2.2.2 ASTER DAR Data Ingest and Archiving B120330.020$E	The ASTER DAR Data Ingest and Archiving test case verifies that the EDC ECS DAAC ingests and archives ASTER Level 1 data that includes the DAR observation, browse data, and associated metadata. This test case also verifies that the EDC ECS DAAC ingests and archives ancillary data.	A total of 310 ASTER L1B granules will be ingested for processing by PGE xx using the ASTER Routine Production scenario.
12.5.1.1 LPS Data Ingest and Archiving B120650.010$E	The LPS Data Ingest and Archiving verifies that the EDC ESC DAAC ingests and archives Landsat 7 Level 0R data and associated metadata received from the LPS .as The ECS shall be capable of ingesting and archiving and acknowledging Landsat 7 Level 0R data produced by LPS over 12 hours, within 8 hours from the time of receipt of the data availability notice from LPS.	
12.5.1.3 ECS User Access to Landsat 7 Information and Products B120650.030$E	The ECS User Access to Landsat 7 Information and Products test case verifies that the ECS processes user requests for Landsat 7 products and information and distributes the products and information requested.	

Table 7-1. EDC End-to-End Scenarios (cont.)

EDC End-to-End Scenario	F2 Description	Success Criteria
12.4.1.5 MODIS L2 Product Distribution B120510.050$E	The MODIS L2 Product Distribution test case verifies that the ECS processes user requests for products and distributes the products requested. In this test case, the user already knows which products he/she desires to receive. <u>Subscriptions</u>: Need subscriptions for all products Multiple users submitting subscriptions via the Subscription GUI (Can enter these while creating the production plan) Use subscriptions on behalf of SCF users to test the ftp push/pull functions and e-mail notifications Product Distribution Subscriptions and processing of standing orders Science QA of data Distribution of data via 8mm tapes Multi-user Search and Order Use EOSView to view data Distribution will begin as soon as the first products are archived.	# of search requests per hour - 100 # of orders per hour - 50
10.2.1.2 Search and Order products to Update Operations QA (additional detail is contained in Chapter 15 of DID 611 "Quality Assurance"	DAAC operations personnel perform operational Quality Assurance. Personnel will modify either the ScienceQualityFlag and OperationalQualityFlag attributes of core metadata for a granule. SCFs will send email requests to the DAAC to update the ScienceQualityFlag while the DAAC QA personnel will have responsibility to modify the value of the Operational QA flag attribute value for a product generated at a DAAC. The QA monitor will allow DAAC QA personnel to perform this function with the "at launch" system. The QA monitor will be used to: request the SDSRV to search for specific types of data granules; query, retrieve and update metadata; transfer data granules and production history to the operator's computer; view graphical images of data granules; and print/display lists of data granules/data types.	QA monitor will allow the DAAC and SCF quality setting of a data granule parameter, selected by the user. The valid values are: passed failed being investigated not investigated inferred passed inferred failed

Table 7-1. EDC End-to-End Scenarios (cont.)

EDC End-to-End Scenario	F2 Description	Success Criteria
12.1.2.1 End-to-End Fault Management B120110.050$L	The End-to-End Fault Management test procedure builds on earlier fault tests performed in Section 8 (System Management) and Section 9 (Push). The End-to-End Fault management test confirms the ability to monitor and to stop and restart ECS host applications. This section will test the ability of the system to handle faults that occur between the subsystems. Specific tests include: 1.PDPS fault recovery; 2.SDSRV fails during PGE execution and is restarted; 3.DDIST fails during PGE execution and is restarted; 4.Archive server fails during PGE execution and is restarted; 5.Storage Management server fails during PGE execution and is restarted; 6.Cold restart after Ingest Client failure; 7. Cold start and resource cleanup after Storage Management failure;	
10.2.1.1 EDC Science Software Installation and Maintenance (SSI&M) B100230-010$G (Specific procedures for the SSI&T concurrency are contained in the "PDPS Checkout Procedures – Drop 4+" last modified 9/4/98)	Demonstrate that SSI&T activities to include full DAP ingest, test data insertion, register PGE, Plan PGE execution and execute plan can be run concurrently with routine science data processing operations. The PDPS Checkout procedures cover the following SSI&T threads: Full DAP Ingest, Test data insertion, Register PGE, Plan PGE execution and execute plan.	

7.5 EDC Distribution Plan

The following table details the ASTER distribution requirement for the EDC DAAC.

Table 7-2. ASTER Data Distribution

ASTER End-to-End Test Data Distribution Plan

Total Distribution Volume	13.5GB	(310*(84+21+3) + 5*(7+13+9+3)) **1.6**.025
Electronic Push	3.4GB	
Electronic Pull	6.7 GB	
8mm Tape:	3.4GB	

7.5.1 EDC End-to-End Test Landsat 7 Data Distribution Plan

For the purpose of the End-to-End testing, 250 scenes will be ingested and 100 scenes of Landsat 7 data will be distributed. The data will be distributed by 8mm tape as well ftp push and pull. The table below provides detail on the Landsat distribution.

Required Data Distribution Volume:	50GB
Electronic Push	12.5GB
Electronic Pull	12.5GB
8mm Tape:	25GB

Table 7-3. Landsat 7 Data Distribution

Media Type	Product	Scenario	Vol/ Order (MB)	# Orders	Total Vol (MB)
8mm Tape		Via B0SOT, once every hr for 10 hrs, starting at hour 0, submit 5 orders for Landsat-7 scenes	2500	10	25,000
Ftp Pull		Via B0SOT, once every hr for 5 hrs starting at hour 10, submit orders for 5 Landsat-7 scenes	2500	5	12,500
Ftp Push		Via Subscription, submit an order for 25 Landsat-7 scenes	500	25	12,500
				40	50,000

7.6 EDC DAAC Test Scenario Execution Sequence and Schedule

7.6.1 EDC Scenario Testing Sequence

A script describing the test sequence will be provided as a separate cover.

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Appendix A.Software to Hardware Mappings

Appendix A depicts the software to hardware mapping that will be used for the End-to-End Testing. The hardware configuration is depicted in document 920-TDL-008 REV 3.

Table A-1. Site Map of EDC
Generated on Thursday, July 23, 1998

Software	Workstation	Package
CLS : CLS Subsystem		
EDC:e0acs03:CLS:EcCl	Operations WS 01 (Default)	.EcClDAAC.pkg
EDC:e0acs04:CLS:EcCl	Operations WS 02	.EcClDAAC.pkg
EDC:e0ais02:CLS:	AIT Workstation (Default)	.EcClEOSView.pkg
EcClEDC:e0ais03:CLS:EcCl	AIT Workstation/DBMS Server	.EcClEOSView.pkg
EDC:e0dms03:CLS:EcCl	Data Spec Workstation 01 (Default)	.EcClDAAC.pkg
EDC:e0dms04:CLS:EcCl	Data Spec Workstation 02	.EcClDAAC.pkg
EDC:e0ins01:CLS:EcCl	Interface Server 02 Principal for CSS, Backup for DMS, IOS, CLS servers.	.EcClINTFCSVR_EDC.pkg
EDC:e0ins02:CLS:EcCl	Interface Server 01 Principal for DMS, IOS, CLS servers, Backup for CSS.	.EcClINTFCSVR_EDC.pkg
EDC:e0pls03:CLS:EcCl	Planning/Management WS 01 (Default)	.EcClEOSView.pkg
EDC:e0pls03:CLS:EcCl	Planning/Management WS 01 (Default)	.EcClEOSView.pkg .EcClDAAC.pkg
CSS : CSS Subsystem		
EDC:e0dms03:CSS:EcCs	Data Spec Workstation 01 (Default)	.EcCsCommon.pkg .EcCsSubServerGUI.pkg
EDC:e0dms04:CSS:EcCs	Data Spec Workstation 02	.EcCsCommon.pkg .EcCsSubServerGUI.pkg
EDC:e0ins01:CSS:EcCs	Interface Server 02 Principal for CSS, Backup for DMS, IOS, CLS servers.	.EcCsCommon.pkg .EcCsINTFCSVR_EDC.pkg

Table A-1. Site Map of EDC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
EDC:e0ins02:CSS:EcCs	Interface Server 01 Principal for DMS, IOS, CLS servers, Backup for CSS.	.EcCsCommon.pkg .EcCsINTFCSVR_EDC.pkg
EDC:e0msh11:CSS:EcCs MSS Server (S)	EDC:e0msh11:CSS:EcCs MSS Server (S) .EcCsCommon.pkg .EcCsDarMainMSSSVR_EDC.pkg	.EcCsCommon.pkg .EcCsDarMainMSSSVR_EDC.pkg
EDC:e0mss20:CSS:EcCs	Applications Server (S)	.EcCsDarMainMSSSVR_EDC.pkg
EDC:e0mss20:CSS:EcCs	Applications Server (S)	.EcCsACLDb.pkg .EcCsCommon.pkg
EDC:e0mss21:CSS:EcCs	Applications Server (P) (Default)	.EcCsACLDb.pkg .EcCsCommon.pkg
DMS : Data Management		
EDC:e0ins01:DMS:EcDm	Interface Server 02 Principal for CSS, Backup for DMS, IOS, CLS servers.	.EcDmINTFCSVR.pkg
EDC:e0ins02:DMS:EcDm	Interface Server Principal for DMS, IOS, CLS servers, Backup for CSS.	.EcDmINTFCSVR.pkg
DPS : DPS Subsystem		
EDC:e0ais02:DPS:EcDpAt	AIT Workstation (Default)	.EcDpAITWS.pkg
EDC:e0ais03:DPS:EcDpAt	AIT Workstation/DBMS Server	.EcDpAITWS.pkg
EDC:e0pls01:DPS:EcDpPr	Planning/Management WS 02	.EcDpPrPLNMGMTWS.pkg

Table A-1. Site Map of EDC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
EDC:e0pls01:DPS:EcDpPr	Planning/Management WS 02	.EcDpPrPLNMGMTWS.pkg
EDC:e0pls02:DPS:EcDpPr	PDPS DBMS Server	.EcDpPrQUESRVR.pkg
EDC:e0pls03:DPS:EcDpPr	Planning/Management WS 01 (Default)	.EcDpPrPLNMGMTWS.pkg
EDC:e0spg01:DPS:EcDpSc	Science Processor 01 (Default)	.EcDpScSCNCPRCS.pkg
EDC:e0spg05:DPS:EcDpSc	Science Processor 03	.EcDpScSCNCPRCS.pkg
EDC:e0sps04:DPS:EcDpPr	Queuing Server	.EcDpPrQUESRVR.pkg
DSS : Data Distribution		
EDC:e0dis01:DSS:EcDsDd	Distribution Server (S)	.EcDsDdDISTSRVR.pkg
EDC:e0dis02:DSS:EcDsDd	Distribution Server (P) (Default)	.EcDsDdDISTSRVR.pkg
DSS : Science Data Server		
EDC:e0acs03:DSS:EcDsSr	Operations WS 01 (Default)	.EcDsSdOPSWS.pkg
EDC:e0acs04:DSS:EcDsSr	Operations WS 02	.EcDsSdOPSWS.pkg
EDC:e0acs05:DSS:EcDsSr	SDSRV Server (P) (Default)	.EcDsSdSDSRV.pkg .EcDsSdOPSWS.pkg
EDC:e0acs06:DSS:EcDsSr	SDSRV Server (S)	.EcDsSdSDSRV.pkg
DSS : Storage Management		
EDC:e0acg01:DSS:EcDsSt	APC Server (P) (Default)	.EcDsStINJSTSRVR.pkg .EcDsStAPCSVR.pkg
EDC:e0acg02:DSS:EcDsSt	APC Server (S)	.EcDsStINJSTSRVR.pkg .EcDsStAPCSVR.pkg
EDC:e0dis01:DSS:EcDsSt	Distribution Server (S)	.EcDsStDISTSRVR_EDC.pkg
EDC:e0dis02:DSS:EcDsSt	Distribution Server (P) (Default)	.EcDsStDISTSRVR_EDC.pkg
EDC:e0drg01:DSS:EcDsSt	FSMS Server (P) (Default)	.EcDsStFSMSSRVR.pkg
EDC:e0drg05:DSS:EcDsSt	FSMS Server (S)	.EcDsStFSMSSRVR.pkg
EDC:e0drg05:DSS:EcDsSt	FSMS Server (S)	.EcDsStFSMSSRVR.pkg

Table A-1. Site Map of EDC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
EDC:e0icg01:DSS:EcDsSt	Ingest Server (P) (Default)	.EcDsStINJSTSRVR.pkg
EDC:e0icg02:DSS:EcDsSt	Ingest Server (S)	.EcDsStINJSTSRVR.pkg
EDC:e0wkg01:DSS:EcDsSt	Working Storage Host	.EcDsStDBMSSRVR.pkg
INS : Ingest has no components		
EDC:e0acg01:INS:EcIn	APC Server (P) (Default)	EcInAPCSVR.pkg
EDC:e0acg02:INS:EcIn	APC Server (S)	EcInAPCSVR.pkg
EDC:e0acs03:INS:EcIn	Operations WS 01 (Default)	EcInGUIOPSWS.pkg
EDC:e0acs04:INS:EcIn	Operations WS 02	EcInGUIOPSWS.pkg
EDC:e0icg01:INS:EcIn	Ingest Server (P) (Default)	EcInINTFCSVR.pkg/ EcInINJSTSRVR.pkg
EDC:e0icg02:INS:EcIn	Ingest Server (S)	EcInINJSTSRVR.pkg
EDC:e0icg02:INS:EcIn	Ingest Server (S)	EcInINTFCSVR.pkg/EcInINJSTSRVR.pkg
IOS : IOS (Interoperability) Subsyst		
EDC:e0ins01:IOS:EcIo	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcIoAdINTFCSVR.pkg
EDC:e0ins02:IOS:EcIo	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcIoAdINTFCSVR.pkg
MSS : Accountability		
EDC:e0mss20:MSS:EcMsAc	Applications Server (S)	.EcMsAcAPPSSRVR.pkg
EDC:e0mss21:MSS:EcMsAc	Applications Server (P) (Default)	.EcMsAcAPPSSRVR.pkg
MSS : Agent		
EDC:*:MSS:EcMsAg		.EcMsCommon.pkg/EcMsAgGlobalShared.pkg/EcMsCommon.pkg/EcMsAgGlobalShared.pkg
MSS : Comment Survey		
EDC:e0mss20:MSS:EcMsCs	Applications Server (S)	
EDC:e0mss21:MSS:EcMsCs	Applications Server (P) (Default)	
MSS : Database files		
EDC:e0mss21:MSS:EcMsDb	Applications Server (P) (Default)	.EcMsDbSupport.pkg
MSS : MDA		
EDC:*:MSS:EcMsMd		EcMsMdCOMMON.pkg

Table A-1. Site Map of EDC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
EDC:e0mss20:MSS:EcMsMd	Applications Server (S)	.EcMsMdAPPSSRVR.pkg
EDC:e0mss21:MSS:EcMsMd	Applications Server (P) (Default)	.EcMsMdAPPSSRVR.pkg
MSS : Mode Management		
EDC:e0msh03:MSS:EcMsCm	MSS Server (P) (Default)	.EcMsCmSSSRVR.pkg
EDC:e0msh11:MSS:EcMsCm	MSS Server (S)	.EcMsCmSSSRVR.pkg
EDC:e0msh11:MSS:EcMsCm	MSS Server (S)	.EcMsCmSSSRVR.pkg
MSS : Tivoli		
EDC:e0msh03:MSS:EcMsTv	MSS Server (P) (Default)	.EcMsTvMSSSRVR.pkg
EDC:e0msh11:MSS:EcMsTv	MSS Server (S)	.EcMsTvMSSSRVR.pkg
MSS : Trouble Ticket		
EDC:e0msh03:MSS:EcMsTt	MSS Server (P) (Default)	.EcMsTtMSSSRVR.pkg
EDC:e0msh11:MSS:EcMsTt	MSS Server (S)	.EcMsTtMSSSRVR.pkg
PLS : PDPS/PLS Subsystem		
EDC:e0pls01:PLS:EcPl	Planning/Management WS 02	.EcPlPLNMGMTWS.pkg
EDC:e0pls02:PLS:EcPl	PDPS DBMS Server	.EcPlQUESRVR.pkg
EDC:e0pls03:PLS:EcPl	Planning/Management WS 01 (Default)	EcPlPLNMGMTWS.pkg
EDC:e0sps04:PLS:EcPl	Queuing Server	.EcPlQUESRVR.pkg
TOOLKIT : ECS Toolkit		
EDC:e0ais02:TOOLKIT:EcTk	AIT Workstation (Default)	.EcTkToolkit.pkg
EDC:e0ais03:TOOLKIT:EcTk	AIT Workstation/DBMS Server	.EcTkToolkit.pkg
EDC:e0dis01:TOOLKIT:EcTk	Distribution Server (S)	.EcTkToolkit.pkg
EDC:e0pls02:TOOLKIT:EcTk	PDPS DBMS Server	.EcTkToolkit.pkg
EDC:e0spg01:TOOLKIT:EcTk	Science Processor 01 (Default)	.EcTkToolkit.pkg
EDC:e0spg05:TOOLKIT:EcTk	Science Processor 03	.EcTkToolkit.pkg
EDC:e0sps04:TOOLKIT:EcTk	Queuing Server	.EcTkToolkit.pkg
V0_Client : V0_client Subsystem		
EDC:e0ins01:VOC:EcVc	Interface Server 02	
V0_Client : V0_client Subsystem		
EDC:e0ins01:VOC:EcVc	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	EcVcB0SOT.pkg
EDC:e0ins02:VOC:EcVc	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcVcB0SOT.pkg

Table A-2. Site Mappings for the LARC DAAC
Generated on Thursday, July 23, 1998

Software	Workstation	Package
CLS : CLS Subsystem		
LARC:l0acs01:CLS:EcCl	Operations WS 01 (Default)	.EcClDAAC.pkg
LARC:l0acs06:CLS:EcCl	Operations WS 02	.EcClDAAC.pkg
LARC:l0ais01:CLS:EcCl	AIT Workstation/DBMS Server	.EcClEOSView.pkg
LARC:l0ais09:CLS:EcCl	AIT Workstation (Default)	.EcClEOSView.pkg
LARC:l0dms01:CLS:EcCl	Data Spec Workstation 01 (Default)	.EcClDAAC.pkg
LARC:l0dms04:CLS:EcCl	Data Spec Workstation 02	.EcClDAAC.pkg
LARC:l0dms05:CLS:EcCl	Data Spec Workstation 03	.EcClDAAC.pkg
LARC:l0ins01:CLS:EcCl	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	
LARC:l0ins01:CLS:EcCl	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcClINTFCSVR.pkg
LARC:l0ins02:CLS:EcCl	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcClINTFCSVR.pkg
LARC:l0pls02:CLS:EcCl	Planning/Management WS 01 (Default)	.EcClEOSView.pkg/.EcClDAAC.pkg
CSS : CSS Subsystem		
LARC:l0dms01:CSS:EcCs	Data Spec Workstation 01 (Default)	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
LARC:l0dms04:CSS:EcCs	Data Spec Workstation 02	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
LARC:l0dms05:CSS:EcCs	Data Spec Workstation 03	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
LARC:l0ins01:CSS:EcCs	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcCsCommon.pkg
	(# Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcCsCommon.pkg/.EcCsINTFCSVR.pkg
LARC:l0ins02:CSS:EcCs	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcCsCommon.pkg/.EcCsINTFCSVR.pkg
LARC:l0mss20:CSS:EcCs	Applications Server (S)	.EcCsACLDb.pkg/.EcCsCommon.pkg

Table A-2. Site Mappings for the LARC DAAC Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
LARC:l0mss21:CSS:EcCs	Applications Server (P) (Default)	.EcCsACLDb.pkg/.EcCsCommon.pkg
DMS : Data Management		
LARC:l0ins01:DMS:EcDm	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcDmINTFCSVR.pkg
LARC:l0ins02:DMS:EcDm	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcDmINTFCSVR.pkg
DPS : DPS Subsystem		
LARC:l0ais01:DPS:EcDpAt	AIT Workstation/DBMS Server	.EcDpAITWS.pkg
LARC:l0ais09:DPS:EcDpAt	AIT Workstation (Default)	.EcDpAITWS.pkg
LARC:l0pls01:DPS:EcDpPr	PDPS DBMS Server	.EcDpPrQUESRVR.pkg
LARC:l0pls02:DPS:EcDpPr	Planning/Management WS 01 (Default)	.EcDpPrPLNMGMTWS.pkg
LARC:l0spg01:DPS:EcDpSc	Science Processor 01 (Default)	.EcDpScSCNCPRCS.pkg
LARC:l0spg06:DPS:EcDpSc	Science Processor 03	.EcDpScSCNCPRCS.pkg
LARC:l0sps03:DPS:EcDpPr	Queuing Server	.EcDpPrQUESRVR.pkg
DSS : Data Distribution		
LARC:l0dis01:DSS:EcDsDd	Distribution Server (S)	EcDsDdDISTSRVR.pkg
LARC:l0dis02:DSS:EcDsDd	Distribution Server (P) (Default)	EcDsDdDISTSRVR.pkg/EcDsDdDISTSRVR.pkg
DSS : Science Data Server		
LARC:l0acs01:DSS:EcDsSr	Operations WS 01 (Default)	.EcDsSdOPSWS.pkg
LARC:l0acs03:DSS:EcDsSr	SDSRV Server (P) (Default)	.EcDsSdSDSRV.pkg
.EcDsSdOPSWS.pkg		
LARC:l0acs04:DSS:EcDsSr	SDSRV Server (S)	.EcDsSdSDSRV.pkg
LARC:l0acs06:DSS:EcDsSr	Operations WS 02	.EcDsSdOPSWS.pkg
DSS : Storage Management		
LARC:l0acg02:DSS:EcDsSt	APC Server (P) (Default)	.EcDsStINJSTSRVR.pkg/.EcDsStAPCSVR.pkg
LARC:l0acg05:DSS:EcDsSt	APC Server (S)	.EcDsStINJSTSRVR.pkg/.EcDsStAPCSVR.pkg
LARC:l0dis01:DSS:EcDsSt	Distribution Server (S)	.EcDsStDISTSRVR.pkg
LARC:l0dis02:DSS:EcDsSt	Distribution Server (P) (Default)	.EcDsStDISTSRVR.pkg

Table A-2. Site Mappings for the LARC DAAC Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
LARC:l0dis02:DSS:EcDsSt	Distribution Server (P) (Default)	.EcDsStDISTSRVR.pkg
LARC:l0drg01:DSS:EcDsSt	FSMS Server (P) (Default)	.EcDsStFSMSSRVR.pkg
LARC:l0drg03:DSS:EcDsSt	FSMS Server (S)	.EcDsStFSMSSRVR.pkg
LARC:l0icg01:DSS:EcDsSt	Ingest Server (P) (Default)	.EcDsStINJSTSRVR.pkg
LARC:l0icg02:DSS:EcDsSt	Ingest Server (S)	.EcDsStINJSTSRVR.pkg
LARC:l0wkg01:DSS:EcDsSt	Working Storage Host	.EcDsStDBMSSRVR.pkg
INS : Ingest has no components		
LARC:l0acg02:INS:EcIn	APC Server (P) (Default)	.EcInAPCSVR.pkg
LARC:l0acg05:INS:EcIn	APC Server (S)	.EcInAPCSVR.pkg
LARC:l0acs01:INS:EcIn	Operations WS 01 (Default)	.EcInGUIOPSWS.pkg
LARC:l0acs06:INS:EcIn	Operations WS 02	.EcInGUIOPSWS.pkg
LARC:l0acs06:INS:EcIn	Operations WS 02	.EcInGUIOPSWS.pkg
LARC:l0icg01:INS:EcIn	Ingest Server (P) (Default)	.EcInINTFCSVR.pkg/.EcInINJSTSRVR.pkg
LARC:l0icg02:INS:EcIn	Ingest Server (S)	.EcInINTFCSVR.pkg/.EcInINJSTSRVR.pkg
IOS : IOS (Interoperability) Subsyst		
LARC:l0ins01:IOS:EcIo	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcIoAdINTFCSVR.pkg
LARC:l0ins02:IOS:EcIo	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcIoAdINTFCSVR.pkg
MSS : Accountability		
LARC:l0mss20:MSS:EcMsAc	Applications Server (S)	.EcMsAcAPPSSRVR.pkg
LARC:l0mss21:MSS:EcMsAc	Applications Server (P) (Default)	.EcMsAcAPPSSRVR.pkg/EcMsAcAPPSSRVR.pkg
MSS : Agent		
LARC:*:MSS:EcMsAg		.EcMsCommon.pkg/.EcMsAgGlobalShared.pkg
MSS : Comment Survey		
LARC:l0mss20:MSS:EcMsCs	Applications Server (S)	
LARC:l0mss21:MSS:EcMsCs	Applications Server (P) (Default)	
MSS : Database files		
LARC:l0mss21:MSS:EcMsDb	Applications Server (P) (Default)	.EcMsDbSupport.pkg

Table A-2. Site Mappings for the LARC DAAC Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
MSS : MDA		
LARC:*:MSS:EcMsMd		.EcMsMdCOMMON.pkg
LARC:l0mss20:MSS:EcMsMd	Applications Server (S)	.EcMsMdAPPSSRVR.pkg
LARC:l0mss21:MSS:EcMsMd	Applications Server (P) (Default)	.EcMsMdAPPSSRVR.pkg/.EcMsMdAPPSSRVR.pkg
MSS : Mode Management		
LARC:l0msh03:MSS:EcMsCm	MSS Server (P) (Default)	.EcMsCmSSSRVR.pkg
LARC:l0msh22:MSS:EcMsCm	MSS Server (S)	.EcMsCmSSSRVR.pkg
MSS : Tivoli		
LARC:l0msh03:MSS:EcMsTv	MSS Server (P) (Default)	.EcMsTvMSSSRVR.pkg
LARC:l0msh22:MSS:EcMsTv	MSS Server (S)	.EcMsTvMSSSRVR.pkg
MSS : Trouble Ticket		
LARC:l0msh03:MSS:EcMsTt	MSS Server (P) (Default)	.EcMsTtMSSSRVR.pkg
LARC:l0msh22:MSS:EcMsTt	MSS Server (S)	.EcMsTtMSSSRVR.pkg
PLS : PDPS/PLS Subsystem		
LARC:l0pls01:PLS:EcPl	PDPS DBMS Server	.EcPlQUESRVR.pkg
LARC:l0pls02:PLS:EcPl	Planning/Management WS 01 (Default)	.EcPlPLNMGMTWS.pkg
LARC:l0sps03:PLS:EcPl	Queuing Server	.EcPlQUESRVR.pkg
TOOLKIT : ECS Toolkit		
LARC:l0ais01:TOOLKIT:EcTk	AIT Workstation/DBMS Server	.EcTkToolkit.pkg
LARC:l0ais09:TOOLKIT:EcTk	AIT Workstation (Default)	.EcTkToolkit.pkg
LARC:l0dis01:TOOLKIT:EcTk	Distribution Server (S)	.EcTkToolkit.pkg
LARC:l0pls01:TOOLKIT:EcTk	PDPS DBMS Server	.EcTkToolkit.pkg
LARC:l0spg01:TOOLKIT:EcTk	Science Processor 01 (Default)	.EcTkToolkit.pkg
LARC:l0spg06:TOOLKIT:EcTk	Science Processor 03	.EcTkToolkit.pkg
LARC:l0sps03:TOOLKIT:EcTk	Queuing Server	.EcTkToolkit.pkg/ EcTkToolkit.pkg
V0_Client : V0_client Subsystem		
LARC:l0ins01:VOC:EcVc	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcVcB0SOT.pkg

Table A-2. Site Mappings for the LARC DAAC Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
LARC:l0ins02:VOC:EcVc	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	EcVcB0SOT.pkg

Table A-3. Mappings for GSFC Generated on Thursday, July 23, 1998

Software	Workstation	Package
CLS : CLS Subsystem		
GSFC:g0acs02:CLS:EcCl	Operations WS 01 (Default)	.EcClDAAC.pkg
GSFC:g0acs06:CLS:EcCl	Operations WS 02	.EcClDAAC.pkg
GSFC:g0ais01:CLS:EcCl	AIT Workstation/DBMS Server	.EcClEOSView.pkg
GSFC:g0ais05:CLS:EcCl	AIT Workstation (Default)	.EcClEOSView.pkg
GSFC:g0dms03:CLS:EcCl	Data Spec Workstation 01 (Default)	.EcClDAAC.pkg
GSFC:g0dms04:CLS:EcCl	Data Spec Workstation 02	.EcClDAAC.pkg
GSFC:g0dms05:CLS:EcCl	Data Spec Workstation 03	.EcClDAAC.pkg
GSFC:g0ins01:CLS:EcCl	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcClINTFCSVR.pkg
GSFC:g0ins02:CLS:EcCl	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcClINTFCSVR.pkg
GSFC:g0pls01:CLS:EcCl	Planning/Management WS 01 (Default)	.EcClEOSView.pkg/.EcClDAAC.pkg
CSS : CSS Subsystem		
GSFC:g0dms03:CSS:EcCs	Data Spec Workstation 01 (Default)	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
GSFC:g0dms04:CSS:EcCs	Data Spec Workstation 02	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg/.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
GSFC:g0dms05:CSS:EcCs	Data Spec Workstation 03	.EcCsCommon.pkg/.EcCsSubServerGUI.pkg
GSFC:g0ins01:CSS:EcCs	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcCsCommon.pkg/.EcCsINTFCSVR.pkg/.EcCsINTFCSVR_GSFC.pkg

Table A-3. Mappings for GSFC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
GSFC:g0ins02:CSS:EcCs	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	EcCsCommon.pkg/.EcCsINTFCSVR.pkg/.EcCsINTFCSVR_GSFC.pkg
GSFC:g0mss20:CSS:EcCs	Applications Server (S)	.EcCsACLDb.pkg/.EcCsCommon.pkg
GSFC:g0mss21:CSS:EcCs	Applications Server (P) (Default)	.EcCsACLDb.pkg/.EcCsCommon.pkg
DMS : Data Management		
GSFC:g0ins01:DMS:EcDm	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	EcDmINTFCSVR.pkg
GSFC:g0ins02:DMS:EcDm	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcDmINTFCSVR.pkg
DPS : DPS Subsystem		
GSFC:g0ais01:DPS:EcDpAt	AIT Workstation/DBMS Server	.EcDpAITWS.pkg
GSFC:g0ais05:DPS:EcDpAt	AIT Workstation (Default)	.EcDpAITWS.pkg
GSFC:g0pls01:DPS:EcDpPr	Planning/Management WS 01 (Default)	.EcDpPrPLNMGMTWS.pkg
GSFC:g0pls02:DPS:EcDpPr	PDPS DBMS Server	.EcDpPrQUESRVR.pkg
GSFC:g0pls03:DPS:EcDpPr	Planning/Management WS 02	.EcDpPrPLNMGMTWS.pkg
GSFC:g0spg01:DPS:EcDpSc	Science Processor 01 (Default)	.EcDpScSCNCPRCS.pkg
GSFC:g0spg07:DPS:EcDpSc	Science Processor 03	.EcDpScSCNCPRCS.pkg
GSFC:g0sps06:DPS:EcDpPr	Queuing Server	.EcDpPrQUESRVR.pkg
DSS : Data Distribution		
GSFC:g0dis01:DSS:EcDsDd	Distribution Server (S)	.EcDsDdDISTSRVR.pkg
GSFC:g0dis02:DSS:EcDsDd	Distribution Server (P) (Default)	EcDsDdDISTSRVR.pkg
DSS : Science Data Server		
GSFC:g0acs02:DSS:EcDsSr	Operations WS 01 (Default)	.EcDsSdOPSWS.pkg
GSFC:g0acs03:DSS:EcDsSr	SDSRV Server (P) (Default)	.EcDsSdSDSRV.pkg/.EcDsSdOPSWS.pkg
GSFC:g0acs04:DSS:EcDsSr	SDSRV Server (S)	.EcDsSdSDSRV.pkg
GSFC:g0acs06:DSS:EcDsSr	Operations WS 02	.EcDsSdOPSWS.pkg/ EcDsSdOPSWS.pkg
DSS : Storage Management		

Table A-3. Mappings for GSFC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
GSFC:g0acg01:DSS:EcDsSt	APC Server (P) (Default)	.EcDsStINJSTSRVR.pkg/.EcDsStAPCSVR.pkg
GSFC:g0acg05:DSS:EcDsSt	APC Server (S)	.EcDsStINJSTSRVR.pkg/.EcDsStAPCSVR.pkg
GSFC:g0dis01:DSS:EcDsSt	Distribution Server (S)	.EcDsStDISTSRVR.pkg
GSFC:g0dis02:DSS:EcDsSt	Distribution Server (P) (Default)	.EcDsStDISTSRVR.pkg
GSFC:g0drg01:DSS:EcDsSt	FSMS Server (P) (Default)	.EcDsStFSMSSRVR.pkg
GSFC:g0drg07:DSS:EcDsSt	FSMS Server (S)	.EcDsStFSMSSRVR.pkg
GSFC:g0icg01:DSS:EcDsSt	Ingest Server (P) (Default)	.EcDsStINJSTSRVR.pkg
GSFC:g0icg02:DSS:EcDsSt	Ingest Server (S)	.EcDsStINJSTSRVR.pkg
GSFC:g0wkg01:DSS:EcDsSt	Working Storage Host	.EcDsStDBMSSRVR.pkg
INS : Ingest has no components		
GSFC:g0acg01:INS:EcIn	APC Server (P) (Default)	.EcInAPCSVR.pkg
GSFC:g0acg05:INS:EcIn	APC Server (S)	.EcInAPCSVR.pkg
GSFC:g0acs02:INS:EcIn	Operations WS 01 (Default)	.EcInGUIOPSWS.pkg
GSFC:g0acs06:INS:EcIn	Operations WS 02	.EcInGUIOPSWS.pkg
GSFC:g0icg01:INS:EcIn	Ingest Server (P) (Default)	.EcInINTFCSVR.pkg/EcInINJSTSRVR.pkg
GSFC:g0icg02:INS:EcIn	Ingest Server (S)	EcInINTFCSVR.pkg/.EcInINJSTSRVR.pkg
IOS : IOS (Interoperability) Subsyst		
GSFC:g0ins01:IOS:EcIo	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	.EcIoAdINTFCSVR.pkg
	Principal for CSS, Backup for DMS, IOS, CLS servers.	.EcIoAdINTFCSVR.pkg
GSFC:g0ins02:IOS:EcIo	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	.EcIoAdINTFCSVR.pkg
MSS : Accountability		
GSFC:g0mss20:MSS:EcMsAc	Applications Server (S)	.EcMsAcAPPSSRVR.pkg
GSFC:g0mss21:MSS:EcMsAc	Applications Server (P) (Default)	.EcMsAcAPPSSRVR.pkg
MSS : Agent		
GSFC:*:MSS:EcMsAg		EcMsCommon.pkg/.EcMsAgGlobalShared.pkg

Table A-3. Mappings for GSFC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
MSS : Comment Survey		
GSFC:g0mss20:MSS:EcMsCs	Applications Server (S)	
GSFC:g0mss21:MSS:EcMsCs	Applications Server (P) (Default)	
MSS : Database files		
GSFC:g0mss21:MSS:EcMsDb	Applications Server (P) (Default)	.EcMsDbSupport.pkg
MSS : MDA		
GSFC:*:MSS:EcMsMd	(Default)	.EcMsMdCOMMON.pkg
GSFC:g0mss20:MSS:EcMsMd	Applications Server (S)	.EcMsMdAPPSSRVR.pkg
GSFC:g0mss21:MSS:EcMsMd	Applications Server (P) (Default)	.EcMsMdAPPSSRVR.pkg
MSS : Mode Management		
GSFC:g0msh08:MSS:EcMsCm	MSS Server (P) (Default)	.EcMsCmSSSRVR.pkg
GSFC:g0msh11:MSS:EcMsCm	MSS Server (S)	.EcMsCmSSSRVR.pkg
MSS : Tivoli		
GSFC:g0msh08:MSS:EcMsTv	MSS Server (P) (Default)	.EcMsTvMSSSRVR.pkg
GSFC:g0msh11:MSS:EcMsTv	MSS Server (S)	.EcMsTvMSSSRVR.pkg
MSS : Trouble Ticket		
GSFC:g0msh08:MSS:EcMsTt	MSS Server (P) (Default)	.EcMsTtMSSSRVR.pkg
GSFC:g0msh11:MSS:EcMsTt	MSS Server (S)	.EcMsTtMSSSRVR.pkg
PLS : PDPS/PLS Subsystem		
GSFC:g0pls01:PLS:EcPl	Planning/Management WS 01 (Default)	.EcPlPLNMGMTWS.pkg
GSFC:g0pls02:PLS:EcPl	PDPS DBMS Server	.EcPlQUESRVR.pkg
GSFC:g0pls03:PLS:EcPl	Planning/Management WS 02	.EcPlPLNMGMTWS.pkg
GSFC:g0sps06:PLS:EcPl	Queuing Server	.EcPlQUESRVR.pkg
TOOLKIT : ECS Toolkit		
GSFC:g0ais01:TOOLKIT:EcTk	AIT Workstation/DBMS Server	.EcTkToolkit.pkg
GSFC:g0ais05:TOOLKIT:EcTk	AIT Workstation (Default)	.EcTkToolkit.pkg

Table A-3. Mappings for GSFC
Generated on Thursday, July 23, 1998 (cont.)

Software	Workstation	Package
GSFC:g0dis01:TOOLKIT:EcTk	Distribution Server (S)	.EcTkToolkit.pkg
GSFC:g0pls02:TOOLKIT:EcTk	PDPS DBMS Server	.EcTkToolkit.pkg
GSFC:g0spg01:TOOLKIT:EcTk	Science Processor 01 (Default)	.EcTkToolkit.pkg
GSFC:g0spg07:TOOLKIT:EcTk	Science Processor 03	.EcTkToolkit.pkg
GSFC:g0sps06:TOOLKIT:EcTk	Queuing Server	.EcTkToolkit.pkg
V0_Client : V0_client Subsystem		
GSFC:g0ins01:VOC:EcVc	Interface Server 02 (Principal for CSS, Backup for DMS, IOS, CLS servers.)	EcVcB0SOT.pkg
GSFC:g0ins02:VOC:EcVc	Interface Server 01 (Principal for DMS, IOS, CLS servers, Backup for CSS.)	EcVcB0SOT.pkg
	(Principal for DMS, IOS, CLS servers, Backup for CSS.)	EcVcB0SOT.pkg

Appendix B.Test Procedure Development Plan

Legend

X - denotes draft test procedure available

O - denotes no draft available

Table B-1. Common DAAC Test Procedures

Test Number	Title	Reviewer/ Producer	EDC	GSFC	LaRC
B120110-020	System Startup		X-10/16	X-10/16	X-10/16
B100250-020 B100230-020 B100220-020	Search and Order products to Update Operations QA (EDC, GSFC, LaRC		X-10/14	X-10/14	X-10/14
B100230-010	Science Software Installation and Maintenance (SSI&M) (Specific procedures for the SSI&T concurrency are contained in the "PDPS Checkout Procedures – Drop 4+" last modified 9/4/98)		X-10/16	X-10/16	X-10/16
B120110-050	End-to-End Fault Management		X-10/19	X-10/19	X-10/19

Table B-2. EDC Unique Test Procedures

Test Number	Title	Reviewer/ Producer	EDC
B120650-010	LPS and IGS Data Ingest and Archiving		X-10/16
B120650-030	ECS User Access to Landsat 7 Information and Products		X-10/15
B120330-020	ASTER DAR Level 1 Data Ingest and Archiving		X-10/19
B120440-030	MODIS/ASTER Ancillary Data Ingest and Archiving		O-10/16

Table B-3. GSFC Unique Test Procedures

Test Number	Title	Reviewer/ Producer	GSFC
B120440-010	MODIS Production Planning		X-10/20
B120810-010	High Data Rate Ingest, Archiving and Retrieval		X-10/18
B120440-040	MODIS Daily Product Generation, Ingest and Archiving at the GSFC DAAC		X-10/16
B120440-070	MODIS Product Distribution		X-10/20

Table B-4. LaRC Unique Test Procedures

Test Number	Title	Reviewer/ Producer	LaRC
B120510-010	MISR Production Planning		O-10/20
B120510-020	MISR Level 0 Data Ingest and Archiving		X-10/18
B120510-030	MISR Ancillary Data Ingest and Archiving		X-10/16
B120510-040	MISR Product Generation and Archiving		X-10/21
B120510-050	MISR Product Distribution		X-10/22

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Abbreviations and Acronyms

APID	Application ID
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
ATT	End-to-End Test Team
B0SOT	Release B.0 Search and Order Tool
CCSDS	Consultative Committee for Data Systems
CM	Configuration Management
COTS	Commercial Off the Shelf
CPU	Central Processing Unit
DAAC	Distributed Active Archiving Center
DAN	Data Acquisition Number
DAP	Directory Access Protocol
DDIST	Data Distribution
DPR	December Progress Review
ECS	EOSDIS Core System
EDC	Eros Data Center
EDF	ECS Development Facility
EDOS	EOS Data and Operations System
EDS	Expedited Data Sets
EDU	EDOS Data Units
EGS	EOS Ground System
EOC	EOS Operations Center
EOS	Earth Observing System
ESDIS	EOS Data and Information System

ESDT	Earth Science Data Type
ETS	EOSDIS Test System
FDD	Flight Dynamics Division
FTP	File Transfer Protocol
GB	Gigabyte
GDAAC	Goddard Distributed Active Archiving Center
GSFC	Goddard Space Flight Center
GUI	Graphical User Interface
HDF	hierarchical data format
HP	Hewlet Packard
IAS	Instrument Activity Specification
L0	Level 0
LaRC	Langley Research Center
LDAAC	Langley Distributed Active Archiving Center
LPS	Landsat Processing System
LSM	Local System Management
MB	Megabyte
MISR	Multi-Angle Imaging SpectroRadiometer
MOC	Mission Operations Center
MODIS	Moderate-Resolution Imaging Spectroradiometer
NOAA	National Oceanic and Atmospheric Administration
PDS	Production Data Sets
PDS	Production Data Set
PGE	Product Generation Executables
SCTGEN	Simulated CCSDS Telemetry Genorator

SMC	System Management Center
SSI&T	Science Software Integration & Test
STMGT	Storage Management
SUT	system under test
TCP	Transmission Control Protocol
TRMM	Tropical Rainforest Measurement Mission
TSL	Test Script Language
UDP	User Datagram Protocol
VATC	Verification and Test Center

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